

*Factors, Practices, and Policies Influencing Students' Upward Transfer to
Baccalaureate-Degree Programs and Institutions: A Mixed Methods Analysis*

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Abstract

My dissertation utilizes an explanatory, sequential mixed-methods research design to assess factors influencing community college students' transfer probability to baccalaureate-granting institutions and to present promising practices in colleges and states directed at improving upward transfer, particularly for low-income and first-generation college students. First, the dissertation features multi-level random-effects model analyses to better understand how factors such as students' academic and social integration, community college characteristics and expenditures, and state transfer policy components influence community college students' 2/4 transfer probability² over a recent six-year period (utilizing the Beginning Postsecondary Study 2003-2009).

Second, comparative case studies of six community colleges³ in three states (Florida, Georgia, and Washington) report about how community colleges and state policy leaders currently engage in

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Cover photo retrieved from Google Images from: <http://recruiterpoet.files.wordpress.com/2011/05/graduates.jpg>

² "2/4 transfer" is an abbreviated term for upward transfer by community college or lower-division students to a bachelor's degree program or baccalaureate-granting institution. Institutions that primarily award associate's degrees are generally two-year institutions, based on the model of completion of an associate's degree program in two years. Baccalaureate-granting institutions and programs are generally modeled to be completed in four years, and may be called four-year institutions.

³ Georgia does not have community colleges. Rather, the University System of Georgia has 15 "access institutions" called state colleges that are primarily associates' degree granting institutions, and most offer limited baccalaureate degrees. My

experimentation and innovation⁴ in seeking to improve students' 2/4 transfer, and how they use data to inform decision-making on this issue. The case studies consider ways in which community college and state policy leaders make decisions regarding improving students' transfer prospects, the types of promising initiatives being implemented, and what is being learned from them. The case study design used above-average compared to average performers⁵ to illustrate field implementation dynamics that may influence student transfer outcomes, and provide deeper examination of issues affecting community college students as they are making the decision to transfer to a four-year institution, with the goal of improving policies and practices.

Similar to other researchers' findings, I found that most state policy variables⁶ designed to affect transfer demonstrated little or no statistical association with the probability of transfer, after controlling for state wealth (gross state product per capita (GSP), shown to be associated with the historic rise of state cooperative agreements facilitating transfer in the 1980s and 1990s).⁷ Gross state product per capita is also highly positively correlated with the percentage of the state's population with bachelor's degrees,

case study institutions include two of these access institutions. Most of Florida's community colleges have their own baccalaureate degree programs in specialized occupational fields, including one of the case study colleges selected in that state. For simplicity, I refer to colleges as community colleges throughout the paper, though different institutions may offer some range of baccalaureate programs or be in the process of obtaining approval for a bachelor's degree program(s).

⁴ "Experimentation" may take the form of a grant-supported new initiative with an evaluation component that includes quasi-experimental design, or it may be more loosely structured as a new initiative or policy change designed to improve student success outcomes associated with transfer, accompanied by documentation and evaluation of the results. Research on innovation has emphasized how organizational teaming structures can support creative decision-making and the generation of new knowledge guiding change in values, beliefs, and behaviors in the organization (Nilsson, 2003).

⁵ College upward transfer rate for the fall 2006 first-time-in-college cohort was used as a basis for analysis finding outliers (+2 standard deviations), using state-level data (Florida and Washington used three year transfer rates, and Georgia used four-year transfer rates for the fall 2006 cohort). While the average-performing colleges selected in Florida and Washington were average performers according to state-level data on upward transfer rates, there is also evidence from the IPEDS data on transfer-out rates for first-time, full-time students that three-year transfer rates were rising from 2008-2011.

⁶ State articulation and transfer policies include several components, as catalogued by the Education Commission of the States (ECS) in 2001 and 2010 (imputed here for 2005-06, two years after BPS 2003 students' postsecondary entry). ECS transfer policy components are: presence of articulation and transfer legislation; cooperative agreements between institutions and/or departments at 2- and 4-year institutions; transfer data reporting to state higher education commissions, departments, and authorities; transfer incentives and rewards (such as priority admission and scholarships); presence of a statewide course articulation guide; statewide common core or general transferable curriculum; and common course numbering (across two and four-year institutions).

⁷ When gross state product is excluded from the multi-level analysis, cooperative transfer agreements are significant and positive ($\gamma=0.3(0.1)$, $p<.05$), but no other state policy components are significant, and other variables' influences are about the same as Table 3.2 in the quantitative strand.

also significantly associated with increased upward transfer probability. The close correlation between state wealth and the proportion of state residents with a bachelor's degree education are likely proxies for a state's social capital and stronger demand for affordable access to college education by state residents, which may be accomplished through 2/4 transfer educational options in the state's public higher education sector. Even though state transfer policy components did not show significant overall effects in the multi-level regression, the presence of common course numbering was associated with increased transfer probability among first generation students (to earn a bachelor's degree), compared with non-first generation students.

Findings from the case studies center on four main areas: 1) the role of academic and transfer advising, 2) data use for decision support with respect to improving students' progress toward transfer, 3) leadership strategies for developing and assessing interventions to increase transfer, and 4) the role of state policies in framing and supporting colleges to improve students' upward transfer rates. This dissertation identifies some promising strategies, interventions, and practices among colleges with above-average transfer rates compared with colleges with average transfer rates. While colleges have implemented a range of interventions to improve supports for upward transfer, such as mandatory student advising, transfer fairs and transfer advising programs, there is still considerable room for improvement. Even among the better-performing colleges, too many students, particularly those most at risk of not transferring, may not have sufficient, coordinated supports to successfully complete transfer from their lower-division courses to upper-division coursework leading to a bachelor's degree.

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**Robin LaSota
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June, 2013**

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Even though pursuing a doctorate requires considerable independent and solitary work, when I reflect upon the community of scholars who have guided my process I do not feel alone. While I chose the University of Washington for my formal PhD training, and its rigor and values have anchored my scholarship, my dissertation research is a culmination of more than twenty years of dialogue and learning with scholars in this country and around the world. When my research interests finally led me to my dissertation committee chair, Dr. Bill Zumeta, I knew I found someone whose scholarly contributions, professionalism, and networking sphere resonated with my own. We share a foundation of liberal arts education and a love for educational policy research that has sustained my commitment to the PhD program as well as helped me envision all the new ways I will be able to make a difference in education long after graduation.

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⁸ Collaborative Researchers for Education Sciences Training (CREST).

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Chapter I. Why Community College Students' Upward Transfer Matters and How this Mixed-Methods Inquiry Offers Guidance for Improving Transfer Rates

Introduction and Policy Significance

According to the National Center for Education Statistics (2011), six out of ten students who initially enter public two-year colleges in the U.S. never transferred over the six-year period from 2003-2009 (Table 6.0-B). However, two-thirds of the students who never transferred expected a bachelor's degree at the time of initial enrollment and so would almost certainly have needed to transfer to a baccalaureate-granting institution to achieve their degree aspiration. Therefore, 40% of community college entrants transferred, but only 61% of these were "upward" transfers to a bachelor's granting college or university, 36% were lateral transfers to another two-year college, and 3% were "downward" transfers to non-degree-granting institutions. The percentage of upward transfers relative to two-year college entrants then, was 26.6 percent over six years. This data illustrates a critical disconnect between students' educational goals regarding BA attainment and their educational progress and persistence towards attaining their goals.

Only 17% of entering public two-year college students transferred to public four-year institutions, another 5% transferred to private nonprofit four-year institutions, and another 4.6% transferred to BA-granting for-profit institutions, based on a nationally representative sample of entering college students in the Beginning Postsecondary Study (BPS) (NCES, 2011, Table 6.0-B). Of students who entered public two-year colleges as their first institution, 37.5% were "strongly directed" to transfer to four-year institutions (Beginning Postsecondary Study 2003-09;

see Horn, 2009 regarding taxonomy of beginning community college students).¹¹ After six years, among all entrants to public two-year institutions, 19% transferred to a four-year institution without an AA and 7.6% transferred to a four-year institution with an associate's degree, for a total of 26.6% who transferred (Beginning Postsecondary Study 2003-09). The National Student Clearinghouse (NSC) conducted another study of transfer, using its own data over the five academic years from fall 2006-spring 2011. According to NSC, five-year upward transfer rates were higher among full-time students (2012a, p. 47). Five to six years is considered to be an adequate time frame to capture the large majority of students that will eventually transfer from two-year institutions to bachelor's degree granting institutions. However, researchers continue to investigate the limitations of this strategy and the resulting population exclusions.¹²

National Economic and Social Well-Being

Not only are many students not achieving their self-reported goals, the United States' government has goals for the educational attainment of its labor force that are not being met. One of the United States' education policy goals is to increase postsecondary degree attainment to 60% by 2020 among 25-34 year-olds from the average rate of 38% in 2010 (U.S. Department of Education, 2011; OECD, 2010).¹³ An important population to consider in reaching the goal is

¹¹ "Strongly directed" students were defined by their intentions to complete a program of study (4-year transfer, AA degree, or vocational certificate), to attend at least half-time during their first year (2003-04), and participate in a formal program, if degree-seeking. "Moderately directed" students were considered such if they reported intentions to complete a program or were enrolled in a formal AA or certificate program, regardless of enrollment intensity. If students reported no intent to complete a community college credential or transfer to a four-year institution and they were not enrolled in a formal degree program, they were considered not directed. Students classified as strongly directed or moderately directed were also grouped into tracks of 4-year transfer, AA degree, and certificate.

¹² According to the National Student Clearinghouse (2012a), only 2% of two-year college students who transferred to four-year institutions first transferred in their fifth year while the largest proportion (7%) transferred in their second year, followed by 6% in their third year.

¹³ The Organization of Economic Cooperation and Development (2010) reports that among 29 industrialized nations, the U.S. was about average (38%) in postsecondary (tertiary type A) attainment rates in 2008 (Chart A3.1), with 13 countries leading the U.S., particularly among younger age cohorts (less than 30 years of age). These calculations also include attainment of associate's degrees. Organizations such as the National Governors Association, the College Board, and Complete College America join President Barack Obama and philanthropic

students initially enrolling in community colleges (CCs) (approximately 43% of national first-time enrollees according to IPEDS, 2010). At the height of the 2007-2011 enrollment boom, about 7.8 million students enrolled in community colleges in the U.S. in 2011 (Mullin, 2012). Substantial economic and social benefits accrue to individuals with higher levels of educational attainment, particularly bachelor's degrees (Goldin & Katz, 2008; Bureau of Labor Statistics, 2011). Labor market returns correlate strongly and positively with each additional degrees earned, and occupational forecasts show that the majority of jobs (63%) will require some postsecondary education (with about one-fourth of them requiring BA degrees or higher).¹⁴ As minority and low-income individuals represent the fastest-growing demographics in the United States and disproportionately enroll in community colleges,¹⁵ research studies that can inform policy and practice to improve transfer rates of community college students to four-year institutions (often called "2/4 transfer") will be valuable.

Strong Success Rate for Community College Transfers

Once a community college student transfers to a four-year institution, the probability of his or her success in attaining a four-year degree is as good or better than students who initially enter a four-year institution. According to research conducted by Bowen, Chingos, and McPherson (2009), transfer students from community colleges graduate at the same rate as first time freshmen in selective institutions, and, at less-selective institutions, transfer students

leaders of Lumina Foundation for Education and the Bill and Melinda Gates Foundation in the goal of "raising the nation's college attainment rate to 60 percent (22 million new college degrees) in 10 years (by 2020), adding at least 8.2 million new college graduates," as summarized in the Lumina Foundation's *A Stronger Nation*. Some state the overarching goal with minor variations.

¹⁴ See: Carnevale, A., Smith, N., and Strohl, J. (2010). *HELP WANTED: Projections of Jobs and Education Requirements through 2018*. Center for Education and the Workforce, Georgetown University. Online: <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/fullreport.pdf>

¹⁵ See recent population projections from Johnson and Lichter (2010) and college enrollment projections by WICHE, (2013). Provasnik and Planty (2008) report on differences in community college enrollment by race, ethnicity, income status, etc.

graduate at higher rates than first-time freshmen (pp. 142-143).¹⁶ Even though students beginning at community colleges are less likely to earn a bachelor's degree than students starting at a four-year institution,¹⁷ for the 40+% of first time postsecondary students in the U.S. who start at community colleges, a necessary milestone to the bachelor's degree, for those who desire it, is transfer to a four-year institution.¹⁸

Policy research demonstrates a critical need for examination of factors influencing upward transfer, considering the demand for higher levels of degree attainment in the U.S., the sizeable population of students entering postsecondary education through community colleges, and the inequities in educational attainment that persist for low-income and under-represented minority students that have long-term economic and social consequences. Low rates of transfer, coupled with strong labor market demand and higher returns for education at the bachelor's degree level or higher, indicate considerable room for improvement with respect to strengthening systems of support for upward transfer for community college students.

¹⁶ See also Melguizo, Kienzl, and Alfonso (2011).

¹⁷ See research by Long and Kurleander (2009).

¹⁸ Baccalaureate programs at community colleges are being offered in 18 states, according to the American State Colleges and Universities (2010) and have grown steadily over two decades, however, the proportion of community college students in these programs remains very small (less than 5%).

Project Overview: A Mixed-Methods Dissertation

The first purpose of this research project is to estimate the relative influences of student, institution, and state policy variables on 2/4 transfer with nationally representative data and multi-level modeling, using variables shown to be significant in previous research. As part of the multi-level modeling analyses, I conduct relevant model comparisons to estimate effects of resources and policies across institutions and states in interaction with student characteristics. To accomplish this, this dissertation research features multi-level random effects modeling and analyses to better understand how factors such as students' academic and social integration, college characteristics and expenditures, and state transfer policy components influence public two-year college students' 2/4 transfer probability over a six-year period (utilizing the nationally representative *Beginning Postsecondary Study 2003-2009*).

The second purpose of the research project is to investigate and analyze leadership and academic advising practices and policies shaping public two-year colleges' work to boost students' transfer to four-year institutions (i.e. 2/4 transfer). No national dataset exists that catalogues practices in transfer-related academic advising, data-driven decision-making for program and policy design to increase 2/4 transfer, and other institutional practices that could be linked to available quantitative data (e.g. BPS 2003-2009). Therefore, to assess college-level leadership and advising practices, comparative case studies of six colleges (community colleges or similar, primarily associate's degree granting institutions) in three states investigate how policies and practices at the selected colleges and state policy leaders in these states work to improve students' 2/4 transfer, and how they use data to inform decision-making on this issue. For purposes of comparison, the study design contrasts colleges in each state with an above-average transfer rate and an average transfer-rate (accounting for student demographics) in three

states that are actively experimenting with policies to support community college students' postsecondary success. The purpose of the case studies is to gain a better understanding of the experiences of students who are preparing to transfer to a four-year institution and the perspectives of college faculty, staff, and administrators who serve them with an eye to identifying promising practices and policies. Additionally, the case studies incorporate the views about state transfer and articulation policies of state policy officials working on building and improving state systems of support to improve transfer pathways for students in primarily associate's degree granting colleges. The overall goal is to discover promising policies and practices for improving college students' transfer, how leaders make decisions about their implementation strategies to improve transfer, and how they decide how to amend them or initiate new strategies. Promising practices and policies are generally those that college administrators have initiated based upon data analysis, or on which they have conducted internal (or external) evaluations, and have found positive impacts on student outcomes.

This dissertation utilizes an explanatory, sequential mixed-methods research design. Due to the potential for utilizing "complementary strengths and non-overlapping weaknesses" of quantitative and qualitative research approaches¹⁹ (Tashakkori and Teddlie, 2003, p. 299), mixed methods or mixed model research designs can offer greater capacity to increase "legitimatization" and minimize validity threats (Onwuegbuzie and Johnson, 2006). Creswell and Clark (2011) describe that the main objective of the explanatory, sequential design is to use the qualitative inquiry strand to help elaborate, extend, or explain initial quantitative results. The

¹⁹ Quantitative research strategies have strengths of theory-based hypothesis testing; potential generalizability based upon a large, representative, random sample; and can quantify influence of many variables on a reasonably well-defined dependent variable. Qualitative research strategies possess strengths in capturing participants' own meaning-making or the insider's perspective, deepening analyses of particular and complex phenomena, and suggesting how local conditions and contextual factors affect persons' behavior of interest. Quantitative and qualitative research methods each have their own weaknesses as well, relative to their strengths and theoretical influences (Johnson & Onwuegbuzie, 2004).

explanatory, sequential design first assesses patterns or trends and relationships with quantitative information, and then seeks to explain mechanisms or reasons behind the resulting patterns with qualitative research. Goals of such qualitative inquiry may include elaboration of impacts of factors found to be significant ($p < .05$) or non-significant ($p > .05$) in the quantitative analysis²⁰, use of positive-performing exemplars compared to average performers to illustrate field implementation dynamics that appear to influence student outcomes, and deeper examination of issues with the goal of improving policies and practices.

The cross-case studies in this dissertation do not seek to further explain the quantitative findings, per se. The quantitative strand is used to measure the relative influence of factors related to transfer probability for a nationally representative sample of community college entrants, and notice what stands out as most influential, particularly for vulnerable student population groups. Since BPS does not provide much depth on college practices, the qualitative strand in this study complements the quantitative analysis by unpacking the role of college leadership and practices that have promising impact on increasing students' transfer probability.

An ultimate goal for quality mixed methods research is to yield credible meta-inferences from both qualitative and quantitative research components that are consistent with the conditions of research design (as a QUAN + QUAL sequential explanatory design) (Onwuegbuzie and Johnson, 2006). The two research purposes in this dissertation are well-suited for a mixed-methods analysis. The first part seeks to quantitatively measure theoretically and empirically-derived factors (from prior research) found to produce a greater likelihood of students' transfer from public two-year to four-year institutions in a recent and nationally

²⁰ When investigating the positive and significant influence on transfer of common-course numbering, for example, it is constructive to take into account policy components that make theoretical sense but did not end up demonstrating significance in the multi-level regression so as to explore potential ways in which policy implementation can be strengthened.

representative sample, particularly for students who are low-income or first-generation to earn a bachelor's degree.

The second part seeks to investigate qualitatively the dynamics of decision-making within states and colleges directed at improving community college students' transfer to baccalaureate-granting programs and institutions. The selected colleges vary in their transfer rates—one is above average and one is about average within each of the three states – to provide variation and contrasts in practices that may be related to transfer performance. To varying degrees, all colleges selected use data to strategize for improved transfer performance so as to better illuminate the advantages and pitfalls associated with data-based decision-making processes related to transfer. Case study findings provide an analysis of policies, practices and deliberations occurring in these colleges and their state policy circles to augment the national longitudinal, multi-level analysis of factors influencing 2/4 transfer probability. Both quantitative and qualitative strands investigate the role of state articulation/transfer policy in improving 2/4 transfer and the role of community college students' academic and social integration in supporting transfer, particularly for low-income, first-generation students, and under-represented minorities. Using interview data, the case studies examine systems of support for transfer, leadership strategies and data use in decision-making, as well as innovative practices to increase students' transfer. This type of data is not systematically collected at the national level, which is the reason for elaborating the quantitative analysis with interview data on promising practices at the college level and how those practices are supported in different state transfer/articulation policy contexts.

The overall goal of this mixed-methods research is to offer findings that may inform and assist the nation's baccalaureate completion agenda, specifically around improving transfer

pathways from public two-year colleges to baccalaureate-granting institutions. Multi-level modeling and Bayesian predicted probabilities used here offer more nuanced understanding than methods that have generally been used previously of how state and community college policies and practices matter (or not) in increasing students' 2/4 transfer rates, relative to specific student characteristics and choices and institutional characteristics such as enrollment size. Differences in regression slopes and intercepts are investigated for low-income, first-generation-to-earn-a-BA students²¹ (compared to students who are not low-income, first generation to earn a BA), African-American and Latino students compared with white students, and students who planned to transfer at postsecondary entry versus those who did not.

This statistical research methodology is not conducive to making causal claims regarding the advantage to transfer probability from variables such as enrolling in community colleges with certain characteristics, student behaviors such as participation in academic advising, or attending colleges in states with different transfer/articulation policies. Causality can only be established with experimental and, under certain conditions, quasi-experimental research designs (Shadish, Cook, and Campbell, 2002). Rather, the analyses reported here are designed to report factors statistically associated with college students' transfer outcomes among a nationally-representative sample, particularly for low-income students and those who would be the first in their family to earn a bachelor's degree. Case studies of college and state policy leaders that are using evidence-based decision-making to guide new work directed at improved 2/4 transfer (above average compared to average transfer performers) are designed to generate insights into

²¹ Federal eligibility criteria for the TRIO program defines first generation as meaning neither parent has earned a bachelor's degree. This criterion is used as part of the investigation about factors affecting 2/4 transfer because the ultimate desired goal is transferring with the goal of completing the bachelor's degree. One of TRIO's program effectiveness indicators is the number of students who successfully transfer to a four-year institution. Even though a proportion of these students will not earn a bachelor's degree, they are considered as first-generation to potentially earn a BA degree, because neither of their parents had earned one at the time of their postsecondary entry.

promising practices and policy implementation puzzles regarding how to meet diverse students' needs and expectations.²²

The next chapter concentrates on the research questions, methods, and findings of the quantitative strand of the dissertation which focuses on factors influencing students' transfer probability to baccalaureate-granting institutions, particularly for low-income students and students first in their families to earn a baccalaureate degree.

²² Promising practices may be characterized as those which have been studied by internal or external researchers and have documented positive outcomes based on appropriate research methods and evaluation criteria and/or have garnered external funding for implementation; or initiatives that do not yet show positive outcomes or have external funding, but are generally well-regarded, known, and supported (due to a solid theoretical foundation) among institutional leaders and practitioners.

Chapter II. Framing and Design: Factors Influencing Individual Upward Transfer Probability Using National Survey Data

The purpose of this research project is to explore more precisely what individual, community college, and state factors explain the variance in community college students' successful transfer to four-year institutions, particularly those who are low-income students, under-represented minorities, and/or students who would be first in their families to earn a bachelor's degree.

Research Questions – Quantitative Strand

Building upon previous literature, and the nested nature of students' transfer experience (within institutions and states), my research questions are as follows:

1. What is the relative impact of students' choice of program of study²³, academic and social participation in college, academic performance in college, external demands (such as work hours, parenting responsibility), and background characteristics upon U.S. community college students' rates of transfer to four-year institutions? Some of these variables may be subject to policy or institutional influence that could enhance transfer rates.
2. What institutional characteristics of community colleges (e.g. per-student expenditures on instruction, student services or overall, average transfer-out rate; enrollment size; student-

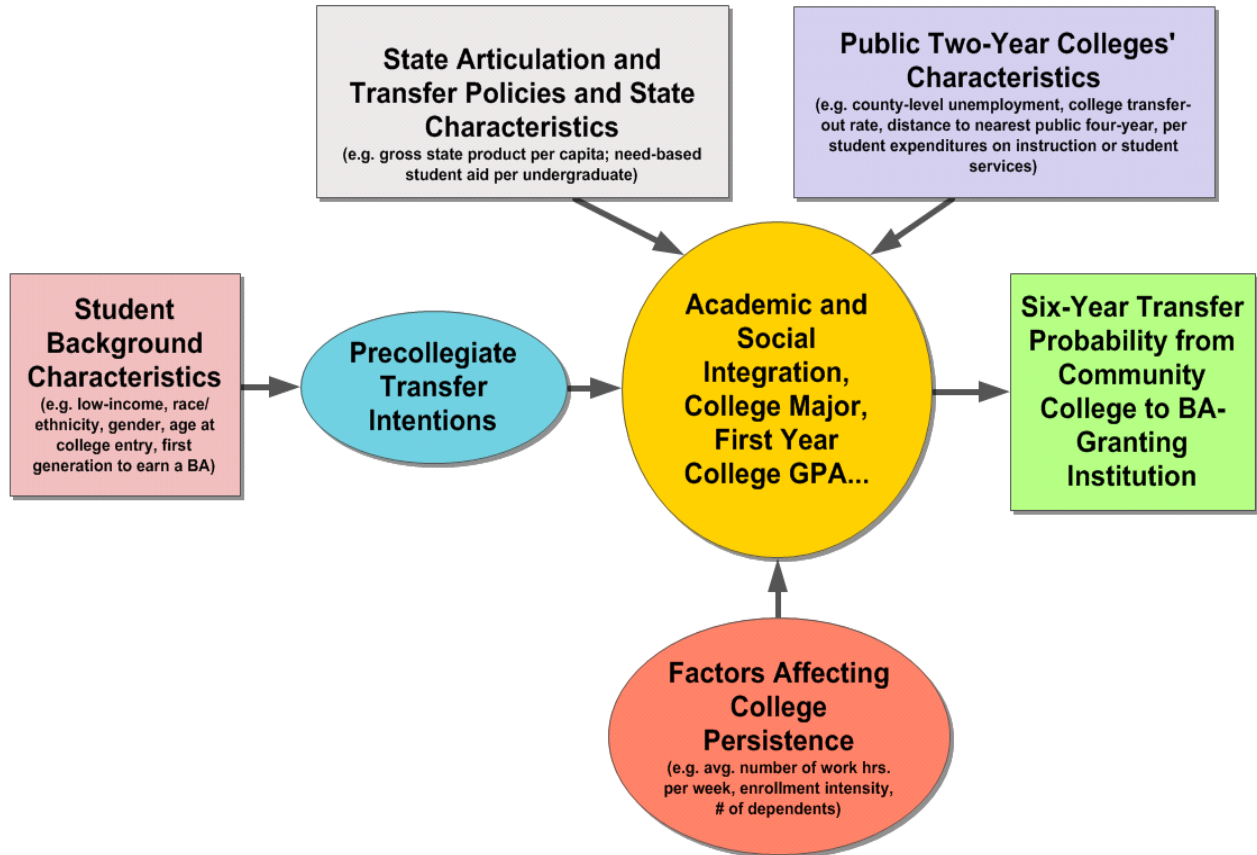
²³ Majors have been consolidated based on the author's previous regression analyses, as well as other scholars' research (Dougherty and Kienzl, 2006) (showing similar degrees of association within categories with 2/4 transfer probability. Humanities, social sciences, STEM, and education majors have similar positive associations with upward transfer probability, and are grouped together as transfer-oriented majors. Health, vocational, technical, and professional fields have similar negative associations with upward transfer probability and are grouped together as non-transfer oriented majors. Declaring a major in business was not significantly related to upward transfer probability or different from the reference category of an undeclared major program of study, so these two categories were grouped together as a strategy for improving model parsimony.

to-faculty ratio; percent of full-time faculty; percent of full-time students) help explain differences in probability of transfer to four-year institutions for U.S. community college students, after considering student-level characteristics mentioned above? Here too, the primary goal is to identify institutional factors that seem to matter for transfer to identify priorities for resource allocation or other policy changes.

3. Which state characteristics and state-level articulation and transfer policies help explain differences in 2/4 transfer probability among students entering public two-year colleges, after controlling for influential student and college characteristics? In short, do state policies matter?

Figure 2.1 offers a visual representation of the conceptual model for this quantitative study.

Figure 2.1. Theoretical Framework to Investigate Factors Influencing Upward Transfer Probability by Community College Students to Baccalaureate-Granting Institutions



Framing Research Literature on Factors Influencing Transfer Probability

Two strands of research frame this research on factors predicting community college students' transfer to four-year institutions: 1) research on student factors and choices relevant to transfer, and 2) research on state and community college characteristics relevant to transfer. Student-level factors appear to be more important in predicting student outcomes than institutional or structural factors, according to Bailey, Jenkins, & Leinbach (2005), however, "the possibility remains that these relationships are constrained by the data available to include in statistical models and how these models are constructed," (Goldrick-Rab, 2010, p. 457). Roksa (2009) noted substantial confusion and incoherence in the transfer literature, as a result of data limitations and available methodologies: "Surveying the transfer literature reveals the diversity of definitions, measurements, data, and analytical methods used that makes it virtually impossible to arrive at any coherent conclusions," (p. 2470).

Characteristics of Students in Community Colleges

Students in today's public two-year colleges reflect considerable racial, socioeconomic, and demographic diversity and enroll more than the baccalaureate sector of the vulnerable students less well served by society's institutions and traditionally not as successful in postsecondary education. Students in community colleges are substantially more likely to be from low-income families than students who initially enroll in four-year institutions (Provasnik & Planty, 2008). Dougherty and Kienzl (2006) found that students from higher income families have a higher likelihood of 2/4 transfer, as do students entering straight from high school. In Dougherty and Kienzl's research, which used BPS 1996-2001 data, some of the variables that positively impacted transfer rates in spite of class, age, and racial-ethnic differences were: better high school academic preparation and performance (e.g. higher high school GPA), higher

educational aspirations, study group participation in community college, and choosing an academic major versus an occupational one (students in occupationally-oriented programs typically do not aspire to transfer).

Many working, older, low-income, and under-represented students attend community colleges. According to the American Association of Community Colleges²⁴ (AACC, 2013), more than half of the 13 million total enrollment in community colleges in 2008 were female (57%), nearly half (39%) were minorities (15% Black, 18% Latino, 6% Asian or Pacific Islander, 1% Native American, and 9% other/unknown), 12% were students with disabilities, and nearly half (46%) received some form of financial aid (federal grants 21% federal loans 10%, state aid 13%, and institutional aid 11%). In 2011-12, community colleges received about one-third (34%) of tuition revenue from Pell grants aid (AACC, 2013). Based on 2011 AACC Fast Facts, the average age of U.S. community college students is 28, and nearly half (45%) are aged 22-39 years (thus older than the common age of college graduation). More than one-tenth (16%) are single parents, and about six in ten (59%) are enrolled part-time. Among full-time students, most (59%) work part-time, and one-fifth (21%) work full-time. Most part-time enrolled students work while attending community colleges (40% work full time, 47% work part-time). Thus, community college students as a group are different and face more challenges than typical students attending most traditional BA-granting institutions.

In the Beginning Postsecondary Study sample used in this analysis (weighted n=1,528,900), the population has similar demographic proportions: 60% female, 47% minority, 20% single parents, 30% worked an average of 1-19 hours per week, 50% worked 20-39 hours per week, and 10% worked 40-60 hours per week (excluding work study). Over their first three

²⁴ AACC represents 90 percent of public, two-year U.S. community colleges and their 13 million students.

years of enrollment, 50% of the students were enrolled primarily part-time, and the average age was 23 at the time of entry. The BPS sample is thus a bit younger than the AACC population statistics show. While BPS is nationally representative, has a relatively high response rate of 89%, and is weighted to be representative, it is not a perfectly representative sample of the community college population.

Students' access to financial aid, work schedules that facilitate time for fulfilling academic responsibilities, and having economic and social supports to enroll full-time, particularly in the first term, all increase 2/4 transfer probability (Goldrick-Rab, 2010). Compared to students attending "4- year" colleges and universities, community college students generally have lower test scores in high school, are far more likely to delay enrollment in college after high school, attend part-time or stop-out of college, and come from households in lower SES quartiles. They tend to require proportionately more educational services to be successful than students without these risk factors (Bailey et al., 2005).

Doyle (2009) analyzed postsecondary enrollment data from Tennessee, and found that increased academic intensity (enrolled at 12 or more credit hours during the first semester of enrollment) causally impacts 2/4 transfer rates.²⁵ Based upon Doyle's analysis, students who took 12 or more credit hours in their first semester increased their probability of transfer from community colleges to four-year institutions within six years by about 11-15 percent. Students who took 9 credits or more were also more likely to transfer than their peers who took less than that, as well as those who took 6 credit hours or more relative to their peers who took fewer.²⁶ In

²⁵ Doyle used data from fall enrollment surveys from every public two-year college campus in Tennessee from 1995-2004, a sample of approximately 25,000 students enrolled in community colleges each year.

²⁶ Doyle (2009) measured the treatment effect of taking more than 6, 9, or 12 credit hours through logistic regression (dependent variable is transfer within six years of initial enrollment to a four-year institution in the state). He

addition to the positive impact of taking additional credits per term upon 2/4 transfer, Goldrick-Rab (2010) reported that “recent rigorous analyses of the effects of aid on persistence revealed that students who receive financial aid appear more likely to make consistent progress in college” (p. 445), and that access to financial resources which allow for increased enrollment intensity positively impacts transfer probability and degree completion.

First-generation college students attending community colleges generally have lowered academic intensity, and more work and family responsibility than students in baccalaureate-granting institutions. More than four out of ten (42%) community college students were first in their families to attend college (note: first-generation college students defined by parents’ attendance not degree completion here) (AACC, 2013), and this group expresses greater satisfaction about their community college experience but also faces specialized challenges (Nomi, 2005). First-generation community college students tend to take fewer credit hours each semester and to face greater financial problems and possess more family responsibilities. First generation college students are less likely to attend community college for the purpose of transfer to a four-year institution and tend to concentrate on immediate returns that can be obtained via job training and obtaining an associate’s degree (Nomi, 2005).

Compared with other students, first-generation students place more emphasis on factors such as cost, financial aid access, academic reputation, and program of study in their choice of community college enrollment (Nomi, 2005). With an average full-time tuition of \$2,544 in 2009-10 in community colleges, compared to \$7,020 at public four-year colleges and universities and much higher for private colleges and universities (Long, 2010, p. 29), first-generation and/or

matched students by race/ethnicity, gender, age, distance traveled to college, declaration of major, and state residency to determine control groups for the enrollment intensity treatments of 6, 9, and 12 credit hours.

lower-income students find community colleges more accessible and affordable. However, public two-year colleges have lower faculty and administrative salaries than public and private four-year institutions, fewer resources allocated to academic support and student services, and much lower per-student levels of state and federal support (Mullin, 2010).

High need for remedial coursework, low levels of follow-through among community college students. Better high school academic preparation, a higher proportion of course completions in college, acceleration through remedial or developmental courses, higher college grades, and increased levels of academic and social engagement on campus have been shown to be significant predictors of transfer among community college students (see the summary of literature in Hagedorn, Cabrera, Prather, 2008, p.5). Yet, almost 60% of students entering the nation's community colleges require some form of remediation in math, reading or English (Bailey, Jeong, and Cho, 2008). The Education Commission of the States reported that states do not systematically report expenditures on developmental education in community colleges. However, some national estimates place the cost of remedial education at more than \$2 billion (Fulton, 2010). In the BPS:2009 sample, about 30% of community college entrants took at least one remedial education course in their first year. Even though placement test scores of more than half of entering community college students indicate a need for remedial coursework, many of these students do not end up enrolling in the developmental courses, resulting in a placement-enrollment gap.

Analysis of National Educational Longitudinal Study (1988-2000) and national community college data from the Achieving the Dream Project indicated that fewer than half of the students who are referred to remediation actually complete the entire sequence to which they are referred (Bailey et al., 2008). According to Bailey et al.'s (2008) research, nearly a third

(30%) referred to developmental education do not enroll in any remedial course, and “only about 60% of referred students actually enroll in the remedial course to which they were referred,” (p. 1). Men, older students, African Americans, part-time students, and students in vocational programs were less likely to progress through their full remedial sequences due to not enrolling in the first or subsequent courses or failing or withdrawing from their enrolled classes, according to this analysis (Bailey et al., 2008).

Higher educational aspirations and high school performance, direct enrollment from high school, and study group participation in community college are factors that reduced racial gaps in transfer rates. Dougherty and Kienzl (2006) found that students from higher income families have a higher likelihood of transfer, as do students entering straight from high school. Some of the variables that positively mediated class, age, and racial-ethnic differences in transfer are better high school academic preparation and performance (e.g. higher high school GPA), higher educational aspirations, study group participation in community college, and choosing an academic major versus an occupational one. Among African-American students, Dougherty and Kienzl (2006) discovered that having higher educational aspirations reduces some of the black-white transfer gap, when controlling for socio-economic background. Also, students without children showed significantly higher probability of transfer, and this impact was greater for older students (>30 years).

Dougherty and Kienzl (2006) reported upon stepwise regression results of transfer rates (from community colleges to four-year institutions) by social background (socio economic status, gender, race/ethnicity, age) on three sets of mediating variables: 1) precollege personal characteristics (e.g. high school academic preparation and academic/career aspirations), 2) external demands (e.g. marital and parental status, extent and intensity of work, enrollment

status), and 3) experiences during community college enrollment (major or college program, degree of academic and social integration in college). The study integrated NELS 1988:2000 with BPS 1990:1994 data, focusing on students who first entered community college. The dependent variable was “transfer status”, i.e. whether community college entrants transferred to a four-year institution at any point after their initial year in postsecondary education. Students in BPS had six years to transfer, and NELS students had at most eight years. BPS may therefore miss some community college students whose average time to transfer is longer than five years, however, this is a relatively small percentage.

Dougherty and Kienzl (2006) acknowledged that one of the limitations of their analysis was its examination of only student-level characteristics to explain the variation in transfer to a four-year institution by community college students. Thus, part of my research strategy here is to explore the role of institution-level variables including per-student instructional expenditures, per-student expenditures for student services, percentage of full-time faculty, faculty-to-student ratio²⁷ and community college size, similar to some other research in this area (Gross & Goldhaber, 2009). Similar to Dougherty and Kienzl (2006) and Horn (2009), my analysis accounts for transfer intention, program of study (transfer-oriented vs. health/vocational/technical), and enrollment intensity, as well as demographic characteristics and influential college experiences, to predict community college students’ transfer probability to 4-year institutions. One of the limitations of these prior studies, however, is the absence of testing of the relative significance of individual and institutional factors for different groups of students, within their varied state policy contexts of support for improved articulation and transfer between community colleges and in-state four-year institutions.

²⁷ Gross and Goldhaber (2009) measure influence of student-to-faculty ratio; I used faculty-to-student ratio as the variable so that I can better interpret the one-unit change as a positive.

College-Level Factors

Fewer resources and budget cuts in community colleges. Several years ago, Bailey, Jenkins, and Leinbach (2005) reported that public two-year colleges experience significant resource constraints in effectively serving students, having more factors associated with lower college retention, transfer, and graduation. While market share enrollment increased by +0.7% in the community college sector from 1999-2009, per-pupil total operating expenditures remained flat (only a \$1 increase in 2009 dollars, compared to a \$14,000 increase in per-pupil total operating expenditures in private research universities, and -0.7% decline in overall market share) (Desrochers and Wellman, 2011). According to Desrochers and Wellman (2011), “community colleges had the greatest increase in enrollment in 2009, adding 341,000 students and growing by nearly 5.5 percent,” (p. 9). Enrollment in for-profit institutions grew at a faster rate than community college enrollment from 1999-2009, however, enrollment in the community college sector is still four times larger than the for-profit, two-year sector (Desrochers and Wellman, 2011, p. 7).

According to the Delta Cost Project analysis (Desrochers and Wellman, 2011), “the immediate effect of the recession was most evident at public community colleges. Spending per student fell in 2009, fueled by a combination of enrollment growth and revenue losses. As a result, community colleges fell further behind other institutions—public, non-profit, and for-profit—in their ability to serve growing populations of students with resources adequate to ensure access, attainment, and quality,” (p. 5). While public two-year colleges enroll more students who require additional resources to be successful in college-level work, they have the “greatest evidence of actual spending cuts in the last few years...in 2006, these colleges enrolled about 6 million students, more than any other institutional group, and the average education and

related cost per FTE was less than \$10,000, an amount less than any other type of college or university,” (Delta Cost Project, 2009, pp. 31-32).²⁸

Divergent educational missions and funding challenges. Brint and Karabel (1989) argued that community college leaders converted their sector’s “dream” of 2/4 transfer to vocational degree attainment. Dougherty’s finding (1994) was that the occupational mission did not replace the transfer mission, rather both missions were pursued simultaneously. The resulting contradictory and distinct tracks within community colleges then become vehicles for both socio-economic mobility and stratification at the same time, Dougherty argued (1994). Divergent educational missions govern the nearly 1,000 community colleges in the U.S., and these institutions face considerable resource constraints. Since community colleges have historically been heavily reliant on state and local funding, their operations, missions, and governance are also highly localized, as well as highly susceptible to economic fluctuations (Dowd & Cheslock, 2006). Even though funding constraints are a top concern among administrators of community colleges, about half (49%) rated “articulation between your institution and other colleges” as very important, trailing only three other issues: state financial support for programs and teaching (63%), linkages with business and industry (56%), and meeting community needs (56%) (Amey & VanDerLinden, 2002).²⁹ Community college administrators also indicated that statewide cooperative agreements across higher education sectors were important facilitators of articulation and transfer (Amey & VanDerLinden, 2002).

²⁸ In Delta Cost Project analysis, a six-year average of per-student expenditures was utilized and the figures were standardized in 2008 dollars. Categories included are: instruction, research, student services, public service, academic support, institutional support, and operations and maintenance. The average per-student expenditure among community colleges represented in BPS was about \$12,500, which seems comparable to the per-student figure provided for 2006 by the Delta Cost Project.

²⁹ Based upon a stratified, randomly sampled survey of 1,700 public community college administrators from fourteen position codes drawn from the American Association of Community Colleges (AACC) database.

Institutional cultures not strongly oriented to promote students' academic and social integration. Public two-year colleges have traditionally not been effective at increasing students' academic³⁰ and social integration³¹ on campus, constructs which have been shown to be correlated with higher levels of college persistence in four-year institutions (Braxton, Hirschy, & McLendon, 2004; Tinto, 1975). Students experience isolation due to the commuter culture of most community colleges, and reforms to create learning communities, instructional innovation, cohort-based education practices, and stronger mentoring systems of support have been limited in scale. Furthermore, "traditional quantitative measures of social and academic integration may be inadequate to capture the precise means through which two-year students develop feelings of congruence," (p. 82) notes Deil-Amen (2011), based upon 238 semi-structured interviews conducted with students, staff and faculty at seven community and seven private two-year colleges.

According to the Community College Survey of Student Engagement (CCSSE, 2007), most students do not meet with their academic advisors at appropriate times over the course of their studies at community colleges. Many students do not declare an academic focus (such as pre-nursing, computer science, or psychology) early on, which delays more specific guidance towards reaching those goals (Shulock and Moore, 2007; Johnson & Rochkind, 2009). Indeed, 30% of students were undeclared as to their major in the first year (2003-04) in the BPS:2009. Too often, academic advisors do not work closely with students to guide them to take courses

³⁰ Academic integration is typically measured with a combination of the following variables: actual or predicted first-year grades; students' sense of their intellectual/academic development; students' perception of faculty concern; frequency of social contact or conversations with faculty and/or advisors about academic matters outside of class time; participation in out-of-class study groups; time spent on homework, and participation in cohort-based programs. See note 5 in Deil-Amen (2011) for relevant citations.

³¹ Social integration is generally defined with measures that capture: participation in school clubs and fine arts activities; sports participation; frequency with which students go places with friends from school; peer group interactions; and [informal out-of-class interactions and conversations with college faculty and personnel. See note 4 in Deil-Amen (2011) for relevant citations.

that count for a degree program or help them master difficulties encountered in getting into or passing college-level courses (Jenkins, 2006; Rosenbaum et al., 2006). Given substantial information requirements for efficient course-taking and limited institutional resources and faculty time for academic advising, some students end up taking courses they do not need, spend long periods in coursework that financial aid does not fund, or do not know that their remedial courses do not count toward a degree (Rosenbaum et al., 2006; Grubb, 2006). Historically, most faculty at community colleges have not invested their highly constrained time and effort towards being “transfer champions” with students, although such rhetoric and norms have surfaced in scholarship and practice with promise for transforming institutional cultures (Dowd, 2011).

Compared to public two-year colleges, private two-year colleges have institutional practices that more effectively support their students to degree completion and potentially transfer to four-year institutions, according to Rosenbaum, Deil-Amen, and Person (2006).³² At private two-year colleges, all students complete a sequence of compressed milestones such as a specific major-related course sequence, course schedules are compressed into discrete time schedules and maintained all year long (vs. more sporadic offerings at public institutions), and programs are packaged according to degree/career objectives. Private two-year colleges assist every student with financial aid counseling, which is not surprising considering that these institutions charge substantially more (Rosenbaum et al., 2006). According to Rosenbaum et al.’s

³² Associate’s degree completion rates for students entering public vs. private two-year institutions were 40.8% and 58% respectively according to NELS 1988-2000 data, (Rosenbaum et al., p. 12). Regression results that controlled for student characteristics with propensity score matching found that “degree completion was significantly higher in private than in public two-year colleges in every comparison,” (Rosenbaum et al., p. 12). The majority of Rosenbaum et al.’s findings come from qualitative and survey research conducted at fourteen two-year colleges in a major Illinois city and its surrounding suburbs over three years (2000 to 2002). Seven community colleges and seven private occupational colleges (among the seven privates, three were non-profit and four for-profit) were included in the sample. Community colleges averaged 3400 full-time students and occupational two-year private colleges average 1500 full-time students. The average tuition was \$3,571 at the public two-year institutions and \$25,601 at the private two-year institutions.

(2006) mixed-methods research, private two-year colleges offer mandatory advising sessions – group sessions on specific programs to outline the curriculum and foster peer support, as well as individual sessions to coach students on attendance, homework, appropriate dress, demeanor, and oral communication. Private two-year colleges also have and use systematic student information systems to keep track of student attendance and performance, which allows advisors to course-correct behaviors in a timely manner. While community colleges are diverse and constrained in emulating all the effective practices at private two-year institutions, public two-year colleges have considerable untapped opportunity for organizational reform, utilizing lessons learned from comparable private institutions, argued Rosenbaum, Redline, and Stephan (2007). While this quantitative analysis does not report on effects of community college practices regarding advising and course-taking patterns (due to limitations of the BPS data), which likely affect transfer probability, these issues are further investigated in the case studies that are part of this research.³³

State-Level Factors

The National Center for Higher Education Management Systems (NCHEMS) created degree attainment “targets” for each state through 2020 based on President Obama’s increased degree attainment goals for the U.S., adjusting for current levels of educational attainment and population growth by state (Kelly, 2010). The Obama goals are thought to be ambitious targets by higher education analysts and higher education associations. States vary in the breadth and degree of implementation of their statewide transfer and articulation policies, the strength of their community college-public university relationships, and in their coordination of efforts to create

³³ Since the time of Rosenbaum’s study, public two-year institutions such as those in my case studies, have implemented some of these practices with mandatory student advising and early warning advising systems, in the past several years (2008-2013).

innovative approaches to boosting student attainment of their chosen degrees. For example, Shulock, Moore, and Jensen (2009) highlighted the efforts of Arizona, Florida, New Jersey, North Carolina, Ohio, Oregon, Texas, and Washington for the purpose of crafting an effective, efficient, transparent, robust, strategic, and feasible proposed transfer system for California.³⁴ The Education Commission of the States (Smith, 2010) shows expansion of states' transfer and articulation policies and supports from 2001-2010, but does not rate policy adoption efforts according to Shulock et al.'s (2009) criteria or any other rating system evaluating policy strength, the extent of implementation, or policy components' potential for raising transfer rates.

State transfer and articulation policies are growing in number, but may be too focused on preventing loss of credit, not on directly improving 2/4 transfer rates. Between 2001-2010, six more states have a statewide transfer policy (36 states up from 30); six more states have cooperative agreements (46 states up from 40), four more states have transfer data reporting (37 states up from 33); four more states have incentives and rewards for transfer students (22 states from 18); nine more states have a statewide articulation guide (35 states from 26); 11 more states have a common core general postsecondary curriculum (34 states from 23); and nine more states have common course numbering across community colleges and four-year institutions (17 states from 8).³⁵ Processes of policy diffusion and policy learning across states

³⁴ State policies were primarily compared on their use of an associate's transfer degree or use of common statewide general education curriculum without an associate's degree.

³⁵ According to ECS's (Smith, 2010) definitions, **Statewide articulation and transfer policy**: Legislatures and higher education systems adopted articulation policies at the state level. **Cooperative agreements**: Cooperative agreements between postsecondary institutions allow articulation on course-to-course, department-to-department, or institution-to-institution basis, oftentimes in situations where no state or system policy exists. **Transfer data reporting**: States that collect data on transfer and student persistence currently have or are developing the capacity to monitor the success of articulation programs. **Incentives and rewards**: In an effort to encourage transfer between two and four year institutions, some states provide extra incentives by offering financial aid, guaranteed transfer, or priority admission. **Statewide articulation guide**: Provides concrete descriptions of these requirements and answer questions students have about the transfer process. **Common core curriculum**: Streamlines articulation process by establishing a general education core curriculum that fulfills BA graduation requirements. **Common course**

guided by national associations and networks have supported this expansion. Yet, research documents that state policies have limited impact on upward transfer for community college students. For example, Roksa & Keith (2008) reported that statewide articulation and transfer agreements were not directed at improving 2/4 transfer rates *per se* and that these policies were primarily designed to prevent loss of credits upon transfer. However unimportant and indirect state policy effects to date may appear given the crude measures of them available, state policy environments should matter - considering the inequities in educational attainment that persist for low-income and under-represented minority students, which have long-term economic and social consequences, and the sizeable investment among states and community colleges to increase 2/4 transfer (Goldrick-Rab, 2010).

Varied transfer “policy strength” across states. States vary widely in the proportion of students who first enroll in two-year institutions (Ehrenberg & Smith, 2004), and states also vary in the quality and effectiveness of their statewide articulation and transfer agreements. According to historical research by Ignash and Townsend (2000), five states were considered to have “strong” statewide agreements in 1999: California, Georgia, Illinois, North Dakota, and Ohio. Twelve states were rated as having “fairly strong” agreements: Arizona, Connecticut, Florida, Idaho, Kentucky, Louisiana, Maryland, Missouri, New Mexico, Oklahoma, Utah, and West Virginia. Sixteen states were classified as having “moderate” strength agreements: Alabama, Arkansas, Colorado, Hawaii, Iowa, Kansas, Massachusetts, Mississippi, Montana, Nevada, Oregon, Rhode Island, South Dakota, Virginia, Washington, and Wyoming. Of the remaining

numbering: Identical course numbering for similar courses between two-year and four-year institutions facilitates ease of transfer, and reduces number of students taking non-transferable credits.

states: one rated as fairly weak (Indiana), nine rated as weak,³⁶ and seven did not respond (Minnesota, Alaska, Nebraska, New Hampshire, New Jersey, North Carolina, and Vermont) to these authors' survey.

Based on a survey of state administrators collected in 1999, Ignash and Townsend (2000) rated agreements according to seven principles: parity among institutions (meaning that community colleges and four-year institutions are treated as equal partners in providing first and second-year level coursework), parity of students (that transfer and non-transfer students are treated equally by receiving institutions), faculty primarily responsible for crafting agreements, accommodation of students who transfer without an associate's degree, development of agreements in specific majors, inclusion of private colleges and universities, and data-driven evaluation used in state policymaking. They did not empirically relate these ratings to students' transfer rates from community colleges to four-year institutions, so the validity of the ratings is indeterminate. Policy strength ratings are not available for the 2005-06 year or later, which would be the most relevant timeframe for the analysis presented here.

State differences in governance structure and funding, as well as BA degree completion outcomes, set a context for students' transfer probability within a state.

Wellman (2002) profiled six states that rely heavily on transfer as a point of access to the baccalaureate degree for low-income students. Three of these states—Florida, New York, and North Carolina—were among the better-performing states nationally on the completion measure used³⁷ in *Measuring Up 2000*³⁸. Three others—Arkansas, New Mexico, and Texas—were

³⁶ Nine states rated as weak were: Delaware, Maine, Michigan, New York, Pennsylvania, South Carolina, Tennessee, Texas, and Wisconsin.

³⁷ The measure was defined as percentage of first-time/full time undergraduates who complete a bachelor's degree within five years, which is not very related to community college students' transfer rates in the states, but was the most reliable postsecondary outcomes data available for that time period.

among the poorest-performing states. Arizona and California were not selected, despite sizable community college sectors, because they both obtained midrange completion scores in *Measuring Up 2000*. Wellman found that all six states had substantial disparities between racial and ethnic groups in retention and baccalaureate degree completion. Regarding state variability in structure and funding, Wellman reported that:

The community college sectors in these states developed in very different ways, and the states' diverse approaches to the structure and funding of higher education reflect these differences. In New York, which has a large private sector, community colleges are governed as part of the public four-year institutions. Of the "high-performing" states, New York has the smallest proportion of students in community colleges, and tuition at community colleges approaches the cost of public four-year institutions in other states. Florida has a younger and much more publicly planned system for higher education, and its state-centered approach to transfer policy reflects this history, just as North Carolina's structure reflects its history of community colleges serving primarily a vocational function. Texas' governance structure suits the historical resistance to statewide control. Both Arkansas and New Mexico are low-growth, resource-poor states with small private sectors. All the states are struggling with the uneven quality of high school preparation for college, which is putting more pressure on them to implement academic policy oversight on admissions testing, placement, and remediation. Three of the states—Florida, North Carolina, and Texas—are experiencing sharply increasing demand for higher education and are planning for community colleges to accommodate a large share of future baccalaureate completion. The other three states are looking at uneven patterns of growth in demand, with disparities between growing urban areas and stable or declining rural areas (p. 37).

In her Table 5, Wellman (2002) compared the six states on 14 measures: 1. Mission for 2-year colleges includes transfer, 2. Type of higher education governance structure (i.e. institutional and statewide), 3. Presence of state-level student cohort tracking, 4. Presence of state-level public reports on transfer performance, 5. Campus-to-campus reports on transfer, 6. State "report card" (if available) includes 2/4 transfer, 7. Enrollment plans and goals at state or institutional level, 8. Performance funding for transfer, 9. Financial aid targeted to 2/4 transfer,

³⁸ In autumn 2000, the National Center for Public Policy and Higher Education (the National Center) published *Measuring Up 2000*, the first state-by-state report card on higher education. Using multiple measures, *Measuring Up 2000* graded every state in five performance categories related to undergraduate higher education—preparation, participation, affordability, completion, and benefits. State grades in each of these areas were calculated based on the performance of the best-performing states.

10. Transferable core curriculum, 11. Articulation frameworks (describes requirements for course and institutional articulation between two-year and four-year institutions) and publicly available statewide course catalogs, 12. Transfer of credit policies, 13. Common course numbering, and 14. Common academic calendars. At the time of this report, Wellman (2002) recommended that states “develop baseline information on statewide transfer performance, including retention and graduation of transfer students,” but did not empirically relate her policy analysis to limited available state data on transfer performance. Later research by Anderson, Sun, and Alfonso (2006b) and Roksa & Keith (2008), however, found that articulation agreements at the state level have little or no effect on the probability of transfer for individual students, based upon analysis of Beginning Postsecondary Study (1989-1996) and National Educational Longitudinal Study (1988-2000) data. Other studies documented that articulation agreements between individual institutions are ill-formed and poorly structured from the beginning (Prager, 1993), as cited by Doyle (2009).

Some evidence of impact of state articulation and policy for Latino students. Recent work by Gross & Goldhaber (2009) analyzed NELS 1988-2000 data to determine the relationship between state transfer and articulation policies and student transfers and earned bachelor’s degrees using a series of logistic regressions that estimated the odds that a student transfers to a four-year institution, controlling for local conditions such as state unemployment rates as well as student background factors. In the simple model comparing log odds of student transfer to four-year institutions between states with and without a statewide articulation agreement in 1992 (consistent with the NELS data time period), the difference in transfer rates

was not statistically significant from zero.³⁹ However, when all variables in the model are included, Hispanic students had “a 78 percent greater odds of transferring when living in a state with a transfer policy than they do in states without transfer policies,” (p. 19). This effect was not confirmed for Black or first-generation students, in their analysis using 1988-2000 NELS data. The impact of state articulation and transfer policies on the log odds of students earning bachelor’s degrees was shown not to be significant for any group investigated: Blacks, Hispanics, or first-generation students. This analysis is rather dated at this point, however.

Higher percentage of tenured faculty, lower student-faculty ratio and community college spending on student services may increase transfer probability. According to Gross and Goldhaber (2009), community college characteristics demonstrated some impact on students’ log odds of transfer, such as having a higher percentage of tenured faculty. For every 10 percent increase in percent of tenured faculty in a student’s community college, holding all else equal, the odds that a student will transfer to a four-year institution increased by 8 percent, which is a considerable effect. As the student-to-faculty ratio increased, a student’s odds of transferring declined by one percentage point for every additional student per faculty member. Institutional spending on student services also increased students’ odds of transfer – for each \$1000 in additional per-student spending on student services (mean = 0.48 or \$480), there was a 5% increase in a students’ odds of transfer. The student cohort on which these results are based began college a quarter century ago, however.

³⁹ Presence of a statewide articulation agreement was derived from Ignash and Townsend’s (2000) research, which surveyed states on: 1) state policy that constitutes an AA degree will automatically transfer; 2) the existence of common, transferable general education requirements; 3) the existence of a common general education core curriculum; 4) common requirements for specific program majors; and 5) common course numbering or equivalent. 1992 status was inferred for states without available data.

Summary of Literature-Based Hypotheses

Table 2.1 below summarizes literature-based hypotheses about state, college, and student factors influencing 2/4 transfer probability, the majority of which are investigated in this dissertation:

Table 2.1 – Literature-Based Hypotheses about Variables for Modeling: State Factors, Community College Resources, and Student Experiences

State Factors	Theory/Hypothesis with Relevant Literature
State cooperative agreements for transfer and articulation (and other policy components)	May reduce burden of transfer to student, creates culture of 2/4 transfer in the state. (Gross & Goldhaber, 2009 found increased transfer probability among Latino students in states with stronger articulation and transfer policies. Kienzl, Wesaw, and Kumar, 2011 reported promising work with respect to implementation of state cooperative agreements [department-to-department, course-by-course, institution-by-institution agreements to ease transfer burden] based on state policy interview data. Roksa, 2009; Roksa & Keith, 2008 found limited impact of state cooperative agreements, however, using NELS 1988-2000.
Total Community College Revenues, instructional expenditures, and/or student services expenditures per community college student in the state and/or at the community college attended	From 1999-2009, community colleges budgetary conditions have been the most constrained of all postsecondary sectors relative to explosive enrollment growth (Delta Cost Project, 2010). As such, community college (CC) students in more resource-rich environments may have increased opportunities and supports for academic persistence and success (Goldrick-Rab, 2010). However, Stange (2012) found that the log of instructional expenditures per student in conjunction with measures of institutional quality (e.g. adjusted faculty salary, % full time faculty, % full time students, and inverse of mean student age) did not explain differences in students' outcomes (earn BA, 2/4 transfer, years enrolled).
Average unemployment rate	Students in counties with higher unemployment rates and higher average wages may act according to perceived increased incentive to persist in community college and transfer to a four-year institution, because with a degree they would be more competitive for a higher wage job. Students who enrolled in community college may perceive lower opportunity costs when unemployment is higher, and find community college more affordable than other educational options (Hillman and Orions, 2012; Kienzl, Melguizo, and Alfonso, 2007). However, recent work by Kienzl et al. (2011) shows that unemployment rates was significantly and negatively associated with transfer probability, using the BPS 2003-2009 dataset.
% of state's enrollment in community colleges	States vary "by as much as five to one in the portion of their population that's attending a community college," (Shaffer, 2008). Wellman (2002) cited Orfield and Paul's (1992) study which reported that "states that relied least on community colleges had higher rates of bachelor's degree attainment," which may suggest that having a higher proportion of the state's postsecondary enrollment in community colleges does not mean that a higher proportion accesses and succeeds in baccalaureate-granting institutions. The 2/4 transfer mission in community colleges encompasses a large segment, but is not the only mission of community colleges (Cohen and Brawer, 2008), and state contexts show wide differences in

	<p>how upward transfer is emphasized and supported among two-year institutions (Wellman, 2002). Among U.S. community college students, however, the most prevalent transfer destination is a four-year institution (60.8%) (National Student Clearinghouse, 2012a).</p>
<p>Number of undergraduates attending public, four-year institutions/state population of 18-24 year olds in 2006 relative to community college population and anticipated retention of public-four year students</p>	<p>CC students in states with a higher number of “slots” in state, public four-year institutions relative to the college-going population may have increased probability of 2/4 transfer. The American Association of Community Colleges (AACC) and the American Association of State Colleges and Universities (AASCU) noted several state and institutional barriers to transfer including limitations on available slots for transfer students in public four-year institutions (2004).</p>
<p>Ratio of four-year tuition to two-year tuition for in-state public institutions in 2003</p>	<p>CC students with a reduced gap in tuition between public four-year and two-year institutions may have an increased probability of 2/4 transfer; students may perceive greater fiscal manageability (Kienzl et al., 2011). The findings were that the tuition difference was not a factor in predicting 2/4 transfer probability in the BPS 2003-2009, only for the BPS 1996-2001 period.</p>
<p>Institutional selectivity of nearest four-year institution</p>	<p>CC students who have a nearby four-year institution that is not highly selective may be more likely to transfer to that institution (that is more comparable to open admissions CC policies), according to research by Dowd et al. (2008). Also, students that are better prepared in community colleges for selective, public four-year institutions may also have more inclination to successful transfer to such institutions, according to extensive case study research (Dowd et al., 2008).</p>
<p>Community College Resources</p>	<p>Theory/Hypothesis with Relevant Literature</p>
<p>Community college enrollment size</p>	<p>Students in smaller community colleges may have more personalized supports for their program of study and stronger connected partnerships with four-year institutions to facilitate students’ transfer. Bailey et al. (2005) found that smaller CCs have increased 2/4 transfer probability.</p>
<p>Faculty-to-student ratio</p>	<p>Community colleges with larger faculty-to-student ratios may have increased 2/4 transfer probability because students have greater access to faculty and more support from them, which is supported by findings from Gross & Goldhaber (2009), even though the interpretation is reversed with the student-to-faculty ratio measure they used.</p>
<p>Per-student expenditures for instruction and student services</p>	<p>Particularly for community college students who tend to require more remedial education and supplemental academic services to be successful in college-level courses, more resources per-student allocated to instruction and student services may positively impact students’ 2/4 transfer probability (Gross & Goldhaber, 2009; Goldrick-Rab, 2010). Gross & Goldhaber (2009) documented a positive impact for increased spending on student services, not instruction on upward transfer probability, using the NELS 1988-2000 data.</p>
<p>Percent of tenured and tenure-track faculty</p>	<p>CCs disproportionately rely on PT faculty to teach first-year courses who are limited in time and resources for advising students about course success and transfer. Empirical findings document that a higher percentage of tenured faculty was associated with increased transfer probability, as these faculty would tend to provide more stability and experience to guide students successfully to transfer (Gross & Goldhaber, 2009; Jacoby, 2006; Dowd, 2011; Umbach, 2007; Charlier and Williams, 2011).</p>

Student Behaviors and Characteristics	Theory/Hypothesis with Relevant Literature
Academic integration/social integration	CC students that experience higher levels of engagement with faculty and students, both academically and socially, may increase support networks and opportunities to succeed in community college, thereby reinforcing motivation to continue on to attain a BA (Deil-Amen, 2011; Tinto, 1975; Braxton, Hirschy, and McClendon, 2004; among others). Deil-Amen (2011) reported that current measures of academic and social integration are not well-aligned with community college students' experience.
Remedial education	Students who complete recommended remedial education (w/controls for students' academic ability & other background factors) have better college outcomes (incl. 2/4 transfer) (Bettinger & Long, 2009). Students who have prolonged enrollment in remedial education courses and fail to pass entry college-level courses have demonstrated lower probability of transfer (Roksa & Calcagno, 2010; Zachry & Schneider, 2010).
Associate's degree completion	Students who complete their associate's degree have increased probability of 2/4 transfer according to research by Roksa & Calcagno (2010), using longitudinal data of Florida students.
Commitment to Defined Program of Study	CC students that are "strongly directed" [have intentions to complete a program of study (4-year transfer, AA degree, or vocational certificate), to attend at least half-time during their first year (2003-04), and participate in a formal degree program, if degree-seeking] have been shown to have increased transfer probability (Horn, 2009).
Risks to College Persistence and Success	Students with fewer risks to college persistence and success have increased upward transfer probability (risks to lower transfer probability include: a full time job, being a single parent, part-time enrollment, no high school diploma, etc.) (Adelman, 2006 among others).
Declared College Major	CC students majoring in health may have reduced 2/4 transfer probability because they have sufficient labor market returns with an AA degree. Students majoring in math and science may have increased probability of 2/4 transfer due to higher labor market returns with a BA. Students in vocational/technical majors may have reduced 2/4 transfer probability because not as interested in careers requiring BA and can obtain desired jobs (LaSota, 2012; Dougherty & Kienzl, 2006).
Completion of transfer-ready milestones	CC students completing specific milestones (such as passing entry college-level math and entry college-level English, completing at least 12 transferable credits, completing 30 transferable credits, etc.) demonstrated increased transfer probability (Doyle, 2009; Offenstien & Shulock, 2010; Calcagno et al., 2006).
Demographic characteristics	Older students, African-American, Latino, low-income, and first-generation students have lowered probability of 2/4 transfer (Dougherty & Kienzl, 2006; Gross & Goldhaber, 2009; Bowen, Chingos, & McPherson, 2009) though effects of these factors may be mitigated by state or higher education institutional factors.
Transfer intentions and higher degree expectations	Students with transfer intentions will be more likely to transfer to four-year institutions (Bradburn & Hurst, 2001). Community college resources and supports may help students to increase degree expectations and thereby increase 2/4 transfer ("warming up") as shown by Alexander, Bozick, and Entwistle (2008).

Rationale for Methodology – Quantitative Strand

This project implements multi-level logistic regression analysis to examine the influence of state articulation and transfer policies and community college characteristics that may explain variance in public two-year college students' 2/4 transfer probability, focusing particularly on low-income students and students who are first-generation to earn a bachelor's degree. Based upon analyses using BPS:2009 data, students' transfer probability varied by state and by community college attended. Calculation of the intra-class correlation showed that a relatively low percentage of the variance in transfer outcome is explained by differences in community college attended (6%) and its state location (2%), and that a higher percentage of the variance is explained by student level characteristics. (See Appendix B for results of the unconditional models). Layered analyses of hierarchical generalized linear model (HGLM) population-average results found that few community college characteristics and state transfer policy components⁴⁰ demonstrated a statistically significant difference in six-year 2/4 transfer probability.

HGLM must be used when the outcome is binary (i.e. 2/4 transfer or not) and the assumption of normal distribution of random effects at level one (the student-level in this case)

⁴⁰ State articulation and transfer policies include several components, as catalogued by the Education Commission of the States (ECS) in 2001 and in Smith (2010) (imputed for 2005-06, two years after BPS students' postsecondary entry). ECS transfer policy components are: presence of articulation/transfer legislation; cooperative agreements and/or departments between 2- and 4-year institutions; transfer data reporting to state higher education commissions, departments, and authorities; transfer incentives and rewards (such as priority admission and scholarships); presence of a statewide articulation guide; common core curriculum; and common course numbering. The National Center for Higher Education Management Systems (NCHEMS) also catalogued states' policies in articulation and transfer between two and four-year institutions and in developmental education placement (2008). The state policy data on developmental education would have been used if regression slopes varied by state for students who took any remedial education. Due to differences in how presence of statewide policy is measured by ECS and NCHEMS and the difficulty of creating a uniform measure of articulation/transfer policy, ECS' specific policy components are used here.

Public two-year college characteristics used and found not to be significant when controlling for state policies and student characteristics are: proportion of full-time faculty, proportion of full-time students, full-time faculty to student ratio, distance to nearest public four-year institution or to nearest non- or less-selective public four year institution, minority-serving institution (as a group characteristic), average enrollment in thousands, and college locale (urban, rural, or suburban).

cannot be satisfied (Raudenbush & Bryk, 2002; Kim, 2007). Multi-level modeling is also appropriate to handle unbalanced data, e.g., where the number of students within colleges varies to any degree (Raudenbush & Bryk, 2002). In the calculations of the probabilities of the outcome variable, institutions with more students are given more weight, and institutions with few students represented in the data are given less weight. Multilevel estimation directly incorporates the clustered BPS sample design⁴¹ into statistical analytic models and reduces parameter uncertainty by combining maximum likelihood techniques with empirical Bayes calculations (Raudenbush & Bryk, 2002; Gelman & Hill, 2007). Dougherty and Kienzl (2006) acknowledged that one of the limitations of their analysis was its examination of only student-level characteristics to explain the variation in transfer to a four-year institution by community college students. This research includes some relevant community college and state characteristics, similar to Kienzl, Wesaw, & Kumar (2011) and Gross & Goldhaber (2009).

Model Equations

I employed five steps in the multi-level logistic regression: 1) logistic, empty (or unconditional) model (with no predictors at any level), 2) logistic multi-level model allowing

⁴¹ According to NCES (2011), two factors, stratification by tracing outcome and the likelihood of being a first-time beginner (FTB), were used to oversample the students most likely to be located and eligible for BPS. The frame was also sorted by institutional sector to ensure representativeness of the sample. A stratified sample of 500 was selected with probabilities proportional to their NPSAS:04 sampling weights. Given that the NPSAS:04 sampling weights were available for all student BPS interview non-respondents, they served as the basis for computing the BPS:04/06 and 03/09 analysis weights. Therefore, selection of the NPSAS:04 student interview non-respondents with probabilities proportional to these weights was used to reduce the overall unequal weighting effects for the sample. In the third phase of BPS interview data collection, the nonresponse conversion phase, focused on obtaining interviews from sample members who had refused to participate, who could not be located, or who were difficult to reach but whose location had been confirmed. If last located within one of 48 selected geographic clusters, these non-respondent cases were assigned to field interviewers for computer-assisted personal interviewing (CAPI). Otherwise the case continued to be worked by telephone interviewers, specially trained refusal converters, and the tracing unit in RTI's Call Center Services (CCS). After a case was classified as either a refusal or difficult to find, the incentive amount for respondents was increased from \$20 to \$30. About 29 percent of completed interviews were completed during the nonresponse conversion phase, according to the clustered sampling (NCES, 2011).

intercepts to vary across colleges and states (with fixed slopes for student-level predictors), 4) logistic multi-level model allowing slopes to vary for each student-level predictor to find student characteristics that vary by college and/or state, and 5) testing theoretically derived college and state-level predictors that predict variance in slope for student characteristics that vary by college and/or state [such as low-income, first-generation to earn a BA students (a student-level predictor) and need-based aid per undergraduate student in state (a state predictor) or faculty-to-student ratio (a college predictor)].

Unconditional model equation. A logistic, multi-level model such as this predicts the probability of four-year transfer at level-1 (between individuals) as the $\text{Prob}(Y_{\text{transfer}}=1 | \beta = P)$, where the $\log [P_{ijk}/1-P_{ijk}] = P_{0jk}$. P_{0jk} represents the probability of transfer for person “i” in college “j” and state “k.”

At level-2 (between public two-year institutions), the unconditional model can be expressed as:

$P_{0jk} = \beta_{00jk} + r_{0k}$, where β_{00jk} is the average transfer probability in college “j” and r_{0k} is the random “college effect”, the deviation of college jk ’s mean from the state’s mean.

At level-3 (between states), the unconditional model can be expressed as:

$\beta_{00k} = \gamma_{000jk} + \mu_{00k}$ (see Raudenbush & Bryk, 2002) where γ_{000jk} is the grand-mean and μ_{00k} is the random “state effect”, or the deviation of the state’s mean from the grand mean.

Therefore, the full unconditional model equation is: $P_{0jk} = \beta_{00jk} \gamma_{000jk} + r_{0k} + \mu_{00k}$

Thus, variability in the individual probability of 2/4 transfer (P_{0jk}) is partitioned into three components: level 1) among students within community colleges (σ^2), level 2) among community colleges within states (τ_{π}), and level 3) among states (τ_{β}).

In a multi-level logistic regression such as this, calculations of the intraclass correlations⁴² are not as straightforward as intraclass correlations in models with continuous outcome variables. The intraclass correlation coefficient formula typically requires the variance at level 1, however, in multi-level logistic regression, the level 1 variance is expressed as a probability. According to Vermunt (2003), an estimate of the level-1 variance in random effects logistic regression can be expressed as $\pi^{2/3}$, a fixed value of approximately 3.29, which is the scaling factor that provides the difference between the normal distribution (probit) and the logistic distribution.

Simple, multi-level model equation.

Y_{ijk} = the binary transfer outcome for student i in community college j in state k . The probability of $P_{ijk} = \Pr(y_{ijk} = 1)$ and P_{ijk} is modeled using a logit link function. The standard assumption is that Y_{ijk} has a Bernoulli distribution, which is appropriate for this data. A simple three level model with a binary outcome, with a single explanatory variable and a fixed and random effect, can then be written as:

$$\text{Log}[(P_{ijk}/1 - P_{ijk})] = \beta_0 + \beta_1 X_{ijk} + \mu_{1jk} X_{ijk} + r_{0k} + \mu_{0jk}$$

Where $i, j,$ and k index levels 1, 2, and 3 respectively, r_{0k} is the random intercept for level 3, μ_{0jk} is the random intercept for level 2, and μ_{1jk} is the random coefficient for the explanatory variable, X_{ijk} .

⁴² The intraclass correlation measures the proportion of the variance in the outcome that is between groups, and applies only to random intercept models. The explained variance at level 2 (i.e. between community colleges) can be calculated as $p = \tau_{00} / (\sigma^2 + \tau_{00})$, where τ_{00} is the level 2 variance, and σ^2 generally represents the variance at level 1 (Raudenbush & Bryk, 2002, p. 36).

Mixed, multi-level model equation with slope predictors. Each of the regression coefficients in the student-level model including the intercept can be viewed as fixed (non-randomly varying) or random across colleges and states. Several student variable coefficients predictors do randomly vary by primary community college attended and by state in this data: low-income, first generation to earn a BA (vs. not low-income, not first generation) and first generation, not low-income (vs. not low-income, not first generation); and declared health/vocational major (vs. business or undeclared). For the subgroup of students who planned to transfer at postsecondary entry, the slope varies by college attended, but not by state, in this data. Therefore, with two examples of varying slopes by college or state predictors (e.g. Students' Intention to Transfer*Average College Transfer-Out Rate and Low-Income and First Generation Student*State Common Course Numbering), the most appropriate mixed model equation is, for example:

$$P_{ijk} = \gamma_{000} + \gamma_{001}(\text{GrossStateProduct}) + \gamma_{002}(\text{StatePolicyComponent1}) + \dots$$

$$\gamma_{008}(\text{StatePolicyComponent7}) +$$

$$\gamma_{010}(\text{County Unemployment}) + \gamma_{020}(\text{AvgCollegeTransferOutRate}) + \gamma_{030}(\text{Proportion of Health/Vocational AA Degree Completions}) +$$

[example slope predictor for college-level and student characteristics that vary by college, i.e.

$$\gamma_{510} \text{PLAN2TRNSFR} * \text{AvgCollegeTransferOutRate}] + \dots [\text{all college-level slope predictors for student groups which 2/4 transfer varies by college}] +$$

$$\gamma_{100}(\text{Student Factor 1}) + \dots \gamma_{1600}(\text{Student Factor 16}) +$$

[example slope predictor for state-level and student characteristics that vary by state,

i.e. γ_{210} Low Income and First Generation*Common Course Numbering(State)] +...[all state-level slope predictors for student groups for which 2/4 transfer varies by state]

+ $r_0 + \mu_{00}$

[See Appendix G for Listing of Variables and Coding.]

Gross State Product is one of the state policy condition variables used in the multi-level regression along with the seven state transfer/articulation policy components (StatePolicyVAR1-VAR7). County-level unemployment and college average transfer-out rate are two of the college-level variables used in the multi-level regression. (See section on State-Level Factors for discussion of rationale for inclusion). Regression slopes allowed to vary include: Students who planned to transfer (PLAN2TRNSFR) (compared to those who did not plan to transfer)*average transfer-out rate of the primary community college (Avg CollegeTransferOutRate). College transfer-out rate is an example of a college-level variable used to explain college-level variance in upward transfer probability for students who planned to transfer. State-level variation in upward transfer probability for student groups such as low-income, first-generation students was interacted with state-level predictors of Gross State Product and all the state policy components (drawing from theoretical and empirical literature from Anderson, Alfonso, and Sun, 2006a). Common course numbering has the strongest influence for the regression slope of first-generation students (low-income or not), and is used here as an example in the example equation.

Six Main Data Sources

Six sources of data are used for the multi-level modeling analyses. The primary source of data is the Beginning Postsecondary Study (BPS) 2003-2009, which is nationally representative of first-time beginning college students. See Appendix A for description of BPS. The

unweighted $n=5,010$ for the full sub-sample of community college students (rounded to nearest ten), and weighted $n=1,528,900$, rounded to the nearest ten. See Appendix C for Descriptive Statistics on the BPS community college sample and the sub-sample that planned to transfer (so declared at entry). The other sources of data are: 1) Integrated Postsecondary Education Data System (IPEDS) for all community college characteristics, 2) Bureau of Labor Statistics (BLS) data for county-level unemployment rates where colleges are located, 3) Bureau of Economic Analysis for 2003 Gross State Product per capita data as a measure of state wealth at the beginning of the time period, 4) Barron's Selectivity Index data from the National Center for Education Statistics (NCES) linked to nearest public-four year institution for public two-year institutions in the dataset, and 5) Education Commission of the States (ECS) for state policy data on articulation and transfer.

College-Level Variables

Data on public two-year college (or community college) characteristics comes primarily from the federal Integrated Postsecondary Education Data System (IPEDS). In the prior analysis (as reported in LaSota, 2012), community college characteristics that did not explain variance in transfer probability were: proportion of full-time faculty, proportion of full-time students, full-time faculty to student ratio, minority-serving institution (as a level-two, college-level characteristic of primary community college attended), average enrollment in thousands, and college locale (Urban, rural, or suburban). In prior analyses with this data (reported in LaSota, 2012), higher per-student spending on instruction and student services (standardized) in community colleges were both unexpectedly negative predictors of transfer probability. One hypothesis for this relationship is the confounding influence of a college's spending and relative emphasis on training for health and/or vocational/technical fields, which are student majors

negatively associated with transfer and that also tend to be relatively expensive to provide.

Therefore, this project investigated the effects of proportion of health and vocational/technical degrees conferred at the community college (averaged over the six-year period)⁴³ as an institutional variable alongside per-student instructional expenditures and per-student expenditures on student services.

Average transfer-out rate from IPEDS was utilized as a college-level predictor, despite its limitations. Transfer out-rate is measured for full-time, first-time students who first enroll in summer or fall only rather than all students and includes 2/4 transfer as well as lateral transfer to other associate's degree granting institutions, which would ideally be excluded. Full-time, first-time students comprise less than half of the public two-year college population, and approximately 36% of community college students who transferred, completed lateral transfers to another associate's granting college (NCES, 2012).⁴⁴ Average transfer-in rate for public four-year institutions was also extracted from IPEDS, and used with the distance measures. IPEDS defines this rate as "total number of full-time degree/certificate-seeking undergraduate students entering the reporting institution for the first time but known to have previously attended a postsecondary institution at the undergraduate level. These students may or may not have transferred credit(s)." This does not specify that transfer-in students have to be from two-year institutions, however. According to NCES analyses of BPS data, 26% of those who "transferred in" transferred from public and private four-year institutions, which indicates that approximately

⁴³ In order to derive proportion of associate's degree completions in health and vocational fields, IPEDS data were used and health and vocational fields were categorized as: communications technologies, computer and information sciences and support services, personal and culinary services, engineering technologies/technicians, legal professions and studies, military technologies; parks, recreation, leisure, and fitness studies; science technologies/technicians; security and protective services; construction trades; mechanic and repair technologies/technicians; precision production; transportation and materials moving; and health professions and related clinical sciences.

⁴⁴ Source: NCES (2012-253, November). Community college student outcomes: 1994-2009. Web Tables. Table 6. "Transfer status after six years: Percentage of 2003-04 beginning students who transferred by 2009 and direction of transfer, by sector of first postsecondary institution: 2004-09." Online: <http://nces.ed.gov/pubs2012/2012173.pdf>

74% transferred-in from two-year institutions (which would be mostly public, but some private). As it turned out, neither the distance to the nearest public four-year institution, nor its transfer-in rate turned out to be a significant predictor of upward transfer in the multi-level analysis.

County-level unemployment rate. County-level unemployment data from the Bureau of Labor Statistics (BLS), mapped with the county of the primary community college attended zipcodes, is used (average unemployment rate from 2004-2008, during the potential transfer period), as an economic factor that may influence transfer to a four-year institution. One hypothesis may be that higher local unemployment would influence students to continue with their education to maximize long-term earnings while incurring lower opportunity costs. But a competing hypothesis may be that higher unemployment rates constrain students' ability to pay for college and their perceptions of their capacity to afford and benefit from continuing in college, particularly because the ability to work at least 1-19 hours per week contributes to increased transfer probability. Kienzl, Wesaw, and Kumar (2011) found that a higher unemployment rate produced a negative effect on transfer, and theorized that students may be unwilling to stay in postsecondary education due to other economic impacts associated with high unemployment such as reduced financial aid, cutbacks in services at community colleges, etc.

Selectivity of nearest public four-year institution. Prior research (e.g. Rouse, 1995; Calcagno and Alfonso, 2007) found that distance to the nearest public four-year institution may help explain variation in 2/4 transfer probability. Therefore, data on the selectivity of public four-year institutions from the National Center for Education Statistics (NCES) was used (the combined lists of 2004 and 2008 public four-year institutions and their Barron's selectivity rankings, since some institutions (less than 20) were added or changed status in that time). Distance to the nearest four year institution was calculated using latitude and longitude of the

individual's primary public two-year college for the BPS sample and the latitudes and longitudes of the public four-year institutions with selectivity data to find the nearest public four-year institution from that data set. Barron's selectivity rankings fall into seven categories: 1) Most Competitive, 2) Highly Competitive, 3) Very Competitive, 4) Competitive, 5) Less Competitive, 6) Noncompetitive, and 7) Special. Research by Dowd and Cheslock (2006) showed that transfer access from both two and four-year colleges to elite, highly selective institutions became constricted between 1984 and 2002. The proportion of transfer students to the total entering student class reduced from 10.5% to 5.7% over the period in highly selective private institutions and in public selective institutions, down to 18.8% in 2002 from 22.2% in 1984. Only a small proportion of community college students would transfer upward to a private or public selective institution (Dowd et al, 2008), so I tested the influence of proximity to nearest public four-year institution as well as nearest non or less selective public four-year institution. Due to changes in institutions offering bachelor's degrees of various types, 183 public four-year institutions were identified in IPEDS in 2004 and 2008 that did not have Barron's selectivity data (so the sample is somewhat constricted in this analysis).

In order to create parsimony in the multi-level regression, these were recoded into three categories: 1) Most, Highly, or Very Competitive, 2) Competitive, or 3) Non or Less Competitive. Of the 1,530 four-year institutions with Barron's selectivity data from NCES and latitude and longitude data from IPEDS, 520 were public four-year institutions. The resulting n's rounded to the nearest tens (due to data security regulations from the Institute of Education Sciences), were then: 10 most competitive, 30 highly competitive, 80 very competitive, 240 competitive, 90 less competitive, 60 non-competitive, and 10 special focus (such as arts and music focused institutions). Special focus institutions were excluded as possible transfer

destinations for this analysis, as being too specialized and serving a smaller number of special-interest students. After re-coding, the resulting n's were: Most, High, or Very Competitive = 120; Competitive = 240; and Non- or Less-Competitive = 150. The average distance to the nearest public four-year institution was 22 miles, using this data and approach, and the average distance to the nearest non- or less-selective public four-year institution was much greater, i.e. 84 miles.

State-Level Variables

State policy variables. Similar to Roksa's (2009) findings, I found differences between how ECS and NCHEMS categorized the presence of a statewide articulation/transfer policy. Roksa (2009) compared policy designations from ECS (2001), Keith and Roksa (2008), Ignash and Townsend (2000, 2001) and found agreement across the three studies for only 21 states with policies of a possible total of 34 states designated by Ignash and Townsend (2000, 2001) as having such a policy (Roksa, 2009, p. 2449). ECS has comparable data for both 2001 and 2010, and the 2010 policy chart indicated in which states and which policies were updated from 2001. This information was used to determine transfer and articulation policies that were in place by 2005-06.⁴⁵ See Appendix F for Chart of State Policy Variables for All States. Due to differences in coding of policies, data validity is strengthened by using **one** coding framework (ECS or NCHEMS) to assess relative influence of policy components. ECS' framework is more comprehensive, and is therefore used in this analysis.

⁴⁵ NCHEMS' analysis used data gathered in 2007 (which was very close to the mid-year of the BPS period) to indicate policies for each state: 1) presence of a transfer policy, 2) institutional coverage of the policy, 3) state has transferable general education curriculum, 4) the AA/AS degree satisfies the general education curriculum requirement at the covered four-year institutions, and 5) the policy allows specific courses to transfer. State articulation/transfer policies generally cover these themes. NCHEMS' analysis does not include presence of: 1) state cooperative agreements, 2) transfer data reporting, 3) transfer-related incentives, 4) common course numbering to support 2/4 articulation across state, or 5) state transfer guide. Both inventories include presence of a statewide articulation/transfer policy and transferable general education curriculum.

State context factors.

1. Gross State Product Per Capita (in millions/population in millions) at the base year of the period (2003) is available from the Bureau of Economic Analysis (BEA). The reason to control for gross state product per capita relates to research by Anderson et al. (2006a) that documented an association between the increase of gross state product (in constant dollars) and a decline in state expenditures on higher education per capita and the expansion of comprehensive articulation agreements. As stated by Anderson et al. (2006a), “in an effort to help manage a somewhat inevitable fiscal crisis in public higher education – which is attributable in part to the state underfunding – statewide articulation agreements were adopted or modified during this period [1978-2000] to generate new cost-effective pathways for states to educate baccalaureate-bound students,” (p. 434). Gross State Product per capita has a high correlation with the percentage of the state’s population with bachelor’s degrees or higher, which has been found to have a significant and positive association with higher levels of upward transfer probability.
2. Need-based aid per undergraduate student by state in 2005-2006 comes from the National Association of State Student Grant and Aid Programs (NASSGAP) Annual Survey from: <http://www.nassgap.org>. This variable was included as a measure of state investment in higher education access, particularly for low-income students, who disproportionately attend community colleges and may be deterred from transferring due to the cost differential between two and four-year colleges. Future analyses may consider the influence of “average net price” at public four-year institutions and measures of financial aid packaging for low-income students, however, this analysis does not include this factor.

3. Proportion of two-year tuition to four-year tuition for in-state public institutions, averaged from 2003-2008, from Delta Cost Project data. The proportions are calculated for each year (2003, 2004, 2005, 2006, 2007, and 2008) and then averaged. See Table 2.1 for rationale for this variable's inclusion in the modeling. If the ratio of two-year tuition to four-year tuition is higher, then students may feel less "sticker shock" when transitioning to the baccalaureate-granting institution, which may increase upward transfer probability.
4. Ratio of community college enrollment to adult population (over 18) in 2005-06.⁴⁶ See Table 2.1 for rationale for this variable's inclusion in the modeling.

Sampling and Methodology

Beginning Postsecondary Study (BPS) Sub-Sample

First, the sample of BPS community college entrants was extracted from all BPS 2009 weighted cases.⁴⁷ To decide how to attribute students to their community college and state location, I first calculated the number of months that a student attended any institution (date enrollment ended minus the date enrollment began). I sorted all records by highest number of months attended each institution first, then filtered by school level so that only community colleges were included. This would preclude a primary institution ID from being a four-year institution since I am interested in how students are nested in their primary community college. Among the resulting sample, for 69% of students the community college at which they stayed the longest was the first institution they attended. The average number of months in the primary community college is 28 months and the median is 23 months, or about two years, with a minimum of 1 month and maximum of 72 months.

⁴⁶ From: Provasnik, S. and Planty, M. (2008). *Community colleges: Special supplement to the Condition of Education 2008* (NCES 2008-033). Washington, D.C.: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Online: <http://nces.ed.gov/pubs2008/2008033.pdf>

⁴⁷ WTB000 is the six-year panel weight for the data, and cases are included if this variable is not equal to zero.

The sample was further refined by excluding students who were co-enrolled in more than one postsecondary institution from 2003-2006 (BPS already excludes co-enrolled students in high school). The resulting sample includes students who were enrolled at least 3 months in a community college, for which the community college of longest enrollment duration in months was chosen as their primary institution, were enrolled in one of the 50 states (Puerto Rico excluded), and were not “reverse transfers” from a four-year institution. The full community college sample is $n=5,010$ and the Student Weighted $N=1,528,900$, $N=500$ community colleges, ~40 states.⁴⁸ Among this selected sample of community college entrants, 55% indicated that they planned to transfer to a four-year institution in 2003-04 (their year of postsecondary entry). This sub-sample of students who planned to transfer has a Student Weighted $N=839,050$, $N=370$ community colleges, ~40 states. Transfer probability over 2003-09 increased from 26% to 37% for the sample that planned to transfer at the outset of postsecondary education. To control for selection effects arising from postsecondary aspirations regarding transfer and for higher levels of academic performance, some of the earlier models were run separately for the planned to transfer sample and without controlling for GPA in the first year, 2003-04 (see LaSota, 2012).⁴⁹

⁴⁸ Numbers rounded to the nearest ten, per data security policies of the Institute of Education Sciences.

⁴⁹ Among the planned to transfer sample (Unweighted $N=2,760$; Weighted $N=839,050$, $N=370$ community colleges, ~40 states), the results were very similar for most coefficients and odds ratios (LaSota, 2012). Transfer probability did not differ for students in different community colleges, only in different states (2% of explained variance across all state characteristics). Among student characteristics, health and vocational/technical majors in this subsample had even greater reduced odds of transfer (compared to undeclared or business majors), although there were 10% fewer health majors in the planned to transfer sample. Vocational/technical majors were about the same share of the total, 10%. Among the planned to transfer sample, attending primarily full-time had even greater advantage and the penalty in odds ratio of transfer for working zero hours per week was reduced for students who planned to transfer compared to the entire sample.

Model Selection

The first step in finding the most efficient models for a large number of predictors is to use Bayesian Model Averaging (BMA). BMA quantifies the value of multiple models with available data and predictors to assist researchers in selecting the most appropriate model for a given outcome variable. The Bayesian Information Criterion (BIC; Schwarz, 1978) and the posterior probability (of a particular model being the best-fitting model) are used as metrics to select the best models. The best models have the lowest BIC and the highest posterior probability. When BMA is applied to all available predictors in a multiple regression model and the desired outcome variable under investigation, it “produces a posterior distribution of the outcome variable which is a weighted average of the posterior distributions of the outcome for each likely model” (Starkweather, 2011 citing Raftery, Painter, & Volinsky, 2005). BMA is particularly useful when a large number of proposed predictors have been measured (e.g. 20-30). BMA is accomplished in the R programming language environment using the BMA package (Raftery, Hoeting, Volinsky, Painter, & Yeung, 2010), and can handle 30 predictors at a time. To identify the most promising student-level variables, BMA was used to select the most influential characteristics across the top recommended models using this approach. Once the strongest student-level predictors were selected, several procedures were then used to identify the best possible model given the variables under consideration. Before any college-level or state level predictors were added, I investigated whether slopes varied significantly ($p < .05$) for each student-level predictor by college and by state. I then hypothesized which college and state-level predictors might plausibly explain differences in slope variation for that student characteristic (e.g. being low-income and first generation to earn a BA in one’s family), and tested whether that variable explained the difference in relationship to 2/4 transfer probability for a low-income,

first generation student (versus not low-income, not first generation) by college and by state (See Table 3.1 in the next chapter for the results).

Bivariate regressions in HLM 6.08 were conducted for all selected variables used as predictors for the 2/4 transfer outcome. Running these bivariate regressions in HLM 6.08 was also instructive to determine each variable's association with 2/4 transfer probability on its own, which can be compared to the results of each multi-level, multivariate regression. See Appendix D for the results of these bivariate regressions. The bivariate regressions showed that among the state-level policy variables, transfer data reporting had a positive association with students' upward transfer probability ($p < .05$). Among college-level variables, significant and negative predictors of students' upward transfer probability were: percent of part-time students, per-student expenditures on instruction, per-student expenditures on student services, and Hispanic-serving institution. The only statistically-meaningful and positive college-level predictor was historically black institution. Total enrollment and faculty-to-student ratio were statistically significant (but neither positive, nor negative) in explaining variance in 2/4 transfer probability, and increased odds were less than 1%. Nearly all of the student-level predictors were significant predictors of the variance in upward transfer probability, according to the bivariate odds ratios, except for gender.

Concluding Remarks

The multi-level modeling strategy used in this analysis is an appropriate analytic method with BPS data of influential student, college, and state characteristics as predictors of community college students' upward transfer probability. Even though there are limitations in the measurement of the factors of analytical interest, the variable transformations and coding were based on the best available data and upon strategies used by other researchers. Bayesian model

averaging, also used in this analysis, is an effective empirical strategy for model selection with numerous student-level predictors. College and state level variables were tested one at a time in the multi-level analyses with the final set of student-level predictors.

The structure of the BPS data itself is not representative of colleges or states, and so group-centering of college-level predictors has limitations, but is still a reasonable approach to the data. The advantage of group-mean centering, according to Raudenbush and Bryk (2002) is one can interpret the intercept as the predicted mean on the outcome variable for each level-2 unit (i.e. colleges in my model). Group-mean centering is also helpful when zero is not a meaningful value (such as in a continuous variable like a college's transfer-out rate), and the probability of a student's transfer is then interpreted relative to the group mean. Multi-level modeling accounts for unbalanced data or uneven sample sizes at level 2 (colleges) and level 3 (states) (Raudenbush and Bryk, 2002). As the results in Chapter Three indicate, available college-level predictors are generally limited in explaining variance of upward transfer probability for the national community college student population as a whole for this period, much less specific sub-populations of interest, such as low-income, first-generation students. Even though national data sets such as the Beginning Postsecondary Study (BPS) have limitations due to limited sample sizes of students by state and college, such a dataset can be used as contextual background to understand inter-relationships among student, institution, and state level variables influencing 2/4 student transfer probability, such as is presented here.

Chapter III. Findings and Interpretations: Factors Influencing Community College Students' Upward Transfer Probability Using National Survey Data

Results – Quantitative Strand

This chapter first presents student variable selection results based upon the Bayesian Model Averaging. With influential student characteristics identified relative to students' upward transfer probability, multi-level models were analyzed to determine influential college-level and state-level characteristics for student sub-groups whose slopes varied by college and/or state. Hundreds of multi-level models have been produced in order to present a set of two multi-level findings summarized in this results section. Based on the parameter estimates of the multi-level models presented in Table 3.2 in this section, specific predicted probabilities were calculated for significant predictors of students' upward transfer probability. Predicted probabilities of 2/4 transfer for first-generation students and students who planned to transfer at the time of college entry, for example, are presented for influential state and college-level predictors which explained transfer variance for populations with different slopes. The chapter concludes with an extensive discussion of multi-level model results, building upon prior research.

Bayesian Model Averaging (BMA) Results

The Bayesian Model Averaging (BMA) results showed that among 27 models selected of student-level predictors, the best five models (selected by BMA program) showed the following individual level variables have the strongest positive and consistent effect on 2/4 transfer probability, listed from highest to lowest posterior probability when averaged across the five best models:

1. Being single through 2009
2. higher first year GPA (in tenths)

3. being aged 15-19 at entry
4. Declaring major in STEM, Arts & Sciences, or Education (compared to business or undeclared)
5. Participating in sports often or sometimes (compared to never participating)
6. Meeting an academic advisor often or sometimes (compared to never meeting)
7. Attending primarily full-time (compared to part-time or mixed full-time/part-time)
8. planning to transfer in Year1 (2003-04)

According to Bayesian Model Averaging, the strongest predictors negatively associated with 2/4 transfer probability were, listed from most negative to least negative posterior probability, averaged across the five best models:

1. being low income and first generation (relative to reference group of: not low-income, not first generation)
2. being first generation and not low income (compared with the same reference group described above)
3. being single*number of dependents through 2009
4. worked zero hrs. per wk. (avg. first and third year vs. worked 1-19 hrs./wk.)
5. worked 20 hrs. or more per wk (vs. worked 1-19 hrs./wk.)
6. took any remedial education in first year

BMA results indicated that the following academic and social integration variables were not significant predictors of 2/4 transfer probability, relative to the other student characteristics modeled: 1) participation in study groups often or sometimes, 2) meeting informally with faculty often or sometimes, 3) talking with faculty outside of class (e.g. office hours) often or sometimes, 4) participation in clubs often or sometimes, and 5) participation in arts and cultural events. Demographic characteristics such as being female or being African-American, Latino, Native American or Pacific Islander, or Asian (compared to White) did not explain significant variance in 2/4 transfer probability when controlling for other characteristics including low-income and first generation to earn a BA in his/her family.

The investigation of variance by slope for these most influential student-level characteristics, by primary public two-year college attended and its state location, showed that the effects of the following characteristics varied across colleges and states:

1. low-income, first generation students (compared to students who were not low-income, not first generation);
2. first generation, not low-income (compared to students who were not low-income, not first-generation); and
3. students who declared a health/vocational/or technical major in the first year (compared to business or undeclared majors).

The slope for students who planned to transfer at postsecondary entry varied significantly by primary public two-year college attended but not its state location. Table 3.1 below provides potential hypothesized explanatory variables for differences in slope for student sub-groups by college and state.

Tables of Findings – Quantitative Strand

Also below, tables 3.2 to 3.4 present findings of final multi-level models. Figure 3.1 displays predicted probabilities of significant predictors associated with students' 2/4 transfer from Table 3.2.

Table 3.1 – Results for Random Variation in Slope for Student Factors by Primary Two-Year College Attended and State with BPS 2003-2009

Student Characteristic/Factor	Transfer Probability Varies by <u>Primary Two-Year College Attended?</u>	Transfer Probability Varies by State <u>Location of Primary Two-Year College Attended?</u>	Promising and Available Explanatory Variables; Results
<p>Low-income, First generation to earn BA (vs. not low-income, not first-generation to earn BA) [Significant and negative in the random intercept model]</p>	<p>Yes</p>	<p>Yes</p>	<ul style="list-style-type: none"> • county-level unemployment where college is located (Not sig.) • percent of college’s associate’s degree completions in health/vocational fields (Not sig.) • college transfer out rate (2005) (Not sig.) • college’s distance to nearest public four-year institution (Not sig.) or to nearest non-or less selective public four year institution (Not sig.) • college’s per-student expenditures on both instruction and student-services (Not sig.) • college’s per-student expenditures on instruction (Not sig.) • college’s per-student expenditures on student services (Not sig.) • college’s average proportion of full-time students (Not sig.) • college’s faculty-to-student ratio (Not sig.) • state need-based student aid dollars spent per undergraduate (2006-07) (Not sig.) • gross state product per capita in 2003 (Sig.) • State articulation policy components (all seven as a group) Only common course numbering sig.
<p>First generation to earn BA, not low income (vs. not low-income, not first-generation to earn BA) [Significant and negative in the random intercept model]</p>	<p>Yes</p>	<p>Yes</p>	<ul style="list-style-type: none"> • county-level unemployment where college is located (Not sig.) • percent of college’s associate’s degree completions in health/vocational fields (Not sig.) • college transfer out rate (2005) (Not sig.) • college’s distance to nearest public four-year institution (Not sig.) or to nearest non-or less selective public four year institution (Not sig.) • college’s per-student expenditures on both instruction and student-services (Not sig.) • college’s per-student expenditures on instruction (Not sig.) • college’s per-student expenditures on student services (Not sig.) • college’s average proportion of full-time students (Not sig.) • college’s faculty-to-student ratio (Not sig.) • state need-based student aid dollars spent per undergraduate (2006-07) (Not sig.) • gross state product per capita in 2003 (Sig.) • State articulation policy components (all seven as a group) Only common course numbering sig.

Student Characteristic/Factor	Outcome Varies by College?	Outcome Varies by State?	Promising and Available Explanatory Variables; Results
Low-income, not first generation to earn BA (vs. not low-income, not first-generation to earn BA) [Not significant and negative in the full random intercept model]	No	No	
Planned to transfer at postsecondary entry [Significant and positive in the full random intercept model]	Yes	No	<ul style="list-style-type: none"> • average transfer-out rate of primary two-year institution (Sig. <.001) • average proportion of full-time students at the college (Not sig.) • faculty-to-student ratio (Not sig.) • gross state product per capita in 2003 (Sig.) • State articulation policy components (all seven as a group) None sig.
Single*number of dependents [Not significant with negative coefficient? in the full random intercept model]	No	No	
Declared transfer-oriented major in first year (vs. business or undeclared major) [Significant and positive in the full random intercept model]	No	No	
Declared health or vocational major in first year (vs. business or undeclared) [Significant and negative in the full random intercept model]	Yes	Yes	<ul style="list-style-type: none"> • county-level unemployment (Not sig.) • proportion of health or vocational major completions (Not sig.) • average transfer out-rate (Not sig.) • gross state product per capita in 2003 (Sig.) • State articulation policy components (all seven as a group) None sig.
Grade point average in first year (by tenths) [Significant and positive in the full random intercept model]	Yes (unit-specific model only)	Yes (unit-specific model only)	None applicable.
Took any remedial education in first year [Significant and negative in the full random intercept model]	No	No	
Talked with academic advisor often or sometimes in first year [Significant and positive in the full random intercept model]	No (unit-specific model only)	No (unit-specific model only)	
Participated in sports often or sometimes in first year [Significant and positive in the full random intercept model]	No	No	

Worked 1-19 hrs per wk (on average) first two years (vs. worked zero hrs per wk) [Significant and positive in the full random intercept model]	No	No	
Worked 20-39 hrs per wk (on average) first two years (vs. worked zero hrs per wk) [Not significant and negative in the full random intercept model]	No	No	
Worked 40+ hrs per wk (on average) first two years (vs. worked zero hrs per wk) [Not significant and negative in the full random intercept model]	No	No	
Worked zero per wk (on average) first two years (vs. worked zero hrs per wk) [Not significant and negative in the full random intercept model]	No	No	
Attended minority-serving institution (MSI) as primary two-year college (Hispanic-serving or historically black college) [Significant and positive in the full random intercept model; not significant and negative when variable = minority-serving institution as primary college* African-American or Latino in an MSI]	Two few df	No	

Table 3.2 - State Policies, Community College Characteristics, and Student Factors’ Influence on 2/4 Transfer Probability (Model without Random Slope Predictors) Based on Beginning Postsecondary Study (BPS) 2003-2009 Data

Significance: .001 = ***/ .01 = **/ .05 = */ .10 = †

Note: Italics indicates *group-mean centering*;

Variance in students’ transfer probability estimated relative to the mean in their primary two-year institution.⁵⁰

Weighted with BPS 2009 panel weight, i.e. WTB000.

(Unweighted n=5,010 students in 500 community colleges in 40 states;

n’s and d.f.’s rounded to the nearest ten, weighted n=1,528,900)

Subject-specific model results, robust standard errors are reported.⁵¹

Variables Influencing Transfer Probability	Parameter Estimate	Odds Ratio and 95% CI ⁵²	df	Comments
Intercept	-4.7 (0.7)***	-	40	
State Policy Characteristics of (Primary) Public Two-Year Institutions Attended⁵³				
Gross State Product Per Capita in 2003 (standardized)	0.3 (0.1)*	1.35 (1.0-1.7)		35% higher odds of transfer in state with one standard deviation higher GSP
State Transfer Data Reporting ⁵⁴	0.1 (0.3)		40	
State Transfer Incentives ⁵⁵	-0.1 (0.2)		40	
State Transfer Guide ⁵⁶	0.3 (0.2)		40	

⁵⁰ The number of student cases in the data per public two-year institution varies widely from one case to hundreds; this data is nationally representative of the beginning postsecondary student population in 2003-04, not representative of students from each institution or state.

⁵¹ Population-average results define regression coefficients to be interpreted as the expected change in the outcome associated with a one-unit increase in the relevant predictor holding constant other predictors, but without controlling any random effects. The unit or subject-specific model holds constant the other predictors and controls random effects (Raudenbush and Bryk, 2002, p. 334), and estimated effects are adjusted for individual differences (Hu et al., 1998).. Subject-specific results are selected in order to present findings of randomly-varying slopes and effects for sub-groups of students.

⁵² Caution: Odds Ratios over-estimate when outcome has greater than 10% probability, such as the case with this population and 2/4 transfer outcome (Six-year transfer probability in this data is 26%). [Osborne, J. W. (2006). Bringing balance and technical accuracy to reporting odds ratios and the results of logistic regression analysis. *Practical Assessment, Research, and Evaluation*, 11(7).] Biomedical researchers recommend calculating “relative risk” estimates to correct these over-estimates, but limited statistical capacity exists to calculate “relative risk” estimates in a three-level logistic regression.

⁵³ State policy characteristics are derived from data gathered by Education Commission of the States (ECS) (2001); Smith (ECS, 2010). Policies are estimated for 2005-06, two years after BPS students’ postsecondary entry. ECS transfer policy components are: articulation and transfer legislation; cooperative agreements between institutions and/or departments at 2- and 4-year institutions; transfer data reporting to state higher education commissions, departments, and authorities; transfer incentives and rewards (such as priority admission and scholarships); presence of a statewide articulation guide; common core/general education curriculum; and common course numbering.

⁵⁴ **Transfer data reporting** (33 states): States that collect data on transfer and student persistence currently have or are developing the capacity to monitor effectiveness of transfer and articulation across colleges, majors, regions, etc. (Source: ECS)

⁵⁵ **Incentives and rewards** (18 states): In an effort to encourage transfer between two and four year institutions, some states provide extra incentives by offering financial aid, guaranteed transfer, or priority admission to the baccalaureate institution. (Source: ECS)

⁵⁶ **Statewide transfer/articulation guide** (26 states): Provides concrete descriptions of transfer/articulation requirements and answers questions students have about the transfer process. (Source: ECS)

Variables Influencing Transfer Probability	Parameter Estimate	Odds Ratio and 95% CI	df	Comments
State Adopted General Education Curr. ⁵⁷	-0.1(0.2)		40	
Common Course Numbering ⁵⁸	0.3(0.2)		40	
State Transfer-Oriented Cooperative Agreements ⁵⁹	0.3(0.2)		40	
Statewide Articulation and Transfer Policy	-0.2(0.2)		40	
Characteristics of (Primary) Public Two-Year Institutions Attended				
<i>County-level unemployment (avg. 2003-08)</i>	-0.1(0.1) †		500	
<i>Proportion of associate's degree completions on average (2003-08) in health, vocational, technical fields (standardized)</i>	-0.3(0.1) †		500	
<i>College transfer-out rate of first-time, full time students</i>	0.02(0.0)**	1.02 (1.00 – 1.03)	500	~2% higher odds in a college with 1 percent higher transfer-out rate
<i>Per-student instruction and student services expenditures</i>	-0.1 (0.2)		500	
Student Characteristics				
Aged 15-19 at time of postsecondary entry (2003-04)	0.5 (0.2)**	1.62 (1.1-2.3)	4980	~62% higher transfer prob. than persons older than 19 at entry
Low-income and first-generation to earn baccalaureate	-0.6 (0.2)**	0.56 (0.4-0.9)	40	~44% lower transfer prob.
First-generation to earn baccalaureate, not low-income	-0.5(0.3)*	0.58 (0.3-1.0)	40	~42% lower transfer prob.
Low-income, not first-generation to earn baccalaureate ⁶⁰	0.0 (0.4)		40	
Planned to transfer at postsecondary entry (2003-04)	1.4(0.1)***	4.1 (3.3-5.2)	500	~4x higher transfer prob.
Declared Transfer-Oriented Major in first year (arts and humanities, STEM, or education)⁶¹	0.4(0.1)**	1.54 (1.2-2.0)	40	~54% higher transfer prob.

⁵⁷ **Transferable general education curriculum** (23 states): Streamlines articulation process by establishing a general education core curriculum that fulfills BA graduation requirements. (Source: ECS)

⁵⁸ **Common course numbering** (8 states): Identical course numbering for similar courses between two-year and four-year institutions facilitates ease of transfer, and reduces number of students taking non-transferable credits. (Source: ECS)

⁵⁹ **Cooperative agreements** (40 states): Cooperative agreements between postsecondary institutions allow articulation in situations where no state or system policy exists. (Source: ECS)

⁶⁰ Reference group is: Not low-income, not first-generation to earn baccalaureate. Low-income is determined according to TRIO program eligibility standards in 2003-04.

⁶¹ Includes majors first declared in: arts and humanities; social sciences; science, technology, engineering, or mathematics (STEM); and education. Reference category: Undeclared major or business major.

Variables Influencing Transfer Probability	Parameter Estimate	Odds Ratio and 95% CI	df	Comments
Declared Health or Vocational-Oriented Major in first year ⁶²	-0.2(0.2)	0.85 (0.6-1.1)	40	
Grade point average (GPA) in first year (2003-04) in tenths	0.5 (0.1)***	1.6 (1.2-2.0)	4980	~60% higher transfer prob. with one tenth higher GPA
Took any remedial education courses in 2003-04	-0.3(0.1)**	0.74 (0.6-0.9)	4980	~26% lower odds of 2/4 transfer if took any remed.
Talked with academic advisor often or sometimes in 2003-04	0.3(0.2) †	1.36 (1.0-1.9)	4980	
Participated in sports often or sometimes in 2003-04	0.4(0.2) †	1.48(1.0-2.2)	4980	
Worked zero hours per week on average (2003-04 to 2005-06)	-0.1 (0.2)		4980	
Worked 1-19 hours per week on average (2003-04 to 2005-06)	0.5(0.1)***	1.61 (1.3-2.0)	4980	~61% higher transfer prob.
Attended primarily full-time (2003-04 to 2005-06)	0.8(0.3)**	2.1 (1.2-3.6)	4980	~2x higher transfer prob.
Attended primarily part-time (2003-04 to 2005-06)⁶³	-1.6(0.4)***	0.21 (0.1-0.4)	4980	~79% lower transfer prob.

⁶² Health and vocational fields are: communications technologies, computer and information sciences and support services, personal and culinary services, engineering technologies/technicians, legal professions and studies, military technologies; parks, recreation, leisure, and fitness studies; science technologies/technicians; security and protective services; construction trades; mechanic and repair technologies/technicians; precision production; transportation and materials moving; health professions and related clinical sciences. (Source: Integrated Postsecondary Education Database, IPEDS). Reference category: Undeclared major or business major.

⁶³ Reference category: Attended mixed full-time and part-time from 2003-04 to 2005-06.

Table 3.3 - State Policies, Community College Characteristics, and Student Factors’ Influence on 2/4 Transfer Probability (Model with Random Slope Predictors)

Based on Beginning Postsecondary Study (BPS) 2003-2009 Data

Significance: .001 = ***/ .01 = **/ .05 = */ .10 = † Note: Italics indicates *group-mean centering*;

Variance in students’ transfer probability estimated relative to the mean in their primary two-year institution.

Weighted with BPS 2009 panel weight, i.e. WTB000. Laplace estimation not available for this model.

(Unweighted n=5,010 students in 500 community colleges in 40 states;

n’s and d.f.’s rounded to the nearest ten, weighted n=1,528,900)

Subject-specific model results with robust standard errors are reported. Gray-shading indicates slope predictors.

Variables Influencing Transfer Probability	Parameter Estimate	Odds Ratio and 95% CI	df	Comments
Intercept	-4.2 (0.7)***	-	40	
State Policy Characteristics of (Primary) Public Two-Year Institutions Attended				
Gross State Product Per Capita in 2003 (standardized)	-0.3 (0.2)			
State Transfer Data Reporting	0.1 (0.2)		40	
State Transfer Incentives	-0.1 (0.2)		40	
State Transfer Guide	0.5 (0.2)*	1.57 (1.1-2.3)	40	~57% higher transfer probability
State Adopted General Education Curr.	-0.3 (0.3)		40	
Common Course Numbering	-0.9 (0.3)*	0.39 (0.2-0.7)	40	~61% lower transfer probability
State Transfer-Oriented Cooperative Agreements	0.3(0.2)		40	
Statewide Articulation and Transfer Policy	-0.5(0.3) †	0.58 (0.3-1.0)	40	
Characteristics of (Primary) Public Two-Year Institutions Attended				
<i>County-level unemployment (avg. 2003-08)</i>	-0.1(0.1)		500	
<i>Proportion of associate’s degree completions on average (2003-08) in health, vocational, technical fields</i>	-0.2(0.1)		500	
<i>College transfer-out rate of first-time, full time students</i>	-0.1(0.0)		500	
Student Characteristics				
Aged 15-19 at time of postsecondary entry (2003-04)	0.5(0.2)*	1.60 (1.1-2.3)	4970	~60% higher transfer prob. than persons older than 19 at entry
Low-income and first-generation to earn baccalaureate (intercept)	-1.0(0.2)***	0.38 (0.2-0.6)	40	~62% lower transfer prob. than not low income, not first generation
• Gross State Product Per Capita in 2003 (standardized)	0.7(0.3)***	2.0 (1.2-3.5)	40	~2x higher transfer prob.
• Common Course Numbering	1.1(0.3)**	3.1(1.7-5.7)	40	~3x higher transfer prob.
• College transfer-out rate of first-time, full time students	0.1(0.05) †	1.06 (1.0-1.1)	500	~6% higher transfer prob. with 1 percent higher college transfer-out rate

Variables Influencing Transfer Probability	Parameter Estimate	Odds Ratio and 95% CI	df	Comments
First-generation to earn baccalaureate, not low-income	-1.0(0.2)***	0.37 (0.2-0.6)	40	~63% lower transfer prob. than not low income, not first generation
<ul style="list-style-type: none"> Gross State Product Per Capita in 2003 (standardized) 	1.0 (0.2)***	2.6 (1.6-4.3)	40	~2.6x higher transfer prob.
<ul style="list-style-type: none"> Common Course Numbering 	2.0 (0.2)***	7.1(4.3-11.7)	40	~7x higher transfer prob.
<ul style="list-style-type: none"> <i>College transfer-out rate of first-time, full time students</i> 	0.05 (0.05)		500	
Low-income, not first-generation to earn baccalaureate ⁶⁴	0.2 (0.5)		40	
Planned to transfer at postsecondary entry (2003-04)	1.3(0.1)***	3.0 (2.6-3.5)	500	
<ul style="list-style-type: none"> <i>College transfer-out rate of first-time, full time students</i> 	0.1 (0.02)***	1.07 (1.0-1.1)	500	~7% higher transfer prob. with 1 percent higher college transfer-out rate
Declared Transfer-Oriented Major in first year (arts and humanities, STEM, or education)⁶⁵	0.4(0.1)*	1.43 (1.1-1.9)	40	~43% higher transfer prob.
<ul style="list-style-type: none"> State Adopted General Education Curriculum 	-0.9 (0.6)**	0.37 (0.2-0.7)	40	~63% lower transfer prob.
<ul style="list-style-type: none"> State Articulation/Transfer Policy 	0.95(0.3)**	2.6 (1.4-4.8)	40	2.6x higher transfer prob.
<ul style="list-style-type: none"> <i>Proportion of associate's degree completions on average (2003-08) in health, vocational, technical fields</i> 	-0.4(0.9)		500	
Declared Health or Vocational-Oriented Major in first year ⁶⁶	-0.0(0.4)		40	
<ul style="list-style-type: none"> State Adopted General Education Curriculum 	-0.9 (0.6)		40	
<ul style="list-style-type: none"> State Articulation/Transfer Policy 	0.5 (0.5)		40	
<ul style="list-style-type: none"> <i>Proportion of associate's degree completions on average (2003-08) in health, vocational, technical fields</i> 	-2.2 (1.2) †		500	

⁶⁴ Reference group is: Not low-income, not first-generation to earn baccalaureate. Low-income is determined according to TRIO program eligibility standards in 2003-04. Slope predictors of gross state product, common course numbering, and college transfer-out rate were included in the model, but not reported in this table due to transfer probability for low income, not first generation students does not vary by college or state.

⁶⁵ Includes majors first declared in: arts and humanities; social sciences; science, technology, engineering, or mathematics (STEM); and education. Reference category: Undeclared major or business major.

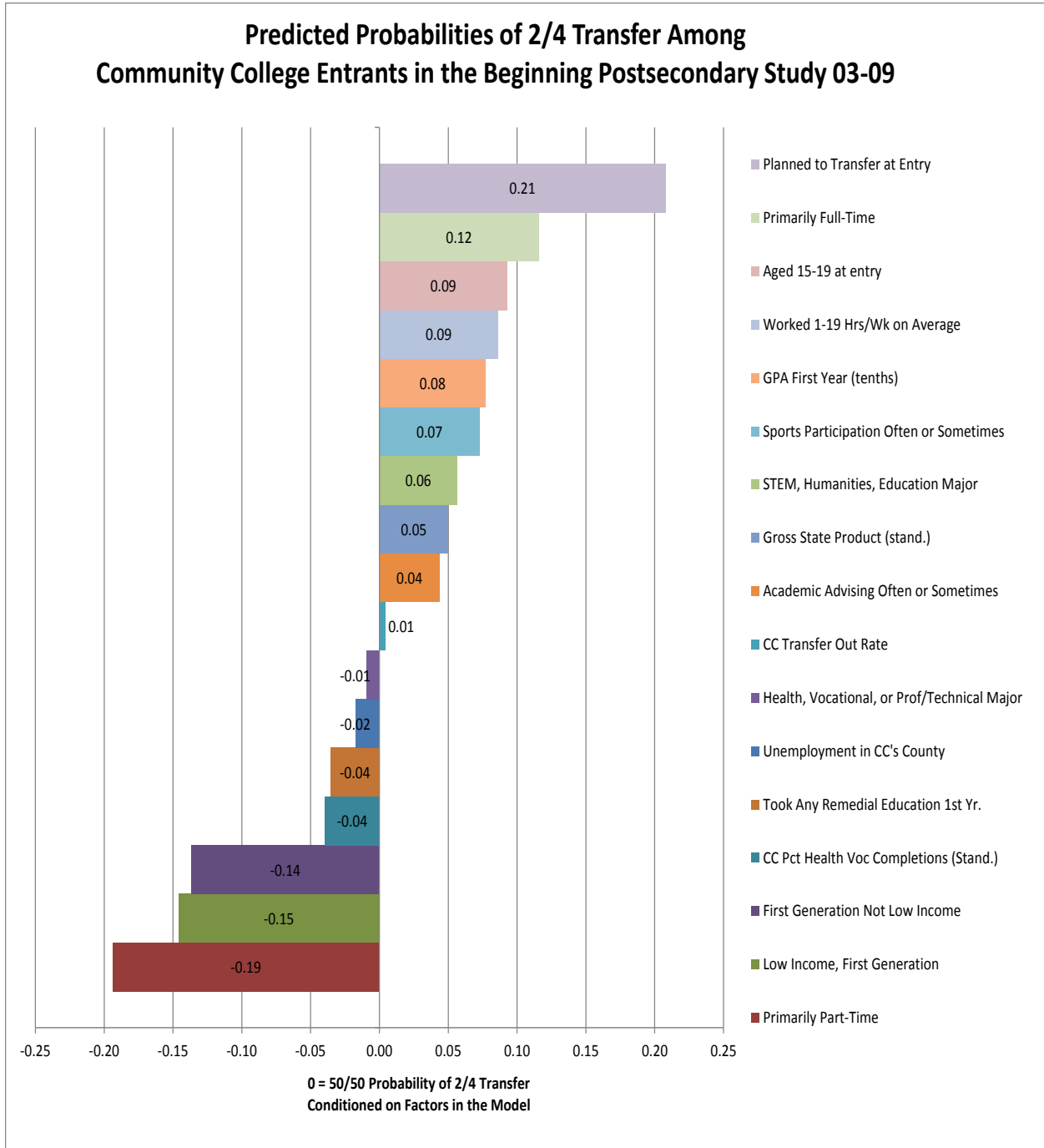
⁶⁶ Health and vocational fields are: communications technologies, computer and information sciences and support services, personal and culinary services, engineering technologies/technicians, legal professions and studies, military technologies; parks, recreation, leisure, and fitness studies; science technologies/technicians; security and protective services; construction trades; mechanic and repair technologies/technicians; precision production; transportation and materials moving; health professions and related clinical sciences. (Source: Integrated Postsecondary Education Database, IPEDS). Reference category: Undeclared major or business major.

Variables Influencing Transfer Probability	Parameter Estimate	Odds Ratio and 95% CI	df	Comments
Grade point average (GPA) in first year (2003-04) in tenths	0.5(0.1)***	1.58 (1.2-2.0)	4970	~58% higher transfer prob. with one tenth higher GPA
Took any remedial education courses in 2003-04	-0.3(0.1)**	0.73 (0.6-0.9)	4970	~27% lower transfer prob.
Talked with academic advisor often or sometimes in 2003-04	0.3(0.2) †	1.33 (1.0-1.9)	4970	~33% higher transfer prob.
Participated in sports often or sometimes in 2003-04	0.4(0.2)		4970	
Worked zero hours per week on average (2003-04 to 2005-06)	-0.1(0.2)		4970	
Worked 1-19 hours per week on average (2003-04 to 2005-06)	0.5(0.1)***	1.59 (1.3-2.0)	4970	~64% higher transfer prob.
Attended primarily full-time (2003-04 to 2005-06 vs. mixed full & part time)	0.8(0.3)**	2.16 (1.2-3.8)	4970	~2.2x higher transfer prob. vs. mixed full and part time
Attended primarily part-time (2003-04 to 2005-06) ⁶⁷	-1.6(0.4)***	0.21 (0.1-0.4)	4970	~79% lower transfer prob. vs. mixed full and part time

⁶⁷ Reference category: Attended mixed full-time and part-time from 2003-04 to 2005-06.

Table 3.4. Change in Probability of Upward Transfer for Student Sub-Populations, whose overall Transfer Probability Varies by College or State, for Significant Explanatory Slope Predictors					
Population Category and Explanatory Slope Predictor	Change in Predicted Probability of Upward Transfer (Formula = $EXP(\text{logit of student population category} + \text{logit of explanatory slope predictor})$)	Logit Parameter from Table 4 for Student Population Category	Logit Parameter from Table 4 for Explanatory Slope Predictor	Interpretation	Reference Category
First Generation AND Low Income + Gross State Product per capita in 2003 (standardized)	0.74	-1.0	0.7	+0.74 percentage point increase in probability of upward transfer for first-generation, low-income students when GSP increases from zero to +1 standard deviation	Not First Generation to earn a BA, Not Low-Income (based upon 2003 TRIO eligibility criteria)
First Generation AND Low Income + Common Course Numbering	1.11	-1.0	1.1	+1.1 percentage point increase in probability of upward transfer for first-generation, low-income students when common course numbering changes from zero to one	Not First Generation to earn a BA, Not Low-Income (based upon 2003 TRIO eligibility criteria)
First Generation, NOT Low Income + Gross State Product per capita in 2003 (standardized)	1.00	-1.0	1	+1.0 percentage point increase in probability of upward transfer for first-generation, NOT low-income students when GSP increases from zero to +1 standard deviation	Not First Generation to earn a BA, Not Low-Income (based upon 2003 TRIO eligibility criteria)
First Generation, NOT Low Income + Common Course Numbering	2.72	-1.0	2	+2.7 percentage points increase in probability of upward transfer for first-generation, low-income students when common course numbering changes from zero to one	Not First Generation to earn a BA, Not Low-Income (based upon 2003 TRIO eligibility criteria)
Planned to Transfer to Four-Year institution at college entry + college transfer-out rate	4.06	1.3	0.1	+4.1 percentage points increase in probability of upward transfer for students with initial transfer intentions when the college transfer-out rate increased by one percentage point	Did not plan to transfer to four-year institution at college entry

Figure 3.1 Predicted Probabilities of Upward Transfer, i.e. 2/4 Transfer of Factors Significant in the Multi-Level Regression



Note: Figure 3.1 shows percent increase or decrease in 2/4 transfer predicted probability beyond 50/50 chance, for each significant characteristic in the model with fixed effects, randomly varying slopes, no slope predictors (Table 3.2).

Discussion of Table and Figure Results

Discussion of Tables 3.2 and 3.3. Table 3.2 offers a summary of main effects, without investigating the particular effects of state- and college-level predictors for sub-populations whose slope varies by college or state. Table 3.3 reports on state policy components and college-level factors that moderate upward transfer probability for specific sub-populations such as low-income, first-generation students. As a set, these findings offer directions for further understanding the role of common course numbering, state wealth, and the mission variation within community colleges as factors in improving students' upward transfer, for first-generation students and transfer-intending students.

In Table 3.3, slope-level predictors are interpreted individually while constraining other slope-level predictors to zero, which poses a problem for the inclusion of multiple state policy components with binary coding. This is because when one state policy component is coded as a 1 (such as having an overall state articulation and transfer policy), it is rarely the case that all other components will be zero. The minimum number of state policy components in articulation and transfer is three. So, after I ran all of the state-level predictors as a group (which are all coded 1, 0), I then ran each of the state-level predictors individually to test the explanatory significance of each state-level policy component for each varying slope. Only common course numbering was a significant explanatory policy component for sub-populations with slopes varying by state. The other significant explanatory variable was continuous and standardized (so zero is the mean), which makes interpretation easier for that variable.

Discussion of Table 3.4. Table 3.4 presents changes in predicted probability of upward transfer for student sub-populations whose slopes vary by college or state, for significant, explanatory slope predictors. Table 3.4 shows the changes in predicted probability of upward,

2/4 transfer for low-income, first generation students when attending a community college located in a state with one standard deviation higher gross state product (at time of college entry) and with common course numbering articulated between public two-year and public four-year institutions. For first-generation, but *NOT* low-income students, the change in predicted probability of upward transfer when the gross state product increases from zero to 1 standard deviation higher is +1.0 percentage points higher. When a first-generation, but not low-income student attended a community college in a state that had common course numbering (vs. not), the change in predicted probability of 2/4 transfer was +2.7 percentage points higher. Among community college students with transfer intentions to a four-year institution at the outset, attending a community college with a higher transfer-out rate resulted in a +4.1 percentage points change in predicted probability. These predicted probabilities can then be interpreted as additional percentage point increase in transfer probability for a particular group (such as low-income, first-generation students), above and beyond the average predicted probability for this sub-group.

Discussion of Figure 3.1 on predicted probabilities. Predicted probabilities of transfer are calculated from the odds ratios presented in the multi-level regression without slope predictors, accounting for fixed effects and randomly-varying slopes for sub-populations (Table 3.2 main effects). The formula for calculating the predicted probability for each significant variable in the model is: \hat{y} of 2/4 transfer = Odds ratio/(1+Odds Ratio). Predicted probabilities may range from 0 to 1, and one may establish 0.5 as a 50/50 probability of transfer, conditioned on the factors in the multi-level model. Factors that increase 2/4 transfer probability, in order of magnitude, beyond a 50/50 probability, as well as factors that lower 2/4 transfer probability, are presented in the chart below. At a glance, the chart illustrates better or worse odds of 2/4 transfer

beyond a 50/50% chance for characteristics that explained variance in transfer probability in the multi-level model with fixed and random effects (no slope predictors).

So, if the average probability for the sample is 26%, approximately one in four students overall will transfer. Figure 2 depicts difference in predicted probability for a particular student characteristic, such as taking any remedial education in the first year or attending primarily full-time. For example, a student who planned to transfer at the time of community college entry had 21% greater predicted probability of transfer, beyond a 50/50 chance. A student who attended primarily full time (vs. mixed full-time/part-time) had a 12% greater predicted probability of transfer, beyond a 50/50 chance; and one who attended primarily part-time had a 19% lower predicted probability of transfer, compared to the mixed group, beyond a 50/50 chance. The chart includes the relative predicted probability for a student attending a college with a higher transfer-out rate, or for a student attending a college in a state with higher “gross state product” (measure of state wealth). For a student who attended a college in a state with a one standard-deviation higher gross state product (2005 data), the predicted probability of transfer is 5% higher than a 50/50 chance. A percentage increase in the community college’s transfer-out rate only increases the predicted probability of transfer by 1%, when controlling for other factors in the model.

Discussion of Multi-Level Model Results: Student, College, and State Factors

Student-Level Characteristics

Of variables over which students can exert control, after controlling for demographics (such as age at postsecondary entry, income, first-generation to earn a BA in his/her family), and initial transfer expectation, six factors are positively associated with transfer probability (see

Table 3.2 the subject-specific model, slopes allowed to vary for sub-populations,⁶⁸ no predictors of randomly varying slope added)⁶⁹:

1. Attending primarily full-time (averaged 2003-04; 2005-06) substantially increased the odds of transfer (+2x increased odds vs. mixed full-time/part-time attendance over first two years).
2. Working between 1-19 hours per week (compared to working 20 or more hours, on average, in 2003-04 and 2005-06) was also a positive predictor (+61% higher odds).
3. A declared major in STEM, Arts and Social/Behavioral Sciences, or Education in the first year increased transfer probability (+54% higher odds), compared to an undeclared or Business major.
4. One tenth of a point increase in first-year grade point average raised transfer probability about +60%, relative to the population average.
5. Students who met with an academic advisor often or sometimes were more likely to transfer than students with little or no such contact (weakly significant, $p < .10$, +36% better odds than the average student)

⁶⁸ Sub-populations of students that vary in 2/4 transfer probability by college and state are: 1) low-income, first generation to earn a BA in his/her family; 2) first-generation, not low-income students (compared with not low-income, not first generation students); and 3) students who declare a health/vocational/technical-oriented major (vs. business or undeclared). Sub populations that vary in 2/4 transfer probability by state but not college are: students who planned to transfer compared to students who did not plan to transfer in 2003-04. Results were derived from multi-level regression with random intercepts and random slopes with all student characteristics (selected to vary one at a time with state policy characteristics and community college characteristics at the intercepts).

⁶⁹ Population-average results define regression coefficients to be interpreted as the expected change in the outcome associated with a one-unit increase in the relevant predictor holding constant other predictors, but without controlling any random effects. The unit-specific or subject-specific model holds constant the other predictors and controls random effects (Raudenbush and Bryk, 2002, p. 334), and estimated effects are adjusted for individual differences (Hu et al., 1998). Subject-specific results are selected in order to present findings in terms of the change due to the covariates for a specific group of individuals (e.g. students who planned to transfer).

6. Participation in sports also raised transfer probability (+48% increased odds), as some of these students may seek to raise their GPAs in community college in order play their sport at a four-year college or university (weakly significant, $p < .10$).

Student factors that did not explain variance in 2/4 transfer probability for this population: participation in study groups, meeting informally with faculty, talking with faculty outside of class (e.g. office hours), or participation in arts and clubs. Regression slopes vary with respect to 2/4 transfer probability across colleges and states for both first-generation students who are and are not low-income or not-low income compared with students who are not low-income and not first generation students); and for students who declare a health/vocational/technical-oriented major (vs. business or undeclared). Regression slopes vary across colleges only among students who planned to transfer among the full sample (compared to those who did not so plan) and for low-income, first generation students (vs. not low-income, not first-generation students).

In this sample, a high proportion of students (70%) were categorized as first generation (neither parent earned a bachelor's degree). First-generation college students demonstrated a lower transfer probability, and this effect was not mitigated by transfer expectations very much, which is one of the strongest student-level factors contributing to transfer overall. Furthermore, available measures at the college-level did not any of the in first-generation students' transfer probability (for either low-income or not low-income first-generation students). For first-time, full-time students, the college's transfer out rate was the strongest predictor of the available college-level measures, but this measure is flawed because approximately 59% of community colleges attend part-time (AACC, 2013).

It is unsurprising that attending primarily full-time has a strong, positive influence on transfer probability. Recall that Doyle (2009) analyzed postsecondary enrollment data from Tennessee, and found that increased academic intensity (enrolled at 12 or more credit hours during the first semester of enrollment) causally impacts transfer rates. Based upon Doyle's analysis, students who took 12 or more credit hours in their first semester increased their probability of transfer from community colleges to four-year institutions by about 11-15 percent over six years. Students who took 9 credits or more were also more likely to transfer than their peers who took less than that, as well as those who took 6 credit hours or more, relative to their peers.

Among the seven measures of academic and social integration⁷⁰ in BPS:2009, meeting with an academic advisor often or sometimes and participation in sports were the strongest predictors of 2/4 transfer probability, yet were only weakly significant ($p < .10$) in the multi-level regressions presented here, controlling for fixed effects and randomly-varying slopes, with or without slope predictors in the model. This finding is unsurprising in view of Deil-Amen's (2011) research on traditional measures of academic and social integration as applied to community college students. Deil-Amen (2011) reported that traditional quantitative measures of social and academic integration may be inadequate to represent community college students' sense of connectedness and congruence with their institution. Among students in two-year colleges in her study, "not only did academic integration take a slightly more social form than one would expect based on previous measures, but also, social integration was often characterized by academic utility, and the tight connectedness of the two forms of integration

⁷⁰ These are: 1) Meeting an academic advisor; 2) Meeting with faculty outside of class; 3) Meeting informally with faculty; 4) Participating in study groups; 5) Participating in arts activities; 6) Participation in Clubs; and 7) Participation in varsity or intramural sports.

often make them indistinguishable in these two-year settings,” (p. 82). Even though traditional measures of academic and social integration⁷¹ have not been found to be well aligned to community college students’ experience from Deil-Amen’s work, these measures are those currently available in the Beginning Postsecondary Study dataset.

Factors that were negatively associated with 2/4 transfer probability when controlling for state and two-year institution characteristics: attending primarily part-time; taking any remedial courses in the first year (-26% reduced odds); and first generation to earn a BA in his/her family (both low-income and not low-income, when compared to being not low-income and not first generation). Racial background did not explain variance in transfer probability after controlling for low-income or first generation to earn a BA. This is not to say that racial/ethnic background is unimportant as a shaping influence in a student’s educational experience and transfer success, because, as Walpole (2007) demonstrates in her analysis and synthesis of literature, “it is critical to understand how the intersections of students’ social class, gender, and racial/ethnic identities shape issues of access and admission, as well as college experiences and outcomes,” (p. 59). The influence of racial/ethnic background is likely working through factors such as income and first-generation status.

Attendance at a minority-serving institution (either historically black college or Hispanic-serving institution, grouped together) was not a factor explaining significant variance in transfer probability in the final model presented. Other scholars, however, have found a positive

⁷¹ Academic integration is typically measured with a combination of the following variables: actual or predicted first-year grades; students’ sense of their intellectual/academic development; students’ perception of faculty concern; frequency of social contact or conversations with faculty and/or advisors about academic matters outside of class time; participation in out-of-class study groups; time spent on homework, and participation in cohort-based programs. See note 5 in Deil-Amen (2011) for relevant citations. Researchers cited by Deil-Amen (2011) developed constructs of academic and social integration to create integrated measures correlated with college persistence. Social integration is generally defined with measures that capture: participation in school clubs and fine arts activities; sports participation; frequency with which students go places with friends from school; peer group interactions; and informational out-of-class interactions and conversations with college faculty and personnel. See note 4 in Deil-Amen (2011) for relevant citations.

influence of attending a minority-serving institution on transfer probability. Kienzl et al. (2011) found that “the likelihood of transferring increased between 14 and 23 percent, on average, when a black student with transfer intentions first enrolled at a historically black college or university,” (p. 13).⁷² Kienzl’s recent estimates of Hispanic students’ transfer rates “suggested that they are transferring at a rate predicted by their socio-demographic characteristics and attendance behavior,” and I found a positive association of attendance at a Hispanic-serving institution in relation to 2/4 transfer probability overall. However, when attendance at a Hispanic-serving institution is interacted with being Latino or attendance at a historically black college is interacted with being African-American, these are not significant predictors of transfer variability ($p > .05$). When the role of attending a minority-serving institution is analyzed as a college or group-level predictor (at Level 2 instead of a student-level/Level 1 characteristic), attendance at a minority-serving institution is not significant.

College-Level Characteristics

Building upon previous literature and the nested nature of students’ transfer experience within community colleges and states, this hierarchical generalized linear model (HGLM) analysis found that few community college characteristics and state policy variables demonstrated a statistically significant relationship to students’ six-year 2/4 transfer probability. [See Appendix B for the results of the unconditional model or inter-class correlation for this data.] However, two characteristics of the primary two-year college attended that do help explain variance in students’ 2/4 transfer probability are (in both population-average and subject-specific models):

⁷² There are several historically Black two-year colleges in the BPS 2003-2009 data.

1. The college's average proportion of associate's degree completions in health and vocational fields, majors that have significantly lower transfer probability. With a one standard-deviation unit increase in this factor, a student's transfer probability with respect to the group-mean average, is approximately -18% reduced odds (weakly significant in the subject-specific model with no slope predictors added, $p < .10$.)
2. College average transfer-out rate, as a crude measure of a college's emphasis and success with transfer, was also a significant predictor of 2/4 transfer probability.⁷³ An average student's transfer probability increased only slightly (i.e. 2%) in a college with a one percentage point higher transfer-out rate (among first-time, full-time students), after controlling for proportion of health/vocationally oriented degree completions and all other factors in the model. Additionally, among students who originally planned to transfer, a one percentage point increase in a student's primary community college's transfer-out rate translates to 6% increased odds of transfer (based on analysis of random slope for students who planned to transfer).

College characteristics that did not explain variance in transfer probability for the overall population were: % full-time faculty, % full-time students, faculty-to-student ratio, enrollment size, per-student expenditures on instruction, per-student expenditures on student services (or a combination of the two), status as a minority-serving institution, distance to nearest public four-year institution or nearest non- or less-selective public four-year institution, and average transfer-in rate of the nearest public four-year institution. Gross & Goldhaber (2009) found an impact of certain institutional factors, i.e. expenditures on instruction and student services, percent of tenured faculty, and student-to-faculty ratio, but used an older dataset (National Educational

⁷³ This measure of the college's focus on transfer-intending student population is intended as a college-level characteristic to represent the influence of a college's transfer-oriented culture, i.e., as a group characteristic.

Longitudinal Study, NELS 1988-2000) and due to data limitations were not able to use multi-level modeling techniques such as were used here. Gross and Goldhaber's research is of primarily historical interest at this point, as it used the older NELS dataset based on the 1990 entry cohort. BPS data includes non-traditional age students and more information about students' academic and social integration in college, which is not part of NELS, an advantage of using BPS for this analysis.

Even though the variables representing academic and social integration in BPS have limitations for representing the experience of community college students, they are the best available in a nationally-representative sample of community college entrants. Stange (2012) did not find evidence that per-student instructional expenditures improved transfer probability. Among four-year institutions, Webber and Ehrenberg (2010) found that per-student expenditures on student services positively influence BA degree attainment, particularly for institutions with lower entrance test scores and higher Pell grant expenditures per student. This is a related, but not directly applicable finding since the study does not investigate community colleges and transfer probability. Student services programs at four-year institutions, particularly those with more academically under-prepared and low-income students, tend to have better systems of support than those established thus far at community colleges.

Since IPEDS measures of completions and transfer-out rates are based on first-time, full-time students and full-time attendance at the student level is one of the strongest influences on increased 2/4 transfer probability, I tested whether the proportion of full-time students, on average for the 2003-2008 period, explained transfer variability across community colleges. The final model showed that a one percentage point increase in the average proportion of full-time

students in comparison to the group mean (of the college attended) or grand population mean was not significant, however.

Among students who planned to transfer at postsecondary entry, the predictor among available measures that significantly explained variance in transfer probability was average transfer-out rate (standardized within colleges or group-mean centered). Recall that a student who intended to transfer had an increased transfer probability of 2 percent in a college with a one percent higher transfer-out rate.⁷⁴ Among students who planned to transfer, a one- percentage point increase in their college's transfer-out rate increased their transfer probability by 6% (based on parameter estimates associated with the slope of students who planned to transfer). As would be expected, college-level predictors such as transfer-out rate and proportion of associate's degree completions in health, technical, and vocational fields (measures of college mission), have not explained much of the college-level variance in 2/4 transfer probability for these sub-populations, yet they were the strongest factors in the data available. After experimenting with college and state-level predictors that might explain state- and college-level variation in 2/4 transfer probability for low-income, first generation students; first-generation, not low-income students; students who planned to transfer; and students who declared majors in health/vocational fields, I found that most of college-level variation in transfer probability still remains to be explained. State-level variation for these populations is no longer present (all $p > .20$) after including gross state product in 2003 and state articulation/transfer policy components for the time period in the slopes, so these are sufficient explanatory variables.

⁷⁴ Offenstein and Shulock (2009) note several limitations to IPEDS' transfer-out rate, including its inclusion of only first-time, full-time students which covered only about 40% of students enrolled in community colleges, and also that the transfer-out rate does not solely apply to 2/4 transfer but includes lateral transfer to another two-year institution (which is estimated at about 36% of all transfers from public two-year colleges in the BPS data.)

Rouse (1995) reported that proximity to a four-year institution had only a small, positive effect on the likelihood of attaining a bachelor's degree for those who started at a community college, but did not investigate the impact of miles to the nearest four-year institution or nearest non or less-selective institution on upward transfer probability. Clotfelter, Ladd, Muschkin, and Vigdor (2013) analyzed cohort data for about 11,000 2003 and 2004 community college entrants in North Carolina, investigating the influence of proximity and college-level characteristics on students' intermediate transfer outcomes (earning associate's degree or earning ten transferable credits).⁷⁵ Clotfelter et al. (2013) found that the presence of a University of North Carolina campus within the county was a significant and negative predictor of these intermediate transfer outcomes. The reasoning for this provided was: "if the students with a four-year degree in mind tend to head directly to the local four-year institution rather than to the local community college, the remaining community college students will be less likely to try for transfer credits than similar students living farther away from any four-year institution," (p. 14 in online, in press version).

Long and Kurlaender (2009) used proximity to nearest non-selective four year institution as an instrumental variable in a study employing Ohio postsecondary system data to analyze the effect of attending a community college on baccalaureate-degree completion within nine years, on the premise that baccalaureate degree completion as a longer-term outcome is not directly predicated or correlated with proximity to nearest four-year institution. Proximity to nearest four-year institution is related to the initial choice to attend a community college, controlling for prior academic performance, but I am unaware of any studies that have investigated the role of

⁷⁵ Transfer success is defined by these authors as "earning an associate's degree within four years of first course or passing at least 10 transferable courses within four years of first course."

proximity to nearest four-year institution or nearest non- or less selective institution on upward transfer probability.

Just as I did, Clotfelter et al. (2013) found little statistical association between available community college characteristics data, such as college size and expenditures (he also added staff training and cooperation with industry), and the intermediate transfer outcomes they investigated. From this analysis, Clotfelter et al. commented on the “significant challenges in identifying meaningful variation in the performance of community colleges,” the limitations of using these aggregate measures, the lack of fine-grained measures of college programs and practices, as well as not having college-specific data on program-by-program efforts to link students to ongoing training in baccalaureate-granting institutions and/or industry.

Indicators of college mission such as transfer-out rates and proportion of associate’s degree completions in health, vocational, or technical fields make sense as the leading college-level predictors of upward transfer probability. Recall that Dougherty (1994) found that the vocational/ occupational mission and the upward transfer mission are pursued simultaneously. These resulting tracks within community colleges then become vehicles for both socio-economic mobility and stratification at the same time, Dougherty (1994) argued. Historically, when states have come to terms with massive budget gaps and public demand for increased access to higher education and institutions face pressure to meet degree completion goals and increase tuition,⁷⁶

⁷⁶ Anderson et al (2006a) includes analysis of “state appropriations for higher education as a share of state expenditures” from 1978 to 2000, which indicates that “much of the decline in higher education appropriations has been accompanied by an important increase in state expenditures as a share of the gross state product, particularly between 1988 and 1995.” While states expanded their budgets, an increasingly smaller share went to higher education. During the same period, there was an expansion of comprehensive articulation agreements between two and four year institutions. Anderson et al. (2006a) documented a disparity in state FTE spending between community colleges and universities between 1990-1991 and 1995-1996, while also showing a widening gap between two and four year current fund expenditures per FTE. Essentially, public four-year institutions gained more funding per FTE from 1990-1996 than did public two-year institutions. Their conclusion is that a significant and growing difference in state spending by level of institution may have spurred state governments to establish

Anderson et al. (2006a) predicted a “tiering effect” that may arise as the “better performing community colleges distinguish themselves from less successful two-year institutions as effective vehicles for transfer,” (p. 444). Vehicles for tiering may include colleges increasing dual enrollment programs, accepting reverse transfers from baccalaureate institutions to reposition them for success in a bachelor’s degree program, honors programs in community colleges, promoting concurrent enrollment in both two-year and four-year institutions, and summer-readiness programs which disproportionately benefit well-informed and better-prepared students from higher economic backgrounds (Anderson et al., 2006a, p. 443).

Bastedo and Gumport (2003) investigated mission differentiation and academic stratification in two states, Massachusetts and New York, using a comparative case study approach, which employed primarily document review over the period from 1990-2001. They found that while these states enacted policies that generally expanded access to higher education, under-prepared students were channeled to community college remedial programs and more prepared students were referred to honors programs and better positioned for transfer to four-year institutions. In Mosholder & Zirkle’s (2007) historical review of articulation and transfer in the U.S., they note that some states developed a tradition of successfully transferring students (Washington, Arizona, and Illinois) and some states, such as California, witnessed highly variable 2/4 transfer rates across institutions, where transfer rates varied between 5-38% largely due to locally-defined mission differentiation (citing Cohen, 2003, p. 741). While multi-level analysis of transfer probability with BPS data does not show much state level variation (i.e. 2 percent of the variance in 2/4 transfer probability can be explained by state location of primary

comprehensive agreements between these different types of institutions. Such policies “divert students seeking bachelor’s degrees into community colleges...and reduces the state’s burden of FTE spending and offers the possibility of a seamless transfer after the first 2 years of college work,” (p. 434).

community college attended), a larger proportion of the variance in 2/4 transfer (i.e. 6% for the average student) can be explained by the primary college attended. In my analysis, mission stratification and differentiation relative to prioritizing students' transfer-success and completions in transfer-oriented majors are shown as the leading college-level characteristics influencing students' upward transfer, once available student-level predictors, state policy contexts for articulation/transfer, and other college-level measures are taken into account.

State-Level Characteristics

Similar to other researchers' findings, I find that most state policy variables designed to affect transfer demonstrate little or no effect on the probability of transfer, after controlling for state wealth (gross state product per capita, see next paragraph). State articulation and transfer policies include several components, as catalogued by the Education Commission of the States (ECS) in 2001 and 2010 (imputed here for 2005-06, two years after BPS 2003 students' postsecondary entry). ECS transfer policy components are: presence of articulation and transfer legislation (36 states); cooperative agreements between institutions and/or departments at 2- and 4-year institutions (40 states); transfer data reporting to state higher education commissions, departments, and authorities (33 states); transfer incentives and rewards (such as priority admission and scholarships) (18 states); presence of a statewide course articulation guide (26 states); common core curriculum (23 states); and common course numbering (8 states). State articulation and transfer policy components have binary coding in the ECS catalogue and some degree of correlation (all less than 0.3, however) with each other across states, which poses a

challenge for discerning effects of individual policy components.⁷⁷ The policies' existence and strength of implementation are not measured annually.

Gross state product per capita is strongly correlated (0.6, $p < .001$) with the proportion of bachelor's degree holders in a state's population, and is a positive and significant predictor of transfer probability across states (before or after controlling for state articulation/transfer policies). Relative to the average, a student in a state with one standard deviation higher gross state product per capita showed increased transfer probability by +35% greater odds (subject-specific model, no slope predictors added). The logic of controlling for gross state product per capita comes from research by Anderson et al. (2006a), which documented an association between the increase in this measure of state wealth and a decline in state expenditures on higher education per capita and the expansion of comprehensive articulation agreements. As stated by Anderson et al. (2006a), "in an effort to help manage a somewhat inevitable fiscal crisis in public higher education – which is attributable in part to the state underfunding – statewide articulation agreements were adopted or modified during this period [1978-2000] to generate new cost-effective pathways for states to educate baccalaureate-bound students," (p. 434).

Relative to my analysis, it is therefore important to note that a higher gross state product per capita is likely a proxy for a more well-developed transfer and articulation system in a state. The proportion of postsecondary enrolled students in community colleges in a state was not a significant predictor of 2/4 transfer probability, but gross state product per capita is. It is likely more obvious that a higher proportion of the population with bachelor's degrees in the state would be significantly and positively associated with community college students' upward

⁷⁷ The only significant correlation, however, was between presence of a state transfer guide and transfer-related incentives (correlation=0.3, $p < .05$). None of the state policy components, gross state product per capita, or community college characteristics had two-tailed Pearson correlations with the outcome of upward transfer of more than +0.1 or -0.1 and none were significant. See Appendix E for correlations tables.

transfer probability. Further analysis is warranted regarding updating Anderson et al's (2006a) historical findings to examine the current relationships between the robustness of the state articulation and transfer system, state funding toward higher education overall and specifically for community colleges, gross state product per capita, the state's upward transfer rate, and state-level baccalaureate degree attainment.

County-level unemployment rate in the location of the student's primary two-year college was not a significant predictor of variation in transfer probability, but had a negative coefficient. Contrary to the hypothesis that higher county unemployment would increase students' likelihood of pursuit of a bachelor's degree to boost their long-term earning potential, Kienzl, Wesaw, and Kumar (2011) also found that a higher unemployment rate produced a negative effect on transfer. They theorized that students may be unwilling to continue on to a four-year institution due to other economic impacts [which may be associated with higher unemployment, state/county economy, etc.] such as reduced financial aid, cutbacks in services at community colleges, etc. Neither the proportion of two-year to public four-year college tuition averaged over 2003-08, nor the proportion of community college enrollment relative to the adult population in the state, were significant predictors of individual transfer probability. Kienzl et al. (2011) similarly found that the tuition differential between two-year and public four-year institutions no longer mattered in the BPS:2009, even though this factor (i.e., a larger differential) negatively impacted students' transfer probability in the earlier BPS:2001 cohort. This change may be due to students having a higher awareness of financial aid opportunities nearly a decade later, and to

increases in Pell grant awards during the period that have blunted the impact of higher tuition somewhat (ACE, 2012).⁷⁸

In the random-intercepts and slopes, subject-specific model with no slope predictors added, none of the state articulation policy components explained variance in six-year 2/4 transfer probability. When all the state articulation/transfer policy components were added to explain variance in slopes for sub-populations, the only component that was significant was common-course numbering and only for first-generation students (low income or not).⁷⁹ Since only eight states reported common course numbering during this period across two and four-year systems, it may be the a proxy for more robust transfer/articulation systems that are not well represented by the ECS indicators. However, this speculation does not have empirical support from this analysis. Consistent with this notion, in the four states in the BPS dataset with 30 or more students represented that had common course numbering (FL, MS, TX, and WY), this policy variable, as one feature of the state's articulation/transfer policy portfolio, proved to be positively associated with increased transfer probability. The other four states with common numbering (AK, ND, SD, ID) have only a few or no students represented in the data. In my analyses of adding predictors to varying slopes particular student groups (i.e. low-income, first generation students; low-income, not first generation students; first-generation, not low-income; students who declared transfer-oriented major; and students who declared a health/vocational major – the following results were found:

⁷⁸ American Council on Education (2012, July 31). Pell Grant Funding History 1976-2010. <http://www.acenet.edu/news-room/Documents/FactSheet-Pell-Grant-Funding-History-1976-2010.pdf>

⁷⁹ As described by the Education Commission of the States (2001, 2010), identical course numbering for similar courses between two-year and four-year institutions should facilitate ease of transfer and reduce the number of students taking non-transferable credits.

**Table 3.5 Significant College and State Variables for Student Sub-Populations
whose Upward Transfer Rates Vary by Primary College Attended or State Location**

Student Population of Interest	College-Level Characteristic	State-Level Policy or Economy
Low-Income, First Generation (vs. reference not low-income, not first-generation)	Transfer-out rate, +, $p < .01$	Not applicable (2/4 transfer does not vary by state for this population). (chi-square=44.7, $p > .21$)
First Generation, Not Low-Income (vs. reference not low-income, not first-generation)	Transfer-out rate, +, $p < .01$	Gross State Product, +, $p < .001$ Common numbering, +, $p < .001$
Low-Income, Not First Generation (vs. reference not low-income, not first-generation)	Not applicable (2/4 transfer does not vary by primary community college attended for this population. (chi-square=65, $p > .50$)	Not applicable (2/4 transfer does not vary by state for this population). (chi-square=40, $p > .50$)
Planned to Transfer	Transfer-out rate, + $p < .01$	Not applicable (chi-square=34, $p > .50$)
Humanities, STEM, Education, Social Sciences Major (vs. reference business/undeclared)	Not applicable (chi-square=51.8, $p > .50$)	Not applicable (chi-square=33.4, $p > .50$)
Health/Vocational Major (vs. reference business/undeclared)	Percent of Health/Vocational Major Associate's Degree Completions, neg. $p < .01$	Chi-square-56.5, $p < .05$; No state-level predictors found as significant.

For first-generation students, the presence of common course numbering in a state was associated with a substantial (3-7x, depending upon if low-income) increase in the odds of transfer, after controlling for gross state product (wealth), which is also a factor associated with increased transfer probability (2.6x better odds). College-level measures of transfer-out rate and proportion of associate's degree completions in health and vocational fields do not explain all the college-level variance in 2/4 transfer probability for these sub-populations, yet they were the strongest factors in the data available. After experimenting with college and state-level predictors that could explain state- and college-level variation in 2/4 transfer probability for the subpopulations of interest, I found that college-level variation in transfer probability still remains

to be explained. State-level variation for these populations is no longer present (all $p > .20$) after including gross state product in 2003 and state articulation/transfer policy components as variables to predict variance in regression slopes associated with upward transfer for sub-populations.

Based on an analysis of National Educational Longitudinal Study (NELS) data and a detailed review of state legislation on articulation and transfer, Roksa & Keith (2008) reported that most legislation and statutes governing statewide articulation and transfer were not directed at improving 2/4 transfer rates *per se* and that these policies were primarily designed to prevent loss of credits upon transfer. This suggests that this macro-level articulation effort may well be not sufficiently targeted to strengthen the desired result in students' transfer behavior, and that increased policy implementation effort may have stronger results if focused at the institution level (both 2-year and 4-year) where impacts seem to be stronger. Among state articulation/transfer policy components, Kienzl et al. (2011) reported that individual 2 and 4-year institutions "can leverage state policies" by creating highly engaged institutional partnerships⁸⁰ that facilitate transfer, and noted promising practices. Even though these cooperative agreements do not explain variance in 2/4 transfer probability in the multi-level regression, the strength of these partnerships could contribute to transfer-oriented culture of a community college in ways not yet picked up by available measures. The association with a state's wealth (gross state product) and the historical rise of cooperative articulation agreements documented by Anderson et al. (2006a) is another confounding factor. Kienzl et al. (2011) reported a negative and

⁸⁰ For example, the presidents of both Florida colleges interviewed for this study spoke of regular communication with presidents and leadership of nearby public four-year institutions (weekly to monthly). Leaders in the University System of Georgia similarly engage in ongoing dialogue to address issues and improvements for transfer and articulation. Washington state has an expansive network of college and state-level leaders negotiating and updating cooperative agreements at both state and college-levels to increase students' successful transfer.

significant impact of state articulation policy⁸¹ on six-year transfer probability*AA degree attainment. These authors suggest that the state articulation/transfer agreements and policies may have introduced “unwanted confusion” and complexity, not yet resolved within and across 2 and 4-year institutions.

Conclusion

In considering these results about the relative influence of state articulation and transfer policies, community college mission, and student factors on individual 2/4 transfer, it is helpful to understand the origins of state articulation and transfer policies, and how they relate to patterns in students’ transfer behavior.

History of State Articulation and Transfer Policies

Anderson, Alfonso, and Sun (2006a) argued that the historical rise in state adoption of articulation and transfer agreements in the 1980s and 1990s stemmed from states’ deliberations concerning the stagnation of higher education appropriations, aggressive tuition increases, and increased political demand for affordable higher education. According to their analysis, 29 statewide articulation agreements were in effect by 1995, and this expansion was not primarily driven by increased student demand for transfer access. After reviewing neo-Marxist, institutionalist, functionalist, and statist theories⁸² to explain the growth of statewide articulation

⁸¹ Their state and articulation policy coding was obtained from the same Education Commission of the States (2001, 2010) data used here.

⁸² As described by Anderson et al. (2006a), functionalists viewed community colleges as integral to expanding opportunities for under-represented groups in higher education through vocational training and as a gateway to baccalaureate degrees. Neo-Marxists argued that community colleges perpetuate class-based inequality by “cooling out” aspirations of working-class, female, and minority students in vocational or technical programs rather than effectively facilitating access to four-year institutions. Institutionalists, such as Brint and Karabel (1989), contended that state universities, higher education commissions, and associations such as the American Association of Community Colleges, “account for the growth of community colleges and their increased vocationalization,” (Anderson et al, 2006a, p. 426). However, state universities also deflected demand for access to higher education to two-year colleges for more under-prepared populations, in order to maintain the value of bachelor’s degrees, according to Brint and Karabel (1989).

and transfer agreements, Anderson et al. (2006a) concluded that “only Dougherty’s state relative autonomy theory accounts for the rise in statewide articulation agreements as policy instruments,” (p. 430).⁸³ Based upon broad analysis of fiscal and demographic trends in the U.S between 1985-1995 as well as analysis of BPS 1989 and 1996 entry cohort data, the authors claim that the growth of statewide articulation agreements arose from competing priorities in state spending, and “the demands of an aging and predominantly White electorate, which is increasingly at odds with the changing demographic patterns” in the U.S. (p. 430) and thus looks for low cost educational alternatives.

Various scholars have illustrated the gaps between state policy’s espoused intent and the access provided by these policies to students across a state’s institutions – both community colleges and four-year institutions. As early as the 1920s, researchers found that transfer students were performing equally to students beginning at four-year institutions (Koos, 1924); California established the first articulated higher education system in the 1920s (Mosholder and Zirkle, 2007, p. 734). Later, in the 1950s, (Bird, 1956) offered similar results and this pattern of transfer students performing as well as freshman-beginning (or native) students was upheld more than 60 years later (Bowen, Chingos, & McPherson, 2009; Melguizo, Kienzl, and Alfonso, 2011). Since students who eventually transfer are just as successful as first-time entrants to four-year institutions, this success rate supported continued state-level articulation and transfer policy development and implementation. Mosholder & Zirkle (2007) noted several factors influencing states to enact transfer and articulation policies: 1) the development of central postsecondary

⁸³ Anderson et al. (2006a) labeled Dougherty’s view as a “statist” perspective. Dougherty (1994) contended that different ideological and economic influences, both within and across states, constrained and shaped the evolution of public community colleges. The major difference from the institutionalist perspective is that, in the statist view, public community colleges’ programs grew in response to state and local interests in creating employment and job training opportunities while appealing to immediate constituents of business, communities seeking economic revitalization, higher education lobbyists, higher education associations, and voters.

coordinating agencies following passage of the 1972 reauthorization of the federal Higher Education Act of 1965, which took on the responsibility of promoting student transfer and articulation; 2) curriculum differentiation among community colleges as their numbers nearly doubled from 1965-1980, reflecting trends toward vocationalization and reduction in academic rigor in community colleges that undermined attempts at university parallelism with bachelor's degree institutions; 3) declining transfer rates (hitting a low point in 1989 when only 21.5% transferred within four years amidst contention regarding transfer rate calculations in the context of poor information systems and institutional research capability (no source cited, Mosholder and Zirkle, 2007, p. 738); and 4) community college leaders taking on multiple and diverse missions such as life-long education, adult education, continuing education, developmental education, and community service (Bailey and Averianova, 1999).

Robertson & Frier (1996) outlined several issues driving state-level authorities to take a more active role in facilitating transfer and articulation in the 1980s: 1) globalization and economic demand for an increasingly skilled workforce, 2) a concern for equity in postsecondary education and equal access to BA education for minorities and low-income students who disproportionately access the open admissions public community colleges; and 3) recognition of the interdependent nature of higher education and shared responsibility within states for eliminating difficulties imposed upon potential transfer students. These pressures and concerns have continued to the present day as the states adopt Common Core Standards for college-ready curricula (44 states), join Complete College America (29 states), participate in multi-state, foundation-supported initiatives focused on increased degree completion (such as Achieving the Dream) (Russell, 2011), increasingly adopt new policies supporting transfer and articulation (Smith, 2010), and yet still have relatively low rates of transfer (Ewell & Kelly, 2009).

Roksa (2009) analyzed the distribution of state articulation agreements (one form of articulation policies) and unified governance structures across states, and found “almost no overlap between states with unified governance structures and those with articulation policies, the only exception being South Dakota. Articulation policies thus appear to be developed in the absence of a unified governance structure,” as an alternative route to creating a coherent, systemic pathway to transfer without a unified governance structure in place (p. 2454).⁸⁴ Roksa (2009) further found that presence of state articulation policies (those created by the legislature or executive order) was not correlated with the proportion of a state’s enrollment in community colleges or the share in the private sector of four-year institutions (her Figure 2A). However, she stated that the lack of correlation “does not preclude the possibility that the effectiveness of articulation policies varies by the distribution of enrollments,” since effectiveness is difficult to measure (p. 2456). Like Roksa (2009), I did not find an association between a state’s proportion of higher education enrollment in community colleges and increased upward transfer probability.

Challenges in Analysis of State-Level Factors Associated with Students’ Upward Transfer

The greatest challenge faced in conducting empirical analysis of state and college-level factors influencing upward transfer probability lies in the quality, reliability, and precision of available data on not only state policy adoption, but state policy implementation, as well as implementation and effectiveness of college-level programs and practices. Policy organizations such as ECS and NCHEMS coded state policies differently for this period, and these policies are more complex than binary coding allows for. Furthermore, reliable data on policy strength at the

⁸⁴ Roksa (2009) characterized states with a relatively tight governance structure (i.e. unitary) as using the unitary governance structure to designate community colleges as branches of four-year institutions, encourage cooperative agreements between institutions, develop a common transferable general curriculum, and build a common course numbering system. Some states with these features also have a statewide articulation and transfer policy, but for some states, such a policy may seem unnecessary due to the unified governance structure. For example, Alaska’s higher education system consists of three main universities and each has a four-year campus as well as several two-year campuses.

time of students' transfer within the period (2003-08) does not exist. Available state policy data on 2/4 articulation efforts offers relatively crude measures of policy existence, and does not reflect the extent of policy implementation nor the practices at community colleges and public four-year institutions that likely have a more direct impact on student behavior.

While student-level factors appear to be more important in predicting student outcomes than institutional or state-level structural factors, according to Bailey, Jenkins, & Leinbach (2005), "the possibility remains that these relationships are constrained by the data available to include in statistical models and how these models are constructed," reported Goldrick-Rab (2010, p. 457). However unimportant and indirect state policy effects may appear given the available measures, state policy environments could play a role in facilitating seamless articulation and transfer for students as they transition from lower-division coursework in a community college to upper-division coursework in a bachelor's degree program.

Roksa (2009) provided instructive guidance on unanswered questions in assessing the impact of state articulation and transfer policies, based upon a critical review of prior research and extensive analysis of methodological limitations plaguing this type of work.⁸⁵ She argued that analyses that investigate the relationship between policy existence and/or policy strength and transfer rates may not fully measure policy effectiveness. Since state policies are primarily intended to preserve the value of credits earned at different types of institutions, better measures of policy success are: number of credits lost (or preserved) in transfer; the amount of time (in

⁸⁵ Roksa (2009) compared coding of statewide articulation policies from four national studies (ECS, 2001; Keith and Roksa, 2008; Ignash and Townsend, 2000; and Anderson, Sun, and Alfonso, 2006) and found agreement for only 21 states (in her Table 1). While study results using the NELS 1988-2000 data cannot be directly compared, Roksa (2009) provided a summary of four national studies and their model results to determine influence of state articulation policy on student transfer outcomes and found similar null results across studies that control for similar student characteristics. The transfer outcomes included: transfer to any four-year institution, to any in-state four-year institution, to any in-state public four-year institution, or transfer according to the Transfer Assembly definition (students earning at least 12 credits in a community college and transferring to a public four-year institution within four years of enrollment).

full-time equivalent terms) that students took to transfer and to earn a bachelor's degree, the likelihood of earning a bachelor's degree, as well as how well prepared students are for transfer by community colleges. Roksa (2009) points out that if the goal is increased accountability for community colleges and states on degree completion and transfer rates, that a value-added approach to determining a community college's effectiveness in reducing transfer gaps (between differing income and/or racial groups) or increasing overall transfer rates would be more instructive. This would involve calculating cohort-based transfer rates at each college, and documenting upward transfer rates for population sub-groups (such as Pell eligible students or students who originally place into developmental education), and tracking and comparing these rates over time, as well as conducting growth-modeling with the data. Roksa (2009) also noted substantial confusion and incoherence in the transfer literature: "Surveying the transfer literature reveals the diversity of definitions, measurements, data, and analytical methods used that makes it virtually impossible to arrive at any coherent conclusions," (p. 2470).

One of the key missing pieces in the literature regarding effectiveness of statewide transfer and articulation policies is an analysis of the sense-making process and factors affecting policy implementation among the relevant stakeholders in transfer success. These include: public community college administrators, faculty, and staff; personnel at four-year institutions receiving transfer students; state officials; interested parties influencing the opportunity structure and conditions affecting students transfer; and of course, the students themselves. Amidst challenges of lack of agreement about transfer measurement and appropriate comparison groups, limitations of available data, poor coordination regarding evaluating transfer in higher education, and uneven implementation of standards for data quality, another looming question is: What are promising practices for improving data collection and research strategy coordination, definitional

agreements, and achieving better implementation of standards for data quality? The case study research portion of this dissertation addresses these issues, in part, as it investigates the role of data use in decision-making to improve systems of support for increasing students' upward transfer to baccalaureate-granting programs and institutions.

Furthermore, state articulation agreements are only one facet of state policy supports linked to facilitating students' transfer from two-year to four-year institutions. State policy with respect to students' access to need-based and merit-based financial aid at two-year and four-year institutions and within public and private institutions, state performance-based funding formulas and policies relating to increased transfer rates, state policies allowing community colleges to grant bachelor's degrees, and state reforms concerning major-related pathways are just some of the state-level policies that may further influence states' transfer rates and baccalaureate completion rates. No single study has investigated the inter-dependent influence of these state policy influences (nor has this study attempted that). So, there are plenty of avenues for future research in this area.

Discussion of Positive Associations of Some State Policy Components with 2/4 Transfer

Kienzl et al. (2011) found promising impacts of statewide cooperative agreements, which may be program-by-program, course-by-course, or institution-by-institution, depending on the state. The development of these agreements is generally accompanied by deliberation and relationship building between two and four-year institutions. If gross state product is excluded as a state-level characteristic in the multi-level model, state cooperative agreements are a positive, explanatory variable of upward transfer probability for the overall sample.

My study found a positive association between the presence of a statewide transfer guide and students' upward transfer probability in the model with fixed effects, randomly-varying slopes, with slope predictors added for sub-populations with randomly-varying slopes (See Table 3.3). According to the Education Commission of the States (based on data collection in 2010), 26 states provided concrete descriptions of transfer/articulation requirements and answers to questions students have about the transfer process via a state transfer guide. This measure does not account for the accessibility or level of utilization of the state transfer guide by students. However, it is an indicator of a statewide effort to consolidate and purposefully assist students in the transfer process. The state transfer guide would not exist if it were not for a system of relationships developed to support better articulation and transfer between two- and four-year institutions as well as policy press for improving transfer probability. A state articulation and transfer guide designed for student use is perhaps a necessary , but not sufficient policy component enabling increased transfer.

Similarly, common course numbering would not exist without state-level intentionality to bolster upward transfer access and success. The development of a common course numbering system requires systematic review of courses by faculty at both two- and four-year institutions, and a high level of ongoing orchestration to align course curricula relative to agreed-upon outcomes that constitute the basis for particular transferable course numbers. As an example, other states have sought out the advice of Florida's policymakers on designing common course numbering systems in their state context, as the state is highly regarded as a national exemplar for its common course numbering system. At the time that Florida developed common course numbering, the State University System and the Florida College System, which now oversees the community colleges, were not separately managed. If they were developing the common course

numbering system in 2013, it would be far more difficult to orchestrate, commented the Director of the Office of Articulation (personal communication, December 4, 2012).

The foundation for the development of Florida's common course numbering system occurred in the late 1960s, when "registrars and advisors at Florida's public institutions of higher education voiced concerns about the difficulties encountered in assigning course credits to students transferring from lower-division colleges to the upper-division of universities, or to students changing institutions prior to degree completion," (Statewide Articulation Manual, revised October 2011).⁸⁶ Florida then developed a common course numbering system to facilitate the transfer of credit for equivalent courses among the state's colleges and universities to reduce barriers with respect to admission (transfer of credit) and unnecessary repetition of courses by transfer students. Florida's Statewide Course Numbering System (SCNS) is "now used at all public and selected nonpublic institutions of higher education in Florida (10 state universities, 28 Florida College System institutions, 25 participating nonpublic postsecondary institutions, and 40 area technical education centers are included in the SCNS)."⁸⁷ The SCNS is continually updated to accommodate policy changes, such as was the case with House Resolution 7135 adopted in 2012,⁸⁸ and new courses and programs.

As a description for what a state transfer guide may include, consider this description of Florida's Common Prerequisites Counseling Manual:

⁸⁶ Retrieved online 03.15.13 from: <http://www.fldoe.org/articulation/pdf/statewide-postsecondary-articulation-manual.pdf>

⁸⁷ Statewide Articulation Manual (2011), p. 3.

⁸⁸ Florida H.R. 7135 requires all state universities (SUS) and colleges (community colleges now in the Florida College System [FCS]) to revise their General Education requirements. The legislation reduces the number of credits in General Education from 36 to 30 and identifies five broad discipline areas (Communication, Humanities, Mathematics, Sciences, Social Sciences) in which General Education credits must be obtained. One of the intentions behind this legislation was to better align the general education credits in the Florida College System with the accreditation requirements of the Southern Association of Colleges and Schools (SACS). It further requires that one course in each area (a total of 15 credits) be selected from no more than five courses in the area and that these courses be offered and accepted by all Florida public postsecondary institutions..

In 1996, institutions of higher education in the state of Florida, under legislative mandate and through the direction of the Articulation Coordinating Committee, established a list of common prerequisite courses for every degree program. The purpose of such a list is to provide students, especially those who plan to transfer between institutions, with information regarding the courses that they will need to take to be admitted into upper division programs. The Common Prerequisites Counseling Manual is a centralized compilation of program prerequisites that can be referenced by counselors and students in their academic planning. The Common Prerequisites Counseling Manual is compiled in a format as established by the Oversight Subcommittee of the Articulation Coordinating Committee and is considered to be the “official” publication of the program prerequisites. It is compiled annually and placed in a format that is accessible by all institutions. The Common Prerequisites Manual is not intended as a comprehensive advising manual. For effective academic planning, students should be referred to university catalogs and counseling manuals (2012-13 Catalog).⁸⁹

In itself, the presence of a state transfer guide or common course numbering would not induce a student to transfer, nor does this analysis offer any empirical support for such a claim. What this analysis may suggest is that the presence of a state transfer guide is positively associated with higher transfer probability, considering other factors accounted for in the model. The presence of a state transfer guide does not explain variance for sub-populations of students with randomly varying slopes across states, but common course numbering does. For first-generation, low-income students and first-generation, not low income students (compared with not first generation, not low income students), the presence of common course numbering is associated with much greater odds of transfer and, in this model, helps explain variance in state-level slope differences for students with these backgrounds. For the whole population of community college entrants, the presence of common course numbering does not demonstrate a positive association with upward transfer probability. After all, common course numbering is present in only four states represented in the dataset (FL, MS, TX, and WY which each had at least 30 student cases).

⁸⁹ Retrieved 03.15.13 from:
http://www.flvc.org/flvc/portal/Home_Page/Student%20Services/College_Transfer_Center/Common_Prerequisite_Manual/

Limitations of State-Level Policies to Moderate 2/4 Transfer by Students' Major Field of Study

According to the level 2 and 3 variance components, individual 2/4 transfer probability does not vary by college or state for STEM, humanities, or education majors (compared with students who declared business as a major or were undeclared), but the slope varies for health/vocational/technical majors by college and state. None of the available measures of state articulation and transfer policies affect transfer probability for health/vocational/technical majors (for whom transfer rates are low). However, the presence of a state-adopted transferable general education curriculum was negatively and significantly associated with 2/4 transfer probability (-63% reduced odds of transfer for STEM, humanities, and education majors). In light of this somewhat surprising but not novel finding, one of the new developments in state-level policymaking is the creation of major-related pathways for transfer, which should more directly help students plan and execute a transferable curriculum in their field of study. Washington state offers a good model of this practice and, once it is fully in place, this step may mitigate the limitations of a general transferable curriculum.

For transfer-oriented majors, the presence of a state articulation and transfer policy⁹⁰ is positively and significantly associated with upward transfer probability. For example, Washington has a transfer/articulation umbrella policy that covers all institutions in the state, both public and private, and is the only state in the nation to have this degree of coverage. However, for the average student in the population across all majors, the presence of a statewide articulation and transfer policy is negatively associated with 2/4 transfer probability (or at least,

⁹⁰ Articulation and transfer policies are created by the state legislature, state executive order, or state board of higher education rule, such as in Alabama (ALA. CODE 16-5-8 "All applicable credits transferred from a two-year institution to a four-year institution shall fulfill degree requirements at the four-year institution as if they were earned at the four-year institution,") (Smith, 2010).

is not positive enough to overcome the negative intercept in these models). Moore, Shulock, and Jensen (2009) chose to research systems of support for transfer in Arizona, Florida, New Jersey, North Carolina, Ohio, Oregon, Texas, and Washington because “these states are known for having statewide transfer patterns, for strong community college and public-university relationships, or for being innovative with regard to student success,” (p. i). The authors highlighted the efforts of these states, including Washington’s policies on developing major-related programs, and each state’s overall articulation/transfer policy as part of their own crafting of what they termed an effective, efficient, transparent, robust, strategic, and feasible proposed transfer system for California.⁹¹

Summary of Data Limitations in the Quantitative Strand

Several key challenges arise in the investigation of impact of statewide articulation and transfer policies on students’ transfer rates from public community colleges to four-year institutions. The first has to do with limitations of available national data. National datasets such as the Beginning Postsecondary Study and the (National) Educational Longitudinal Study do not offer representative samples of students from individual colleges or states. Multi-level modeling techniques offer some improvements in more precisely accounting for students’ nested outcomes within their particular community college and state, as well as their chosen four-year institution where applicable. However, even with weighting procedures and analytical strategies that account for small and unequal sample sizes among institutions and states, threats still remain with respect to external validity of conclusions from this type of analysis. Studies that use data from voluntary initiatives such as the Transfer Assembly Project, Community College Study of Student Engagement, or Achieving the Dream have even more limitations because they do not

⁹¹ State policies were primarily compared on their use of an associate’s transfer degree or use of common statewide general education curriculum without an associate’s degree.

include all states and/or a random sample of relevant higher education institutions (Roksa, 2009). They have large samples, however, and studies using them can certainly be useful for generating hypotheses.

Offenstein and Shulock (2009) cited numerous limitations of the Integrated Postsecondary Education Data System (IPEDS) for studying community college outcomes including exclusion of part-time students and those entering in winter and spring terms, too short time spans for graduation and transfer-out rates, no linking with the National Student Clearinghouse to track completion outcomes in four-year institutions, lack of ability to effectively track nearly half of community college students attending multiple institutions, and no systematic reporting requirements for outcomes by subgroups (under age 24 vs. older than 24 years, remediation-eligible vs. non-remediation eligible, low-income students vs. non low-income, etc.). IPEDS and other national data sets also do not provide information on the degree to which the community college prioritizes the 2/4-transfer outcome for its student population in its resources, curricula, and policies. While IPEDS staff work to establish uniform guidelines and requirements for reporting institutional characteristics such as institutional expenditures and revenues, percentage of full-time and part-time faculty, and percentage of tenured faculty, improvements and changes occur annually which makes year-to-year comparisons challenging.

Definitional considerations in the calculation of transfer rates, as discussed earlier, are a major challenge and have been noted by numerous scholars (Roksa, 2009). It is also difficult to align the available student-level outcome and descriptive data with data on institutional policies, state policies, and level of policy implementation effort and resources in the appropriate time frames. For example, Roksa (2009) discovered uneven levels of inter-rater reliability on even the presence of a statewide articulation agreement, as well as the definition of what constitutes one

(see Appendix pp. 2476-78), within a span of one to two years (1999-2000). In MDRC studies involving randomized controlled trials of various types of interventions (student performance incentives, mentoring, student success seminars, bridge programs, etc.), scholars have noted challenges in capturing changes to program implementation and aligning data analytic methods and comparisons with those changes in practice and policies that may be influencing outcomes of a particular intervention. This is a common concern of course in evaluation studies throughout education and human services. State level policy influences and conditions are not typically addressed in these studies of institution-based reforms.

My research limited investigation to public community college students and their transfer rates to four-year institutions in relation to state articulation policy existence and types of state articulation policy components through multi-level modeling techniques. My dissertation does not consider the influence of state articulation policies for students entering two-year private institutions, which is a much smaller proportion of students seeking associate's degrees, but growing steadily. Described in Chapter Two, Rosenbaum et al's (2006) research on differences between private and public two-year colleges illustrated important differences in degree completion outcomes and college practices between public and private two-year institutions, for example. Scholars have also noted an important methodological concern in studies of community college students with respect to how measures of constructs are operationalized relative to the particular concerns and characteristics of community college students, such as academic and social integration (Deil-Amen, 2011) or the role of social and cultural capital in explaining student outcomes (Wells, 2008). However, even with recent methodological advances employed here, challenges remain in attributing predictive influence of a full range of influential factors, programs, or student experiences that cause or are associated with upward transfer probability for

different age, racial/ethnic, or income groups. This quantitative inquiry also does not include the influence of college-level programs and practices (distinct from college characteristics), which is examined in the comparative case studies strand of this dissertation.

Chapter IV. Framing and Design: Case Studies of Promising College Practices to Increase Students' Upward Transfer

Introduction

To respond to the need for a more nuanced and detailed picture of the dynamics of upward transfer, that built on and complemented my quantitative findings, I carried out a series of qualitative case studies at state and institutional level. By contrasting colleges that had relatively high transfer rates with more “average performers” in each of three states (Georgia, Washington, and Florida), these case studies explored particular aspects of the college’s approach to the upwards transfer function and the ways in which the states created a supportive policy environment for this function. In this strand of my dissertation research, I set out to learn more about the strategies used by colleges (that primarily award associate’s degrees) to improve students’ upward transfer, and particularly, colleges actively engaged in evidence-based experimentation and innovation. My objective was to learn ways that leaders engage in innovation to improve students’ upward transfer rates, in colleges with above-average transfer rates contrasted with leaders in colleges with average transfer rates (based on regressions controlling for colleges’ student characteristics)

Philanthropically-supported initiatives such as Achieving the Dream (ATD) have worked to identify and cultivate effective, transformative practices oriented towards increasing student success outcomes in public two-year institutions. Founded in 2004, Lumina Foundation for Education now supports nearly 200 institutions in 32 states and the District of Columbia to improve success among community college students, particularly low-income students and under-represented minorities. Community colleges create and implement interventions, data-based decision-making processes, and reforms in developmental education and college-level

“gatekeeper” courses⁹² seeking to improve grades, term-to-term retention, degree completion, and progress in completing a transfer-ready curriculum (Zachry-Rutschow et al., MDRC, 2011). The infrastructure of ATD includes 100 coaches and advisors and 15 state policy teams working with its colleges to improve outcomes for about 3.75 million community college students.

Over five years, however, trends in student outcomes among the first 26 ATD community colleges remained relatively unchanged, with a few exceptions. Achieving the Dream’s core metrics of student success does not include 2/4 transfer rates of community colleges.⁹³ According to the five-year evaluation of ATD, which is one of the largest scaled initiatives among public community colleges in the United States, the majority of strategies implemented by the first 26 community colleges were small scale (52%), while one-third were considered large-scale (31% of strategies) (Public Agenda, 2011).⁹⁴ Institutions showed “modest improvements in the percentage of students completing gatekeeper college English courses and in course completion (overall). However, students’ persistence and the percentage of students completing developmental math, developmental English, developmental reading, and gatekeeper math courses remained substantially the same” (Zachry-Rutschow et al., MDRC, 2011).⁹⁵

⁹² A gatekeeper course is the first or lowest-level college-level course students take in a subject such as mathematics, reading, or writing, often following completion of one or more developmental courses in that subject (College Board, retrieved 02/17/13 from: <http://completionarch.collegeboard.org/progress/college/enrollment-in-gatekeeper-courses>)

⁹³ The five key indicators are: 1) completion of developmental education courses, 2) completion of introductory-level or “gatekeeper” college-level courses, 3) completion of courses with a C or higher, 4) persistence from term-to-term and year-to-year, and 5) attainment of a degree or certificate. Transfer rates are tracked, however, as part of Achieving the Dream’s report of outcomes, since upward transfer is a central mission of most ATD colleges (ATD Data Notes, 2012). Online: http://www.achievingthedream.org/sites/default/files/news/DataNotes_Vol7No1V1.pdf

⁹⁴ According to recent metrics of scale up advanced by MDRC, programs may be defined as “large scale” if they reached more than 25% of their intended target populations, “medium scale” if they reached between 10-25%, and “small scale” if they reach fewer than 10% of the target population.

⁹⁵ This was an aggregate finding, and included results of both small scale interventions and large scale interventions. “On average, each college implemented seven strategies, with all 26 colleges implementing over 200 strategies in total, representing an enormous investment of time and work by college personnel...most strategies reached less than 10 percent of their intended target, however, colleges made noteworthy progress toward scale-up, as nearly all succeeded at expanding at least one direct strategy to reach at least 25 percent of its intended

Recent research has identified improvements in academic advising as a key factor in improving students' postsecondary outcomes (for example, MDRC's Opening Doors research initiative summarized by Scrivener and Coghlan, 2011 and Jaggars and Fletcher, 2013). Case studies in my dissertation explore differences in academic and transfer advising practices across colleges and states, relative to the college's and state's overall transfer rate. A complementary line of research (Rutschow and Orr, 2009; Rutschow and Coghlan, 2010) has investigated the role of evidence or data-based decision-making in community colleges to improve students' success, which is an embedded aspect of inquiry in my dissertation case studies. Finally, researchers have begun to investigate college-level innovations (MDRC, 2011) as well as the state role in nurturing college-level innovation to improve students' success (Altstadt, 2012). My case studies explore these four aspects – academic advising, data use for decision-making, college-level innovation, and state supports for college-level innovation – to better design systems of support for improving students' upward transfer from lower-division coursework and programs to upper-division, baccalaureate-granting programs and institutions.

Framing Literature

This section primarily outlines relevant research literature on influential college-level practices and state-college policy collaboration that may support improved transfer rates. However, it is first important to highlight prior research findings about promising interventions to improve postsecondary education outcomes for a student population disproportionately not successful in upward transfer and baccalaureate degree attainment. Black male college

target population,” (p. ES-11). Furthermore, the authors advise caution in interpreting this finding. “While the lack of movement in student outcomes may occur largely because the interventions affected a small proportion of students in a cohort, the stability of student indicators over time may also reflect the short time span over which outcomes were analyzed. That is, the analysis of two-year outcomes for students may not provide a long enough window to adequately reflect the changes in institutional capacity and the implementation of specific strategies given the very low levels of student achievement that most colleges faced initially,” (p. ES-12).

completion rates are the lowest among all racial/ethnic groups in U.S. higher education (Harper, 2012; Strayhorn, 2010; Bowen, Chingos, & McPherson, 2009).⁹⁶ Community colleges enroll the large majority of African-American males in postsecondary education (Bush and Bush, 2010) and less than a quarter (24%) attain their desired postsecondary goals (Wood, Hilton, & Lewis, 2012, p. 210 citing six-year degree attainment outcomes from BPS:2009). This case study research considers the African-American male student experience in preparing for successful transfer as a way of understanding how college practices and state policies can strategically address barriers faced by this important student population.

Barriers faced by African American males in community colleges and recommended policy levers. Wood and Hilton (2012) summarized barriers to stronger academic and social engagement in college from external factors (such as violence, low social status, low employment opportunities, criminal justice policies, etc.), academic factors (such as lack of college-preparatory offerings in high school, lack of culturally responsive education in K-12, and factors contributing to the need for remedial education in college from K-12 education), and environmental/cultural factors (such as low educational expectations, an external locus of control, cultural disconnection and discrimination in the college environment, etc.). Wood and Hilton's (2012) recommendations from a comprehensive meta-synthesis of research from 1971 to 2009 to improve postsecondary success outcomes of African American males in community colleges included improvements to: 1) high school curricula (requirement of study skill and test-taking skill development training and four years of mathematics); 2) college supports such as financial aid, more rigorous evaluation of instruction and advising, systemic and transparent

⁹⁶ Strayhorn, T. L. (2010). When race and gender collide: Social and cultural capital's influence on the academic achievement of African American and Latino males. *The Review of Higher Education*, 33(3), 307-332.
Bowen, W., Chingos, M., and McPherson, M. (2009). *Crossing the finish line: Completing college at America's public universities*. Princeton, NJ: Princeton University Press.

implementation of learning communities, integration and support of student life organizations for African American students; 3) state-level supports such as increasing need-based financial aid, funding structures designed to reduce equity gaps in higher education, and performance accountability for improving African-Americans' access, participation, and degree completion in higher education; and 4) federal supports such as increasing funding authorization for TRIO and related higher education student services programs.

Conceptualizing improvements in academic and transfer advising: Relevant research. As mentioned in the quantitative analysis, community colleges have traditionally not been effective at increasing students' academic⁹⁷ and social⁹⁸ integration on campus, constructs which have been shown to be correlated with higher levels of college persistence in four-year institutions (e.g. Braxton, Hirschy, & McClendon, 2004; Tinto, 1975). Among the available measures of academic and social integration in this dissertation's quantitative analysis (see Chapter Two), "meeting with an academic advisor often or sometimes" was the strongest academic integration predictor of upward transfer, and sports participation carried the most predictive weight among social integration variables available in BPS. Deil-Amen's (2011) research reported, however, that traditional quantitative measures of social and academic integration may be inadequate to represent community college students' sense of connectedness and congruence with their institution. Among students in two-year colleges in her study, "not only did academic integration take a slightly more social form than one would expect based on

⁹⁷ Academic integration is typically measured with a combination of the following variables: actual or predicted first-year grades; students' sense of their intellectual/academic development; students' perception of faculty concern; frequency of social contact or conversations with faculty and/or advisors about academic matters outside of class time; participation in out-of-class study groups; time spent on homework, and participation in cohort-based programs. See note 5 in Deil-Amen (2011) for relevant citations. Researchers cited by Deil-Amen (2011) developed constructs of academic and social integration to create integrated measures correlated with college persistence.

⁹⁸ Social integration is generally defined with measures that capture: participation in school clubs and fine arts activities; sports participation; frequency with which students go places with friends from school; peer group interactions; and informational out-of-class interactions and conversations with college faculty and personnel. See note 4 in Deil-Amen (2011) for relevant citations.

previous measures, but also, social integration was often characterized by academic utility, and the tight connectedness of the two forms of integration often make them indistinguishable in these two-year settings,” (p. 82). In qualitative research studies, Deil-Amen (2011) and other scholars have documented the central importance of students’ access and utilization of timely, relevant, and thoughtful advising to guide students’ degree completion and upward transfer (Rosenbaum et al., 2006; Dowd et al, 2011). As this prior research suggests, regarding the role of advising and possibly other college-level factors that might influence upward transfer, qualitative research has much offer our understanding of the upward transfer phenomenon.

As an extension of research on institutional cultures that lead to improved transfer access by low-income public community college students, Dowd et al. (2008) investigated the role of faculty and student peers in promoting transfer access through case studies of four selective public universities and their primary public community college feeder institutions and four selective liberal arts, four-year institutions and linked public community college feeder institutions.⁹⁹ These institutional exemplars were identified based on the numbers of community college students transferring to the elite four-year partner institution, and on signs of a relatively high level of programming and advising to facilitate transfer access, based upon institutional admission and program documents. Study data included 197 interviews of administrators, faculty, staff, and special program directors within these institutions from October 2005-January

⁹⁹ Selection of the four-year highly selective institutions for case study was based on multivariate regression analysis of data from the Annual Survey of Colleges of the College Board. Site selections were based on characteristics of the selective four-year institutions: institution size, total number of enrolled transfer students, percentage of enrolled transfers from two-year institutions, type of residential setting, and institution funding structure (public vs. private). Four public universities were included, and then paired with nearby feeder two-year college (Gabbard et al., p. 20). The dependent variable was “the gap between expected and observed transfer rate” (Gabbard et al., p. 10), controlling or student for attrition, percent of first-year students in campus housing, public vs. private status, and other factors. Four-year institutions with relatively higher transfer-in rates were selected and characterized as “transfer amenable.” The researchers hypothesized them as “likely to have exemplary practices,” (Gabbard et al., pp. 5-6).

2006; and ten life history interviews with students who successfully transferred from a community college to an elite institution (Dowd et al., 2008; Pak et al., 2006).

Dowd and colleagues' research project showed that "administrators and faculty members play two critical roles in helping students traverse the boundaries between open access and exclusive institutions: as 'transfer agents' and 'transfer champions' (Gabbard et al., 2006)," (Dowd et al., 2008, p. 9). According to this research, the roles of peer advisors, transfer agents, and transfer champions are inter-related and complementary in reducing academic, informational, economic, and cultural barriers to transfer. 'Transfer agents' help students navigate complicated academic requirements and application procedures and validate students' educational aspirations and dispel their students' fears about belonging or succeeding. 'Transfer champions' represent the views of transfer students, socioeconomically disadvantaged students especially, to shape institutional policies and practices designed to reduce informational, economic, and cultural barriers to transfer (Dowd et al., 2008). Transfer champions are typically faculty and administrators, and transfer agents may be any "authority figure" such as a student services advisor or faculty member offering transfer advising to students with technical knowledge and/or validating support.

Dowd et al.'s research summarizes practices associated with promoting transfer access for low-income community college students to highly selective four-year institutions along four dimensions: structural, informational, cultural, and relational. Changes in structures, relationships, information-sharing, and cultural responsiveness to transfer students' needs are made within community colleges and partnering four-year institutions in the areas of hiring, financial aid, institutional research, website design, faculty collaboration, faculty mentoring, and more. Effective collaborations include time for "four-year and community college faculty to

collaborate on pedagogy, curriculum development, and community service,” for example. When debriefing and coding my interviews with faculty advisors and staff, I considered ways in which they might act as ‘transfer champions’ or ‘transfer agents.’ Though not called out in Dowd et al’s research, one could add a category of ‘transfer informant’, which is not as proactive and transformative a role as either ‘transfer champion’ or ‘transfer agent,’ yet still potentially helpful in encouraging upward transfer (such a role appeared in my case studies, as noted later). Many students that I spoke with have a faculty or staff person who provides guiding information, but does not offer much (or any) time for meaningful coaching, affirmation, or navigational support.

Some community colleges have experimented with first year student integration programs, intensive advising, and student feedback systems (e.g. “Early Alert” systems), reforms in student-centered and systemic support services, new programs that boost financial-aid access, mentoring, and scholarship programs to increase student engagement, retention, and 2/4 transfer. Zachry & Schneider’s review of rigorous evidence on the effects of student success courses, intensive advising, and supplemental instruction reported that some such initiatives have promising positive impact, but “none of the supplemental supports studied here provided striking changes in developmental students’ course pass rates, GPAs, or credits earned,” (2008, p. 47-48). In short, there does not appear to be a “silver bullet.” This literature offers useful evidence and framing ideas from which to investigate further. For my case studies, this prior literature offers a context for noticing areas for systemic change and development in systems of support for upward transfer in colleges granting primarily associate’s degrees.

Understanding how data-based decision-making in colleges guide improvements to students’ transfer: Relevant literature. While considering practices like advising that research has identified as particularly related to success of transfer, I also paid attention to the ways that

the colleges under study created a context for innovation related to improving students' upward transfer, by using data strategically and otherwise fostering innovation. For example, to investigate the relationships between data-based decision-making and innovation in the colleges I studied, I asked about how faculty, administrators, and student affairs staff used data in their decision-making about transfer-related student supports. Some recent empirical literature on data use in community colleges provides some useful context for my qualitative inquiry on this topic.

Kerrigan and Jenkins (2013) studied the use of data on students by faculty, administrators, and student services staff at six Washington state colleges that joined ATD in 2006-07.¹⁰⁰ Comparative analyses were conducted of survey data collected in 2007 and 2010 of differences among the three groups (faculty, administrators, and student services staff) to determine changes in the extent of data use and the frequency of data use between 2007 and 2010. Among ATD-related data investigated (on retention rates, graduation rates, transfer rates, developmental education completion rates, and other learning measures), data on transfer rates was the least utilized among all three groups. Kerrigan and Jenkins (2013) also found that administrators were “more frequent and intensive users of student outcomes data and research from their college than faculty or student services staff,” (p. 1). That faculty and student services staff did not examine student progression or use outcomes data on a regular basis and that this did not change between 2007 and 2010, was one of the main findings. Between 2007 and 2010, faculty did increase their use of data to inform teaching-related decisions, and their use of data was positively associated with their department's use of data. These findings suggest how difficult organizational change is with respect to promoting meaningful and frequent use of data to improve practices, especially transfer-related practices.

¹⁰⁰ One of the colleges in my case study research was also in this group.

According to case study research (Rutschow and Coghlan, 2010) of five colleges who participated in Achieving the Dream since 2004, four of five colleges the spent the largest share of their investment (average college spending equaled \$6.3 million – ranged from \$2.9 million spent by the smallest of these five colleges to nearly \$11 million by a larger college) on intervention strategies and the leadership and management of their reforms. On average, 20 percent was spent on improving institutional research capacity such as technology purchases, the hiring of new staff, and ongoing evaluations. While most of these colleges already had stronger than average institutional research capacity, institutional research is an area requiring “hard-cost” investments to support long-term planning and requires foresight to create the maximum value from investments from new data and technology systems (p. ES-7). Rutschow and Orr (2009) documented the challenge in transforming institutional research (IR) at Guilford Technical Community College (one of the original ATD colleges, located in North Carolina) from a narrow focus on compliance reporting to state and federal agencies to data use for decision support by faculty and staff.

Rutschow and Orr’s (2009) case study described the college’s initial process of hiring a new IR director and transitioning to a new data system, “both of which hindered efforts to collect and analyze data,” (p. ES-2). Without an existing infrastructure or culture of faculty and staff data use for decision-making at the outset, Guilford first used national and state data to guide its planning and design of interventions. Once the new IR director was hired, a data warehouse of institutional and individual student performance was created, which allowed Guilford to conduct ongoing, detailed evaluation of the majority of its 15 original strategies. With this new system and IR office staffing, faculty and staff worked with IR to identify appropriate comparison groups to evaluate intervention effectiveness and use results to inform programming decisions.

Guilford also “established a committee of faculty and staff to advise the IR department and administrators on critical issues, such as the expansion of intervention strategies and the selection of institutional performance indicators,” (p. ES-4). Some improvements in student success outcomes (pre- and post assessment in persistence and graduation rates, not transfer) were observed through this effort. Continuing challenges include work to engage some groups of faculty and staff in data analysis and scaling up of some of the high-intensity, high-cost interventions, according to Rutschow and Orr (2009). These themes are echoed in college case studies in this dissertation, however, data use is just one facet of the themes and issues explored, for its role in fostering innovation directed at improving students’ upward transfer.

Attending to broader college-level influences and practices that support innovation: Research on high-performing colleges. Research on colleges that are “high performing” gives further clues concerning the role that data use and other supports for innovation may play in improving upward transfer. HCM Strategists (2010) used interview data to synthesize and elaborate upon practices of 32 nationally-recognized public higher education institutions.¹⁰¹ These are colleges that are “beating the odds” in closing academic preparation and degree completion gaps between low-income and minority students and their more advantaged peers. Four themes extracted from interviews at these 32 high-performing institutions were the presence of: (1) coordinated efforts to strengthen college preparation and access; (2) assessment-intensive,

¹⁰¹ HCM Strategists’ “Beating the Odds” list primarily includes four-year institutions, but has eight community colleges: 1) El Paso Community College (El Paso, TX) – an Achieving the Dream Leader School; 2) Northern Virginia Community College (seven VA campuses) – an Achieving the Dream Leader School; 3) Patrick Henry Community College (Martinsville, VA) – an Achieving the Dream Leader School, 4) Richmond Community College (Hamlet, NC) – “institution to watch” designation by Gates Foundation; 5) St. Clair Community College (Port Huron, MI) – “institution to watch” designation by Gates Foundation, 6) Valencia Community College (Orlando, FL) – an Achieving the Dream Leader School and “high-performing, low-cost institution” designation by McKinsey, 7) Rio Salado College (Hamlet, NC) – “high performing, low-cost institution” designation by McKinsey; and 8) Tennessee Technology Center (Murfreesboro/Nashville, TN) – “high performing, low-cost institution” designation by McKinsey.

accelerated, and contextualized curriculum revisions in remedial education; (3) rigorous experimentation with new models of educational delivery (e.g. cohorts, customized pathways); and (4) strong leadership that fosters shared ownership and collaboration, strategic data use, consistent messages about completion of “credentials of value”, and utilizes outcomes-based budgeting. As part of understanding each college’s context for innovation related to improving students’ upward transfer, my interviews covered practices related to each of these four themes.

Other research on institutional effectiveness converges with the principles emerging from the HCM Strategists’ (2010) study. In earlier research, Jenkins (2007) conducted retrospective interviews in 2005 about organizational structure, staff, and external environments that existed between 1998-2003 among three high-impact and three-low impact colleges – supplemented with annual reports, survey results, and document review – to identify seven qualities of institutional effectiveness.¹⁰² The four Achieving the Dream principles and “Beating the Odds” practices are convergent with these seven qualities identified by Jenkins (2007): (1) institutional focus on student retention and outcomes, not just enrollment; (2) targeted support for minority students with clear commitment by college’s leadership, minority-inclusive campus environment, outreach to improve college access by minority students, and active recruitment of minority faculty and staff; (3) well-designed, aligned, and proactive student support services; (4) support for faculty development focused on improving teaching; (5) experimentation with ways to improve the effectiveness of instruction and support services; (6) use of institutional research

¹⁰² To select a sample of three high-impact and three low-impact public community colleges for field study, Jenkins (2007) used regression models of Florida transcript data of more than 150,000 degree-seeking first-time enrollees from 1998-99, 1999-2000, or 2000-01 to estimate the effect that each of the 28 community colleges had on the probabilities of individual students in each of the three cohorts achieving one of three outcomes of success: 1) completing either a certificate or associate degree, 2) transferring to a public university in Florida, or 3) persisting at the starting institution for three years (nine terms, including summers), controlled for student factors shown to be risk factors in completing these outcomes. The regressions provided an estimate for the institutional effect of each college on students’ probability of completing, transferring, or persisting; and quartile rankings of high-impact and low-impact colleges among 28 Florida community colleges were created on selected institutional characteristics.

to track student outcomes and improve program impact; and (7) institutional management processes designed to promote systemic improvement in student success. These seven qualities were also used as a guide to understanding transfer-related supports in my participating case study colleges.

The state role as a guiding influence to college-level innovation and data use: Recent policy analyses. I have not yet seen any empirical research that investigates the interactive effects between state articulation and transfer policies and college-level innovation to improve community college students' upward transfer. However, some recent policy analyses and descriptions of state policy-college partnerships have been written to offer some guidance in this arena. Jobs for the Future (Altstadt, 2012) summarized policy recommendations from a network of state and college leaders involved in Achieving the Dream, the Developmental Education Initiative, and Completion by Design on how states can accelerate community college innovation.¹⁰³ The focus of the recommendations is upon state and college support for faculty leadership in policymaking, faculty engagement in the design of classroom-based innovations, and faculty use of data to inform experimentation. Some of the high-level trends across states

¹⁰³ Fifteen states are represented in the network. Eleven of these states were represented at the meeting on December 13, 2011 which served as the primary source of data for the Altstadt, 2012 report.

Developmental Education Initiative (DEI): Colleges in six states participated in the three-year initiative, launched in 2009 with funding from the Bill & Melinda Gates Foundation and the Lumina Foundation for Education. Six of the participating 15 colleges were in Florida, and implemented various initiatives to improve student success through the redesign of developmental education courses, increased college readiness testing in high schools, and developing a statewide process to review data on student performance. Subsequent to the DEI pilot, seven colleges developed modularized developmental education courses with the option of enrolling in one-to-two credit courses based on the PERT (Postsecondary Education Readiness Test), a diagnostic student assessment.

Completion by Design: This is a new competitive grant program which provides nearly \$35 million over five years to cadres of community colleges in three states: Florida, Ohio, and North Carolina. Managing partners are responsible for convening the participating community colleges or campuses in their state to design and implement pathways for student completion. The managing partner builds relationships with other partner organizations, including a policy lead in their state responsible for designing and leading supportive public policy initiatives. To support this work, the Division of Florida colleges was recently awarded the state policy lead grant for Completion by Design. The implementation phase of Completion by Design is two years. During these two years, colleges reshape their processes and programs to enable dramatic improvements in student completion.

include: 1) faculty participation in state-level groups that recommend policy and programmatic changes to developmental education (seven states); 2) faculty training on how to use data for decision support (nine states); 3) states providing data access to faculty without request (three states), states building comprehensive data systems to expand data access (three states), and states offering faculty detailed data to support completion initiatives and service delivery redesign (two states); 4) states offering incentives, such as release time and travel stipends, to encourage faculty to participate in policy discussions and professional development opportunities (five states); and 5) lagging technology use and impact evaluations of faculty engagement strategies and the effect on processes directly aligned with student success outcomes. This report does not address state-level partnership with faculty directly aimed at improving students' upward transfer, however, it is useful in describing some emerging policy trends among states involved in visible networks of innovative practice.

Researchers have studied the effects of emerging new performance funding models (i.e. “performance funding 2.0” models in Washington, Ohio, Indiana, Tennessee, and other states), which is a type of state-level innovation affecting college-level practices and redesign of educational delivery.¹⁰⁴ Analysts have concentrated on the design of these models, theories of their evolution in particular states, and summarized initial outcomes (however, these policies are relatively new). This policy environment is a shaping influence for college-level practices with respect to improving transfer rates, however, little research has been conducted on this

¹⁰⁴ The theory behind performance funding in higher education is to tie state funding of higher education to college-level achievement of desired postsecondary outcomes. “Performance funding 1.0” models were developed among a number of states and offered “bonus” funding over and above regular state funding for achievement of certain outcomes, based upon a formula. “Performance funding 2.0” models link the distribution of base funding from states to the achievement of postsecondary outcome indicators, as a proportion of the base funding (e.g. Tennessee 85-90% of the funding tied to performance indicators).

interaction. While some policy analyses¹⁰⁵ have explored the role of state policy incentives in strengthening the connection of reforms among community colleges to regional economic development and workforce training, these analyses do not specifically address the needs for additional baccalaureate degree holders in specific fields and the role of state policies in articulation and transfer in that effort. My case studies include discussion of how college and state leaders may be using performance funding and regional labor market needs as a guidepost to improving supports for student transfer (or not), depending upon the role of the 2/4 transfer outcome in the existing or proposed performance funding formula.¹⁰⁶

Case Study Focus and Research Questions

The literature just reviewed on practices related to institutional effectiveness in community colleges may help to interpret institutional cultures, data use, and innovation in practices at the six colleges participating in the study, and more specifically to help pinpoint the context for innovation related to upward transfer, not to mention particular transfer-related practices. Overall, my case studies sought to answer a broad guiding question: What promising initiatives and programs are being developed and implemented among community colleges to increase students' upward transfer, particularly those who are under-represented minorities, low income, and first generation in college students? Within the broad territory embraced by this question, I concentrated my analysis on those aspects of institutional policy and practice that

¹⁰⁵ See Jobs for the Future (2005) *Building skills, increasing economic vitality: A handbook of innovative state policies, prepared with funding from the Rockefeller Foundation*. Cambridge, MA: Author; and Kazis, R. (2011, May). *Community colleges and regional recovery: Strategies for state action*. New York: Brookings-Rockefeller Project on State and Metropolitan Innovation.

¹⁰⁶ Case study states are Washington, Florida, and Georgia. Washington has a performance funding system, the Washington Student Achievement Initiative, that was launched in 2010 for colleges in the State Board of Community and Technical Colleges, based upon student momentum points associated with completion of a certificate or associate's degree. Florida and Georgia were in the design phase of performance funding systems when I visited in fall and winter 2012 and early 2013.

seemed most pertinent to improvement in transfer rates, and that might be highlighted by the comparison of high-performing versus average-performing institutions:

1. *Transfer-related advising practices:* How do advising practices differ between above-average and average performers with respect to improving students' upward transfer, particularly low-income, minority, and first generation students?
2. *Strategic data use aimed at transfer improvement:* How does data use guide implementation of new practices for improved transfer in institutions that are more and less effective at upward transfer? What transfer data use patterns and practices emerge across the colleges and the state contexts?
3. *Creation of a context supporting innovation in transfer-related practices:* In what ways do these institutions create and support an organizational context for innovation and effectiveness in transfer-related aspects of the college's program? What organizational factors may help to spread the effects of promising or innovative practices related to transfer in more versus less effective institutions?

As suggested by the quantitative analysis in the first component of this dissertation, as well as by literature, there is also the distinct possibility that state policy context shapes college-level practices directed at increasing students' transfer. Therefore, I also asked: In what ways are state policies and practices aimed at increasing students' upward transfer and what is the influence of state policy supports and changes with respect to improving community colleges' system of support for students' upward transfer? Do state policies matter at all, particularly with respect to colleges creating systemic approaches to improving upward transfer rates?

Case Study Design and Methods

This research project utilized qualitative case studies of community colleges that are exceeding expectations compared to those that are performing about average (within their state) with regard to increasing transfer rates among low-income and under-represented students, and that are located in states with active policy development and historical infrastructure to support community college students' postsecondary success over a number of years.

Case Sampling Strategy: States and Colleges

Washington, Georgia, and Florida were selected as priority case study states. These three are among those states consistently found by researchers to have notable policies in promoting student success in transfer (Moore, Shulock, and Jensen, 2009; National Center for Public Policy and Higher Education [NCPPE], 2012). Above-average colleges were identified here from outliers in each individual state's regression analyses of colleges' cohort-based transfer rates, controlling for student population characteristics, such as percent of Pell grant recipients, percent of African-American and Latino students, and percent of students placed in developmental courses (when available). Aspen Prize data and input from state higher education policymakers were also used to supplement regression analyses for purposes of case selection. [See Appendix H for Case Study Selection].

Washington is among the top few states in its proportion of community college enrollment relative to its total student population (50% per NCPPE, 2011). Washington's community and technical colleges system (SBCTC) has cooperative agreements with all four-year institutions (public and private) in the state to give direct transfer students (who earned AA and AS degrees) top priority in the admissions process (Smith, 2010). Florida and Georgia are among the top ten states in terms of projected number of high school graduates and thus are

important to national goals and have fairly high reliance on community colleges (28% and 35%, respectively, of students in higher education were enrolled at two-year colleges in these two states in 2007-08). Florida has a strong articulation agreement that states that AA degree graduates from state-approved Florida community colleges must be admitted as juniors to any state university as long as the university has space, money, and curriculum to meet the student's needs (Smith, 2010). In Georgia, students who complete the core curriculum at an institution in the University System of Georgia are guaranteed full credit in transfer at all public two-year and four-year colleges and universities, if they do not change major or program of study (Smith, 2010). [See Appendix I for data about each of the states].

In Ewell and Kelly's (2009) analysis of national state transfer rates using data from the National Student Clearinghouse (NSC). In my analysis of data reported by Ewell and Kelly (2009), Georgia is a state that exceeded expectations with respect to its' four-year transfer rate (2002-2006), at 25% (outside +2 standard deviations on the studentized deleted residual¹⁰⁷). Georgia, however, had a relatively low amount of coverage with respect to the National Student Clearinghouse data used for Ewell and Kelly's (2009) analysis. Even though the results of my regression should be treated with caution, the selected states offered useful policy-innovative contexts for this investigation. My ordinary least squares regression that aimed to find states performing above-average with respect to 2/4 transfer, controlled for a range of state characteristics including: percent of low income families with children; percent of the state population that is African-American, Latino, and Native American; percent that earned a

¹⁰⁷ As described by Field (2009), studentized deleted residuals are a measure of the influence of a particular case of data (which is this analysis, the individual is the state aggregate, since this is not student-level data), which is a standardized version of the deleted residual. The deleted residual is the difference between the adjusted predicted value for a case (of one state) and the original observed value for that case (of the same state). The studentized residual is the unstandardized residual divided by an estimate of its standard deviation that varies for each data point. These residuals have the same properties as standardized residuals but usually provide a more precise estimate of the error variance of a specific case (state).

bachelor's degree or higher; average state unemployment rate from 2003-2006; percent of the state population enrolled in two-year institutions in 2005-06; the proportion of students enrolled in two-year institutions in 2002 cohort (from IPEDS) (as a measure of the state's enrollment in community colleges); ratio of tuition difference between two-year and four-year institutions in 2005-06; the level of governance centralization in the state in 2002; and the presence of state policies related to articulation and transfer.¹⁰⁸

The only variable that explained variation in state transfer rates with this available data and equation was the percentage of the state's population with a bachelor's degree or higher. A more highly educated state population is associated with higher 2/4 transfer rates. None of the state policy components were significant predictors of state transfer rate, nor any of the above listed predictors when considered together in the complete model. Kansas and Vermont were also notable outliers in exceeding predicted values for state transfer rates, relative to these state policy and population indicators. However, Vermont had only six thousand students in the 2002 cohort of students who entered two-year institutions¹⁰⁹, and Kansas had just over 75,000 students compared with nearly 137,000 in Georgia's 2002 cohort. Georgia also has a more racially diverse population. Florida and Washington were not notable outliers in the multiple regression on state transfer rate, controlling for state population characteristics, state articulation transfer policies, etc. According to the National Student Clearinghouse 2002 cohort data, the four-year

¹⁰⁸ State policies were catalogued by the National Center for Higher Education Management Systems (NCHEMS) in 2008: 1) has a transfer policy, 2) transferable general education curriculum, 3) does AA/AS satisfy general education requirement?, 4) do specific courses transfer?, and were entered separately in the regression. According to NCHEMS' analysis, all but six states (CA, NY, MD, VT, MI, CT) had an explicit transfer policy in 2008, either written into law or promulgated by a state governing or coordinating board. CA subsequently adopted transfer legislation and Maryland was reported as developing state transfer policy at that time. NY, VT, and CT reported system level agreements. The Education Commission of the States (Smith, 2010) also catalogued state articulation and transfer policies, noting the presence of state cooperative agreements, transfer data reporting to state authorities, transfer-related incentives (in the form of guaranteed admission, scholarships, etc.), a statewide articulation and transfer guide for students and parents, and common course numbering.

¹⁰⁹ Vermont has only three associates' degree granting institutions: Community College of Vermont, Vermont Technical College, and Landmark College (private).

transfer rate of first-time-in-college students¹¹⁰ for Florida was 14.1% and for Washington was 16.6%. Florida and Washington's 2/4 transfer rate during this period was about average among 45 states¹¹¹ [range was 5% (Indiana) to 30% (Vermont), mean 15.5%, median 15]. However, Florida and Washington's coverage in the NSC data was very high (Florida had 86% coverage and Washington had 99% coverage), which is not the case for all the states.

The two case study community colleges in each state were selected based upon available student data from states on colleges' 2/4 transfer rates, when controlling for student demographic characteristics, such as percentage who are low-income and/or under-represented minority students (See Appendix H). Regression analyses were conducted using data obtained from research directors in state higher education systems (Florida College system, University System of Georgia, Washington State Board of Community and Technical Colleges) on 2/4 transfer rates for each community college controlling for a range of community college characteristics (such as community college size, percent in developmental courses and/or percent in developmental math, percent transfer-intending students (measured as part of student applications and catalogued in state data), percent of students with GED/no high school diploma, percent from ethnic minority backgrounds and/or low income, community college's distance to nearest four-year institution, per-student expenditures, etc.) to determine community colleges' that were outliers (more than +2 standard deviations higher) from their predicted probability of 2/4 transfer, and those that were about average (close to state's average transfer rates).

¹¹⁰ The sample included 986,439 first-time half-time-or-greater students for the two-year cohort in the fifty states. Students were defined as "enrolled" in a given academic year if they were present in the database between July 1 and June 30. For example, the 2002-2003 academic year was defined as beginning on July 1, 2002 and ending on June 30, 2003. Students were counted only once for enrollment or degree completion purposes within that period. First time students were defined as those enrolled in the 2002 academic year with no prior instance of enrollment in the database for any of the years NSC has data. Both full-time and part-time students attending half-time or more were included in the two-year cohort. The two-year cohorts included first time students who were less than 40 years old since the majority of students 40 and older have no intentions of transferring to a four-year institution.

¹¹¹ Numbers were too small to report in Alaska, Arizona, Delaware, New Hampshire and West Virginia.

Recommendations from the research team in the state's community college system were also used to inform community college selection for case study participation. Within Florida and Washington, I found that Achieving the Dream Leader (ADL) Colleges were promising candidates for case study selection due to their ADL-encouraged experimentation with committed leadership, use of evidence to improve programs and services, broad engagement with other educational institutions, and systemic institutional improvement in relationship to improvements in student outcomes.¹¹² Georgia does not have ATD Leader Colleges at this time.

Table 4.1 below offers a brief introduction to the college's pseudonyms, their transfer rates, enrollment, setting, and campus structure, as background.

¹¹² Leader Colleges must apply for this status, and are selected based on their commitment to and progress on four principles: committed leadership, use of evidence to improve programs and services, broad engagement, and systemic institutional improvement. They must also show three years of sustained improvement of student success. To retain Leader College status, colleges must reapply every three years. Reapplication requires a site visit by a Data Coach and Coach during the year leading up to reapplication, funded by the college (per the Achieving the Dream Leader Colleges 2012 application).

Table 4.1 – Case Study Colleges Characteristics and Features

College Pseudonyms	Transfer Rate (FL and GA provided state data, WA data comes from IPEDS)	Enrollment (fall 2011 UG rounded to nearest thousand) and Setting	Structure	Achieving the Dream (ATD)
(FL) Hope Community College	Three-year rate for fall 2006 cohort FTIC students seeking AA/AS = 20%	15,000/located in city setting 50% full-time	One campus	ATD since 2005
(FL) Sunshine State College	Three-year rate for fall 2006 cohort FTIC students seeking AA/AS = 12%	33,000/located in city setting 32% full-time	Multiple campuses	ATD since 2011
(GA) Peachtree College	Four-year rate for fall 2006 cohort FTIC = 28% ¹¹³	6,000/rural 54% full-time	Multiple campuses	No
(GA) Cherokee Rose College	Four-year rate for fall 2006 cohort FTIC = 28%	2,000/rural, partial residential 78% full-time	Multiple campuses; additional campus approved for consolidation in early 2013	No
(WA) Harvest Community College	Three-year rate for fall 2006 cohort full-time, first time = 23%	5,000/rural 57% full-time	One campus	No
(WA) Emerald Community College	Three-year rate for fall 2006 cohort full-time, first time = 11%	7,000/suburban 58% full-time	One campus	ATD since 2004

Data Sources and Data Collection

My case study component relied heavily on individual and focus group interviews with a wide range of participants in each of the sites (at college and state levels). Interview questions centered upon the four themes presented in the framing literature – practices in academic and transfer advising; data use for decision-making relative to improving transfer; how leaders engage in innovative practices and the origins of those innovations; and the shaping influence, if any, of the state policy context in articulation and transfer. Interview questions were further

¹¹³ With the addition of transfer data obtained from the National Student Clearinghouse, Peachtree's upward transfer rate increased to 43% (per the college's completion plan).

tailored to the role of the person being interviewed – as a student; college faculty, administrator, or staff person; or state policy official. To ensure that these sources would yield a balanced picture of the transfer related practices and supportive conditions, I cast a wide net to invite and secure a diverse range of stakeholders to participate in interviews.

Identification of interviewees. First, semi-structured interviews with institutional administrators, program developers, faculty leaders, institutional researchers, and student services leaders from each case study institution were used to inform description of practices, the nature of their use of data to guide decision-making, and their learning processes about strategic ways to advance 2/4 transfer among low-income students. Additional interviews were conducted with state policy officials working on improving state articulation and transfer pathways, policies, and incentives. These state-level interviews were used to better understand new strategies being implemented to increase 2/4 transfer in relationship to the historical factors that may improve or constrain the state's effectiveness in improving transfer outcomes. Information from the state policy context is also used as a backdrop to understanding state influences affecting the selected community colleges' institutional capacity and effectiveness in improving 2/4 transfer rates. Second, state agency policy reports, state transfer and degree completion data, website information, and internal memoranda and reports produced by community college institutional research units and administration were reviewed.

In total, I spoke with 179 individuals across the three states and six colleges. I interviewed twenty state policy analysts and leaders in one- hour interviews (n=9 in FL; n=5 in GA; n=6 in WA). In my visits to colleges, I spoke with 110 administrators, faculty, and staff. Administrator interviews included Presidents, Vice Presidents of Academic Affairs and Student Affairs, Directors of Institutional Effectiveness and Research, Directors of Pre-College

Education, academic deans, and leaders of student support programs, such as TRIO. Faculty who participated in my study generally were those most involved in student advising or instructional reforms designed to improve students' progression towards transfer. College interviews also included student affairs advisors, TRIO staff, and academic support staff. Across the six colleges, I talked with 49 students (nine individual one-hour interviews, 40 students in six focus groups). I spoke with no fewer than six students at each college who were TRIO eligible or in a similar support program such as Brother-to-Brother¹¹⁴ (Georgia), Mesa (STEM support program for low-income, minority and female students in Washington), and specialized support programs in Florida. Generally, I worked with the vice presidents of academic affairs to secure participation from all the key informants from the study, but in Florida I worked with the chiefs of staff.

Semi-structured interviews. Interviews were conducted with 15-25 institutional administrators, program developers, faculty leaders, institutional researchers, and student services leaders from each case study institution. Approximately five persons per state were interviewed among state higher education planners and policymakers in key areas of state articulation/transfer policy, state completion initiatives, and state resource allocation decisions affecting students' 2/4 transfer. Focus groups and/or parallel in-depth interviews with 6-10 low-income students aspiring to transfer were conducted within each of the six case study institutions. (See Appendix H for further detail). Research by Guest, Bunce, & Johnson (2006) used a systematic documentation of the degree of data saturation (i.e. point at which repetition begins to occur) and variability in thematic analysis of interviews, and they found that

¹¹⁴ The Brother-2-Brother (B2B) program is an official student organization of college students whose purpose is to increase the enrollment, retention, and graduation rates of African American and Latino male students. The B2B program offers support from both faculty and peers in academic advising, time management, study techniques, learning styles, test preparation, career planning, and grade monitoring. B2B is part of a statewide African American Male Initiative (AAMI[®]) of the Board of Regents of the University System of Georgia.

“saturation occurred within the first twelve interviews.” (Guest, Bunce, & Johnson, 2006, Abstract, p. 1). However, basic elements for meta-themes emerged with approximately six interviews (for persons representing the same group, perspective, or role). The students’ perspective is analyzed relative to how well community college leaders, staff and faculty, as well as state policy makers, anticipate students’ needs, concerns, and barriers to successful transfer. Student interviews and group discussion are used to invite transformative ideas about how community college staff, faculty, and administrators can better align incentives and actions with students’ goals and preferences, as well as better help them overcome academic, personal, information, financial, and campus structural barriers.

The one hour interviews and/or focus groups were semi-structured with questions prepared in advance (See Appendix J for guiding interview questions), and yet designed to elicit organic stories and perspectives from student’s educational or each university professional’s experience (Patton, 2001b). Student participants were selected to reflect a diverse range of experiences: economically and racially diverse students, students with different experiences in remedial courses, and low-income students seeking transfer (Patton, 2001c).

Study participants from community colleges and state policy offices were selected for two main reasons: 1) central role of their position in implementing, designing, and/or evaluating policy or programs intended to strengthen students’ success in 2/4 transfer, and 2) current reputation for innovative and inquiry-rich thought leadership in this sphere (Patton, 2001c). Information obtained from interviews was used to uncover what each informant considers to have promising impact in improving student success and transfer in relation to their work, in light of evidence and data gathered at the institution or externally. Interviews are used to find out about if and how different strategies are being developed or utilized to increase transfer

outcomes among different sub-groups of students – disaggregated by income, race/ethnicity, academic performance, eligible for remedial education, etc. Interviews also focused upon the evidentiary basis, if any, for these strategies. Study participants were asked to share their reflections on implementation challenges over time, and the lessons learned from various interventions, data analysis, and program implementation experiences.

Data Analysis

Qualitative research has the advantage of reporting how people interpret their experiences, the constructs and schemas that inform their decision-making, and what meaning they attribute to various decisions or experiences (Merriam, 2009), in relation to an overall outcome of interest (here, transfer rates from two-year to four-year institutions). An important goal of the qualitative research strategy is to examine the interactions between “policies, people, and places – the demands specific policies place on implementers; the participants in implementation and their starting beliefs, knowledge, and other orientations towards policy demands; and the places or contexts that help shape what people can and will do,” (Honig, 2006, p. 2).

Analytic processes. Audiotapes of interviews were transcribed for analysis using both open and focused coding processes (Coffey and Atkinson, 1996; Emerson, Fretz, and Shaw, 1995). Several mechanisms will be used to achieve high standards of credibility, dependability, and transferability. First, interviews from multiple stakeholders were analyzed to triangulate data relative to participants’ claims, and increase the degree of trustworthiness that the data reflects reality as perceived within the community colleges and state contexts under study (Merriam, 2009). Second, the principal investigator conducted “member checks” to increase internal validity of data analysis through a process established for respondents to validate the data

collected (Merriam, 2009). During each interview, I also provided periodic summaries of main points and understandings to have a verbal confirmation of what is meant or stated, where there were questions or doubts regarding meaning-making.

While using semi-structured interview protocols, I worked with each interviewee to feel comfortable and share their own fluid, interactive, narrative, discovery and inquiry process in relationship to the research questions. In a “grounded theory” approach, new decisions occur constantly in data-gathering, data-analysis, and reporting of findings. Transferability of research findings is supported by “detailed description of the findings with adequate evidence presented in the form of quotes from participant interviews, field notes, and documents,” (Merriam, 2009, p. 227).

Analytic memos on initial findings from each of the states and their institutions (Emerson, Fretz, and Shaw, 1985) were used as the basis for making theoretical generalizations from specific experiences, perspectives, and interpretations shared by participants. Specifically, I wrote analytic memos on initial findings from each of the states and their institutions¹¹⁵ (Emerson, Fretz, & Shaw, 1985) as the basis for making theoretical generalizations from specific experiences, perspectives, and interpretations shared by participants. Summary tables, charts, and figures¹¹⁶ were then created in relation to each of the areas of case study analysis: (1) academic advising, (2) data use, (3) supports for learning and innovation, and (4) the role of state articulation and transfer policy.

¹¹⁵ A separate analytic memo was not written for Georgia colleges, only for state-level transfer/articulation policies in Georgia. Instead transcripts from both Georgia colleges were combed for relevant practices and analysis, relative to each of the four areas of case study analysis (advising, data use, innovation, and state context for college-level innovation), and incorporated into the analysis.

¹¹⁶ These tables are primarily summaries of contrasting practices between colleges and states on key dimensions of inquiry in the case studies, some of which are included in this dissertation.

Claim formulation and verification. The legitimacy of claims developed from the qualitative inquiry is strengthened by several strategies: (1) the detailed, intensive interviews and analytic memos generated from multiple data sources; (2) participant validation of findings and interpretation through “member checks”; (3) triangulation of data analyses from interviews from multiple stakeholders (community college personnel, state policy analysts and leaders, and students), and (4) cross-site comparisons (Maxwell, 2005). These processes are used to generate “analytic generalizations” (Yin, 1994) likely to have “transferability” (Guba and Lincoln, 1989), which is the strength of qualitative, cross-site inquiry. This advantage in case study methodology is utilized to investigate decision-making, policies, and practices that are focused on improving upward transfer outcomes for low-income, first-generation students in community colleges.

Analytic claims from case studies were then screened according to several criteria that lend credibility to the theoretical and analytic generalization:

- Respondents’ own assessments of generalizability to other community college students, other community colleges, other states, as relevant to the person’s role in the study (such as a vice president of academic affairs sharing how her specific practices may be helpful to other academic leaders in community colleges);
- The similarity of dynamics and constraints to those in other situations;
- The presumed depth or universality of the phenomenon studied; and
- Corroboration from other studies (Weiss, 1994).

Claims first centered on the overarching research question and sub-questions. Claims focused attention on how state and community college leaders and students revealed beneficial impacts and limitations of specific practices and policies that appear to have made an important difference in students’ postsecondary careers relative to upward transferring. Claims also

explored ways that college structures, policies, and practices may be deconstructed and re-constructed to better maximize the success of low-income and first-generation students.

Chapter V. Case Study Findings and Interpretations (I): Advising Practices and Supports **in View of the Student Experience**

The comparative case studies of six colleges in three states yielded three sets of findings. The first, detailed in Chapter Five, concerns the college and what it can do to increase students' upward transfer, chiefly through academic and transfer-related advising. The second, presented in Chapter Six, concerns the way colleges can build systems of support for the transfer function in general—and for particular practices related to transfer—chiefly through the strategic uses of data, and by encouraging innovation related to improving upward transfer. Both of these sets of themes came into sharp focus through examining data from the paired cases within each state, of a college with above-average transfer rates and one with average rates. What one can learn from looking closely at college practices and support systems takes on further meaning when one considers what the state can do to encourage or motivate colleges to enhance rates of upward transfer by lower-division or community college students, a matter I take up in Chapter Seven, the third set of findings from the case study analysis. In Chapter Seven, I also bring together the themes from the preceding two chapters and offer an integrated picture of upward transfer systems, in local and state perspective, and ways they may be improved, based on these insights from the case study investigation.

I ground the analysis of all three chapters in the student experience, with the case of one student, who faced significant barriers to succeeding in transfer. His story offers a way to understand meaningful supports for a student to transfer, and the connections and disconnections between college practices and state policy. I then turn to analyses of college advising practices, once again focusing on practices in relation to the “student experience”, those encounters between the student and college staff or faculty that appear to be of special importance in the

motivating and enabling transfer to happen, especially for students who have historically been underrepresented in college.

Connections and Disconnections Between State Policy, College Practices, and the Student

Experience: Derek's Story

At the Florida community college with an above-average transfer rate (Hope Community College¹¹⁷), collaborative activity and problem-solving fueled the creation of a personalized culture aimed strategically at enhancing students' success in degree completion and transfer. Hope Community College has mandatory student advising through the student's first 18 hours (registration holds are lifted when a student sees an advisor), a relatively well-developed institutional effectiveness and research capacity which includes faculty and staff engagement in data analysis for decision support, and experimentation and innovation in areas of pre-college education, with external funding from national foundations.¹¹⁸ It is instructive to consider how one student with numerous risk factors to transferring experienced the system of support for success and transfer at Hope Community College.

Derek's Journey Towards Prospective Transfer

Derek¹¹⁹ shared with me that he plans to transfer from Hope Community College to a nearby state university to pursue a bachelor's degree in social work. At the time of my interview, Derek had two more required courses at his community college – economics and foreign language, based upon his transcript review with the Transfer and Graduation Specialist. With a

¹¹⁷ This is a pseudonym.

¹¹⁸ Hope Community College participates in Achieving the Dream and the multi-state Developmental Education Initiative funded by the Lumina Foundation for Education, for example. It also receives funding from the Bill and Melinda Gates Foundation for a peer-leadership, service-learning program designed to strengthen students' successful completion of pre-college requirements and gatekeeper college-level courses, as well as overall retention and persistence rates.

¹¹⁹ Not his real name.

3.0 GPA (or perhaps a bit higher after Spring 2013 term), he was confident he will be accepted into the university's BSW program.¹²⁰ When he visited universities in Florida as part of a high-school organized tour a few years earlier, he liked Florida State University (FSU) the best. Also, FSU connected with him because Derek's uncle bought him a FSU sweatshirt (because his uncle liked the football team) when he was younger that he used to wear all the time.

The odds against Derek pursuing college and succeeding in college were formidable. As an African-American boy in the foster care system, the likelihood of his earning a college degree, according to research reported by the Pew Charitable Trusts, would be less than 3% (Pew Charitable Trusts, 2007).¹²¹ More than 40% of foster care youth do not earn a high school diploma. Derek said that he was passed through high school and graduated in 2004, but did not learn the material because he talked when the teacher was talking. "They just passed me because teachers didn't want to deal with me another year, because they knew I was, like, one of the class clowns," he said candidly. He told me about a teacher who once asked him when he was little about his purpose in life, and he remembered "shrugging my shoulders saying I don't know...I looked back at the teacher, I said, I don't know, I guess to be black and die."

Research indicates that one in four children from foster care in the U.S. will be incarcerated within the first two years after they leave the system, and more than 20 percent will become homeless at some time after age 18 (Pew Charitable Trusts, 2007). Derek did become

¹²⁰ FSU- Social Work: "This is a limited access major. The following requirements apply to students entering FSU spring 2013 and after: 1) an application, an updated resume, and a personal statement, 2) an overall GPA of 2.5 or higher, 3) at least 60 credits earned by the time of entry into the program to include all FSU Liberal Studies [courses are offered at all state community colleges?] or an AA from a Florida public college, and 4) all five of the common prerequisite courses with a B- or higher. Prospective students will find the BSW application online at <http://csw.fsu.edu/academics/bachelor-of-social-work/admissions-information/>. Applications are considered on a rolling admission basis with the following deadlines: Fall Term—July 1; Spring Term—November 1; Summer Term—April 1," retrieved 03.17.13 from: http://www.academic-guide.fsu.edu/social_work.htm

¹²¹ Pew Charitable Trusts (2007). *Time for reform: Investing in prevention – Keeping children safe at home*. Philadelphia, PA: Author, p. 1.

homeless after a breakup with his girlfriend, and she was the original reason for his moving to this new city from Miami. At the age of 27, he told me, "All my friends who I grew up with, they're either dead or in prison now." Derek had something else in mind for his life, and despite every obstacle before him, he chose a different path.

I said I don't want to be next. And a lot of people always tried to speak upon my life and told me that I'd never be anything and that I'd be dead or in prison. But I'm not here to prove them wrong, but they are wrong. And I'm going to continue to move forward and just continue to get this education so I could be somebody.

When Derek faced the long line to register for classes at the community college the first time around, he lost his temper and "didn't have patience." The staff introduced Derek to the Dean of Enrollment at the time, and

no matter what, she wouldn't lose patience. She would listen to me. She let me go on and on, babbling and talking. And then after I was finished she was like OK, I'm just here to help you. Now anything you need help with, I'll help you...but it didn't register to me that she was helping me.

So Derek took her business card, and kept it, deciding at the time that "school isn't for me," and he went back to his girlfriend at the time. After that relationship ended and he became homeless, Derek met up with a pastor of a local church who has since become a precious friend and mentor.

He changed his attitude and appearance from dreadlocks to short hair and vests, ties, and shirts with support from church mentors. There came a point when he was "sick and tired of being sick and tired." And he came back to the Dean of Enrollment, and she saw the difference. "She heard my voice sound different. I wasn't talking all rough like look here, like the way I used to talk to people.... I was more like, look, I really need to come to school. And she gave me a chance, got me a job up here. Ever since, things have been just been working out real good."

Derek emphasized being grateful and putting his faith in God throughout the interview. He internalized supports from church and others to affirm a new destiny for himself.

I'm glad that breaking point came to me because it helped me to be serious in life and understand look, I don't have to be here. I could keep moving forward. I don't have to stop now. No matter what problems or circumstances happen in life, it has an expiration date on it, which means it's not going to last that long. And I just wanted to keep moving forward. And I said you know what, I came this far, and now I'm the only person that I know of in my family that has an education, a college education. Like my mom, everybody, they didn't make it past high school. But I decided to keep on moving, and I feel like God has something better for me.

Derek's circumstances likely would have been very different, if it were not for the Dean of Enrollment's patient and caring way that she interacted with Derek who described himself as angry, screaming, and impatient. The college's president spoke of the value placed on that type of one-on-one caring and support at his college. Among the 49 students I spoke with across the six colleges in my study, most of them talked about making this type of personal connection with a faculty member, staff person, or administrator at the college which propels them closer to their goal.

This Florida community college president expressed it well:

I must tell you, I think that a whole lot of success that any institution enjoys in this area in terms of transfer— it's all about the people. It's all about the quality. I know it sounds trite. But it's about the quality of the people who are engaging with our students, who are advising our students, and their competence, and the quality of the information they provide and the fact they care. What I hear about our Transfer and Graduation Specialist from students and parents, it is obvious to them she cares about the success of the student, and that matters greatly. I think the personal relationships we have at my level with provosts and vice-presidents matter too... we socialize and we are free to say how can we help each other better...that's all personal relationships. You can build the systems and create with automated emails, but at the end of the day, I think the success of our institution has everything to do with the fact that we have established those kinds of relationships with people.

One of this president's new initiatives is to create a "first day effect" that focuses on "our success as a college, our rankings nationally, transfer rates to other institutions, our out-of-class support, the quality of faculty, so that they can sit down with their family after the first day, and say I'm so glad I chose ____." The president wanted a change from previous practices, because when he sat in orientation, he noticed that the staff provided a uniform set of information to students, which he thought was not the most efficient because students are coming to the institution with different backgrounds and objectives. He noticed how sessions emphasized rules, and consequences for not following them such as with parking and academic probation. When he envisioned the dinner conversation that students would have with their families about the experience, it fell short of the goal of creating those caring, personal connections that makes them feel welcome and glad to come. He decided to create a new culture in Human Resources also, and asked HR to set up a lunch or meeting with the President for every new hire, rather than have the primary emphasis with new employees to be the completion of their forms and logistical concerns.¹²²

¹²² The sustainability of this proposed effort is unknown, as the college has approximately 200 full-time faculty, over 500 part-time faculty, and about 400 staff members. However, the President grounds this vision in experience with six direct reports and is working on a plan: "Regarding the first day effect, our HR department is still working on the details of how to implement it for faculty and staff. It will apply to all new hires at the college (except for those employed on grants or on contracts, as they report to those entities). I personally do this for everyone I hire that will report directly to me. Over the past six or so months that has been five people. That is really where my passion for this came from. I starting doing this which caused consternation with HR. HR did not want me to occupy their first day because of their need to have immigration forms, insurance forms, and other administrative issues addressed. I, however, felt the energy from my meetings with them was very obvious and a more appropriate use of their first day. The feedback from those I hired was overwhelmingly positive. HR plans to do this in small groups, coupling overall college information with time to break out with individual supervisors to apply the general information to specific jobs within the college. I also have a requirement that I meet with those hired into Dean and Director level jobs who are one level removed from me within their first month to discuss how they were welcomed and oriented as well as to cover my values with them and get to know them as people. As an aside, you probably know that many executives have a practice of meeting with such employees prior to hiring being finalized. There is an unconscious psychological game associated with that practice that instills in newly hired managers the belief that they owe their employment to the President (in this case). I don't play that game, preferring to reinforce the authority of those who actually make hiring decisions."

As Derek internalized new ways to take responsibility for creating his own successful future, the college offered him a work study position in Enrollment Services. He shared with me that he did not feel love until his 20s when he met his pastor, and now the work environment at the college makes him feel part of a family that he loves. Since he never had much of a family of his own, he embraced the college's family environment as his own. "I wanted to come back to school because I remembered that love she [the Dean of Enrollment Services] showed me. I didn't want to talk to anybody but her because of the love she had," he said. Derek has embraced many of the college's out-of-class supports, such as the consolidated learning support center, which offers tutoring and open spaces for study groups in any academic area. He describes the Learning Commons¹²³ (the college's tutoring and media center) as "his best friend" and would spend hours there bringing his grades up from D's and F's to A's and B's. He has been spending time with other students in his classes, studying. Derek said, that "Every class that I take, I always get friends from out of those classes and I meet new people." He has a small group of students he meets with for Bible study. He enjoys this and other study group interaction even more than one-on-one work with the tutor. Once he could believe that loving kindness was available instead of a business-like five-minute enrollment session at the end of a long line, and be shown a wide array of resources designed to support his success, Derek found his niche. In his own words, "As soon as someone actually sat down to see what I had to say, it felt like a release. And I didn't walk around with that anger face no more. I just was all right."

¹²³ The Learning Commons has tutoring available in all areas from about 20 full-time specialists, about 100 part-time staff, as well as faculty who contribute hours. It is designed as a stigma-free space with open computing areas, meeting rooms for study groups, and workshop meeting spaces as a learning resource for everyone. "The Learning Commons is a concept, not a place," as one dean framed it, so that students who are online can have comparable services and connect with necessary resources virtually if needed. The college is creating virtual study rooms as part of this process, which will also be supportive to students that have a hybrid of campus-based and online courses and coursework.

Recent research to reframe scholarship on the poor higher education outcomes of African-American males highlighted the importance of several factors in guiding successful completion and leadership among African-American males in higher education (Harper, 2012).¹²⁴ According to research summarized by Harper (2012), successful African-American males generally exhibit these behaviors; they:

- Resolve masculine identity conflicts.
- Negotiate peer support for achievement.
- Develop political acumen for success in professional settings in which they are racially under-represented.
- Develop strong Black identities that incite productive activism on predominantly white campuses.
- Acquire social capital and access to resources, politically wealthy persons, and exclusive networks.
- Craft productive responses to racist stereotypes.
- Overcome previous educational and socioeconomic disadvantage. (p. 12)

These identified qualities are primarily based upon synthesis from research about successful experiences of African-American males in four-year institutions; however, similar principles can plausibly be applied to an African-American male in a two-year college. I noticed most of these qualities in Derek, as he navigated his way through foster care, his K-12 educational experience, and on his campus. He created a new look and identity for himself after losing his girlfriend, connecting with the church, generating self-love in connection with loving support from others, and re-engaging in college. Derek negotiated peer support in class work groups and study group settings in the Learning Commons. With support from the Dean of

¹²⁴ Harper, S. (2012). *Black Male Student Success in Higher Education. A report from the National Black Male College Achievement Study*. Philadelphia, PA: University of Pennsylvania Graduate School of Education. Retrieved 2/4/2013 from: <http://www.gse.upenn.edu/equity/sites/gse.upenn.edu/equity/files/publications/bmss.pdf>

Enrollment Services, he was able to be strong in his commitment to his program of study and find ways to have self-pride in his character and way of being in the world. He became well connected to the inner network of Enrollment Services through his work-study position at the college. However, we did not touch upon access to other sources of political wealth, exclusive networks, etc. He did not express efforts towards campus-based activism, yet he was resilient in responding to racist stereotypes that he told me about from K-12 education, on campus, and in the community at large. His transformation does not at this stage include leadership rooted in criticisms of institutional structures, but is grounded in a self-acceptance where he is productively able to pursue the supports and community he needs to succeed in achieving his goals of transferring and obtaining a bachelor's degree in social work.

Key supports for Derek's successful progression in his associate's degree program were his work study job, encouragement to seek out tutoring support for his classwork, outside mentoring through his church and college-level support for integrating his spiritual identity at college, as well as the caring manner of student services professionals. State policies in articulation and transfer did not show up as special facilitators for upward transfer, per se, for Derek. I asked Derek about the role of any state supports for individuals with backgrounds in foster care and he said he could not find any additional support for which he would be eligible (since his tuition is already covered). He did recall, however:

I know when I was in high school, we went to this state building in Miami, like all the foster kids, and they were telling us, before we turn 18, they were like we just wanted to let you know this program called Independent Living for foster care kids. And around the time, Jeb Bush was the governor of Florida and they were saying something about how the programs that he has for us where all foster care kids, they receive free tuition for any college or any university they ever want to go to for life. But now I heard rules have been changed, and now until you get to the age of 28 or whatever-- I'm 27 right now, so once I get to 28, I guess I'm going to have to start paying for my education. But the blessing there is I'm not going to sit here and complain that

so far, since I've decided to come back, my education has been paid for, tuition. I don't pay for tuition, so that's a wonderful thing.

Without support for his tuition, Derek would likely not have progressed as far as he had in college, if he had persisted at all. The opportunity to visit Florida's colleges and universities while he was in high school clearly made an impression too, and this type of experience is well-supported across state high schools and postsecondary institutions to encourage students to make successful transitions to college. The time limit for state financial support for college tuition among foster care youth may have come as a surprise to Derek from his understanding of state policy rules based on a visit to a state building in Miami while in high school. Derek has some awareness of the role of state and federal policy shaping his circumstances, and has a grateful attitude about the supports he has received. Hopefully, he will continue to be resourceful in funding his bachelor's degree education through supportive contacts at the receiving university, and the respective state, federal, and private resources for which he is eligible.¹²⁵

Derek's story take place against a backdrop of limited transfer prospects among African American males in particular, and these facts raise significant questions about what exactly can support such students' desire and capacity to transfer. Harper (2012) emphasized the importance of creating institutional supports to affirm African-American males in cultivating and persisting in success behaviors. Support organizations such as TRIO, Mesa programs for STEM majors, student African American brotherhood organizations, and other types of informal peer networks provide essential supports for minorities and flourish when administrators share collective leadership and responsibility for their continuation and effective programming (Harper, 2012; Wood and Hilton, 2012).

¹²⁵ At the time of finalization of this dissertation, Derek's progress in completing his associate's degree and transferring was unknown.

Among the six colleges I visited, each had a support network in place for low-income, minority, and/or first-generation-in-college students. I interviewed some of the most actively engaged students at each of the colleges as I worked through college administrators who were more successful in recruiting active students to participate. For African-American males in particular, most reported that without the supportive network they had at their college or campus, they would not have had the same level of academic success or ambitious career goals. Only a small number of students (less than 10%) participate in these support networks generally, so the systemic impact is not as large as would be desirable.

Advising Practices at Derek's College

From Derek's story, the reader does not learn about the full array of college practices devoted to academic advising at Hope Community College. I learned, however, that Derek's interaction with the transfer and graduation specialist was effective in helping him know exactly what he needed to complete his associate's degree and what it would take to transfer to his preferred bachelor's degree program.

Hope's transfer and graduation (TG) specialist conveyed a strong sense of urgency in helping students achieve their goals, building upon experience working in student affairs at public universities and considerable experience (more than ten years) at Hope. She shared with me that her commitment to helping students graduate comes from her own university experience as a student, as a peer advisor, and also as a professional advisor. Her goal is that every student have the personal support for transfer planning and training to effectively run their own degree audits¹²⁶ in the online portal. Her work is informed by the belief that "every decision matters and

¹²⁶ The degree audit is a computerized assessment of credits earned and needed for the desired degree, certificate, or program entered in the student's portfolio. A degree audit will notify students if they have completed 75% of their required courses in their program of study to be eligible for graduation. A degree audit will also notify students if a

has consequences...” and that students should take as much or even more ownership over their own degree completion as she does.

I've had to call people and tell them they can't graduate and why they can't graduate, and you hear the disappointment, the heartache, the tears sometimes, anger sometimes. ...I'm really fortunate that someone's only missing an hour and we could take a credit by exam, whether it's Constitution or vocabulary, or it's a 3-hour computer competency test. So, when I get that opportunity and I go, oh, this is a problem, but this is how we can solve it and still get you to graduate this semester, so let's focus on that, a lot of times they're able to do it and they graduate and it's great...But the main lesson I try to tell them, but listen, this is the thing...you need to be the owner of that degree audit or that [specific university transfer assessment] report and track yourself. The advisors are great humans and they mean well, but they're seeing a lot of people and trying to service a lot of people in a short amount of time, and there's only one of you. So you learn what your requirements are, you track it yourself. If you have questions, go see an expert. But know ultimately, it's you. You determine whether you graduate or not, because I know it's frustrating to see two or three advisors and no one brought this up until you're seeing me. That's ridiculous, and I apologize for that. But the reality is I'm here now, let's see what we can do to fix it, and get you graduated.

One defining feature of the colleges with higher transfer rates, including Hope Community College, is their mandatory advising practices and models. At Hope, for example, students receive an overview of the online degree audit and advising system during the new student orientation process. New students that have less than 18 credit hours of prior credit are assigned to the Advising Center. They are required to do a first-time-in-college workshop to go over their degree audit and to plan out their goals and classes with professional advisors through the college's online system and store it in their individual learning plan. This is usually done during the first semester enrolled, after orientation. Students used to have mandatory advising through the first 30 hours (which is the halfway point to an AA/AS degree), but it was compressed to mandatory advising through the first 18 hours. Two primary reasons for this shift were complaints from more self-sufficient students adept with registration and program

course is eligible for a specific degree program. Students are encouraged to complete a degree/audit every semester prior to registering for classes to determine if the classes they have selected fall within their degree major. The degree audit function is easily accessed by students in their online portal.

management, and the difficulty of staffing for the longer-range advising period through 30 hours for all students.¹²⁷

After the first 18 credit hours, students are referred to faculty and academic-division-based advisors. To better streamline the advising transition from the Advising Center to the academic division (faculty), the student success director worked with his staff to have a consistent message and plan for referring students to the division/faculty advisor by calling ahead to make sure an advisor is ready to meet with the student being referred. In addition to the college's professional advisors, faculty receive training in the degree audit system. In the faculty contract, faculty are to spend thirty hours per semester providing out-of-class support to students – either through advising, tutoring students in the Learning Commons, and/or sponsoring a campus-based club. Most faculty choose traditional advising, however, faculty have sponsored clubs such as Model United Nations, Black Male Achievers, among others. College advisors then reinforce the importance of faculty and students going over the degree audit each semester. During the degree audit, points of discussion are the intended transfer major and transfer school to make sure the student is combining the AA requirements with the needed pre-requisites for their future transfer school and major. Students are also encouraged to follow the links in the transfer school's transfer manual and to check it each semester for possible changes in requirements.

¹²⁷ With updates to the computer mainframe and online advising system, high-performing students could potentially have holds lifted from their registration and become exempted from mandatory advising according to some agreed-upon criteria. Exempting high-performing students with completed plans would take some time to implement effectively (however, the above-average performing college in Washington state does this based on its own criteria).

Early in each semester the TG specialist works with the registrar to determine if students who applied for graduation have any credits missing. She contacts those students via phone and email and gives them suggestions on how to meet the requirements in that term. Students ready to graduate also receive resources on possible transfer options and information about the college's career center resources. The TG specialist produces a graduation list every 2 to 4 weeks for the students that applied for graduation for the current semester, and generally runs those reports as soon as the previous semester is complete. In some cases, the TG specialist helps the students with appeals to the proper dean for course substitutions, in some cases students are able to take credit by exam tests to meet missing requirements. If not, the TG specialist works with the student to "make sure they know what they need to take for next semester to make sure they do get lined up to graduate next semester." Some of the key challenges shared in the interviews were:

- staying current on changes in admission requirements for different programs at various transfer destinations;
- training and engaging all faculty on effective advising practices and consistent use of the system;
- implementing regular, more frequent (than every two weeks) communication, meetings, coaching, and training to assist new professional advisors in delivering quality advising; and
- working with IT developers to improve communication between the student's online learning plan and the degree audit system with notifications and alerts, etc. that are as up-to-date as possible.

Hope Community College is in the process of restructuring advising to look at how to maximize faculty time in meeting with students throughout the semester, and match faculty and student advisees' interests to the best extent possible, as well as assessing the effectiveness of faculty advising. "This is a big challenge for the institution right now. For the first time we're discussing having a strategic enrollment plan, which we have never had...and even when we've talked about it...it's not just getting [students] in the door, and it's not just keeping them. It's making progress toward that goal at the end...keeping them moving through and completing," as one administrator said.

Derek's story and the overview of transfer advising practices at his college—one with an above-average transfer rate—sets the stage for discussion of broader themes about academic advising practices across the six colleges and three states represented in this study. Here we focus first on what can be learned by comparing college practices with above average transfer rates with advising practices of their average-performing counterparts.

Comparing Academic Advising Practices in Above-Average and Average-Performing Colleges

Among the colleges with above-average transfer rates, two of the three had some form of mandatory student advising, enforced with a registration hold until a faculty or professional staff advisor with authority approved. Among these above-average performers, at least half of their student population expressed transfer intent¹²⁸ and the college had a system in place (running for

¹²⁸ In community colleges in Washington, for example, the average proportion of transfer-intending students was 58% across the 29 institutions (calculated based on new 2011 entrants). Since the above-average performing college in Washington had only 46% transfer-intending students among the new 2011 entrants, this is lower than the 58% average. The proportion of transfer-intending students is therefore likely not an important driver for this college's relatively high three-year transfer rate among fall 2006 entrants, since those percentage of transfer-intending students was likely similar for that cohort. By contrast, the Washington average performer had a 62% transfer-intending student population among new 2011 entrants. In Florida, the average proportion of AA/AS students was

10+ years) for transfer advising, with designated staff focused on helping students with transfer (primarily upward transfer). Specialized program supports (such as TRIO, peer-leadership/service learning programs, or the Brother-to-Brother program) were typically used as specialized services for vulnerable student populations with disproportionately poor success in upward transfer (i.e. low income students, first-generation students, under-represented minorities, students with disabilities, and/or students who place into developmental education). Another important feature that contributed to higher transfer rates among higher-performing colleges in all three states¹²⁹ was the partnerships created particularly among academic and student affairs and institutional research and/or effectiveness offices. With highly collaborative and responsive feedback loops, and with frequent communication among student affairs, academic affairs, and units concerned with institutional research and effectiveness, a “system of support” for upward transfer becomes a reality.

Comparing the Two Georgia Colleges

In Georgia, transfer advising support varied substantially between two colleges. Peachtree College (above average performer) has several campuses and a blended faculty-professional staff advising model, such that students were to see faculty advisors during the “Early Bird” advising period and professional advisors during the registration period. Early Bird advising had been in effect at this college for about five years, and was designed to support

74% among fall 2006 FTIC students (not all of whom may be transfer-intending, however this is a good proxy), and the above-average performer had 89% AA/AS students in the fall 2006 FTIC cohort. By contrast, the average performer had 69% AA/AS degree seeking students in the fall 2006 FTIC cohort. In the case of the Florida institutions, the proportion of AA/AS degree seeking students as well as the proportion of full-time students at the above-average performing college has greater influence in the higher transfer rate. Since the University System of Georgia and the Technical Colleges System of Georgia are separate, USG institutions will have higher overall proportions of transfer-intending students, and nearly all students would be AA/AS students.

¹²⁹ In Georgia’s above-average performing college, the institutional research (IR)/planning director became the vice president of academic and student affairs, who continued to perform IR duties in partnership with the Director of Student Success and E-Learning. While there was not a separate IR office operating at the time, and institutional assessment was also managed separately, these functions were integrated through the office of the (Interim) vice president of academic and student affairs.

students' planning on a three-term time horizon. Faculty and college administrators selected the three-term horizon to align with fall-to-fall retention and to help students with annual planning (based on semester system). About one third of students voluntarily participated in Early Bird advising, and after that, the rest saw professional student advisors for term-specific registration. While clearly addressing some of the need for transfer-related advising support, this strategy is not as robust as mandatory advising systems at above-average performers in Washington and Florida.

At Peachtree, academic advising was supplemented by a two-credit-hour college success course that was required for all students who placed into one or more learning support requirements.¹³⁰ This course is currently being evaluated with a pre- and post-course survey and tracking of grades in college-level courses after taking the student success course. The Director of the First Year Experience aimed to make the course mandatory for all students and increase it to a three-hour course, which would allow students more time to engage in service learning projects, delve into a "common read" book, and produce an electronic portfolio of their assignments. Some of the Peachtree campuses offered student success workshops focused on helping students transfer, however, student participation in these workshops is voluntary and they tend not to be well-attended. One of the campus advisors launched an advising initiative specifically related to transfer, which includes bringing college representatives from four-year

¹³⁰ For access institutions/state colleges in Georgia, incoming students may be exempted from taking the COMPASS placement test if they achieve the designated threshold score on the ACT or SAT, met the required English or math curriculum in high school, or scored at advanced proficiency on the state test. Learning Support students accepted into a University System of Georgia college must meet these minimum requirements: 1) place in no more than two of the three Learning Support Areas, and 2) meet these minimum COMPASS scores (Reading=62, English=32, Mathematics=20) The compass Scores required to EXEMPT placement are: Reading ≥ 74 (62–73: READ 0099) ←*Class placed in if score not met*; English ≥ 60 (32–59: ENGL 0099); and Algebra ≥ 37 (20–36: MATH 0097). Possible learning support courses are: ENGL 99, MATH 97 or 99, and READ 99 in Georgia.

institutions in under a coordinated and coherent strategy rather than different individuals hosting uncoordinated, inconsistent recruiting events.

In contrast, Cherokee Rose College (average performer) did not have professional student advisors formally established. Faculty members were the students' primary advisors and every student had an advising hold on course registration until they saw their faculty advisor (this process had been in effect for one year). Faculty advising loads varied; and some had between 50-70 advisees. Before advising was mandatory, perhaps one-third to a half of a faculty member's advisees would set up appointments with faculty advisors, and the rest would "self-advise" and register on their own. According to the Vice President of Academic Affairs, "faculty need ownership in advising...they are the ones who really know the curriculum. They're the ones who typically have contact with people at the institutions where our students transfer to." Cherokee Rose, at one time, had professional student advisors, which turned out to be a failed experiment due to the advisors not being able to handle seeing all the students and providing informed advice. Cherokee Rose also offered some informal supports from student activities staff and residence hall staff to assist with academic planning and registration.

The President aimed to increase students' professional advising supports to complement faculty advising in the consolidation (because the consolidating campus received state funds for professional advising staff), recognizing lack of professional advising staff as a limitation and yet affirming the positive foundation of a strong faculty advising role across campuses. All first-time students are required to take a first-year experience program orientation course (1 credit), which included a common book, financial aid counseling, writing skill development, course registration help, guidance for career and college planning, etc. Responsibilities for teaching this course were shared by administrators, faculty, and staff (even the President had taught a section of it).

However, faculty expressed disappointment over changes to the curriculum in this student success course. Activities such as conducting library research over a three-hour period for a specific project, requiring visits to various academic departments as part of academic and career planning, and shadowing an instructor were removed in favor of more learning about financial aid, registration, and administrative requirements. As one English faculty member described, the course used to be “geared more to creating a college student who is equipped to research, communicate, plan, think critically, be self-reliant...it was committed more to developing the college student, as opposed to teaching them how to get through the system, which is what I, sadly, think the course is geared more toward that now.”

Comparing the Two Colleges in Washington State

Washington’s case study colleges adopted a different approach to transfer advising than Georgia’s colleges. Both Washington colleges had designated “transfer advisors” who are actively integrated with improving student services programming at the institution and who served as a visible reminder and resource for students to plan for upward transfer. Table 5.1 summarizes transfer advising practices in the Washington colleges:

**Table 5.1. Transfer Advising Practices in Two Community Colleges
in Washington State**

<i>Transfer Advising Practices –Core Themes</i>	<i>Harvest</i> <i>[Above average three-year transfer rate; fall 2006 cohort]</i>	<i>Emerald</i> <i>[Average three-year transfer rate; fall 2006 cohort]</i>
<i>Diverse student communication technologies</i>	College has embedded links to transfer plans and info from student web portal that advisors link to during advising. College is also planning Facebook page, Google messaging, texting, website updates, as well as having updated catalogs, bulletin boards in physical space; targeted marketing based on updated educational plans, transfer interests.	Transfer information primarily disseminated through student newspaper, workshops, faculty listserv, flyers, emails.
<i>Relationships with BA-granting institutions</i>	Transfer advisor conducts campus visits (meet and greet) with state’s public four-year institutions and those in nearby states; organizes transfer fairs each term. College has historical partnerships due to transfer initiative begun more than 15 yrs. ago. The transfer initiative/specialist increased transfers the first year (from 35 to 285 students).	The educational planning center organizes transfer fairs each term, and has relationships with on-campus BA programs too. More than 20 institutions participate and recruit at each fair. Engineering faculty member also takes students on BA-granting campus tours (one trip to four state university campuses each year).
<i>Internal collaboration</i>	The transfer advisor: <ul style="list-style-type: none"> • works closely with TRIO (transfer is now a measured outcome for TRIO), • plans pizza lunch seminars for students, particularly related to financing BA degree completion, and • has strong support from Student Services, Retention/Completion, tutoring, Associated Student Body, and IT. 	The educational planning center staff: <ul style="list-style-type: none"> • talk with faculty senate about advising issues; • communicate through division transfer liaisons with faculty by division; and • refer students to TRIO, Mesa, honors program.
<i>One-on-one advising</i>	The transfer advisor works on education plans with individual students assigned as her advisees by Student Services and referred by faculty. However, she is new to her job and does not yet have a sense of advising “load” relative to transfer-intending population (i.e. 50% of total).	Transfer advisor serves as initial drop-in resource; but is not structured for ongoing one-on-one counseling. Educational planning center staff use one-on-one conversations to guide group-level programmatic work (e.g. workshops, transfer fairs, etc.).

<p><i>Transfer Advising Practices –Core Themes (continued)</i></p>	<p><i>Harvest</i> [Above average three-year transfer rate; fall 2006 cohort]</p>	<p><i>Emerald</i> [Average three-year transfer rate; fall 2006 cohort]</p>
<p><i>Two-way faculty communication strategies</i></p>	<p>Transfer advisor builds on experienced faculty members that she has relationships with as well as long history of prior transfer advisor (more than 15 years).</p> <p>Transfer advisor also sets up time in faculty meetings to review new website updates and new BA institution requirements.</p> <p>Retention Director set up group conversations with faculty about advising several years ago to improve advising centralized supports resulting in much stronger faculty participation (offered coffee and snacks).</p>	<p>The educational planning center hosts faculty workshops on transfer topics with variable participation.</p> <p>Educational planning center staff work with division faculty liaisons on new transfer-related updates to key faculty department chairs and other department leaders.</p> <p>The transfer advisor conducts classroom visits to ESL courses, higher level developmental courses, and gatekeeper courses in English and math to encourage transfer planning early in their program.</p>
<p><i>Additional supports for undecided students</i></p>	<p>Transfer advisor would like to set up a college experience class/to help with undecided students. Not all faculty are effective in such advising situations. Student Services VP considers students “undeclared” until they have a BA major selected and the transfer advisor works with the student until they have a decided major.</p>	<p>The educational planning staff would like term-by-term sense of how many students are undecided, but don’t have this currently. Faculty and staff working on strategy for motivating students’ decision of major.</p>
<p><i>Conduct research to support advising</i></p>	<p>The college conducted a study of transfers across state lines with National Student Clearinghouse data, and tracked students who completed summer orientation in those transfer numbers to measure the effectiveness of the orientation.</p> <p>The college hired completion coaches to follow through with students in cohort-based approach of students not re-enrolling from fall to spring (i.e. 300 students in fall 2012 through this work posted 15 more AA degrees and re-enrolled a third).</p>	<p>The educational planning center conducted a study of students’ self-assessment of their anticipated grades to gauge how to handle credit-overload approvals. The study found that students’ self-report with 2.5 GPA or less were on average 2 grades off the mark (they inflated their GPA to obtain approval for taking more credits). Also Running Start students had a split between high and low performers, and fewer in the middle. This data used to create intervention in overload approvals.</p> <p>Additionally, educational planning staff desire timely data back from four-year institutions after students transfer, and feedback about students not accepted for transfer.</p>

Interviews with transfer advisors at Harvest and Emerald illustrated the diverse nature of their roles as they experimented with communication technologies and strategies to better engage and reach students and co-advise students with faculty. There are more similarities than differences between the above-average and average-performing Washington colleges in transfer advising, perhaps due to the collaborative, well-developed transfer and articulation infrastructure built within the state.¹³¹ Transfer advisors at both colleges were actively developing relationships with four-year colleges and universities to support major-related advising and successful transfer across programs. They were both building internal institutional capacity to improve advising mechanisms (through IT and research, for example). Key differences between the two colleges are mandatory student advising (with registration holds each term) and early warning academic alerts at the above-average performer vs. only mandatory orientation at the average-performer and voluntary academic advising with either faculty or professional staff. Additionally, at the above-average performer in Washington, administrators have been recruited by other colleges to share their online advising portal and system and this system has been adopted by other Washington colleges. The above-average performing college

Movement Toward the Reform of Advising Practices in all Six Colleges

The case study data made clear that there was room for improvement in advising practices (as well as related support activities) in all six colleges. Reform efforts underway in the average-performing colleges, however, were especially noticeable in the ways they tackled this aspects of the college's support for student success. These efforts were corroborated by the views

¹³¹ A system of councils, committees, and organizations that compose the "Washington Transfer Network" facilitate the design, implementation, and continuous improvement of transfer and articulation supports in Washington state. Twenty groups, committees, and consortia which address some aspect of transfer and articulation between colleges and universities in Washington state illustrates the broad scope of the network, differentiation among tasks and roles relative to transfer/articulation, and the scale of the work outlined to support statewide transfer/articulation. Retrieved online 03.21.13 from: <http://www.sbctc.edu/college/studentsvcs/WATransferNetwork10-2011.pdf>

of the students themselves, who offered ideas about ways to improve advising in case study focus groups. I review below the movement towards improvement in advising and the transfer function in the six colleges, while noting as well that there was also room for improvement in the above average colleges.

Steps to Improvement in Average-Performing Case Study Colleges (FL and WA)

At Sunshine State College¹³², one of the campus provosts took the lead on the design of a student coaching system/Early Alert advising. As part of the visioning of what students should expect at the college, the decision was to move away from what he termed an “egg timer advising model,” where advisors had a line of students, everybody got five minutes, and then you went to the next student. First-time-in-college (FTIC) students are now to be assigned a specific advisor to work with, and careful information is kept in the student’s online portal on his or her needs and any barriers they may face with respect to success in their academic work. This system was to be rolled out in mid-Spring term 2013 for FTIC students. Counselors of veteran or disabled students and the TRIO program, for example, have used case management approaches in baccalaureate programs to advise students, but it is time-intensive, and serves specialized groups. College administrators have been strategizing about how to scale-up wraparound, case management advising approaches for a wider proportion of the student population.

Emerald launched a mandatory new student orientation in fall 2012, and the college offers two ongoing advising resources – 1) a drop-in educational planning center and 2) longer-term, specialized advising from faculty. About 70% of Emerald students have identified faculty

¹³² Sunshine State College (a pseudonym) has performed about average when including both full-time and part-time students in the transfer rate, based on state cohort data. The three-year transfer-out rate has substantially risen from 2008 to 2011 among first-time, full-time students, from 10 to 16 percent. This is the only college in Florida with such a dramatic increase in college transfer-out rate. Sunshine State also has the largest proportion of its students (10-12%) enrolled in community college baccalaureate programs of Florida’s 28 community colleges.

advisors, according to the Student Services vice president, and the others have been self-advising. Both faculty and students noticed gaps in the advising process, and faculty leaders have been working to “raise the profile of faculty advising,” especially for newer faculty. In order to raise awareness about students needing to see faculty for advising, faculty conduct advising at tables in the student union during registration periods and also in the library during evenings. Faculty leaders from several disciplines attended a national conference on student affairs and advising to learn about effective strategies, and have the goal of creating more long-term, mentoring relationships “as opposed to the sort of bull-pen drop-in advising” in the college’s main advising center. Staff at the college’s main educational planning center had 19,000 student visits last year, on a drop-in basis.¹³³ Students don’t have to make an appointment and the center is open 48 hours per week. The educational planning/student services staff meet weekly to stay up-to-date on transfer requirements of different bachelor’s degree programs and institutions, advising procedures, course revisions, and so on. All college advisors (from academic divisions, workforce programs, specialized programs such as TRIO or Mesa) meet quarterly.

Student views on improving academic advising in average-performing colleges. My discussion with about ten students at Sunshine State College included strong suggestions for improvements in advising. As one student said:

They don’t have a clue, there’s hundreds of students...there’s 34,000 students [whole college], and there’s about 200 advisors. And so they have to know everything for one, but then they deal with thousands of students every single day...it’s not they don’t want to help, but it’s that they also want the students to take it upon themselves to try to figure it out too.

¹³³ Emerald’s student body is approximately 14,000, 7,000 of whom are in AA/AS degree programs and others are in adult basic education, pre-college courses, and certificate programs. An unknown proportion of the 19,000 visits to Emerald’s educational planning center would be repeat visits.

Another student confessed that an advisor put her in three math classes in one term – college algebra, statistics, and calculus – and she ended up failing them all. These were three classes she needed to graduate, has one year left, had to be full-time for financial aid purposes and could not drop any after getting half-way through the term to maintain full-time status since she could not replace those courses at that point. She recommended that advisors help students consider a long-range plan, such as sequencing the math curriculum, and balance out courses (math, humanities, science, social sciences, etc.) to facilitate a student's successful progression.¹³⁴ As of the time of my visit (late January, 2013), about 7,000 students had completed their educational/life plans in the new system, which is designed to help guide students and advisors create efficient and productive pathways to their degree goals.¹³⁵

One of the students recommended that career advising be expanded to include transfer advising, because exploration of AA to BA options across various fields is an essential part of career planning. Transfer advising is much easier if you know the university you want to transfer into and have narrowed that down early on, this student explained. She outlined a strategy that could be used with a student:

If I'm not sure what school I want to go to, [the advisor] could then maybe sit down with me and contact an advisor at a university and get a Skype interview with that advisor so we could talk face-to-face without having to travel across the state, so I could learn what I needed to know and it would still come through [the college], but it wouldn't put all the pressure on these advisors who are trying to advise every student in every major at every campus. It's an impossible job.

She also talked about the problems that may occur when the student does not make the contact with the four-year program or university of interest to check on requirements. For example,

¹³⁴ For example, Georgia's above-average performing Peachtree College has an early-bird advising structure and an advising horizon of three terms.

¹³⁵ By contrast, Hope Community College, Florida's above-average performer, has required student individual learning plans for several years.

within the associate's degree a student can choose various science course options, but this student found out on her own what she needs to be a successful transfer student is chemistry or physical science, not earth science or something else.

Sunshine State College students affirmed that they need to take the initiative in making their own plans. While students may not use the Florida Virtual Campus system or the college's links to bachelor's degree programs at the college and elsewhere, they do use Google search. One Sunshine State student described her two-hour wait to see an advisor before going through orientation, which tests persistence and determination.¹³⁶ This is particularly problematic for the incoming freshmen that do not really want to be there whose their parents are forcing them, or for other students who do not take the initiative for whatever reason. Another of the Sunshine State students used the metaphor of the "fast-food line" to describe how students are treated in advising. He recommended that students be able to sign-up for classes, sit down with the advisor, engage in questions and answers to elicit more about goals for their education, and be able to know how the short-term plan (this term) contributes to the longer-range plan (Associate's degree, transfer, bachelor's degree). He emphasized:

One way to help the advisement is that instead of treating students as if they're on a fast food line, like you get cycled through the advisement process as quick as possible...where a student maybe spends less than five minutes with an advisor...have...where it's more personal instead of just as quickly as possible just get out of here.

At Sunshine State, another student elaborated on the challenges of giving each student this type of personalized attention, and she recommended a counselor for each department and program. This way, she said they can point you in the direction of the classes you need based on knowledge of the field, the range of programs, etc. specific to the industry. Other students

¹³⁶ The President, campus provosts, and chief student affairs officer have worked to reduce this wait time and implement strategies so that quick questions can be handled more efficiently.

chimed in with experiences of working with individuals like this who are knowledgeable go-to persons, such as in hospitality, and one of them pointed out that the department chairs are generally viewed as the key persons who make these connections. Some students know who their go-to person is – in a building or among their teachers, but as one student pointed out, “There are students that are just like I don’t know what to do so I’m just going to take my paper, and I’m going to do my own thing and hope for the best.” The students talked about how to create more of the “go-getter” type of students and how to better reach the students “who don’t want to take responsibility and take initiative and do what needs to be done.” For these students, “you really need somebody to talk to personally, and I don’t think that mechanism is there. Advisors are just there to tell you how to get out as quickly as possible. They don’t ask you personal questions,” one student emphasized.

At Emerald Community College in WA, students’ comments about the advising process were similar to those at Sunshine State College. Emerald students emphasized a need for an ongoing support structure for transfer, as well as knowledgeable persons in their field of interest to guide them to take the appropriate courses and help make connections with people at universities in their field. In the drop-in advising center, the appointments average about 15 minutes and focused on course-taking that term. One student described how he fills in his own gaps after he still has questions after drop-in advising or seeing his faculty advisor. He has not made a practice of following-up with his faculty advisor by email or phone, though he admitted that he could do that in the future. He has connections through his church with faculty and staff at the University of Washington – “I work a lot with them, so it’s more of me finding my own resources rather than utilizing the resources that I have at [Emerald].” Without this mentorship, he said that most students may “figure things out on your own, and then it’s like you think that

you're doing the right thing until it's time for you to transfer, like oh my god, I need this class? Oh my gosh, what about this? Oh my god, I didn't do this. So either they'll get discouraged [and continue on], or they're going to get discouraged and give up." Many students do not see an advisor or experience the advising structure as too limited when they create their schedules, relative to their desired program of study.

Faculty deliberations to improve advising at Emerald. Colleges responded differently to the kinds of issues identified by students, as well as some faculty or administrators. In Emerald Community College (within Washington State), faculty are exploring the challenges in creating a system for high-quality advising for a large number of students, with diverse enrollment patterns, levels of academic preparation, and degree program interests. At Emerald CC, students have faculty advisor assignments from the educational planning center, but also select faculty advisors based on courses they have taken, or based on meeting faculty in informal gatherings. The student services advising center may also work with students to select an advisor if they are undecided, using a list of advisors who have elected to serve students in this category. This process is called "Project Declare." Full-time faculty are required to keep three-four office hours per week to advise students, and some have students waiting outside their doors and others are not as busy during those hours advising students. "Some faculty are much more proactive in reaching out to students...there is imbalance," described the student services vice president. Some faculty, such as economics faculty advising students on transfer in business, may have 80-90 students in their advising load, and some faculty who may elect to advise undecided students, may have only 18 on their list. The implications of this imbalance for individual departments, students, and faculty are unknown. Transfer advisors, provosts/vice presidents of academic affairs, or faculty talked about an imbalance in faculty effectiveness with advising at all colleges.

The college is considering changes to advising, because “institutionally there is not a very clear pathway...the generally accepted understanding is that educational planning does first quarter advising...we’ll get you started...then [the student] should figure out what they’re going to do...and then once you figure it out we’ll assign you a faculty advisor. But students, I think, need more support for figuring it out...[such as] helping them sort the prof/tech pathway versus the transfer pathway,” according to an Emerald faculty member. Faculty and staff are now deliberating about key points of transition for students, providing supports for career assessments and counseling, and redesigning course placement relative to where students score on the placement test. The objective for identifying timeframes for career assessments is to reduce students’ time without a declared major of study, and the goal with respect to adjustments to course placements is creating the optimal match for students’ progression to college-level courses.

One barrier to improving faculty engagement with advising students at Emerald is making sure that advising is “considered equal [to teaching] in governance activities for post tenure evaluation and [promotion]. And making sure that faculty trust that will be the case going forward. So, I can attend a committee meeting four times a quarter versus meeting with 75 advisees. Which am I going to do if I’m not passionate about one or either of them? So there are a lot of pieces to that puzzle,” said one Emerald social science faculty member. An Emerald business faculty member argued that a culture change must occur at the college among faculty, such that faculty see advising as teaching, and the challenge is providing resources and incentives to support this:

I really think it’s important that faculty get more involved with advising. We can connect with students in a different way than educational planning...I think we need to work a little harder with our students to be encouraging and helpful...the cultural change...is to

say, advising is teaching. It's a part of our job...the obstacle I think we're going to face is what's the incentive for the instructor to get involved and do this work.

This core team of faculty working on the advising committee have strategized about offering faculty training sessions on financial aid, transfer/articulation, resources for coaching about career pathways, etc. that would build upon the programming offered by the college's student services department.

One of the ideas offered by a business faculty member was to coach and identify "master advisors within each department who mentor and encourage faculty and departments to increase their knowledge of all the different areas of advising, and to see the value and importance of it." Faculty members have also been working on what incentives and compensation structure would be reasonable for additional responsibilities such as these. At the national advising conference, the participating faculty learned about the use of an "advising syllabus" which is like a course syllabus, but is essentially "a contract with the student" to develop their academic plan, access campus and program resources as appropriate (TRIO, Mesa, honors, the Center for Leadership and Service, etc.), and complete steps involved in transfer. The current plan is to recruit faculty for a summer institute to outline the advising syllabus and create a campus-wide plan for implementation (detail on available resources and faculty compensation for this was not yet available).

Emerald faculty and students that I interviewed affirmed that meaningful, personalized connections in academic advising matter most when supporting students on successful degree completion and transfer pathways. One engineering faculty member would exemplify behaviors of a 'transfer champion,' but this type of faculty-student advising is atypical at Emerald.¹³⁷ He is

¹³⁷ This engineering professor meets with 15 students per week, and the other engineering faculty member also meets with 15 students per week, and together they advise between 200-300 students. Several Mesa students are

working with a team of faculty and administrators to broaden these practices among larger numbers of faculty in the context of their own disciplines. Students have to persevere on their own oftentimes to get the answers and support they need. As described by one Emerald student:

I believe there is a serious gap in the communication within this school because not only me, but several students have talked about how different people give you different information, and there are a lot of people who will give you information to shut you down and to turn you away. And some students have left and not come [back to college] because of that. That's not me. I'm going to keep coming back to you and I'm going to keep asking you the same question...if you don't know something, don't just say I don't know. Say I don't know, but I know this person who is knowledgeable, or...I'll take you over here, or I'll do this...to find the answer.

Emerald faculty, student services, and administrators are working on solutions to these problems, however, a cohesive strategy with a realistic plan for implementation with the necessary resources was not articulated or shared with me at the time of my interviews.

Strategies for improving advising at Sunshine State. The average-performing college in Florida (Sunshine State) launched a comprehensive set of initiatives to improve student success, called the “College Experience.” The College Experience has five components: new

engineering majors, and this faculty member describes Mesa and TRIO as “auxiliary support programs” that provide personalized coaching and more opportunities for campus connections. He works closely with the tutoring center because a large proportion of campus tutors are his students. In order to cultivate research-based problem-solving for students (in addition to running a research lab in addition to his teaching and advising load), he runs an engineering club on Monday and Wednesday afternoons for two hours, in which about 30 students work on two design projects, such as a human-powered paper vehicle or a robot. He keeps track of his students who transfer, and organizes campus visits to four universities a year, and makes connections with the faculty and his former students at that university.

His current students learn from his former students during those visits and reinforce how their training at Emerald has helped prepare them for the type of work they are doing in upper-division engineering. For example, he took 20 students to Washington State University (WSU) on a bus, with funding from WSU and the college's student affairs department. When he hears feedback about his lab report assignments and research projects from former students, he then uses those relationships to adapt his course curriculum and strengthen transitions to upper-division work for his students even more strongly. He is mindful about promoting access to successful engineering students among those under-represented in STEM fields such as low-income, minorities, and women students. “I spend more time with this group of students because the chances of success are greater the further along students go in their courses, especially math... TRIO [and Mesa] allows me to implement more resources,” and he described how TRIO's work to provide financial planning and literacy training “frees me up to do some additional things...it broadens our approach to student success.”

student orientation, mandatory integrated developmental advising, a learning plan, an early alert system, and enhanced out of class support. To ensure the plan is implemented and to monitor its success, academic leaders have met every week for 30 minutes to discuss progress in each of the five initiatives for 180 days (6 months in 2012-13, and this period has been extended), and any college staff person can listen in on the meetings. This is known as the 5 x 180 plan. Sunshine State College uses coaching from Achieving the Dream to broaden the scale of impact and positive connection with vulnerable populations. With respect to having the whole college share responsibility for supporting all students to succeed, especially those who are historically underperforming and under-served, “courageous conversations” that are part of the Achieving the Dream work on campus examine how supports can go beyond small-scale programs and initiatives.¹³⁸ Though apparently worthwhile as far as they go, targeted initiatives often only touch a few among the many thousands of students (such as Men Achieving Excellence (MAX), Brother-to-Brother,¹³⁹ TRIO, College Reach Out Programs (CROP), etc.). One of the results of the ATD courageous conversations among the deans was the idea of “Each one, Reach one.” As the ATD coordinator described, the goal is for each faculty or staff member to “take one student

¹³⁸ One of the core strategies for institutional transformation highlighted in Achieving the Dream is leading and facilitating “courageous conversations.” The ATD coordinator has been leading conversations about success metrics, implementation process, equity issues, and planning, as part of the development of the college’s three-year ATD plan. At the time of my interview, there had been about six months of planning/implementation. One of the areas of transformation for the college, the ATD coordinator described, is among faculty members’ responsiveness and strategizing about meeting the diverse needs of the student population through multiple instructional approaches and also partnerships with community services. Along with advising staff, faculty have noticed that students face additional challenges to academic success that go beyond providing tutoring and having students utilize it. Some students deal with homelessness, mental health concerns, domestic violence, poor nutrition, and more. Through courageous conversations work, faculty and staff teamed together to host the first Work, Life, and School Connections fair. All faculty posted the announcement in their classrooms; and it’s also publicized on Facebook, Twitter, student blogs, and the student newspaper. Strategizing about how to effectively use social media is embedded in the Achieving the Dream planning and implementation, and social media experts regularly attend meetings.

¹³⁹ The Brother-2-Brother (B2B) program is an official student organization of college students whose purpose is to increase the enrollment, retention, and graduation rates of African American and Latino male students. The B2B program offers support from both faculty and peers in academic advising, time management, study techniques, learning styles, test preparation, career planning, and grade monitoring. B2B is part of a state-wide African American Male Initiative (AAMI[®]) of the Board of Regents of the University System of Georgia.

in you think may not be successful if you don't intervene and go the extra step for that student, just applying the personal touch," as a way of showing how the college will support that student.

In one of the meetings, the Dean of Sciences brought up the idea of asking faculty to go the extra mile, and then the collective group expanded on the idea to play out the scope of it – each faculty member across 4,000 sections per term – would have a substantial impact. To make the idea more palpable, “it may be that one opportunity a faculty might have to reach out to a student who hadn't slept that night, worked overtime...and this is why they're failing your class,” and then work with that student to coach them on finding a better work schedule and help them follow through on tutoring support and coaching them to be more successful on work for class. One of the ways that the college will capture this work is through planned faculty testimonials, organized on a blog by the college's marketing and public information office. This effort was announced at the all-college day in October. The director of the college's professional development center is working with faculty and administrators to grow this effort, along with the deans and others championing the effort.

“Each one, reach one” was felt by the students. One of the African-American male students I spoke with, who primarily takes classes on a campus with a larger African-American population than some of the other campuses at the same institution, noticed a difference from prior faculty-staff-student relationships in the new ways that faculty and staff were reaching out to students. One faculty member had brought together about 20 African-American students as part of the Student Government Association and the Women on the Way program, and asked this student to take a leadership role in Each One, Reach One, which he accepted. Without any specific question on this initiative from me, he said:

...through the faculty alone, the little Each One, Reach One program [works] where the teachers, whenever they see a struggling student, they're supposed to help them out. And so that's why you can see a big burst from a lot of faculty within the college and a lot of the staff to really try to help the students. From my perspective, and from where I'm at, that's why I say that I think they're doing a good job, just because they are trying, they are putting that effort out there, and ultimately it is for the student to decide, whether they're shy or whether they're scared or nervous or whatever, you still have to decide for yourself.

This student reported that there were flyers and pamphlets in the hallways and walls which promoted "Each one, reach one" and described a wide range of programs for counseling, tutoring, family concerns, and so forth.

Room for Improvement in Colleges with Above-Average Transfer Rates

Despite evidence of more effective practices and better developed support systems in colleges with above-average transfer rates, respondents identified various facets of this institution's effort that could be improved. In addition to mandatory or early bird student advising supported by both faculty and professional advising staff, all three colleges with above-average transfer rates generally had academic leaders (including the president) who championed students' transfer and successfully engaged mid-level leaders and leaders from nearby four-year institutions in supporting students' upward transfer. Faculty contracts at colleges with above-average transfer rates included student advising assignments or some comparable equivalent, such as leading a student club, and institutional supports for faculty to be effective in student advising, such as an online transfer advising portal. Colleges with above-average transfer rates also had a larger proportion of faculty (compared with average performers) involved in planning out-of-class supports and enrichment experiences for students that aid transfer. Faculty at these colleges were also active in supporting campus programs dedicated to improved postsecondary success for low-income, minority, and first-generation students, such as TRIO and similar STEM

programs, by inviting presentations in their classrooms about available programs and services, and referring students to these services in their advising.

Even with a proactive approach to transfer advising, respondents in all colleges, even the highest performing ones, described a high amount of variance among faculty, in both activity and performance, with respect to transfer advising (based on interviews with both faculty, transfer advisors, and student affairs administrators). Students also vocalized differences in advising knowledge and capacity across professional staff in all of the colleges. In order to address this problem, solutions that are being generated by academic leaders in all six colleges include incorporating advising participation and effectiveness as part of faculty evaluation and promotion, and providing additional professional incentives. Faculty evaluation metrics regarding academic advising and transfer-advising, in particular, had not been finalized or implemented at any of the colleges I visited, so this is a new frontier for faculty work in broad-access colleges such as these. Due to the increasing proportion of part-time faculty working at community colleges, colleges have also begun to implement training and development programs for part-time faculty and offer additional pay for part-time faculty to conduct advising with students.¹⁴⁰

¹⁴⁰ For example, at Hope Community College, strategies to engage adjunct faculty with campus community include opportunities to participate in the annual welcome to campus event and program offerings from the college's professional development center. However, only a small percentage participate in these types of events and activities, so the college's professional development center uses interns to experiment with internet-based community building initiatives with adjuncts that go beyond emails about rules, deadlines, and procedures. The college's professional development center offers a program for adjunct faculty which is a semester-long seminar that meets seven times on instructional effectiveness and networking. Adjuncts also have the opportunity to be invited by their dean to participate in the advancement program, which offers a chance for an adjunct to perform a 10-minute teaching demo and work through a proposed professional growth plan over a semester. When an adjunct completes the advancement program, he/she earns \$100 more per credit hour, and must attend two more workshops at the college or through another professional organization in their field.

Colleges that have higher rates of upward transfer tended to convey a greater sense of confidence, urgency, and resource investment in building and maintaining relationships that work to support students' 2/4 transfer. Even in these colleges, however, students felt that substantial improvements were necessary to increase the availability of high-quality, consistent transfer advising. Students across the colleges generally emphasized the need for a transfer "advocate," which was a term used by one student at the above-average performer in Washington state (Harvest Community College). This "transfer advocate" is similar to Dowd's conception of a "transfer champion" – someone who breaks down barriers (such as inconsistent transfer advice, lack of responsiveness/helpful service in financial aid planning, problems between two- and four-year institutions that are major-specific, etc.), and meaningfully guides and coaches students to be successful in upward transfer (Dowd et al., 2008).

The Crucial Role of Relationships with Faculty or Staff

When we look in detail at what colleges do to encourage and support upward transfer, it is clear that certain kinds of practices, supported by institutional policies, can make a difference. It is also clear that more needs to be done, and that all the students and faculty in all the colleges were aware of this, and were often taking steps to address this need. But one theme was especially noticeable, in particular, when approaching the problem from the vantage point of the student, as in Derek's case. At the core of the successful practices—or their absence—was the crucial role that relationships with faculty or staff could play in shaping students' ideas about transfer possibilities, belief that they could transfer, or their actual steps to engage in transfer.

While students at all of the colleges reported complaints about advising supports and some of their instructors' effectiveness, most students I spoke with could point to one supportive service or person that made a positive difference in their educational experience and transfer

readiness. Nearly all the students I interviewed, however, were among the most connected to the college's support programs and student services because they were recruited to participate in the study through a faculty or staff person. Students who were not participating in a support program such as TRIO, Brother-to-Brother, or a student leadership program (in the Florida colleges I visited, one of these programs was for developmental education students) may not have had the same sense of connection to a faculty or staff member. By making the experiences felt by students in these types of programs more universal, as well as having mandated transfer advising for all students enrolled in associate's degree programs, upward transfer rates would likely dramatically improve.

Here the qualitative findings illuminate patterns apparent in the quantitative analyses. Based on conversations with students, it is unsurprising that measures of academic and social integration available in BPS (participation in academic advising, informal faculty conversations, clubs, arts, sports, and/or study groups) do not explain variance in students' upward transfer probability particularly well. These measures do not capture the extent and quality of connection between the student and college faculty and staff, nor do these measures capture the quantity of personal connections felt by the students, especially with transfer-specific support persons. A measure that captures the types of transfer-specific advising interactions experienced by the student and distinguishes between interactions such as those identified by Dowd's research on transfer agents and transfer champions¹⁴¹ would be instructive. In my research, I found that most

¹⁴¹ Recall that 'transfer agents' help students navigate complicated academic requirements and application procedures and validate students' educational aspirations and dispel their students' fears about belonging or succeeding. 'Transfer champions' represent the views of transfer students, socioeconomically disadvantaged students especially, to shape institutional policies and practices designed to reduce informational, economic, and cultural barriers to transfer (Dowd et al., 2008). Transfer champions are typically faculty and administrators, and transfer agents may be any "authority figure" such as a student services advisor or faculty member offering transfer advising to students with technical knowledge and/or validating support.

students likely have access to a “transfer informant” may not choose to even obtain transfer advice since this is an optional service. Some of the highly involved students, such as those in TRIO programs in Washington colleges and Brother-to-Brother programs (at the above-average performing college in Georgia), spoke of having a relationship with an advisor who would be more of a “transfer champion.” My sense was that this is not the norm.

Drawing particularly from student interviews and focus groups, my hypothesis is that if one were to measure the number of people that a student feels particularly engaged with, connected to, and who will advocate on their behalf, as well as the strength of those connections, this measure would be strongly associated with students’ upward transfer probability. Building from the quantitative analysis, investigation of this hypothesis should also account for student’s transfer intention, transfer-oriented major, and the college’s mission focus on transfer success. The meaningful connections could stem from participation in a course that led to a study group, which created a friendship that helped connect the student to a work study job or a club activity; but it is the personal relationship that likely matters more than the context of the meeting or the task. Researchers in K-12 education have identified personalized academic and social learning as a key variable for student success (Rutledge, 2012), which has also been mirrored in higher education in research on learning communities (Price, 2005).

Participation in goal-oriented and focused tasks designed to address specific barriers faced by students on their pathway to transferring to a four-year institution, such as workshops on applying to four-year institutions, attending “Transfer Fairs,” and receiving transfer-focused advising would also likely show a significant and positive effect. Participation in “academic advising” as a general practice is not the same as working with a “transfer champion” at the college who is invested and concentrated on supporting the student in successful transfer by

helping break down any necessary barriers faced by the student in the process. While developing and sustaining the work of ‘transfer champions’ is a substantial challenge in colleges that are resource-constrained, growing the number of faculty, staff, and administrators actively engaged in this role is a worthwhile investment towards increasing community college students’ successful transition to baccalaureate programs.

Chapter VI. Case Study Findings and Interpretations (II): Building Data-Informed, Innovative Systems to Support Upward Transfer

One step removed from the direct interface between students and faculty or staff—where relationships appear to play such an important role, as noted in the preceding chapter—lie various actions, structures, and practices whereby the college builds a “system of support” for the transfer function. In this chapter, I trace two key aspects of the six colleges’ efforts to build such a system. The first concerns the use of data to redesign programs and initiatives to better enable students to be successful in upward transfer. The second entails a broader “climate of innovation,” which the colleges can build to encourage experimentation with transfer-related structures, practices, and policies.

Data Use Related to Improving Students’ Upward Transfer

For Derek and students like him, data use matters most when used to inform decision-making about college-level supports making a difference in their success. These supports include such things as: access and delivery of tutoring; support for campus clubs and study groups; work study opportunities; and effective mentoring. While Hope CC offered an array of services that Derek affirmed were making an important difference in his success, the college (and the other five colleges in the case studies) did not conduct formative or summative evaluative research on tutoring quality and implementation; work study experiences; or peer-peer, faculty-staff, or faculty-student mentoring. These types of specialized studies would perhaps better capture some of the influential effects of factors helping Derek and his peers to succeed in transferring.

Data on students’ upward transfer was most readily known and accessed by directors of institutional effectiveness and research (or similar position) across the six colleges. Use of data

for decision-making was the most promoted among administrators in Florida institutions (compared with the Georgia and Washington institutions). Even in the Florida colleges, however, knowledge of relevant data on students' upward transfer about who is transferring in relation to the college's programs and services was not commonly retrieved by most persons I interviewed. Directors of institutional research and effectiveness did not share any examples of disaggregating upward transfer rates by major field of study or by student sub-groups such as Pell grant recipients, first-generation, or under-represented minority groups.

This type of data could then be used to target interventions, programs, and/or advising to support them in more tailored ways to lead to successful transfer. [See Appendix K for a description of data use and interventions across colleges]. State research administrators in Florida and Georgia track the number of transfers by major field of study and grade point average within the public colleges and universities, however, this information is generally not used to tailor major-specific advising for improving seamless transfer.¹⁴² One strong indicator of a college's investment and attention to improving students' upward transfer by the president and/or vice president of student affairs is the purchase of National Student Clearinghouse (NSC) data on transfer for their student cohorts (Harvest, Peachtree, Cherokee Rose, and Sunshine State) in order to document the nature of students' transfer pathways (upward vs. lateral, full-time vs. part-time enrollment, etc.). In my interviews, I did not hear much discussion of how colleges were using the NSC data to strengthen transfer supports, agreements, and advising for students, however.

¹⁴² Washington's State Board of Community and Technical Colleges provides cohort-based analyses of transfer rates to colleges through the Washington State Governance Institute for Student Success, e.g. "the number of transfers without earned degree" and the "total completed, transferred, or still enrolled." The Washington Student Achievement Council (2013) published aggregate data for the system as a whole (not by individual colleges) on the "trend in transfers and transitions to Washington baccalaureate institutions" since its last report (2011). However, Washington's transfer data by college is not disaggregated by major, GPA, student characteristics, etc. and is not readily available to the public or college faculty and staff.

Whatever the data sources and the configuration of users within the college, the case study data reveal a number of data use practices, that informed—or could inform—the transfer process in several ways. I review these below, first, in terms of data tracking that could support transfer prospects for historically underserved students. Second, I zero in on one college (Sunshine state) which has evolved a more comprehensive model of data-informed practice that has important implications for improving transfer prospects. Finally, I review what local and state actions are doing to create an environment supporting data use in these colleges.

Using Data to Track and Support Historically Underserved Students' Transfer Prospects

A first level of data use is generally to support documentation of a more accurate transfer rate for reporting purposes, such as for accreditation (Washington), planning for outcomes-based budgeting (Georgia), or baccalaureate program expansion (Florida). Beyond that, individual colleges—and not necessarily those with above-average transfer rates—have been experimenting with various ways to use data in guiding and designing better services of historically underserved students, if not for the full student population in the college.

At both of the Florida colleges I visited, administrators reviewed state, college-level, and campus-level data on gaps between racial/ethnic groups in completion of milestones toward student success, including transfer. African-American males were viewed as the most vulnerable and at-risk based upon review of state and college-level data, which is also reflected in national data and research. Florida colleges had each used data about the under-performance of African-American and Latino males, as well as data about the misalignment between pre-college education and college-level coursework success for under-prepared student populations, to reform student services programming and developmental education sequencing, curricula, and instruction.

Transfer data use and experimentation with data-based program design at Hope Community College. On the transfer outcome, Hope institutional researchers compare students who are in college-preparatory courses to those who are not. The college is currently running analyses of student graduation and transfer by discipline, and looking at ABC rates (percent of students receiving A, B, or C in their core courses) and withdrawal rates by major field of study. One useful analysis the Hope Community College President mentioned was the study conducted to determine the impact of a student's changing his/her program of study, and the results showing that once a student changed programs more than three times, he/she was unlikely to finish the associate's degree. Hope CC is also looking at ways to study cost-effectiveness of various programs by participating in a national study that analyzes course, completion, and transfer outcomes relative to expenditures, and faculty and student characteristics. Another large study will examine first-time-in-college (FTIC) students fall-to-fall retention (which is about 60%) to find out where students go after they leave the institution.¹⁴³

Since Hope Community College joined Achieving the Dream, which emphasizes building a culture of evidence to guide experimentation, in 2005, the college has been developing its own capacity to conduct research on its programs, and supporting administrators, faculty, and staff to use the business intelligence system to run their own queries. This college gathers student and institutional data at three levels: among individual programs, college-wide measures in comparison to other Florida colleges, and federally-reported measures for national comparisons. Concurrent with ATD work, the college has been successful in developing grant-supported

¹⁴³ According to the National Community College Benchmarking Project, the median fall-to-fall persistence rate is 48.44%, the 90th percentile is 54.52%, and the 10% percentile is 40.4%. In the most recent year, 2012, 267 institutions from 37 states participated in the project from: NY (26), IL (19), TX (17), CO (15), IN (15), AZ (14), MO (13), PA (13), IA (11), KS (11), TN (11), MI (10), WI (8), HI (7), NJ (7), OH (7), WY (7), FL (6), KY (5), NC (5), SC (5), etc.

initiatives using its institutional research and effectiveness capacity in data-based program design. For example, students who are Pell-eligible, first-time-in-college, and placed into developmental education courses from their scores on the Postsecondary Education Readiness Test (PERT)¹⁴⁴ may elect to participate in a new program which trains peer leaders to serve as teaching assistants in developmental and college success courses. Students who place into two or more developmental education courses are required to take a three-credit Student Success course, and others who place into college-level courses can take it as an elective. Peer leaders are experienced students who work with faculty and staff and small groups of students to assist them with setting goals, connecting to college life, navigating college systems, utilizing college resources and services, and developing a commitment to leadership and service. This program is supported by institutional research and the office of civic engagement and volunteerism, as well as the academic support division of the college. It is another way to engage academically under-prepared students in leadership roles, as many of them may not take the initiative to get involved in the Student Government Association or other student groups.

The program started small, with eight peer leaders and four faculty teaching student success courses in January 2012, and the eventual goal will be to use the experience to inform instruction in the whole learning support division and campus-wide. After a year, the program grew to 30 peer leaders. Students' success is tracked as part of their "pod" group which meets several times a week, and they are tracked in courses that have a designated peer leader, with comparable students in standard courses. The coordinator meets with peer leaders several times a semester, and they all work together in the office at least one hour a week. The hypothesis being

¹⁴⁴ PERT is one of the first customized state college placement tests developed from a blueprint in 2010 created by Florida educators from K-12 districts, colleges, and universities. PERT replaced Accuplacer, and was built from Florida's work with the American Diploma Project to develop college readiness competencies.

tested is that students with peer leaders or participating in a pod are more successful in courses, have higher retention, and/or better completion and transfer outcomes (longer term). A university-based external evaluator has been contracted to report on the program's effectiveness on the basis of these studies.

Using both quantitative and qualitative data at Sunshine State College. Among the case study colleges, are efforts to bring different kinds of data to bear on the challenges they are facing in their transfer function. Sunshine's Chief Student Affairs Officer affirmed that having access to the data about special populations has transformed problem-solving to support students to succeed in college by making it more strategic. "Now that we have that data, we know who our students are, what our minority groups look like, and as a College, we value all student populations, we have not shied away from any student groups, and we engage them." With information from business intelligence about student success rates, a glaring finding was the under-performance of African-American males. Larger campuses at Sunshine have paid administrators to work with an initiative called, Men Achieving Excellence (MAX). One of the campuses with a smaller minority population has a faculty club advisor for the MAX club. Seminars provide skill-building in interviewing and professional dress for example. Larger campuses offer clothes closets and textbook lending, for women and men. The TRIO program¹⁴⁵ and Campus/College Reach Out Programs are also supports for low-income, first-generation-in-college, and minority students to provide intensive case management support aimed at transfer and degree completion.

¹⁴⁵ The Federal TRIO Programs are federal outreach and student services programs designed to identify and provide services for individuals from disadvantaged backgrounds. TRIO programs are targeted to serve and assist low-income individuals, first-generation college students, and individuals with disabilities to progress through the academic pipeline, in this case from community college to baccalaureate-granting programs and institutions. TRIO also includes a training program for directors and staff of TRIO projects.

Quantitative data is not the only type of data used to improve programming so that Sunshine State students have a more productive, engaged “college experience.” Sunshine State faculty and administrators met with African American male students in a “collaborative labs” setting to process plans for improving student success.¹⁴⁶ The result of this open planning meeting was that “students [were] taking charge of their own destinies, instead of saying well, here’s my feedback. You guys make it happen for us,” according to the collaborative lab director. This involves qualitative data gathering and brainstorming. Another strategy that emerged was to hold a focus group and talk with African-American females about what the college can do to help them succeed.

Data access and use in Georgia colleges. Data use that could inform or enhance the transfer function was not always directed at transfer per se, but at the full scope of students’ progress through the institution. At the two colleges in Georgia, for example, access and utilization of data regarding equity gaps in students’ upward transfer rates was not emphasized as much as data about equity gaps in students’ degree completion, students’ successful transition from learning support to college-level courses, and retention. Faculty and administrators focused their attention on course pass rates, and courses with higher “DWF” rates (grade of D or F or withdrawal), in order to guide instructional planning, faculty professional development, course

¹⁴⁶ For broad-based stakeholder engagement and collaborative visioning, the college uses an on-campus facility and experienced facilitators that use an appreciative inquiry approach to decision-making, called Collaborative Labs. Collaborative Labs serve many other clients, but the college generally uses the labs weekly for some aspect of planning for student success related initiatives. Appreciative inquiry (AI) begins with an inventory of strengths and effective practices, an assessment of how those strengths can be leveraged and expanded, visioning about ideal scenarios, and then strategic planning to get to that ideal scenario. AI is based on the work of Dr. David Cooperrider, Case Western Reserve University, author of the *Appreciative Inquiry Handbook*, published in 2003. Facilitation strategies include: having groups create magazine covers and headlines that put the ideal scenario into pictures and words; having groups work with a think-tank or brainstorming software that records as many ideas as possible from each member in a ten-minute period; and engaging everyone in voting on the ideas which results in a top 10, then top 3 or 5. Each session includes a documenter, technologist, and visual illustrator to capture multi-dimensionally the work of the groups and stakeholders assembled.

redesign, or changes in sequencing. At Peachtree College, faculty had begun brainstorming ways to improve course success rates by encouraging tutoring with specific instructions to the student and tutor and also by talking with students about accountability mechanisms to ensure students submit their original work (e.g. faculty use www.turnitin.com to check online sources).

At Cherokee Rose, the President's Cabinet typically requested information about differences in students' success rates or DWF rates by campus location or student type (i.e. commuter versus residential students), and among students exiting learning support classes, disaggregated by sub-group such as race/ethnicity and age group. Since Cherokee Rose has two campuses and other programs based at a four-year institution, the college invested in obtaining transfer data from the National Student Clearinghouse, and found out that transfer pathways of students included lateral transfers to other associates' degree programs and programs in technical colleges, as well as some proportion of upward transfers.

Barriers to using transfer data for decision support in Washington state. In Washington, administrators did not focus in the same way as those in Florida and Georgia on closing gaps in student outcomes (such as upward transfer) between low-income or minority students and groups traditionally performing better. However, both Washington colleges offered strong programmatic support for low-income, minority, first-generation, and disabled students through TRIO, a federal program with requirements that include extensive tracking and accountability regarding students' upward transfer. TRIO advisors met with students several times per term, working through students' immediate challenges as well as preparing them for longer-term transfer and success in a bachelor's degree-granting program. According to TRIO directors or other student affairs administrators I talked to in the Washington colleges, TRIO programs concentrated their services on full-time students to maximize program resources for

students best able to take advantage of the programming. However, TRIO programs reached only a small percentage of eligible students, and were encouraged to participate in broader institutional change and leadership deliberations so as to not become too programmatically isolated from college operations as a whole.

The limited use of data in the transfer process may reflect constraints built into the state's data system, as the Washington colleges reveal. In this state, college administrators reported constraints in accessing students' upward transfer data due to a lag in the design and implementation of the state's P-20W longitudinal data system, as well as the completion of the Mutual Records Transcript Exchange (MRTE). "There's a lot of confusion right now about whose tracking actual transfer outcomes, and whose got the data, and who has it reliably, and is it user-friendly?," according to one Washington college leader (September, 2012). In a sense, the state is "living through a period of being in a black hole about that outcome," described an Emerald Community College administrator, and as a result, colleges were still waiting to learn how transfer will be tracked by the state data system and how to use the new data reporting mechanism for retrieving data on this outcome that can be used in decision-making.

As an institutional indicator, transfer "hasn't been made a priority," [as reported by the institutional research director at Emerald], and one reason for that is that transfer is not a performance indicator in the Washington Student Achievement Initiative (the state's performance funding program). From the perspective of the IR Director, transfer success is one of the three key success outcomes as one third of the population is transfer-oriented¹⁴⁷, and a growing number of students are Running Start (co-enrolled in high school) who are also largely transfer oriented. However, she pointed out that, in her view, it is not enough to track transfer

¹⁴⁷ About one third of Emerald's enrollments are in each category: 1) professional/technical, 2) transfer, and 3) ABE/GED/pre-college education.

without tracking continuous enrollment at the transfer institution, progress toward a bachelor's degree, and eventual bachelor's degree attainment. Emerald CC's IR director also wanted to measure institutional processes that support students' upward transfer: how well their students were set up for success in a four-year institution and the strength of partnerships with four-year institutions.

Transfer data use deliberations at Emerald CC help illustrate the many dimensions of the transfer-related data use challenge. Colleges may wish to make better use of data for this purpose, but not have ready access to (or knowledge of how to access) the most useful data. One of the major barriers with tracking cohort-based rates of transfer is the historic lag of about two years in provision of data on any given cohort (though this lag time may be improved in the new state data tracking system). In order to supplement state data and capture transfers across state lines, Harvest Community College (above-average transfer performer in Washington) obtained transfer data from the National Student Clearinghouse (NSC) and documented a higher transfer rate as a result of this inquiry.¹⁴⁸ Emerald Community College would also benefit from tracking student transfers using NSC data to determine transfer rates to other community colleges, to on-site university partners, and even out-of-state transfers.¹⁴⁹

The Shift to Data-Informed Practice: Sunshine State's Business Intelligence System

Across the colleges, models were beginning to emerge of sophisticated and sustained efforts to use data in a variety of ways to support practice in various realms of college functioning, transfer included. One particular college exemplifies this effort, through the creation

¹⁴⁸ The above-average performing college in Georgia also calculates its transfer rate by paying to subscribe to the National Student Clearinghouse.

¹⁴⁹ Tracking students' transfers with NSC data may be particularly helpful since the population is highly culturally diverse, and students may be more open to re-location because of their immigration history. For example, two of the nine students I interviewed at this college were interested in out-of-state transfer.

of a “business intelligence system” now in extensive use throughout the college.

Its introduction surfaces the subtle and substantial changes in institutional culture that are implied as colleges move towards decision-making and practices that are more fully and continuously data-informed.

Systematic and shared data use at this college was a strong facilitating influence for the innovation cultivated in “each one, reach one.” For the president at this college (Sunshine State), according to the vice president of institutional effectiveness, “institutional research is not a department, everyone at the college is an institutional researcher.” Institutional Effectiveness and Research was headed by administrators who have worked at the college several years and they had begun development of a “business intelligence” system prior to this president’s tenure. Even though it was not officially part of their jobs, a small work group met every Friday to improve data access and the timeliness of data request processing. After working in the business sector, individuals in this group were frustrated by the sheltered treatment of data at the college and not being able to run their own queries. Deans and the campus provosts were invited to make lists of information they needed to operate effectively, and this information guided the development of the business intelligence system. The associate vice president of institutional effectiveness (IE) and director of institutional research (IR) described that “institutional research is no longer a gatekeeper of data,” and they function more to “facilitate the institutional effectiveness process.” IR leaders show others where the data is and then lead conversations on best use practices, assessment of the information, and how to improve the system to answer new questions. Faculty and administrators together regularly access data as part of their planning.

Enrollment Management, Information Technology, and Institutional Effectiveness offices worked on the design of the business intelligence (BI) system over a year. The BI system

allowed for quick retrieval of information on enrollment, retention, and so on, by sub-group of student, or by department, over several terms. After rolling out the system in presentations and trainings, “one of the important things that it has allowed [the college] to do, minus the technology, was to have consistent measures,” reported the associate vice president of institutional effectiveness. Also, the Institutional Effectiveness team had been able to build up trust with stakeholders, in such a way that people are less likely to deny the data, say that it’s wrong, say that it doesn’t measure what we do, or that it does not capture the work of my department. The quality and integrity of the data was well-regarded, and the number of users trained in the system had increased to about 180 or so by the time of my visit. The next training group will be the academic advisors (about 60), and then the system will be rolled-out for college-wide use. In the system, academic advisors are able to take stock of how well students perform in relation to their individual learning plan.¹⁵⁰ The college had recently purchased access to track students’ transfers through the National Student Clearinghouse (NSC). This type of capability was pursued in order to follow students’ transfer progress and, if they continued at another baccalaureate-granting institution, determine if they completed associate’s degree requirements there so that the community college could confer that degree. Also, the NSC data provides information on which program or major the student transferred into, but the state data does not.

The business intelligence system is updated daily, “so as soon as grades are posted...[whether it is a 16-week, 8-week, or 4-week course, or whatever], the next day you will

¹⁵⁰ A committee of about 40 college-wide members (faculty, counselors, deans, provosts, associate provosts, and students) came up with a framework for the student life plan that takes into consideration guidelines from federal regulations pertaining to financial aid and state policies. Students are in one of three tracks: accelerated, intervention, or restricted. The Strategic Issues Council will consider effects on enrollment when implementing this plan, and strategize with data. Prior to implementation, institutional researchers simulated the impact of this plan using the previous year’s data using different student populations: all students, developmental students who tested into one area (e.g. math), two areas (e.g. math and English), and first-time-in-college students.

see it in the system,” described the IR director. Deans were the primary users of data regarding pass, withdraw, and failing grades for each course, and could run reports for courses in their department. The typical practice was that deans, the senior vice president, and/or president would pull up the data together on success rates to review status and engage in dialogue with faculty members to problem-solve about increasing pass rates and reducing withdrawals and failures. This was different from the prior practice where researchers would provide data in the form of a presentation on a more periodic basis, and now the practice of reviewing data was more embedded in day-to-day operations. Campus provosts (there is a provost for each of several campuses) were also expected to review campus-level data for success rates and track metrics (5x180?)¹⁵¹ for their students’ experience in advising, orientation, career center visits, counseling and so on. Data use directly guides new planning with respect to budgeting, allocation of staff time, revision of staff and faculty responsibilities, collective decisions about professional development (faculty also have \$1500 for individual professional development over two years), and more.

The shift in the institutional culture to data-driven decision-making was not a natural one for some administrators at this college. One campus provost, academically oriented in English and humanities, described the changes she made to adjust:

This is the first time we could come close to calling ourselves a data-driven institution, and we’re all catching on, and we’re embracing it. I certainly embraced it. I like to tell people if I can learn how to use business intelligence and get good at it and even crave it, anybody can... Quite honestly, my looking at data when I had to wasn’t just because that wasn’t the culture here prior to [the current President], but also because I was afraid of it. I’m not a numbers person, I was never good at math. And so when people would talk

¹⁵¹ To focus on student success, the College created a system called The College Experience. The College Experience has five components: new student orientation, mandatory integrated developmental advising, a learning plan, an early alert system, and enhanced out of class support. To ensure the plan is implemented and monitor its success, leaders meet every week for 30 minutes over 180 days (6 months) to discuss progress in each of the five initiatives. This is known as the 5 x 180 plan.

data, I'm like OK, OK, and I would do what I had to do. But the whole enterprise is so much friendlier than I ever thought it would be, and the whole business intelligence is so user-friendly that that has been completely dispelled and that's part of the leap for me.

As a leader who made the transformation to craving data and feeling comfortable making queries with the system, she emphasized that this was a crucial first step: "to get to the point where you crave it, you want it...you're not just looking at it because you've got this new president who likes to look at it." By expanding the use of the business intelligence system, she said, anyone can see how a particular group, such as African American males who were first-time-in-college as of fall 2011, fared in comparison to the same cohort that began in fall 2012. Once people have learned to know the system's capacity, they are "grabbing hold of all the other questions that we can ask, too." This is exactly what Achieving the Dream supports colleges to accomplish.

However, one faculty member pointed out that while the business intelligence (BI) system is "great", "one of the things that BI doesn't do is qualitative...you know that African American males don't do that well here. OK, but what I want to know is why is that African American male who's at Dartmouth now, why did he succeed? I'd like to know his story and others similar...And I think we'll get there. I think we need to push more for the qualitative side. Nothing against the quantitative," he said.

Creating a Local and State Environment for Data Use

As the business intelligence system case suggests, the use of data to inform transfer or other aspects of the college's program presumes a larger institutional environment that supports data use. Based on my interviews, the emphasis placed upon data use for decision support by the college's leadership, especially the president and vice presidents of academic and student affairs seems to be a common underpinning of colleges with higher upward transfer rates, and those

with increasing rates of students' transfer.¹⁵² With leadership support and additional investments in the data use infrastructure, colleges are then more likely to have more faculty, staff, advisors, and administrators who have access to data queries, data use training, and ask questions of their college's data to improve their work with students and generate innovative programming.¹⁵³ College administrators focused on documenting a more accurate and detailed portrait of their students' transfer patterns use NSC data, not just data from their state. Once a college documented a higher rate of upward transfer from NSC data analysis, the college administrators I spoke with did not elaborate on many changes in transfer supports or new articulation agreements and transfer relationships that resulted. This may be because they were relatively satisfied with documenting a higher transfer rate than state data showed. For data-informed decision-making based on NSC data to occur, IR/IE offices would have to link the NSC transfer data to their own databases and student information and then conduct a meaningful analysis about college-level interventions and activities making a difference in reducing equity gaps in transfer or in improving overall transfer rates. None of the colleges reported conducting such a study using NSC data.

The state also shapes the local environment for data use. The state policy environment plays a role in shaping a college's use and access of data to guide decision-making and innovation towards specific outcomes. State-level attention to reducing equity gaps in retention,

¹⁵² Recall that Sunshine State's three-year transfer-out rate has substantially risen from 2008 to 2011 among first-time, full-time students, from 10 to 16 percent. This is the only college in Florida with such a dramatic increase in college transfer-out rate. Sunshine State also has the largest proportion of its students (10-12%) enrolled in community college baccalaureate programs of Florida's 28 community colleges. Sunshine State performed about average when including both full-time and part-time students in the three-year transfer rate of the fall 2006 cohort, based on state cohort data.

¹⁵³ Research on data use for decision support in Achieving the Dream colleges showed that this process may be slow to change (cited in Chapter IV). Barriers include limitations of the existing data infrastructure, hiring or training staff with expertise for database design and data-use training, lack of accountability or evaluation metrics tied to data use for decision-making, and changing leadership practices and meeting management to be organized around use of performance indicators to re-design practices, programs, and policies.

graduation, and transfer influenced colleges to pay attention to reducing these gaps (for example, in Florida's state strategic plan and college strategic plans and in Georgia's college completion plan and colleges' individual completion plans). State-level provision of transfer data to colleges and the status of transfer outcomes in the state's current or proposed outcome-funding formula are both influential in shaping colleges' attention to the transfer outcome. Colleges considered trade-offs in allocating their own limited institutional research capacity towards transfer-specific studies versus other topics and planning of interventions from those studies. Considerations may include the degree of state funding anticipated from attaining and documenting a higher transfer rate, concern about preparing their transfer-intending student population to succeed at their destination institutions, the college's own investment in supporting internal student transfer to one of their specialized baccalaureate programs, and the degree of resource constraints on affording transfer-specific data gathering and analyses as well as targeted interventions that might result.

College Support for Innovation in Transfer-Related Practices

The experimentation with advising practices and data use in relation to transfer or other aspects of the college's program hints at another, broader feature of the college that undergirds improvements in students transfer prospects and support. Especially visible in the colleges with above-average (or substantially improving) transfer rates, the colleges were creating a culture of support for innovation in practice. While not limited to transfer per se, the set of supports for innovation clearly stimulated a variety of the practices and interventions that seemed to have promise.

Lessons learned from Derek's story may indicate that instructional innovation or new interventions and programs are not necessarily required when setting the context for students'

success in transferring. He did not talk about his participation in a pilot initiative or new program as an instrumental factor in his persistence. However, he did talk about the role of the college's Learning Commons in supporting his success. At the time of its founding in 2008, the Learning Commons was considered an innovation. Tutoring and supplemental student support services used to be scattered in many locations on campus before the Learning Commons. By transforming an under-utilized library into a central place for students to convene for tutoring, meeting in study groups, access learning resources, etc., Derek had a supportive context to spend many hours working on his coursework. Would Derek have succeeded in many of his courses without the collaborative, integrated design of the Learning Commons and the intentional design and support for building community among students and better connecting faculty, students, and staff?

Other students I interviewed at Hope Community College and elsewhere spoke of the helpful supports of specialized programs, such as peer tutoring, service learning, TRIO, Brother-to-Brother, Mesa (wraparound counseling program for STEM majors who are low-income, minorities or women), work study programs, and more. The personalized attention and extra support for meaningful connections by target students with other students and with faculty and staff at the college in the context of these programs were what students most talked about as influential to their successful progress. When students did not have coordinated, helpful, and kind relationships with college faculty, staff, or administrators (even if it was just one bad experience), that was the factor that discouraged them most.

Problem-identification, solution-finding, and innovation in the design and implementation of the college's system(s) of support for students' upward transfer generally began with dialogue among administrators, staff, faculty, and students in the colleges I studied.

According to theory regarding diffusion of innovation, one or more people within an organization must first identify a problem and then match promising innovations as solutions to relevant problems (Miles, 2012). I use the term “system of support for students’ upward transfer,” however, each college in my study is in a different stage of creating a comprehensive, coordinated system of support for transfer. Across these six colleges, none of them had what I would consider a robust, comprehensive, and coordinated “system of support for students’ upward transfer.” However, all of them had some individual components and practices that assisted students in effective transition to upper-division coursework and bachelor’s degree programs/institutions. Each of the colleges in the study had, as part of its mission, the goal to support students in achieving success in their chosen field and job, which may or may not include pursuit of a bachelor’s degree. The transfer mission is just one of many pursued by community colleges and primarily associate’s degree granting institutions in this study.¹⁵⁴

College-wide and Collaborative Processes of Innovative Program Design: The Case of the Florida Colleges

Leaders at Hope Community College and Sunshine State College¹⁵⁵ each described ways in which their student success initiatives were launched through a process of agenda-setting, matching of innovation to a specific problem, redefining and restructuring, clarifying, and routinizing. However, they did not use those terms to characterize their process, nor was it necessarily linear. Appendix M offers a visual representation of the processes associated with the diffusion of college-level innovation, drawing from the descriptions of practices and adoption of innovations in the Florida colleges that I studied. The state articulation policy context, the local

¹⁵⁴ As the analyses of upward transfer probability in the Beginning Postsecondary Study showed, colleges’ transfer-out rates vary and prove influential to a student’s individual likelihood of upward transfer.

¹⁵⁵ The pseudonyms used for participating Florida colleges. Hope CC is the above-average performer, and Sunshine State is an average, but rising performer with respect to transfer. Hope CC does not have any baccalaureate programs, and Sunshine State College has about 10-12% of its students in its own bachelor’s degree programs.

economy, and the relationships developed between the community college (or primarily associate's-degree granting college) and nearby four-year institutions are also shaping influences on the college-level problem-solution frameworks and on the success of institution-wide adoption of new practices and routines.

Once ideas and solutions either originated with or found support among faculty, professional staff, administrators, or all of the above, new responsibilities were negotiated and reallocated within both colleges. Both Florida colleges promoted ongoing professional learning among faculty and staff; then actively support application of that learning within the context of the individual's role, so they seemed to do especially well at supporting reallocation of responsibility. Faculty and deans that maintained strong relationships with employers as part of their program, course design, instructional delivery, and evaluation metrics also seem to be highly facile in reallocating responsibilities in support of better alignment with labor market and industry articulated workforce needs. College administrators viewed the collaborative planning with employers as a touchstone to understanding skills, knowledge, and educational levels required for various jobs, which may result in a higher press for students' upward transfer (particularly in the case of nursing with a high national push for more bachelor's degree holders). With highly engaged, stable, and effective leadership practices, an interactive process of clarifying new roles and creating new routines for implementation has a better foundation for success in achieving the intended outcomes.

At both colleges in Florida, administrators provided tangible and consistent examples of their work to engage students differently, more strategically, and positively in leadership roles and in being part of the delivery of innovations designed to promote student success in associate's degree programs and in upward transfer. At Hope CC, students placed in pre-college

courses may elect to participate as peer leaders and teaching assistants through a pilot program described earlier. Sunshine State administrators enrolled students as collaborative leaders in the five key initiatives designed to improve the “college experience.” Students were regularly engaged in collaborative decision-making through the professionally-facilitated laboratory used by many stakeholder groups to design and re-design college programs and initiatives.

Sunshine State’s collaborative laboratory provided its space and professional facilitation to support articulation planning between the college and the nearby state university. For example in January 2013, all the deans and academic affairs heads at the university and all the college’s health education program staff convened to examine trends in the health care professions and design an articulated curriculum and programs to address those trends. Building on brainstorming about greatest achievements in health education by the individual institutions, collaborative groups brainstormed potential magazine covers and headlines focused on celebrations of future envisioned joint efforts. Collaborative groups envisioned that their partnership would be “awarded the largest federal grant in Florida’s history to coordinate comprehensive mental health care needs for veterans,” and the design of joint massive online courses that educate enrolled students to be a “CEO of [their own] health.” Using a clicker-type classroom response system¹⁵⁶, participants voted on emerging health professions based upon

¹⁵⁶ The Vanderbilt University Center for Teaching defined a classroom response system (sometimes called a personal response system, student response system, or audience response system) as a set of hardware and software that facilitates teaching or decision-making activities such as the following: 1) a teacher or facilitator poses a multiple-choice question the group via an overhead or computer projector, 2) each student or participant submits an answer to the question using a handheld transmitter (a “clicker”) that beams a radio-frequency signal to a receiver attached to the teacher’s computer, 3) software on the teacher or facilitator’s computer collects the students’ or participants’ answers and produces a bar chart showing how many individuals chose each of the answer choices, and 4) the teacher or facilitator makes “on the fly” instructional or meeting facilitation choices in response to the bar chart by, for example, leading the group in a discussion of the merits of each answer choice or asking students (participants) to discuss the question in small groups.” See: <http://cft.vanderbilt.edu/teaching-guides/technology/clickers/>

labor market trends, and examined the inventory of degree programs addressing those professions. This type of collaboration between faculty across institutional lines is not new, was planned as an ongoing initiative, and was an example of how 2/4 transfer collaboration is created, nurtured, and sustained in a major-specific field such as health.

Over many years, the presidents and vice presidents of Sunshine State College and the nearby four-year state university worked together regularly to coordinate degree program offerings and transfer arrangements for students. New bachelor's program ideas for Sunshine State were run by the Dean of Undergraduate Studies at the nearby state university, and then he would raise the proposal with the university's president for any concerns about market saturation in a particular field. The nearby public university had been supportive primarily because of the nature of the county's population dispersion, traffic and travel constraints, and Sunshine State's reputation, according to its former interim president. The nearby state university had a transfer-in rate¹⁵⁷ of about 11% in 2008, which was about three percentage points higher than the mean for public four-year institutions nationally (average=8%). Sunshine State College gave the nearby four-year state university permission to recruit its associate's students often. While there was a strong relationship, the president of Sunshine State College expressed that the local state university strictly enforced admissions requirements for transfer students.

Similar to Sunshine State College, Hope's president maintains communication with presidents of the nearby state universities. One result of these communications is that four-year public universities near Hope CC referred students not initially accepted to the university to Hope CC in order to give them an option to obtain the associate's degree and reapply for

¹⁵⁷ Transfer-in rates include transfers from other four-year institutions [probably quite small] as well as transfers from primarily associate's granting institutions. This is calculated as new transfers as a percentage of total enrollment at the four-year institution.

admission at the four-year institution. Hope's student support services staff and some faculty also maintained dialogue with their counterparts in same field at the nearby state universities. One of Hope's business faculty spoke about a productive relationship with the chair of the accounting department at the nearby four-year institution who shared the study guide for the accounting competency exam, because this is a test that students must take when they transfer. For students taking accounting in the fall semester, she arranged for them to take the competency exam in conjunction with the course final in early January when the content was fresh in their minds, instead of a June test date (nearly six months later). Also, the division advisor for Technology and Professional Programs stays actively connected to chairs and program coordinators at the local four-year universities. Not every faculty member takes on the role of maintaining communication with similar faculty at nearby four-year institutions. However, the Provost works with division heads and through them, their advisors, to create discipline and academic subject-based relationships that support students' transfer.

Specific Innovations that Enhance the Transfer Function

Looking across the six case study colleges, several categories of innovation emerged with particularly strong implications for students' prospects for transferring upwards. Some of these innovations concentrated on targeted supports for low-income, first-generation, and under-represented minority students. Other innovations approached developmental education in new ways that improve students' pathways from pre-college to college-level courses, thereby enabling students engaged in adult basic education a chance at transfer. Still other experiments developed baccalaureate alternatives within the college, thereby presenting transfer students the prospects of a more ready transfer pathway within the college.

Innovations in transfer supports for low-income, first-generation, and under-represented minority students. Specialized program supports such as the federal TRIO programs (Washington colleges), Brother-to-Brother or African American Male Initiative programs (Georgia), or other program supports (service learning, peer tutoring, Men Achieving Excellence, Each One Reach One, etc. in Florida) are a source of original and creative ideas to strengthen and improve students' upward transfer. One of TRIO's evaluation criteria is the percentage of participating students who complete upward transfer, which creates the link between program participation and transfer more explicitly than specialized programs in Georgia or Florida (which are not directly evaluated on the upward transfer outcome).

The TRIO program at Harvest offers a useful illustration of this. The Student Affairs VP at Harvest reported that she reminds the TRIO Director often that while the college is funded to serve TRIO-eligible students, "you must never lose sight that you're to create a culture of understanding of the issues faced by first-generation and low-income students," across the college, because federal funding for programs such as these is vulnerable to being cut and needs a more systemic impact.¹⁵⁸ As part of this effort, TRIO staff members participate in college-level effectiveness planning meetings and in semi-monthly meetings with student affairs.

Once students apply to Harvest, TRIO markets the program in the new student orientation, information sessions on transfer, classroom visits, student newspaper articles and announcements, and brief questionnaires.¹⁵⁹ Once students are enrolled in TRIO, they are invited to monthly meetings, cultural enrichment activities/outings, the student-run TRIO club, financial literacy workshops, campus tours, and one-on-one coaching. The program offers "premier

¹⁵⁸ At Harvest, TRIO is funded to serve 250 students, and enrolled 280 for the 2012-13 year.

¹⁵⁹ TRIO eligibility requirements are that neither of the student's parent has earned a BA or the student qualifies as low-income by federal guideline or has documented disability.

transfer advising and goal-oriented advising”¹⁶⁰ is what the Director tells students, and provides one-on-one advising time two or three times a quarter (instead of scheduling brief advising sessions at the beginning of the quarter in the college advising/planning center).

According to the Harvest vice president of student affairs, “We have this elaborate system of safety nets” and a referral system for tutoring, honors, study skill classes, etc. with a “network of people to follow up” based upon electronic reports from Harvest faculty members. For all students who receive academic early warning notifications, a career/student services coach/staff person is assigned to follow-up. Harvest students who receive early academic warning may be the students most at risk for not transferring, but the support system exists for all students.

Table 6.1 below provides an overview of the range of innovative practices in Harvest’s TRIO program:

Table 6.1 TRIO Program Innovations at Harvest Community College	
Textbook Lending Program	After each TRIO advising session, students may sign up on a clipboard for books for the next quarter and these books are then obtained and reserved for them.
Inventories on Study Skills, Learning Styles, Financial Literacy	Eligible participating students complete three assessments: 1) a learning styles inventory, 2) learning and study strategies inventory, and 3) a financial literacy assessment. The goal of these services and tools is to strategically guide students towards a program of study, based on their interests and strengths, and offer financial planning knowledge to help students realize their goals.
One-Credit “Cash Course”	Open to all students as a free financial literacy program and has an expanded curriculum (one-credit course) for TRIO-eligible students. The college covers tuition for TRIO students to take this one-credit course which is self-paced and online; also modules do not have to be taken in sequence. TRIO staff reported they would be presenting their work on this financial literacy program at regional and national TRIO conferences.

¹⁶⁰ TRIO advisors work with his or her 75 or so student advisees to develop their education plan, which includes an Education Action Plan and Transfer Success Plan. Students document their strengths and areas of struggle – academically and outside of school. The advisor next works with the student to document actions and strategies to be completed over the next month, which will be reviewed next time to assess how it’s going, re-strategize, and set new goals. The Transfer Success Plan generally takes two ½ hour sessions to fully complete. TRIO staff members also have worked with departments of IT and Student Services to create an online interactive tool that documents completion, in process, and not completed by anticipated date for each action item.

Text Messaging Alerts via Google Talk	TRIO advisors work with students to make sure their FAFSA is completed on time by sending text messages through Google Talk, and most students opt-in to receiving text messages. Among TRIO programs in the region, this is viewed as an innovative practice, along with the college-developed Transfer Success Plan. But these initiatives have primarily anecdotal evidence as evidentiary support for its success.
Organized Campus Visits to Universities	Harvest TRIO students receive additional supports for campus visits to universities (staff-organized and funded travel) and specialized planning, which is otherwise not a commonplace activity led by academic division faculty. Campus visits include a tour, meeting with financial aid and admissions staff, a visit to the TRIO program if the university has one, visits with individual faculty or programs, which are arranged in advance by the TRIO advisor. TRIO students are encouraged to sign up for campus tours on their advising days. TRIO “co-advises with faculty” by contacting BA-granting institutions about which students express the most interest in learning more and providing extra support.
Tutoring Services	TRIO also pays for up to five hours of tutoring per class per week, and encourages their students to use the tutoring center. Students also have the option of requesting one-on-one tutoring formalized in a contract by student’s instructor and advisor.
TRIO Club	The TRIO club is a student-initiated program with about ten active members each term that most colleges do not have. TRIO club students lead community service projects and do fundraising projects for scholarship money. While this is a small program, the students involved generate possibilities for other students to get more involved through the Associated Student Body.

The TRIO students that I interviewed found all of these supports to be positive for them – especially the one-on-one coaching, campus visits, opportunities to participate in TRIO club, and book lending program. Based on their experiences and those of other students they know, students’ recommendations focused on creating a college climate where one feels that one can have his or her particular concerns addressed – whether it be a problem with financial aid, a complaint about an instructor who has treated you rudely, or the assignment of an expensive book.

Emerald’s TRIO program offers similar supports as Harvest to first-generation (to earn a bachelor’s degree), low-income, under-represented minorities, and students with disabilities. For students specializing in science, technology, engineering, and mathematics (STEM) fields, the Mesa program offers intensive academic and social support to similarly eligible students (low-

income, under-represented minorities). Unlike Harvest's program which has existed for more than a decade, Emerald's TRIO program started in 2010 (it was two years old at the time of my interview). The TRIO director called it a "high touch program" that provides "wraparound services" in four main areas: academic preparedness, transfer readiness, community engagement, and financial literacy and competencies. A faculty member reported that because TRIO offers the range of supports for transfer-intending students who have higher risks of not transferring (such as training in financial literacy and planning), he is free "to do some additional things" such as run engineering club projects, take students on campus visits, collaborate with other two-year and four-year college engineering faculty, and provide engineering-specific advice to students.

Innovations in developmental education pathways to enhance students' transfer prospects. Participation in Achieving the Dream (ATD) has strengthened the rigor of inquiry that engaged in by faculty with respect to their programs and courses, and this inquiry has been a catalyst for innovation at Hope, Emerald, and Sunshine State. Even though transfer data use as a vehicle for the design and implementation of better transfer-related supports was a weak area identified by Kerrigan and Jenkins (2013) in Washington's ATD colleges,¹⁶¹ participation in ATD training has supported faculty in principles and practices associated with linking evaluative data analysis with innovative programming.

For example, Emerald Community College (Washington average performer) has about 6,000 students annually in adult basic skills education which includes English as a Second Language (ESL) classes, high school GED programs, and adult basic skills (ABE), which

¹⁶¹ Kerrigan and Jenkins (2013) found that less than 15% of administrators, less than 5% of faculty, and 10% student services staff use data on transfer rates at least four times per year (constitutes "frequent use"). Among data on retention, graduation, developmental education completion rates, and other learning measures, data on transfer rates was used frequently by a smaller overall proportion of student service staff, faculty, and administrators.

overlaps with developmental education at the college, because the goal is for students to eventually transition to college-level coursework. One of the catalysts for instructional reform in adult basic skills was the review of historical data on the success rates of students at the lowest level (level one) of developmental education rates in earning an associate's degree, which found that only one student had attained an AA after starting at level one in an entry cohort, over a period of several years. At Emerald, about 15-20 percent of the student population places in the higher levels of adult basic skills education.

One of the pilot initiatives that demonstrated success was an intervention with the high level ESL students to co-enroll them in the ESL, college-level English course, and an ABE support class for 15 credits. Drawing from lessons learned in the state's Integrated Basic Education and Skills Training (I-BEST) program, faculty found that the overlap or co-teaching was not the essential component, it was the faculty co-planning, "working together, understanding what's going on in the all the classrooms, discussing the students, what instructional models worked best, adjusting their teaching to fit the needs of students, and planning out the lessons, assessing, and closing the gap," explained the ABE Director at Emerald. An investment in collaborative planning among faculty is also far less expensive than co-teaching.

Faculty teaching college-level English and faculty teaching ESL then launched a team planning effort to include about 5-10 high-level ESL students in introductory college-level courses, and did not charge the students tuition for the pilot. The instructors found that these students were making huge gains and could skip a pre-college English class and go straight to English 101. This program enabled the creation of an accelerated, new pathway for high-level ESL students to have earlier access to college-level coursework as a first step (which could then

make upward transfer a possibility with sufficient credits (i.e. 45 in the “Washington 45” or completion of an associate’s degree).¹⁶² The program has been in effect for one year, student retention is high, and the program is considered a step forward in improving students’ upward mobility to college-level work. Perhaps the strongest reason for the success of this initiative, according to the ABE director, is that it is not a top-down initiative, and was created by the faculty themselves. The “faculty pilot lots of things, and then measure it in terms of how did the students do?” which to the ABE director, is part of being “good stewards of resources.” Achieving the Dream put faculty in “more of a researcher’s mindset.” Even though faculty were not “really accustomed to having a control group and a test group...it brought up the habit.” Faculty are making meaningful comparisons with respect to their pilot initiatives, and demonstrating gains among students participating versus similar students not participating.

The institutional research (IR) director has influenced the ABE director to track students in a cohort-type manner, if only quarter-to-quarter.¹⁶³ The ABE director described that the IR director “wanted to measure the ABE students in cohorts –from fall to fall,” and this was a disconnect from the open enrollment structure of the program, which does not necessarily retain students from term-to-term. Students stop in and out a great deal, and in this sense, fall to fall

¹⁶² In May 2012, SBCTC adopted the “Washington 45” to facilitate student advising for direct transfer agreement (DTA) programs in the first year of coursework. SBCTC offers the following qualifier about the list: “it does not replace the Direct Transfer Agreement, Associate of Science Tracks I and II or any Major Related Program agreement, nor will it guarantee admission to a four-year institution,” on its website. [http://www.sbctc.ctc.edu/college/studentsvcs/wa45_final-2012.pdf] Completion of courses with a C or better from each course on the list would be able to transfer to any public Washington institution and most private higher education institutions in the state. The Washington 45 was not designed as a credential in order to be responsive to state and federal policies regarding financial aid. While state policymakers are focused on degree completion (both associate and bachelor’s degrees), the Washington 45 is helpful as a guideline for first-year course-taking because they are all transferable and students can transfer with this set after one year. Good utilization of this approach, of course depends upon college-level advising practices. State policymakers are therefore interested in building an effective advising system that is specifically tailored to Washington state’s transfer/articulation environment [according to the Council of Presidents policy associate].

¹⁶³ It would also be beneficial to analyze student outcomes for students entering a particular term and track demographic and control variables of particular interest, although this was not mentioned as part of the strategy of quasi-experimental analysis in the interviews I conducted.

progress does not offer adequate time for students' progression, he argued. One strategy he would like to try for tracking students is to combine entrants into ABE from fall, winter, and spring terms and then track their progress through the spring of the next year. Their solution was to use both approaches, and they found a way to work together on a meaningful solution. This example is indicative of the collaborative and decentralized approach to decision-making at the college and the way in which faculty experience a stronger engagement with creating and revising programs and courses, as well as evaluating those new programs with meaningful comparison groups.

Emerald's use of data to guide innovation in programming for high-level ESL students illustrates ways in which innovation is guided by data use. Even though ESL students have a long pathway to upward transfer to a baccalaureate program, the college has implemented systems to better track students longitudinally such that administrators, faculty, and staff become more invested in long-term planning with students. At the same time that classroom interventions were being piloted and evaluated, the college also created a separate advising center for ABE and ESL students, targeted to their own needs and developmental pathways. The college's educational planning center then concentrates its advising on students who place into college-level courses and higher levels of developmental coursework.

Innovations in baccalaureate programming as a transfer possibility. The leading area for community colleges to expand to baccalaureate programming is in the field of nursing, which has a national mandate to increase the percent of bachelor's degree-holding nurses to 80% (up from 50%).¹⁶⁴ Four of the six colleges in my study have established or have completed

¹⁶⁴ Institute of Medicine of the National Academies. (2010). *Future of Nursing: Advancing Change, Advancing Health*. Washington, DC: Author. Report recommendations retrieved online 05.17.2013 from:

substantial planning for offering bachelor's degrees in nursing.¹⁶⁵ By housing upper-level college courses of study leading to a Bachelor's degree under the same roof, the colleges provided a more immediately accessible transfer pathway for qualified applicants from the college's two-year degree track, even though in these programs, enrollment does not come solely from the lower-division student population at the college. Nursing staff working in the field tend to enroll in these programs, and programs also enroll transfer students from other two and four-year colleges. While community-college baccalaureate programs are not the focus of my study, one of the Florida colleges that has more than 10% of its enrollment in bachelor's degree programs has increased its transfer-out rate from 10 to 16 percent between 2008 and 2011.¹⁶⁶ Based on interviews with academic leaders at this college, it seems that the institution's expansion of baccalaureate programming had also intensified the college's focus on supporting students' upward transfer, not only to its own programs, but also to university partner programs located on campus and to the nearby state four-year university.

Leadership for Innovation in the Case Study Colleges

Behind the specific innovations that might enhance the transfer function were purposeful efforts by top college leaders to change the college's culture to one that supported more innovation, greater risk taking, and proactive efforts to enhance institutional effectiveness. Often featuring a process of staff deliberation stimulated by a common book, these leadership

<http://www.iom.edu/~media/Files/Report%20Files/2010/The-Future-of-Nursing/Future%20of%20Nursing%202010%20Recommendations.pdf>

¹⁶⁵ Both Florida and Washington are considered national leaders in the development and implementation of community college baccalaureate programs (Floyd & Walker, 2009). Georgia's access institutions in the University System of Georgia (USG) all offer some bachelor's degree programs, and at the time of this study, only one two-year USG institution remains (Bainbridge).

¹⁶⁶ Recall that IPEDS defines the transfer-out rate as "the total number of students who are known to have transferred out of the reporting institution within 150% of normal time to completion divided by the adjusted cohort."

efforts in three of the case study colleges had demonstrable influence on staff's motivation, direction, and capacity to enact changes in their programs and /practices.

Harvest Community College, Washington: Harvest's vice president of academic affairs reported that she builds her community of leadership through a summer retreat with directors and division chairs. In the first retreat, she used *Meeting the ethical challenges of leadership* by Craig Johnson (2011) to generate possibilities and problem-solving on key challenges faced in improving students' success. This book uses the metaphor of shadow and light to help leaders deliberate and assess their leadership behaviors for desired results. "If you're leading more in the light, then you're focusing more on lifting people up, acknowledging their strengths, highlighting and keynoting and profiling their accomplishments and contributions," described Harvest's vice president of academic affairs. When leaders value others' contributions, "there'll be a lot more collaboration...the morale is going to be higher." Indeed, the faculty union representative at Harvest Community College described the culture of the college relative to supports for students' academic success: "there is a real synergy and symbiotic relationship with some key areas. It's not all on the faculty's shoulders. It's not all on student development. It's not all on IT. It's just this collective, innovative, cooperative environment – there's a high level of communication. And so if anybody, a secretary or staff person, says couldn't we just have this? With good ideas, the next thing you know, IT's working on how they can make it happen," she said. The college has a culture of "voluntary workaholism" she says that it is set from the president, who personally meets and approves every full-time hire.

The vice president of workforce development at Harvest described a shift in the metrics that are being used to measure the college's success: "We used to just focus so on enrollment, enrollment, enrollment...now we're taking a step back and saying, OK, it's not just about how

many are in your class? How many are we helping to cross the finish line? How many are we helping to get to the place they need to be to be what they consider successful? How are we helping them finish what they started?” Towards that end, one of the new initiatives has been to offer “completion scholarship grants” whereby students who are having financial difficulty staying enrolled to complete their degree (e.g. 1 or 2 terms from AA, AS, or AAST) are offered a financial grant/scholarship to offset tuition cost. If they finish, the scholarship does not have to be re-paid, and if they do not finish, the scholarship becomes a loan that has to be re-paid. These students work with the student affairs staff and transfer advisor on their educational plans as they finalize their associate’s degree. This is unusual for community colleges to have such discretionary funding for this type of program, however, the college has funding from individual donors as well as discretionary prize money.

Peachtree College, Georgia: In the Division of Academic Success, about 14 staff including the director have used *The Leadership Challenge* (by James Kouzes and Barry Posner) as a common read to guide the design of new initiatives and evaluation (each person has their own project). The director worked through the book’s chapters and associated activities in a previous corporate job that she found helpful in creating community, cultivating innovative practices, and developing staff leadership. One of her staff’s projects involves collecting data from the new early warning advising system and students’ access and use of tutoring resources. Another pilot initiative has been created to strengthen transfer advising. The director’s project is to “make the activities of all of the units more visible this year...primarily by making reports that are data-based to high-level stakeholders like the cabinet,” such as on descriptive statistics about students participation in e-learning courses and placements into learning support courses.

The senior academic tutor's project is designed to strengthen collaboration with part-time tutors by engaging them in "what they want to learn by putting out a call for proposals" and invite the part-time tutors to propose new techniques to learn about and make presentations on the technique. Since the first chapter of the book was about the "sense of collaboration between management and staff," her goal with the part-time tutors is to help them feel that their work is not "just a job" but to help them feel that "they're involved in all the process," of tutoring design, implementation, and evaluation. She is working with the senior academic tutor at another campus to track the effectiveness of tutoring with an experimental design and a small pilot group of students, to find out the effects of tutoring support on passing courses.

Sunshine State College, Florida: Sunshine State's current president was hired in 2010, and described seminal moments during his tenure as well as the foundation for his leadership in our interview. He used the metaphor of generating "orbital velocity" for new initiatives and college-wide improvement over an initial period of the first 180 days. This period was extended for another 90 days, as the "launch" of new initiatives turned into execution of the mission. One of the anchoring resources the President mentioned to me was the *Four Disciplines of Execution* book by Sean Covey, Jim Huling and Chris McChesney (2012). This book was recommended by an instructor in the corporate training division in late August/early September of 2012, and the president thought it to be a perfect fit for the work ahead. The four disciplines are: 1) focus 2) leverage 3) engagement and 4) accountability. In this book, the emphasis is on building successful conditions to achieve results tied to accountability processes aligned with the primary focus, i.e. the "wildly important goal."

As part of discussions about meaningful metrics that gauge the success of the college's work towards their overarching goal, the President's emphasis was not on student satisfaction or

feeling about services, but about tracking outcomes that have to do with retention, participation, course success, and graduation (ATD metrics) after participating in a face-to-face orientation, using tutoring support, creating a learning plan, and so on. Transfer and workforce outcomes would likely be investigated as part of better understanding the effectiveness of newly-legislated transfer-advising plans required in Florida colleges and the performance-based budgeting formulas under discussion, however, these outcomes were not emphasized in the analyses underway during the time of my college visit.

The experience of reading the *Four Disciplines of Execution* was a strong catalyst for productivity, according to the chief student affairs officer, “I kid you not, in one year, we have actually completed and initiated more projects than we’ve done in my 25 years...we’ve wanted to do [these initiatives] for eons...but it was analysis paralysis.” With campus-based leadership assuming responsibility for new roles and front line staff being invited to listen in and participate in making the changes happen, the chief student affairs officer said she is more confident, strategic, and able to work through problems more efficiently. For example, she meets with the student presidents of each campus’s student government association every other Friday. Students prepare the chief student affairs officer for questions that she should address with an email sent in advance. She talks with them about their experience with different college procedures and practices so that she understands challenges students face first-hand, and then she works with students on collaborative solutions in areas such as financial aid, smoking policy, daycare, mental health services for students, etc.

Transforming a college culture to support innovation aligned with efficient strategies to improve students’ outcomes, including 2/4 transfer, required much more than engaging in dialogue around a shared text focused on some aspect of leadership. However, what made these

“common reads” successful was the engagement of the top leader in applying the principles of the text to his or her own leadership, and the facilitation of this learning and application by others. A structure was provided in all three circumstances for administrators or staff to engage with the text in regularly scheduled meetings, and plan projects or applied tasks using principles of effective leadership. Participants reported feeling empowered by the process of engaging with the text and working with their colleagues, and in one case, empowered to opt out of formal participation yet still continue to practice leadership as a senior academic advisor.

Supports for and Barriers to College-Level Innovation

This findings section outlined several influences on college-level innovation across the three states, designed to support at-risk student populations for successful persistence, course success, associate’s degree completion, and eventually 2/4 transfer. Facilitating supports for innovation to improve students’ upward transfer included: 1) partnerships created by college presidents, other college leaders, and faculty between nearby two- and four-year institutions; 2) collaborative discussions aimed at smoothing students’ upward transfer between two and four-year programs or institutions in specific majors to align with regional labor market needs; 3) college participation in Achieving the Dream, another national initiative aimed at improved student outcomes – particularly in student course completion, transition from pre-college to college-level courses, and associate’s degree completion – through data-informed planning and implementation of innovative strategies; 4) colleges offering their own baccalaureate degree programs, particularly in nursing, and providing co-location of bachelor’s degree offerings from other four-year institutions at the (primarily) associate’s granting institution; and 5) strategic, coordinated, student-focused leadership strategies to build shared engagement and responsibility

for improving student outcomes towards successful 2/4 transfer, which often included the use of a “common read” among college staff, administrators, and/or faculty.

Due to the diverse student populations present in community (or junior/access) colleges who enter postsecondary education with varying levels of academic preparedness for college-level work and different career objectives, support for students’ upward transfer is only one targeted outcome. Particularly for students requiring considerable support in pre-college courses, transferring requires longer-term planning, which most community colleges are not effectively set up to provide for the majority of their students. In national initiatives such as Achieving the Dream and Complete College America, 2/4 transfer is a supplemental or embedded success metric, not a central one. The analyses presented in this chapter acknowledge that transfer is not the only important target or consequence of the data use and innovation that colleges were engaged in. Nonetheless, the effects on transfer, or the possibility of effects, was unavoidable, and clearly an important part of the mission of these institutions.

Chapter VII. Putting Case Study Findings in Perspective (III)—State and Local Influences and Interdependencies

The preceding two chapters have laid out what can be learned from a close examination of the case study colleges, concerning their efforts to support and improve the upward transfer of their students, especially those that have been historically less well served by the educational system. The analyses have highlighted aspects of advising practice, data use, and support for innovation that each play current or emerging roles in strengthening student successful transitions to 2/4 transfer. But stepping back from these patterns allows us to put them, as colleges within state systems, into better perspective, and brings a set of potential influences and interdependencies into full view. With this in mind, the reader will be better able to grasp how the different strands of the case study work contribute to a fuller picture of the prospects and possibilities for upward transfer.

This chapter will accomplish this purpose, first, by reviewing what I learned from state-level data collection, intended to surface state connections to local college activities and other features of the state context that help explain what colleges are or might be doing to strengthen 2/4 articulation and transfer outcomes. Following that, I discuss the way all the strands of the case study analysis inform each other, offer a set of examples and themes that can illuminate what quantitative analyses have already told us, and may inform state policy initiatives moving forward.

The Role of State Articulation and Transfer Policy Context

Recall that Derek's successful progress in college was fueled primarily by personal connections built through his ties with student success/enrollment services administrators and staff, work study in Enrollment Services, receiving tutoring in the Learning Commons, and church mentors. In high school, he had the opportunity to visit colleges across the state, which introduced him to different possibilities for pursuing a college degree, including the public four-year institution nearby to Hope Community College. Hope administrators maintain strong communication with administrators from nearby public four-year institutions, in order to facilitate students' upward transfer. The President's commitment to maintaining a personalized, academically challenging environment at Hope Community College and the way he reinforces this in planning with the nearby, four-year institutions is one shaping influence in Derek's foundation for successful transfer.

State and federal financial aid programs and the college's financial aid package helped Derek afford to be enrolled full-time, however, Derek did not know exactly how his tuition was funded or how he would fund his upper-division courses towards a bachelor's degree at the time we talked. Florida's policy that mandates that AA degree graduates from state-approved Florida community colleges must be admitted as juniors to any state university as long as the university has space, money, and curriculum to meet the student's needs, would be a facilitating factor for Derek, once he received his AA degree. From Derek's story and the Florida case studies, the state's role is primarily in the background for an individual student's pathway to transfer, but paves the road for two- and four-year institutions to better facilitate students' upward transfer through common course numbering, a transferable general education curriculum, and so on.

In the previous two chapters, the activities identified at the college level to promote and support upward transfer—through enhanced transfer advising practices, strategic use of data, and creating an environment for innovation in transfer activity—takes place in a state context. To understand how that context might be shaping or predisposing colleges to tackle transfer issues in constructive ways or not, I gathered and analyzed a layer of data from the state-level. Appendix L summarizes influential state policy components in each of the case study states in the areas of: historical transfer and articulation legislation; new legislation and state initiatives related to improving transfer; common course numbering; statewide collaboratives and infrastructure to govern state-level transfer policy; state-level transfer data tracking and reporting; the adoption of a statewide general transferable curriculum; the status of the 2/4 transfer outcome in state performance funding formulas; the state’s connection to national initiatives to increase transfer, degree completion, and intermediate postsecondary outcomes; and state-level work to reform pre-college or developmental education.

Although the connections between local institutional activities and the state may be indirect or hard to discern by local actors, several patterns emerged that are worth understanding. I analyze them below, first in terms of the interdependent influences and relationships – across institutions, sectors, and intergovernmental levels – that influence the colleges’ transfer focus and support systems. Then, I review what the case studies reveal (in selected states) about three particular state policy initiatives with important implications for transfer. Finally, I synthesize what the state-level analyses highlight about the transfer function from lower-division to upper-division or from two-year to four-year institutions.

Interdependent Influences and Relationships Related to the College's Transfer Focus

Based upon my interview data and building upon the previous findings sections, I find that the degree of a college's concentration on improving students' upward transfer is driven by several factors: the proportion of students enrolled with transfer intentions and the college's historical partnerships supporting students' transfer; leadership priority and attention towards improving the colleges' 2/4 transfer rate; and interdependence of supply and demand forces in the local higher education economy influencing the degree of recruiting by nearby four-year colleges at community colleges. These forces, coupled with a set of relationships across institutions, sectors, and intergovernmental levels, create a set of conditions that could substantially shape each college's system of support for upward transfer.

The colleges' systems of support for upward transfer were informed by interdependent and reciprocal relationships between: (1) the state's articulation and transfer policy networks¹⁶⁷, on the one hand, and faculty and administrators in the colleges, on the other (primarily by job-alike titles such as vice presidents of academic affairs meeting with state agency staff); (2) leaders in local institutions granting associates' degrees and their counterparts in granting baccalaureate degrees, and (3) leaders of major-related programs (such as deans and program

¹⁶⁷ For example, Washington's Joint Transfer Council (JTC) is a standing committee with representatives from public and independent academic degree-granting institutions and the [Washington Student Achievement Council, WSAC]. JTC was founded ten years ago (2003) and meets approximately six times per year. JTC considers statewide transfer issues and recommends policy strategies for transfer, including major related program agreements and other statewide communication strategies related to transfer and transfer issues. Membership consists of: Public Baccalaureates - Vice provosts of Academic Affairs from each of the six public baccalaureate institutions, a Council of Presidents (COP) staff member, Private Baccalaureates - President of Independent Colleges of Washington (ICW) and representatives from registration and academic planning offices, Community and Technical Colleges (CTC) - Eight vice presidents of instruction or student services and a staff member from the CTC state board, One Executive Board member from the Intercollege Relations Commission (ICRC), and [WSAC] staff. JTC has formal communication with and works on behalf of institutions represented by the membership in collaboration with the Executive Committee of the Intercollege Relations Commission and the [WSAC]," according to the Washington Transfer Network document provided on the JTC website and WSAC website. Washington has about twenty different collaborative groups which form a Washington Transfer Network, and Georgia and Florida also have networks to convene college and state-level leaders to support articulation and transfer.

directors) and employers in those fields.¹⁶⁸ The case study colleges and states gave evidence of all three. All three of the case study states had a developed infrastructure for collaborative discussion among two and four-year faculty in the same discipline to problem-solve on issues of transfer and articulation. Similarly, each state had some mechanism or network for job-alike networking among college presidents, vice presidents of academic affairs or provosts, chief student affairs officers, registrars and admissions administrators, etc. to confer and provide input into state-level policy deliberations. Additionally, college-level administrators were engaged in coordinating their program design and delivery to meet labor market demands in the major-related fields, and engage in collaboration with employers such as advisory board members, internship providers, and strategic planners, especially in above-average performing institutions and in colleges with increasing transfer rates.

A more specific set of influences on the colleges' system of support for transfer derive from particular state policies, each with distinct implications for upward transfer:

- State policies and resources such as common course numbering, cooperative articulation agreements, state-level online resources facilitating students' transfer (such as handbooks, manuals, searchable databases, etc.);
- Legislative mandates regarding matters such as academic advising requirements, faculty evaluation (revisions to include advising practices), and transferable courses for community colleges;

¹⁶⁸ Historically, community or junior colleges have developed collaborative relationships with employers to support AA/AS graduates' transition to careers. Now that primarily associate's degree granting institutions are growing to offer some specialized bachelor's degrees and have bachelor's degree programs co-located on their campuses, these partnerships have been expanded to address new supports needed for articulation and transfer so that graduates may be competitive for bachelor's degree-level jobs.

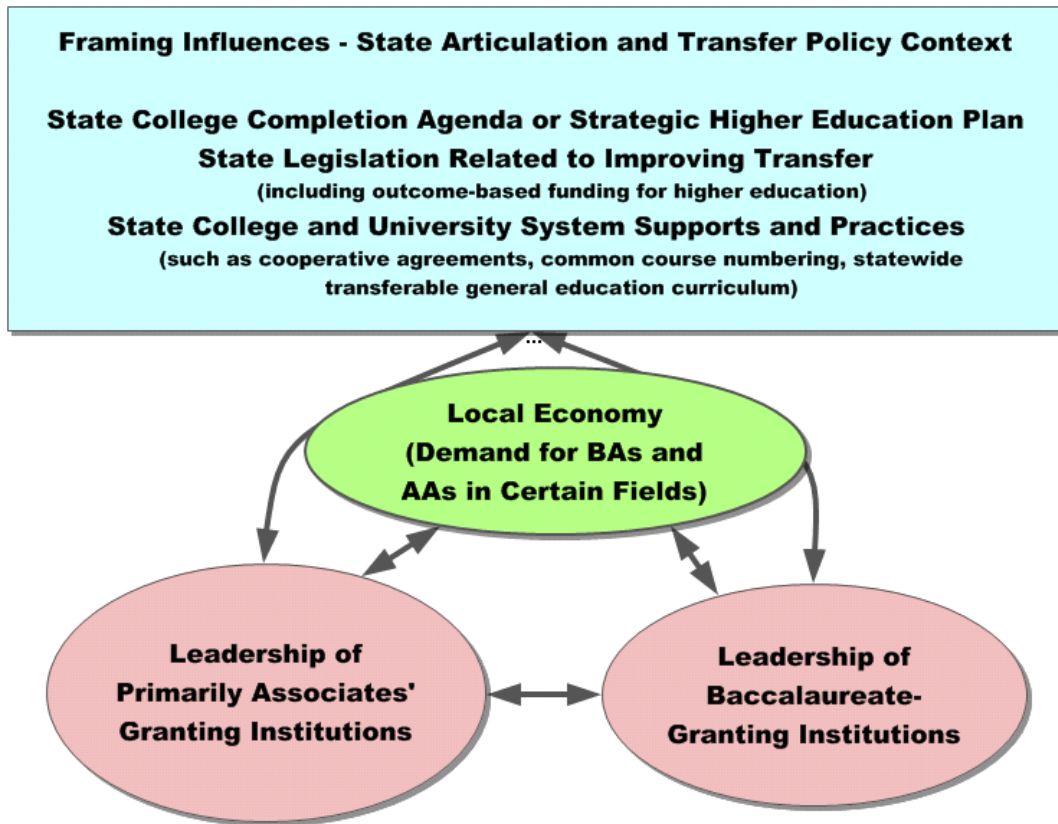
- Performance funding formulas governing state funding to community colleges based on outcomes achieved by the colleges (already in use or proposed)¹⁶⁹; and
- Participation in national networks such as Complete College America, Race to the Top, Achieving the Dream, etc., which stipulate changes in postsecondary delivery to improve postsecondary outcomes and close gaps in those outcomes between traditionally higher-performing and under-performing student groups.¹⁷⁰

States' efforts to develop longitudinal data systems and specific data-sharing agreements which facilitate more rigorous tracking of students' transfer patterns between colleges, and support colleges' use of that data for improving transfer-related supports are also influential, and have already been noted in Chapter VI. Taken together, these influences—from relationships, interdependencies, and particular state policies—relate to each other as shown in figure 7.1.

¹⁶⁹ Washington's Student Achievement Initiative has been implemented, but does not include 2/4 transfer as an outcome. Georgia's outcome-based funding model was proposed at the time of my visit and the state planned to include 2/4 transfer. Florida's performance funding model was in the process of being developed to support implementation of the state's strategic plan, which includes 2/4 transfer as an outcome.

¹⁷⁰ Transfer is considered an intermediate outcome to bachelor's degree completion in these initiatives, and Complete College America gives 2/4 transfer more of a priority than the other initiatives. Race to the Top's graduation rates and postsecondary data includes college course completion (which is an intermediate outcome for 2/4 transfer) and Achieving the Dream does not include 2/4 transfer as one of its five key metrics.

Figure 7.1. Inter-Dependent Relationships between State Articulation and Policy Context, Local Economies, and Institutional Leadership



The example of Sunshine State College: Interdependent and reciprocal relationships. Recall that Sunshine’s faculty and administrators met with counterparts at the nearby four-year institution in the area of health professions and majors to facilitate new ideas and agreements for degree programs aligned with labor market needs in the region. Relationships built with employers and mutual knowledge of labor market trends were important catalysts to coordinated planning that better supports upward transfer such that students can more successfully attain bachelor’s degrees and meet workforce demand for baccalaureate-trained individuals. Sunshine State’s president is also highly participatory in state-level policy discussions and uses his college-level leadership to further benefit statewide outcomes. As one

Sunshine State administrator shared, the president “doesn’t sit back and wait for the state to tell us what to do...[and] purposefully tries to be several steps ahead...” The college’s staff includes a government relations specialist, and this person keeps track of upcoming legislation, collaborates with others on implications for college-level operations, and shares this information broadly so that other colleges also may benefit.

Florida’s new legislation on articulation and postsecondary reform (H.R. 7135) mandates changes to student advising as well as to the general education core curriculum. No later than when students are halfway through their associate’s degree program (30 hours), the college will now require a learning plan, graduation check, and advising plan to support students on the achievement of their desired program.¹⁷¹ College student affairs administrators across the state meet four times a year, and will be sharing and deliberating about strategies to meet the 30-hour advising requirement. Sunshine State College’s approach to this new requirement is laid out in the initiatives that comprise the College Experience. Recall that the College Experience has five components: new student orientation, mandatory integrated developmental advising¹⁷², a learning plan, an early alert system, and enhanced out of class support.

Regarding transfer, one of the strategies Sunshine State College has used in the past has been sending letters to all students scheduled to graduate each term to find out which BA institutions students are applying to and attending. This inquiry is used to reach out to students to

¹⁷¹ One of the provisions of Florida legislation passed in 2012 (H.R. 7135) requires that every college in the Florida College System (FCS) have a plan in place for mandatory transfer advising by the time students earn 30 college credits towards their AA degree. Specifically, the law “requires the Articulation Coordinating Council (ACC) to have each FCS student identify a desired baccalaureate degree, by institution of interest, by the time the student earns 30 credits. The FCS institution must then notify the student of degree program prerequisites,” (Lehr, McColsky, and Woodruff, 2012, p. 21). This legislation was touted by Florida’s Higher Education Coordinating Council as “the most comprehensive postsecondary legislation since 1995,” (2012, p. 4).

¹⁷² Mandatory integrated developmental advising requires students who place into developmental college courses to work with an advisor on an individualized educational plan.

offer support for achieving their post-graduation plans. In their feedback to the college, some students may say they are going to a state university, but have not yet applied, or have applied and have not yet been admitted. By starting at the 30-hour mark with transfer planning, the college will be better able to forward timely information regarding admission requirements, baccalaureate program options, and so on geared for the student's stated learning plan objectives. While the state has an online system that students can use to find any degree program offered in their field, its admission requirements and so on, this is not updated as quickly as the BA colleges' websites. The college has therefore linked its website directly with the BA institutions' websites, and students can access the bachelor's degree information from their own web portal as they conduct their "graduation check" in the system.

The state's new requirement about 30-hour transfer advising has generated considerable planning and brainstorming at Sunshine State. Sunshine State's senior vice president of student affairs has worked with her staff to capture data from students' stated goals and send reminders about applying to their chosen baccalaureate program in advance of the application deadline, and to follow through with the student to see if they completed and submitted their application. Administrators and staff participated in social media training to consider communication strategies that will engage students in following through on their goals, such as text messages and messages in Facebook or Instagram that remind them to go to their dean's office since they have reached the 30-hour mark. The training has brought some new information about social media to bear, such as the search engine capability of YouTube, and how that could be used to promote the college's programs and messages. Facebook has also been increasingly popular among older population brackets, but is waning in popularity among younger populations in favor of.... The college just launched its first mobile app, where students can see their schedule,

their learning plan, maps of all campuses, and directions to all campuses. The chief student affairs officer talked about making the communications participatory and engaging, rather than a formal notification – such as having an avatar for the message to add a bit of fun and novelty. While there is not a strong plan currently in place to help all students transfer, “we are having strong conversations about the plan. And creating more value to having a plan. I don’t think we thought it was that important [previously],” she said.

As this aspect of the Florida state context begins to suggest, what is happening at the state level can create direction and incentives for or constraints on efforts at improvement in the upward transfer success of students. While my state-level data did not yield much evidence of a direct connection to the particular state policies in place in the case study colleges, the continuing developments at the state level have clear potential to shape local behavior, commitments, and courses of action. At a minimum, the state-level policy trends are likely to prompt more extensive use of transfer-related data. Increased state and federal incentives and accountability for colleges to support students in achieving their post-associate’s degree plans motivate college college-level leaders to conduct more detailed, college-specific analyses of transfer data and develop more comprehensive advising supports for students.

While state articulation and transfer policies generally do not appreciably influence an individual student’s transfer probability, according to statistical analyses of this relationship, the level of press and urgency generated by state policy actors may affect the college-level implementation of programs and practices associated with improving students’ upward transfer. This is apparent from the interrelationships between the practices being implemented by college student services leaders and the policy formulation which emerged in the Florida law requiring

mandatory transfer advising before students reach 30 hours of credits in their associate's degree program, for example.

Additionally, to the extent that state articulation/transfer policies (such as common course numbering in two-year and four-year colleges) reflects a significant positive relationship with first-generation students' upward transfer rates (found in the quantitative analysis, Table 3.3) this result appears to be related to the depth, focus, and adaptability of ongoing collaborative relationships built to support transfer between primarily associate's degree granting colleges and four-year universities, and supported by state-level networks and policy-making circles. [Refer to Appendix L for brief descriptions of policy initiatives related to articulation and transfer in each of the three states].

The Implications of Particular State Policies for the Local Transfer Function

As the set of relationships reviewed above implies, the state policy environment can influence local colleges efforts to support or focus on upward transfer in direct or indirect ways through particular policies. Three noteworthy policy initiatives emerge from the mixed-methods analysis: common course numbering, state outcome-based or performance funding, and college completion planning.

Common course numbering (CCN): What can be learned from Florida. Common course numbering was present in only four states represented in the BPS dataset (FL, MS, TX, and WY and each had at least 30 student cases). From the case study analysis, which included only Florida among these four, my hypothesis is that the history of robust communications and problem solving focused on increasing step-by-step outcomes to BA attainment (involved in the creation of common course numbering decades ago) supports college-level press for students'

upward transfer in states that have CCN. Common course numbering would not exist without state-level intentionality to bolster upward transfer access and success. The development of a common course numbering system requires systematic review of courses by faculty at both two- and four-year institutions, and a high level of ongoing orchestration to align course curricula relative to agreed-upon outcomes that constitute the basis for particular transferable course numbers. Any course change or mandate to the general education curriculum (as in the recent Florida H.R. 7135) has implications for common course numbering and the system of articulation and transfer across the state.

The foundation for the development of Florida's common course numbering system occurred in the late 1960s, when "registrars and advisors at Florida's public institutions of higher education voiced concerns about the difficulties encountered in assigning course credits to students transferring from lower-division colleges to the upper-division of universities, or to students changing institutions prior to degree completion," (Statewide Articulation Manual, revised October 2011).¹⁷³ Florida then developed a common course numbering system to facilitate the transfer of credit for equivalent courses among the state's colleges and universities to reduce barriers with respect to admission (transfer of credit) and unnecessary repetition of courses by transfer students. Florida's Statewide Course Numbering System (SCNS) is "now used at all public and selected nonpublic institutions of higher education in Florida (10 state universities, 28 Florida College System institutions, 25 participating nonpublic postsecondary institutions, and 40 area technical education centers are included in the SCNS)."¹⁷⁴ The SCNS is

¹⁷³ Retrieved online 03.15.13 from: <http://www.fldoe.org/articulation/pdf/statewide-postsecondary-articulation-manual.pdf>

¹⁷⁴ Statewide Articulation Manual (2011), p. 3.

continually updated to accommodate policy changes, such as was the case with House Resolution 7135, adopted in 2012,¹⁷⁵ and to new courses and programs.

Common course numbering likely has created a type of “path dependence” in states that established it. Path dependency theories have been primarily applied in economics to illustrate how the adoption of a particular technology, technique, or practice becomes institutionalized (even when a new solution may be better for current conditions). Path dependence occurs due to increasing returns on the adoption of a new technology, technique, or practice and because of costs associated with changing the practice to a new one (Liebowitz and Margolis, n.d.).¹⁷⁶

Common course numbering may not be the most efficient lever or vehicle for improving articulation and transfer outcomes, however, the history of processes associated with maintaining it may be associated with college registrars’ advocacy for students in reducing credits lost in transfer. To the extent there is a supportive state structure (such as established histories of counseling students from high school to associate’s granting programs as a stepping stone to a four-year program or university) and an ongoing infrastructure to facilitate smooth transfer in states with common course numbering, these relationships and structures may reinforce higher rates of transfer, particularly for first-generation college students.

¹⁷⁵ Florida H.R. 7135 requires all state universities (SUS) and colleges (community colleges now in the Florida College System [FCS]) to revise their General Education requirements. The goal is to reduce the number of courses that satisfy a single general education area and standardize courses used for the purpose of general education, rather than have numerous elective or introductory courses satisfy the requirement. One of the purposes of the legislation is to improve transfer rates by reducing the number of credits required in General Education from 36 to 30. General Education credits may be obtained in five broad discipline areas (Communication, Humanities, Mathematics, Sciences, Social Sciences). One of the intentions behind this legislation was to better align the general education credits in the Florida College System with the accreditation requirements of the Southern Association of Colleges and Schools (SACS). It further requires that one course in each area (a total of 15 credits) be selected by the student from no more than five qualifying courses and that these courses be offered and accepted by all Florida public postsecondary institutions.

¹⁷⁶ “Path dependence” by Stephen E. Margolis and S. J. Liebowitz, retrieved online 06.23.13 from <http://www.utdallas.edu/~liebowit/palgrave/palpd.html>

Other states have sought out the advice of Florida's policymakers on designing common course numbering systems in their state context, as it is highly regarded as a national exemplar. However, at the time that Florida developed common course numbering, the State University System and the Florida College System, which now oversees the community colleges, were not separately managed. If they were developing the common course numbering system in 2013, it would be far more difficult to orchestrate, commented the Director of the Office of Articulation (personal communication, December 4, 2012).

The influence of state outcome-based or performance funding. The framework for state-level performance funding that is in operation or in the planning stages also has an influence on the way in which upward transfer is prioritized. Among the three states in my case study research, only Washington has a performance-based funding system in place, and the allocation of dollars tied to those performance metrics is relatively small.¹⁷⁷ Still, it seems to have had a considerable effect on institutional behavior. The Washington Student Achievement Initiative, however, does not include 2/4 transfer as one of the funding-based measures, which may largely be due to the ambiguity about data validity and reliability of the P-20W longitudinal data system that is currently being worked on at the state level. Now that the state's Mutual Records Transcript Exchange (MRTE) has obtained full participation from the public four-year institutions as of spring 2013, and the data management issues are better clarified, inclusion of the 2/4 transfer outcome in the Washington Student Achievement Initiative (SAI) may be revisited. When I spoke with faculty about the influence of the Washington Student Achievement

¹⁷⁷ According to the Community College Research Center, "Funding allocated for achievement points has never amounted to more than one percent of the college system's budget. For the two years between the launch of the initiative and the initial allocation of funds based on performance, a flat amount was allocated to each college as "seed money" to support "student success strategies." The average allocation per college was \$52,000 in the first year and \$67,000 in the second year," (Jenkins and Shulock, 2013; p. 9).

Initiative on their work in advising students about transfer and improving the system of support for transfer, faculty and administrators interviewed generally expressed that the SAI is largely symbolic, not an important driver for changes in their teaching, advising, or leadership.

In Florida and Georgia, college academic leaders were highly tuned into the proposals for performance-based budgeting and were shaping their practices to align with emerging priorities and proposals at the state level. For example, at Sunshine State's chief student affairs officer shared that:

As a college, we have decided we're going to work as if our funding is going to be based on retention...students who pass their courses with A's, B's, and C's, and who show up for the next semester, graduate, or go to the next level...transfer has taken on a whole new meaning. We used to say well, we've done our part, you got your AA...but now that we confer baccalaureate degrees, transfer is even more important...the majority of our transfer students to our baccalaureate programs are all native students who got their AA degree here.

As another example, Georgia higher education system leaders are in the process of “developing an outcomes-based funding model for higher education in Georgia”, building from the Tennessee model which earmarks the majority of higher education funding to performance metrics.¹⁷⁸ Academic leaders in the Georgia colleges that participated in my study expressed how this policy context has dramatically shaped the creation of their “college completion plans” which is a requirement of all institutions in the University System of Georgia as part of the Complete College Georgia initiative. Georgia's proposed framework includes “formula dollars awarded for successful transfer, and completion is prioritized over progression,” according to the slides from a presentation delivered at the meeting of the Higher Education Funding Commission

¹⁷⁸ “Developing an Outcomes Based Funding Model for Higher Education in Georgia” Powerpoint presentation retrieved online 03.19.13 from: <http://media.morristechnology.com/mediafilesvr/upload/gainesville/article/2012/10/24/1025FUNDINGDOC2.pdf>

on October 22, 2012. The proposed definition in this document was: “The number of students who transferred out to any public, private, or out-of-state institution who had accumulated at least 15 earned credit hours.¹⁷⁹ This measure does not specify upward transfer (from lower-division to upper-division coursework, the equivalent of 2/4 transfer), yet signals to colleges a monetary value for supporting students’ access and success in transferring for the student’s desired degree. The outcome-funding proposal also specifies a state mechanism for tracking student transfers, which shows anticipation of how essential this information function is in order to accurately award “credit” for the transfer in the outcome-funding formula.

College completion planning as a framework for state support of college-level innovation. State policies targeting improved bachelor’s degree completion and postsecondary-workforce alignment is another important potential influence on college-level planning, innovation, and resource allocation. College-level problem-solution frameworks and the success of institution-wide adoption of new practices and routines are or can be influenced by macro-level policy efforts (such as state actions related to Complete College America¹⁸⁰). Georgia offers an illustrative example of this. In March 2012, the University of Georgia hosted working teams from all University System of Georgia (USG) institutions to design campus completion plans with a provided template by state policy officials which was accompanied by a plan for

¹⁷⁹ Metric calculated based on student enrollment at College A during year 1 (summer, fall, spring year 1) and transfer enrollment found later in year 1 or year 2 (fall, spring, year 2). This does not include a student who accumulated hours through dual [high school] enrollment programs and then enrolled at another institution. The number of credit hours accepted by the institution the student transfers to does not factor into this outcome. The National Student Clearinghouse and/or GA AWARDS (Georgia’s Academic and Workforce Analysis and Research Data System) should be used to track transfers,” the presentation stated.

¹⁸⁰ According to the Complete College America website: “Established in 2009, Complete College America is a national nonprofit with a single mission: to work with states to significantly increase the number of Americans with quality career certificates or college degrees and to close attainment gaps for traditionally underrepresented populations.” See: <http://www.completecollege.org/about/> Five of the nation's leading foundations have joined together in support of Complete College America's efforts: Carnegie Corporation of New York, Ford Foundation, Bill & Melinda Gates Foundation, W.K. Kellogg Foundation, and Lumina Foundation for Education. As of 05.29.13, the website reported that 24 states participate in Complete College America, which includes statewide, data-based strategic planning and consulting.

ongoing technical assistance from the USG for completion planning. “Teams from 60 campuses of both systems participated...including the four pairs of campuses involved in consolidation which worked as cohesive teams,” stated the Executive Summary of Campus Completion Plans document.¹⁸¹ Colleges submitted their College Completion plans by July 1, 2012 and the USG had one month to respond to all plans. Georgia is the first state in the U.S. to have all institutions in systems analogous to the USG and the Technical College System of Georgia (TCSG) put forward comprehensive plans for how that institution will contribute to meeting of state college completion goals (per Chief Academic Officer, USG). Each college plan addressed the following components with their own needs assessment, strategy, and institutional capacity:

- “Collaborative engagement with campus and community stakeholders
- Collection and analysis of data to facilitate an introspective process to identify strengths, areas for improvement, and the needs of regions and populations served
- Alignment and partnerships with K-12 for college readiness (including common core, dual enrollment, Early College, STEM partnerships, educator preparation)
- Improved access and graduation for all students (build upon work with first-time, full-time students and “make higher education more accessible, affordable, and effective for part-time and working students, adults, the military, low-income students, students with disabilities, and students of racial and ethnic diversity)
- Shortened time to degree (including prior learning assessment, curriculum redesign, transfer and articulation agreements, and the use of advisors or intelligent advising systems)
- Restructured instruction and learning (including effective teaching and learning practices, focus on gateway courses, online and hybrid learning, new business models, learning analytics, and stackable credentials)
- Transformation of remediation (primarily for access-oriented institutions to include co-requisites, modular delivery models, and just-in-time learning support)”,¹⁸²

The University System of Georgia has had a Retention, Progression, and Graduation initiative (RPG) for years, focused on first-time, full-time students, and “what Complete College Georgia brings to our table is a focus on under-served populations – adult learners, the military,

¹⁸¹ USG Campus Completion Plans retrieved online 03.18.13 from:
http://www.usg.edu/educational_access/documents/USG_Campus_Completion_Plans.pdf

¹⁸² USG Campus Completion Plans retrieved online 03.18.13 from:
http://www.usg.edu/educational_access/documents/USG_Campus_Completion_Plans.pdf, page 3 of 636.

minority students, etc.,” according to the USG Academic Affairs Officer. USG policymakers and campus leaders are looking for innovative ways to use distance learning to meet college completion goals and expand access to college degree programs to non-traditional student populations, according to the same USG Academic Affairs Officer.

In its College Completion plan, Peachtree College (high transfer performer in Georgia) described that some of its “most dramatic changes are in instructional delivery.” Faculty training will be offered in a year-long program to support adoption of best practices in online teaching, based upon synthesis of research and training in this area. Peachtree outlined its goal to develop and offer incentives and recognition to faculty demonstrating effectiveness in online teaching in on performance measures such as course retention and student learning assessment. Advising and early intervention (referral to tutoring) are central aspects to improving course success rates, particularly for courses that generally have higher DFW rates (i.e. grades with a D or F or withdrawals). Since Peachtree has a multi-campus structure and between-campus commutes can be a formidable barrier to student progression towards transfer, Peachtree set out to increase opportunities for students to take whole degree programs online, and offer students at smaller campuses a fuller range of courses through webinar and online programming. Peachtree’s four-year 2/4 transfer rate is above average (29% upward transfer rate within USG and 43% upward transfer rate including non-USG institutions in Georgia and other states), and specific strategies to directly improve students’ rates of upward transfer were not an area of focus in the College Completion Plan.

With respect to improving transfer rates, particularly for vulnerable student groups, Cherokee Rose (average performer) outlined in its College Completion plan that it would track

2/4 transfer of each of the student groups (non-traditional aged students, Pell grant recipients, Black, non-Hispanic, and White, non-Hispanic students). Additionally, Cherokee Rose would track retention after transfer, completion of an associate's degree (i.e. completion of 60 credit hours in Areas A-E¹⁸³ and completion of a bachelor's degree. The plan did not disaggregate the current transfer rates from overall retention and associate degree graduation rates, however. Nor did Cherokee Rose include specific strategies as to how the data will be used to improve transfer rates by these groups. General strategies to improve degree completion were articulated to transform remediation coursework, restructure instructional delivery, shorten time to degree (includes pilot of new academic advising), expand access to college through partnerships with K-12, and deliver high-quality educational programs and teaching. By working on each of these objectives in tandem, the theory of action is that Cherokee Rose will provide a better system of support for improving transfer, graduation, and retention. One of the persistent reasons for lower than desired rates of transfer may be the lack of intentional planning and transfer-specific support services, due to colleges assuming that if other interventions are well-implemented that 2/4 transfer will automatically follow.

At the same time that the University System of Georgia (USG) put into place the Complete College Georgia planning process, USG mandated consolidation of four pairs of institution in the state, including Cherokee Rose (which was formerly a junior college that has added bachelor's degree offerings in nursing and consolidated with a two-year college). The President described that she thinks that her college is "a little behind the curve of where maybe the system office thinks colleges are on Complete College Georgia," because she has been

¹⁸³ Each institution's core curriculum must consist of 60 semester hours, 42 hours in Areas A-E and 18 hours in Area F (lower division). Area A1 is Communications (6 semester hrs.), Area A2 is Quantitative Skills (3 semester hrs.), Area B is Institutional Options (3 semester hrs.), Area C is Humanities, Fine Arts, and Ethics (6 semester hrs.); Area D is Natural Sciences, Mathematics, and Technology (7 semester hrs., 4 of which must be in lab); Area E is Social Sciences (6 semester hrs.); and Area F is lower-division major requirements (18 semester hrs.).

assembling a new leadership team to support a consolidated college structure across both campuses. Academic and student affairs leaders at Cherokee Rose have been involved in the statewide planning committee for Complete College Georgia, which has supported integrated planning. However, Cherokee Rose anticipates additional resources will be required to implement strategies outlined in its plan, and the new leadership will be crafting budgetary implications. While transfer is a central aspect of the consolidated college's mission, many details have yet to be determined regarding organizing existing supports for improved transfer and designing and implementing better transfer advising across the two campuses of the consolidated institution.

Synthesis: State Influence on Local Transfer Prospects and Possibilities

This section offers several examples of state policy influences on college-level work to improve transfer: 1) how dialogue and agreements between two- and four-year institutions may influence transfer opportunities and programmatic offerings tailored to labor market needs in a region, 2) how the work involved in crafting common course numbering may influence first-generation students' transfer probability, 3) how the status of the transfer outcome in state-level performance funding and the accessibility of transfer data for decision support affects college-level work to improve transfer, and 4) how state involvement in national initiatives such as Complete College America has served as a catalyst for requiring college completion plans and accountability to those plans. State-level staffing to support transfer and articulation consists of only a handful of individuals in each of these three states. To accomplish most of the large-scale policy design and implementation efforts requires substantial infrastructure and partnership with college-level leaders, faculty, and staff. For this reason, state policy officials have substantial incentive to support college-level engagement in decision-making, policy design, and policy

implementation in the wide array of supports required to improve students' upward transfer (especially among low-income and first-generation students).

Each of the state policy components¹⁸⁴ may influence college-level innovation, data use, and academic advising practices related to improving students' upward transfer to varying degrees. Other state policies, such as need-based financial aid, may also have an effect on the probability of students' upward transfer, particularly for low-income students, though this was not significant in the multi-level regression using BPS 2003-09 data.¹⁸⁵ The degree of influence appears to depend, in part, on the degree of college mission emphasis on 2/4 transfer access and success, the nature of the student population, and the college's relationship to the local community of employers and respective degree offerings.

Integration of State and Local Case Study Findings

Taken together, what we have learned from close examination of particular colleges and an analysis of the state level influences and interdependencies which affect them, gives us some new insights into possibilities and prospects of upward transfer, especially for those who have been historically poorly served by the education system. Up until now, a widespread view holds that: "Although community colleges and the transfer function are often construed as the embodiment of democratic opportunities for access to higher education, transfer is primarily something affluent students do" (Dowd, 2011, p. 219). This statement reflects a historically established pattern that is likely to continue when colleges and states allow normal demographic

¹⁸⁴ Transfer policy components, as measured by Education Commission of the States (Smith, 2010), are the presence of: articulation and transfer legislation; cooperative agreements between institutions and/or departments at 2- and 4-year institutions; transfer data reporting to state higher education commissions, departments, and authorities; transfer incentives and rewards (such as priority admission and scholarships); presence of a statewide course articulation guide; common core curriculum; and common course numbering.

¹⁸⁵ Need-based aid per undergraduate student by state in 2005-2006 came from the National Association of State Student Grant and Aid Programs (NASSGAP) Annual Survey from: <http://www.nassgap.org>.

and institutional practices to continue. The case study research undertaken in this dissertation helps to point in a different direction. The qualitative strand offers promising approaches for changing transfer access and success among low-income, first-generation, and minority students. Specifically, the case study research on six community colleges (that primarily grant associate's degrees) in three states that have attempted to approach their policymaking in innovative ways (Florida, Georgia, and Washington) shows how some colleges and states have experimented with initiatives to improve students' access and success in upward transfer. Admittedly, these colleges face numerous constraints in closing the upward transfer gap between students who are first-generation, low-income, underprepared, and minorities, compared with students whose parents have bachelor's degrees, are not low-income, and come from more academically-prepared backgrounds. But even in the face of these constraints, contrasts between colleges with better than average transfer rates and those with more average rates (controlling for student characteristics) reveal that improvements in upward transfer for these populations are possible, and that more can be done to incentivize these improvements.

That said, the case study work revealed substantial continuing challenges of several kinds. One of the most influential challenges to improving students' upward transfer is that the states and colleges each prioritize the transfer outcome differently with respect to performance or outcomes funding, and with respect to their own transfer-intending populations. Furthermore, all participating case study colleges faced continuing challenges with: 1) enabling sufficient access and providing the right supports to various transfer-eligible students, 2) generating the right kinds of data to inform the improvement of transfer, and 3) finding ways to improve institutional transfer supports concurrent with an evolving set of transfer-related policies from the state level.

Colleges with higher transfer rates have implemented a range of practices such as mandatory advising, early bird advising, and early warning advising systems generally targeted at first-time, full-time students and/or students placed into developmental education courses (also called pre-college or learning support), if not all students. Even with many new supports for students' articulation and transfer and experimental advising programs (e.g. early warning, early bird, wraparound advising, etc.), many students do not have the access and support they feel they need for focused and strategic transfer planning. For many students, especially those enrolled part-time, who are experiencing barriers with financing higher education, succeeding in pre-college or college-level courses, and managing multiple demands from work, life, and family, the supports offered in their community college are insufficient. Improvements to the transfer advising supports are generally accompanied by a range of innovations in instructional practices, curriculum development, new educational delivery models, and programming wrapped around improving student success (increased tutoring support, peer leadership training, etc. such as at Hope Community College). But it is too soon to determine whether these are successfully addressing the barriers students are encountering. Some of these initiatives are evaluated with quasi-experimental research designs or external evaluators; however, most are not rigorously evaluated for effectiveness.

With support from organizations such as Achieving the Dream and Complete College America, states and colleges have worked on better ways to access and use data on students' upward transfer. However, challenges persist in gathering reliable data on first-generation status (since self-report data is not very reliable and there is a lack of consistency in defining first-generation status), as well as disaggregating student outcome data (such as students' upward transfer) by low-income status or by students placed into developmental education coursework in

mathematics, reading, or both. Yet, using data to identify gaps in outcomes for these students is likely to play an important role in successful programming aimed at improving students' upward transfer, differentiated for vulnerable student populations (such as students placing into developmental coursework, African-American males, low-income students, etc.). Once gaps are identified based on disaggregating cohort-based transfer rates by population sub-groups, the next challenge faced by colleges is to develop meaningful interventions to close the gaps, and to secure the resources necessary for doing so. But they all encounter significant resource challenges: colleges face budgetary constraints to adding incentives and resources to student services programming and adding to faculty responsibilities.

The effort to improve upward transfer occurs in a busy and demanding state policy environment, and that, too, is a source of challenges for increasing transfer rates. States vary in their policy development and implementation with respect to articulation and transfer, and also vary in the proportion of their postsecondary student population enrolled in associate's degree granting programs. Colleges experience different pressures from state policies, such as in Georgia, which mandated consolidation of eight institutions to better streamline administrative operations, improve cost-efficiency, and leverage resources across the University System of Georgia to increase postsecondary-workforce alignment in major fields. Among six principles that guided the consolidation decisions, cost efficiency had a strong emphasis as well as improved opportunities for students' educational attainment, by student demand for different majors and examination of organizational capacities, strengths, and proximity. Since all but one USG institution became four-year colleges, improved transfer pathways from associate's degree programs to internal bachelor's degree program is a desired outcome.

New policy changes in Florida and Washington also shape college-level work to improve upward transfer rates. In Florida, colleges must respond to new legislation requiring transfer advising by the time a student reaches 30 credit hours and revise general education curriculum offerings in response to the state mandate to reduce the general education core curriculum from 36 to 30 hours. Washington's continuing revisions to degree articulation requirements by major requires that colleges regularly update their advising practices in each of the major fields as policy changes occur. No matter what the policy mandate, a persistent challenge remains for colleges to coordinate consistent, reliable implementation of new and historical articulation and transfer policies at scale among their student populations, particularly those who are vulnerable and under-performing.

From the quantitative analysis and state-level interviews in Florida and Washington, my interpretation of the finding about the positive, moderating influence of common course numbering in increasing first-generation students' transfer probability is that the presence of common course numbering is a proxy for the collaborative, articulation work involved in decisions about equivalency of course work between two- and four-year institutions. Florida has an advantage from its long history of coordinated planning between community colleges and state universities to craft common course numbering, dating from nearly fifty years ago. Yet, nearly every state has the opportunity to build upon its own history with respect to articulation and transfer systems to strengthen coordinated planning and applied problem-solving between associate's degree programs and bachelor's degree programs. Some states have not been as

engaged in creating state-level policy supports for articulation and transfer and do not have a higher education system structured for two-year to four-year college transfer.¹⁸⁶

The college case studies across the three states suggest that states could consider additional incentives and supports for colleges to design research-based innovations and measure effectiveness in enhancing transfer with meaningful comparison groups. Together, states and colleges may achieve higher transfer rates, particularly among vulnerable student populations, with more efficient, accessible processes for using data to support decision-making around existing and new programs and services targeted at increasing students' degree completion and transfer outcomes. Even though five years of implementation of Achieving the Dream (ATD) has not shown much increase in student outcomes, and upward transfer is not included as one of ATD's key performance metrics, building a culture of evidence to guide innovative practices and evaluate them is a potentially worthwhile investment (Rutschow et al., MDRC, 2011; Rutschow and Orr, 2009; Rutschow and Coghlan, 2010). Investing in research-based innovation to cultivate a transfer-oriented college culture with personalized and systemic efforts to advocate and support students' transfer has a positive effect in above-average performing colleges (based on descriptions of practices in advising, data use, and innovation at Harvest, Hope, and Peachtree). Among the average-performing colleges which have diverse student populations and institutional contexts, we also learn here of strategies, practices, and challenges to inform the work ahead in improving students' upward transfer, especially among student groups traditionally less likely to transfer.

¹⁸⁶ For example, as of 2010 (Education Commission of the States' data on state transfer policies), Maine, Montana, and Nevada did not have any of the state transfer and articulation policies implemented. States with only 2 of 7 catalogued state transfer policy components included: Arkansas, Delaware, Indiana, New Hampshire, New Jersey, and Vermont.

Chapter VIII. Integrating and Interpreting Mixed-Methods Findings

This sequential, explanatory research design covers a large territory of inquiry. The quantitative strand first investigates state, college, and student factors influencing students' upward 2/4-transfer probability. With Beginning Postsecondary Study (BPS) data from 2003-2009 and other data sources, the analyses investigated the role of state articulation and transfer policies and college-level characteristics in explaining variance in individual upward transfer probability (after accounting for individual characteristics), particularly for first-generation and low-income students. The qualitative strand of this dissertation reported findings of interviews conducted with a range of stakeholders in six colleges and three states to uncover promising practices in colleges influencing or inhibiting students' upward transfer, obtain more detailed understanding of the state articulation and transfer policy design and implementation, and investigate how college leaders design innovations around transfer and related student success outcomes and evaluate their effectiveness.

From the quantitative analysis, I learned that among the available academic integration variables in BPS, meeting with an academic advisor often or sometimes had the strongest association with students' 2/4 transfer probability. This finding led me to further investigate academic and transfer advising practices through the college case studies in order to learn about advising practices in colleges with above-average upward transfer rates compared with those with average rates. College-level variables available in BPS explained little of the variance in upward transfer probability for community college students, so I then set out to learn from the college case studies what practices may be influencing improved transfer, particularly for first-generation and low-income students. Previous research has investigated the role of community colleges' leadership practices; data use for decision support; and the design, implementation, and

effectiveness of interventions to improve students' progression, transfer, and degree completion. However, none of these studies investigated the relationship between college practices and students' upward transfer in areas of academic advising, data use for decision support, the design and implementation of innovations, and state policy influences in the way that this study does. Also, since findings from the quantitative analysis yielded little clarity regarding state policy influences on upward transfer probability for low-income and first-generation students, the case studies explored the work of state policy officials in the areas of articulation and transfer to better understand what goes into policies such as common course numbering, inter-institutional or statewide system cooperative agreements, transfer data reporting, and so on.

This chapter summarizes the conclusions from this mixed-methods dissertation, provides an overview of the contribution of these findings to the literature, considers implications for practitioners, explores unanswered questions and limitations, and offers thoughts about future research directions. I start with several overall conclusions, then follow with what the study reveals about college-level efforts and improvement in transfer. After that, I consider what the study findings say about transforming the state role in relation to articulation and transfer between two- and four-year institutions. I close with remarks about the contributions this research can make to existing literatures, as well as noting its limitations and the questions it leave unanswered for further research.

Conclusions from the Mixed-Methods Analysis

Similar to other researchers' findings, I found that most state policy variables designed to affect transfer demonstrated little or no statistical association with the probability of transfer, after controlling for state wealth (gross state product per capita, or GSP), which had been shown to be associated with the historic rise of state cooperative agreements facilitating transfer in the

1980s and 1990s.¹⁸⁷ Gross state product per capita is also highly positively correlated with the percentage of the state's population with bachelor's degrees, which is also significantly associated with increased upward transfer probability. The close correlation between state wealth and the proportion of state residents with a bachelor's degree education are likely proxies for a state's social capital and stronger demand for affordable access to college education by state residents, which may be accomplished through 2/4 transfer educational options in the state's public higher education sector.

Even though state transfer policy components¹⁸⁸ did not show significant overall effects, state transfer policy may moderate lower transfer probability among first generation students compared with non-first generation students. For first-generation students, the presence of common course numbering in a state was associated with a substantial (3-7 times, depending on if low-income) increase in the odds of upward transfer, after controlling for gross state product. My interpretation of the finding about common course numbering's positive effect for first-generation students is that the history and patterns of relationships built between associate's granting and bachelor's degree institutions among faculty, administrators, and staff around articulation/transfer policy initiatives (such as common course numbering, the creation of a statewide articulation guide for students, etc.) positively impacts upward transfer probability for first-generation students, not necessarily the guide or numbering in and of itself. Interviews with

¹⁸⁷ When gross state product is excluded from the multi-level analysis, cooperative transfer agreements are significant and positive ($\gamma=0.3(0.1)$, $p<.02$), but no other state policy components are significant, and other variables' influences are about the same as Table 3.2 in the quantitative strand.

¹⁸⁸ Recall that state articulation and transfer policies include several components, as catalogued by the Education Commission of the States (ECS) in 2001 and 2010 (imputed for 2005-06, two years after BPS 2003 students' postsecondary entry). ECS transfer policy components are: presence of articulation and transfer legislation; cooperative agreements between institutions and/or departments at 2- and 4-year institutions; transfer data reporting to state higher education commissions, departments, and authorities; transfer incentives and rewards (such as priority admission and scholarships); presence of a statewide course articulation guide; common core curriculum; and common course numbering.

state policy officials in Florida (state with the longest history of common course numbering) and Washington (state with common course numbering across community colleges, but not with four-year institutions) provided background to understand facilitating state factors (e.g., unified governance system with both two-year and four-year institutions) and limiting state factors (e.g., a decentralized higher education governance system with two- and four-year institutions governed separately).

While the quantitative analysis in many ways affirms prior research about the ambiguous or unknown effects of state transfer and articulation policies, the case studies offer some insight as to the ways in which state policies may be influential, particularly in improving outcomes for vulnerable student populations such as first-generation college students. While students are largely disconnected from direct influences of state policymaking with respect to articulation and transfer, they are likely to experience the effects only indirectly, as in the ways that access to upward transfer is opened up or constricted in their particular field of study, region, or community by outcomes of policy-level negotiations. As the case study analysis makes clear, what matters most to the majority of students is having a positive, supportive experience with the faculty and staff with whom they interact in their college to address whatever barriers they are experiencing. State articulation and transfer policies do not tend to address this key personal experience factor, but college leaders, especially at colleges with higher than average transfer rates, concern themselves with creating personalized, meaningful, and engaging connections with students to a high degree. Based upon the case study data, some of the largest barriers to creating engaging and personalized learning environments and educational experiences have to do with the difficulties of managing multi-campus colleges, extremely large enrollments (such as more than 10,000 students), an increasing number of adjunct and part-time faculty, and

extremely large (such as 1,000 to 1) student-to-advisor ratios. These conditions are, of course, largely the products of state policies, albeit primarily those related to resources.

Based on results of the quantitative analysis in this dissertation, policy intervention would likely be most strategic if directed at helping high school students (who are not planning to directly transition to a bachelor's degree granting-program or may not yet have academic preparedness for direct admission to a four-year program or institution) to create specific plans for obtaining a bachelor's degree aligned to a specific field and to outline a transfer pathway to that end. Practice in making specific plans would be useful, even if the student decides to change the plan based upon new college or career experiences or results of work style and career inventories. Recent research from the Community College Research Center (Jaggars & Fletcher, 2013) shows that community college students have a more difficult time with solving transfer-related advising scenarios¹⁸⁹ than with completing tasks related to choosing a program of study based on prior achievement and desired salary objective. This may suggest that it would be worthwhile for high schools to offer student success courses generally offered for first-year college students, as a way of building transfer intentions and plans earlier. Transfer intention and full-time attendance were the two student level characteristics most positively associated with upward transfer probability from the quantitative strand, which implies that further intervention to increase full-time, continuous enrollment would also be extremely beneficial. Reforms to financial aid counseling and financial aid packaging, particularly for community college students, would be needed in this effort, particularly because many community college students

¹⁸⁹ CCRC's study investigated how well students use current resources for accurate logistical decision-making. In partnership with a Midwestern community college, twelve scenarios were presented to students (N = 38 students). The scenarios included: 1) Choosing program of study, 2) Choosing transfer school, 3) Understanding course requirements (for degree; for transfer). Students' responses to the scenarios were scored out of 100 possible points. The scenarios and grading rubric were created with the partnering community college's advising office.

are loan averse or working 20 or more hours a week (a factor negatively associated with upward transfer).

Indicators of college mission such as transfer-out rates¹⁹⁰ and proportion of associate's degree completions in fields other than health, vocational, or technical fields make sense as the leading college-level predictors of upward transfer probability. Quantitative analyses before now with then available data on community college characteristics left a blind spot regarding which college-level factors may help explain variance in upward transfer, particularly for first generation and/or low-income students. In order to have a good chance at receiving the labor market returns from attaining a bachelor's degree, my analysis shows that community college students gain an advantage from choosing a transfer-oriented field of study and attending a college with a higher transfer-out rate.

This dissertation identifies some promising strategies, interventions, and practices among colleges with above-average transfer rates compared with colleges with average transfer rates. Even among the better-performing colleges, however, too many students—particularly those most at risk of not transferring—may not have sufficient, coordinated supports to successfully complete transfer from their lower-division courses to upper-division coursework leading to a bachelor's degree. The case study analysis offers some insights for improving use of transfer data for decision making when allocating resources and planning interventions to increase students' upward transfer. However, the larger problem with respect to improving upward transfer is generating increased individual and collective responsibility among both two- and four-year institutions for transfer. As states develop performance or outcomes-based funding

¹⁹⁰ Recall that IPEDS defines the transfer-out rate as “the total number of students who are known to have transferred out of the reporting institution within 150% of normal time to completion divided by the adjusted cohort.”

models at the same time that longitudinal student data warehouses are being built and refined to track student degree completions, transfer, and labor market outcomes, colleges respond to this increased accountability with strategic and innovative change, or resist based on their own priorities and values and the limitations of state system supports and problems with timeliness and reliability of data.

College Strategies to Improve Students' Successful Access to the Baccalaureate Pathway

With available college-level data, the quantitative analysis showed that few college-level variables explain significant variance in individual students' transfer probability overall. From the quantitative analysis, a blind spot remained regarding which college characteristics may help explain variance in transfer probability for low-income and/or first generation students. Derek's story at Hope Community College illustrated and personified what I learned in the qualitative case study inquiry about the role of personalized and meaningful relationships in academics, work, and in community and social spheres that help a student such as Derek succeed in college, and presumably in the final stages of upward transfer. Other students interviewed affirmed the important role of timely and helpful academic support, well-designed and professionally executed instruction, engaging work study jobs, and meaningful community and social supports either through their affirmations of positive support they received in these areas or by complaints about their absence. College presidents also emphasized the central importance of every faculty, staff, and administrator creating a personal connection with students. Derek's college president was especially illustrative of this point among the four presidents I interviewed. The value placed on personalization was particularly salient in colleges with above-average upward transfer rates, where students were more likely to cite feeling especially cared about and having faculty members whom they could call on their cell phone, for example.

College case studies noted promising practices in academic and transfer advising, data use for decision support, and the design and implementation of innovations that showed a positive impact for participating students. However, all colleges indicated room for their own improvement in these areas, particularly as it related to improving transfer rates and closing gaps in these rates between traditionally higher-performing groups and those under-performing. See Appendix N for a summary of findings and supportive evidence from the qualitative strand of inquiry. Tables 8.1 through 8.3 below summarize promising practices and challenges in academic and transfer advising, transfer data use, and the design and implementation of innovations to improve students' upward transfer:

Table 8.1 - Promising Practices and Challenges in Academic and Transfer Advising

Academic and Transfer Advising	
Domains of Promising Practices	Challenges Associated with Each Domain
Transfer “champions”. Academic leaders who champion students’ transfer and successfully engage others in this work	Lack of professional development, accountability, or resources for faculty and staff to become effective “transfer champions”
Mandatory advising with faculty and professional staff dedicated to transfer advising	Institutions with more than 10,000 enrollment and/or reductions in student affairs budgets face challenges in effectively implementing mandatory advising models.
Personalized advising. College-wide support for personalized, multi-term (1/2 hour advising sessions) with students (e.g. early bird advising, designated advising days)	Having enough college-wide support, training, and incentives on how to be an effective transfer advisor, as well as to have enough well-trained persons advising so that more students can be reached (and protect against burnout, being overwhelmed, etc.)
Tutoring relationships. College-wide support for stronger faculty-tutor collaboration and faculty participation in tutoring (supplemented by mid-term alerts to students not passing at mid-term)	Developing more college-wide support, training, and incentives for faculty to utilize tutors well and to help students most in need of support access needed help; positive encouragement for students’ motivation and connection to tutoring support (creation of learning-friendly spaces, online access to tutoring resources, college paid tutoring for low-income students, etc.)
Faculty incentives and recognition for advising (advising hours in the faculty contract, advising awards)	Deeply embedded norms that devalue advising, as part of faculty work
Transfer-related IT. Well-developed information technology (IT) advising system to support students’ creation of a transfer plan and follow-up by faculty and staff on that plan	Creation of collaborative decision-making structures and strong, working partnerships to advise the investments and priorities of IT in online systems that are easy-to-use by faculty and students and organized around student success Also challenging to work within older IT systems to generate new alerts for students that help them maintain focus on transfer goals
Targeting underrepresented students. Campus support programs for low-income, minority, and first-generation students that are well-integrated in college-wide planning and supported by faculty	Staying knowledgeable about students’ preferred transfer destinations, requirements, barriers, and negotiating removal of those barriers
2/4 Collaboration. Transfer advisors engaged in relationship building with representatives from BA-granting programs and institutions	Staying current on changes in admission requirements for different programs at various transfer destinations, and providing coordinated, timely updates to students and faculty via accessible, easy-to-use online and print media.

Table 8.2 - Promising Practices and Challenges in Transfer Data Use

Transfer Data Use for Improving Transfer-Related Student Supports	
Domains of Promising Practices	Challenges Associated with Each Domain
<p>College leaders championing transfer data use (with other key outcomes). Leadership support for collective data-based decision-making and incentives for transfer data use by faculty, staff, and administrators (e.g. training support, accountability, performance bonuses, promotion criteria, etc.)</p>	<p>Colleges having diverse student populations in adult basic education, professional/technical fields (in which an AA/AS is the terminal degree for the desired job), dual enrollment students, and transfer-intending AA/AS students from both traditional and non-traditional backgrounds as well as academically prepared and those under-prepared – making it more challenging to concentrate necessary leadership focus on 2/4 transfer outcomes</p>
<p>Calculation of college transfer patterns with NSC data. Use of NSC transfer data to calculate accurate 2/4 transfer rate disaggregated by major, campus location, full-time vs. part-time status, Pell grant recipient, or other meaningful characteristics</p>	<p>Constrained IR office staffing, expertise, leadership support, and resources to access NSC and state data to provide timely feedback on students’ transfer patterns to guide advising and planning for student support services</p>
<p>Redesign of college transfer supports using NSC data analysis. Use of NSC transfer data to plan and implement articulation agreements and build relationships with common transfer destinations among administrators, advisors, faculty, and student services staff</p>	<p>Limited state and college IR capacity to have access to students’ success patterns and barriers at their transfer destination (such as course grades in first term in bachelor’s program by field). Colleges that have started phone calling students to find out student barriers in completing their degree, registering, or transferring acknowledge that this requires substantial person hours to conduct this level of follow-up, and then requires additional investment by the college to meaningfully address the students’ barriers</p>
<p>Quasi-experimental research comparing participants and non-participants to assess specific transfer-related interventions (similar to how colleges are conducting quasi-experimental research with developmental education reform pilots)</p>	<p>Limited state and IR capacity to have quality data on students’ major field of study, first-generation status, or program participation indicators (such as orientation participant or Transfer Fair participant) and to conduct quasi-experimental analysis of students’ transfer patterns relative to these factors or interventions</p>
<p>Weekly tracking of key process metrics such as students’ access of out-of-class supports (in-person and online tutoring, career coaching resources, completion of education or transfer plans)</p>	<p>Limited business intelligence systems and leadership attention to tracking students’ transfer success relative to planned interventions designed to support transfer for large numbers of students</p>
<p>Leading as though funding in part depended on students’ success in 2/4 transfer. When leaders operate as if funding (in part) depended on how well students are completing upward transfer to baccalaureate programs, they plan for success on this metric.</p>	<p>Performance-based or outcome-funding that does not include 2/4 transfer as a rewarded outcome</p>

Table 8.3 - Promising Practices and Challenges in the Design and Implementation of Innovations to Improve Upward Transfer

Design and Implementation of Innovations to Improve Transfer	
Domains of Promising Practices	Challenges Associated with Each Domain
<p>Regular meetings and collaborative decision structures between primarily associate’s degree granting and primarily bachelor’s degree granting programs and institutions to facilitate articulation and transfer for students (e.g. collaborative laboratory, regularly scheduled calls between presidents and provosts across institutions)</p>	<p>Transfer patterns may be dispersed and difficult to manage depending on number of majors, AA/AS programs, and proportion of transfer-intending students making it difficult to orchestrate communication with key transfer destinations. Public four-year institutions may not be flexible or cooperative in establishing smooth transfer pathway for students from community college/access institutions.</p>
<p>Ongoing dialogue between lower division and upper division faculty (by major field of study). Participation by community college or lower-division faculty, student affairs, institutional research, academic affairs, etc. in communicating with four-year institutions regarding admissions, advising, curricular standards</p>	<p>Without support or incentives, most community college or lower-division faculty and staff time is constrained so it is hard to sustain connections with counterparts in four-year institutions and programs. The shift in mindset for faculty, staff, and administrators to hold themselves accountable to more than enrollment and AA/AS degree completion and add upward transfer and bachelor’s degree completion requires more cultivation and strategy.</p>
<p>Alignment of programs with labor market trends (demand for additional bachelor’s degree holders in jobs). Communication with employers by community college deans, administrators, and faculty to align curricular standards and programs to labor market trends and jobs requiring bachelor’s degrees in the region</p>	<p>Active coordination and communication with employers to help position AA/AS graduates and/or transfer students with a BA/BS for labor market success requires savvy leadership and a college infrastructure that supports career planning, which many community colleges/access institutions do not currently have.</p>
<p>Ongoing dialogue between college and state levels of decision-making regarding transfer and articulation. Active communication with state policy officials regarding reforms needed in any area affecting students’ successful 2/4 transfer (developmental education, academic advising, funding support, expansion to offering bachelor’s degrees, major-related transfer agreements, etc.)</p>	<p>Due to the wide range of state policy initiatives, funding constraints, multiple programs affecting students’ transfer success, numerous demands on college leaders, and differences in governing structures and state cultures of collaborative decision-making with college leaders – collaborative state-college or collaborative internal planning may be difficult, contentious, or constrained by myriad factors.</p>

Design and Implementation of Innovations to Improve Transfer (continued)	
Domains of Promising Practices	Challenges Associated with Each Domain
<p>Focus on closing equity gaps in upward transfer in decision-making. Use of collaborative decision-making, “courageous conversations”, and student college completion planning to improve transfer outcomes, particularly for vulnerable student populations</p>	<p>Stigma may be associated with confronting limitations of prior practices in confronting and substantially improving outcomes for students under-performing in higher education (such as African American males). When students are angry or frustrated by institutional or social barriers due to racism or the effects of other types of marginalization, institutions are often not well-equipped to offer student the caring, meaningful support and advocacy they need to push through the barriers to successful transfer (which often require partnerships beyond the college’s traditional programs and services such as with employers, mental health providers, child care, housing, etc.).</p>
<p>Research-based innovation. Use of both external and internal research, leadership literature, and national and professional networks to stimulate innovation, knowledge of and adaptation of high-impact practices</p>	<p>External grant funding often provides faculty, staff, and administrators with support to design and implement research-based initiatives, and conduct evaluations of proposed high-impact practices. Absent such funding, colleges are typically constrained and can only conduct these activities within a limited scope.</p>

As noted in Tables 8.1 through 8.3, this research project highlights promising college practices in the areas of transfer advising, transfer data use, and transfer-related innovations, as well as accompanying challenges and barriers. Transfer and articulation policies vary by state, as does the organization of states’ public colleges and universities. State allocation of resources and funding formulas to community colleges (or similar public access institutions) also varies considerably by state. Colleges that work within their state policy structure with a long-term vision, as well as take active leadership roles in helping to shape a better state (or regional) context for students to achieve their highest postsecondary success, have more to gain from that investment of time, leadership, and thoughtful deliberation.

Many unanswered questions remain regarding how community colleges and access institutions can best address funding limitations, increasing responsibilities for improved student transfer, and effective provision of differentiated support for upward transfer by different student groups which may have varying transfer objectives and intentions. One of the most pressing challenges faced by colleges is how to adapt time- and labor-intensive pilot initiatives for broader implementation among a larger student population. What practices can be adapted from businesses or other organizations that have successfully scaled up interventions for larger populations? Other questions that would be helpful to answer have to do with effective leadership in community colleges and access institutions, and how to create campus cultures where innovation, collaboration, data use, and advocacy for students' upward transfer are the norm.

Further empirical research would be useful on college-level practices that close gaps in upward transfer between student groups traditionally more successful with 2/4 transfer and those not performing as well in transfer. Among colleges that are substantially improving their 2/4 transfer rates over time, and closing gaps in transfer rates for African-Americans and Latinos (especially males), what are the key interventions contributing to that success in raising transfer rates? Another worthwhile investigation has to do with the way that colleges handle financial aid counseling and support students to attend full-time, so that 2/4 transfer becomes a much greater probability. State and federal financial aid policies also have some bearing on college-level practices in financial aid counseling and packaging which would be worthwhile to investigate further. For students citing financial reasons as the major barrier for lack of continuous college enrollment, what changes in financial aid policies (changes in award amounts, extension of term

limits, work study package with financial aid award, etc.) would make the difference for students to stay enrolled, or increase from part-time to full-time enrollment?

College administrators, faculty, and staff are also engaged in partnership-building and outreach with high schools and districts to help students better prepare for a successful transition to an AA/AS program as well as plan for transfer beginning in high school. What are the promising practices in partnership building with high schools in summer bridge programming, academic advising, placement policies (for pre-college courses), and effective models for helping students transition out of pre-college courses, succeed in college-level courses (particularly courses with high failure rates), and position themselves for their desired bachelor's degree program? In what ways is community colleges' expansion to offering bachelor's degree programs associated with improved upward transfer rates for students in lower-division coursework at the same college? Many new questions emerge after exploring this already vast territory of inquiry about factors, policies, and practices influencing students' upward transfer.

Transforming the States' Role to Improve Students' Upward Transfer Rates

The results of this mixed-methods research project invites deliberation about policy levers that may be employed in community colleges and states to boost 2/4 transfer among low-income, academically under-prepared and first generation students. To the extent that having the expectation of a bachelor's degree, an intention to transfer from community college, and continuous, full-time enrollment in community college substantially increases transfer probability, it is useful to consider what community colleges and states can do to foster full-time enrollment among more transfer-intending students, particularly those from less educationally advantaged backgrounds. Additional state and college-level investments in financial support for

full-time attendance would be required for students, and possibly performance-based scholarships for successful academic course performance.¹⁹¹ Among measures of academic integration, talking with an academic advisor often or sometimes was the variable most positively associated with upward transfer (yet only weakly significant in the final model). The case studies offered some insights to effective academic and transfer advising practices, but also raised many new questions.

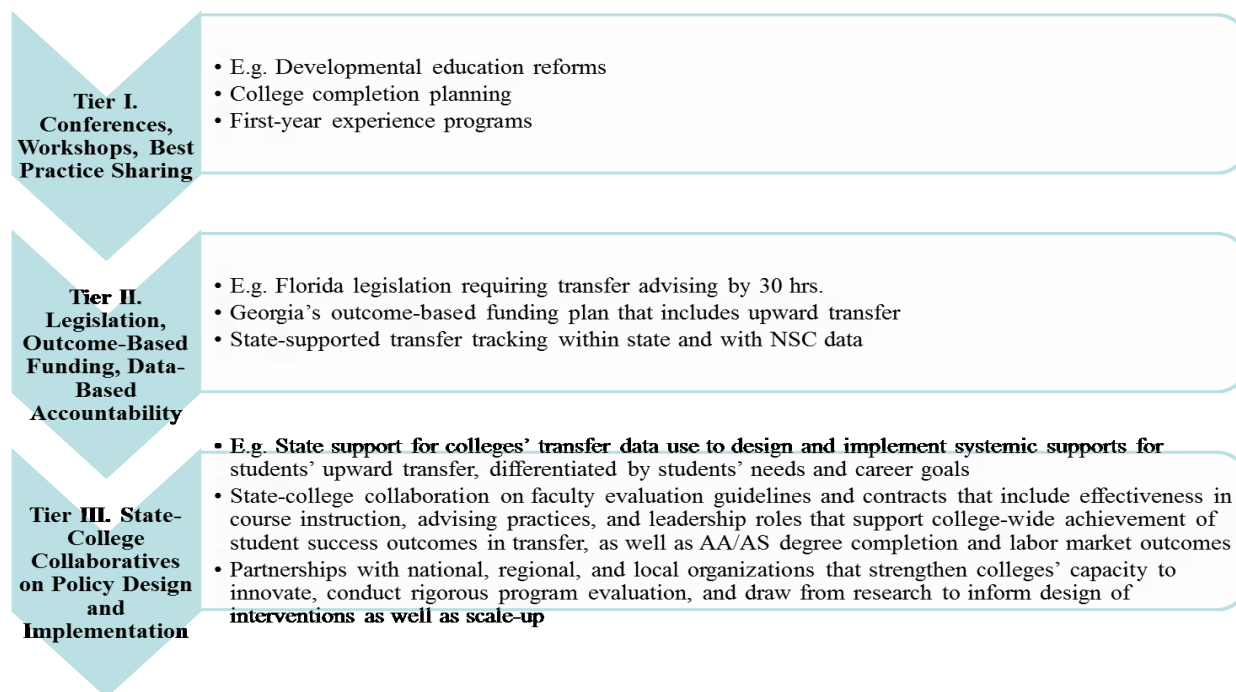
The presence of common course numbering in a state has a positive moderating influence for first generation students' upward transfer probability, which, the Florida case study findings suggest may be a proxy for a robust communications and problem-solving relationship between two and four-year institutions focused on increasing step-by-step outcomes to bachelor's degree attainment over a long-period of time. A host of new questions can be explored from this suggestive finding. Do registrars and faculty involved in course-by-course articulation also invest more time in coaching students' upward transfer? Are they "transfer champions"? What incentives would most strongly incentivize faculty and staff to become "transfer champions", and how many are needed to effectively transform a college culture to dramatically increase 2/4 transfer rates? If students who are low-income and first-generation respond most strongly to personalized academic support in preparing for successful transfer, what strategies are effective in giving all students access to this level of advising and helping maintain relationships with their advisors? If students do not have personal assistance with transfer planning from TRIO, Mesa,

¹⁹¹ For example, performance-based scholarships demonstrated positive effects for low-income parents who attended two community colleges in the New Orleans area. Eligible students could receive \$1,000 for each of two semesters (\$2,000 total) if he/she stayed in college and maintained a "C" or better average in a randomized, controlled trial. Students who received in the scholarship-eligible groups were more likely to register for a second semester and earned on average 3.5 credits (a little more than one college course) more than the control group over four semesters (Richburg-Hayes, 2009).

Brother-to-Brother, MAX, an Honors program, or some other specialized, wraparound program, what resources do they access and how successful are they in transferring?

States have many options for influencing college-level innovation to offer systemic, personalized, and academically aligned transfer pathways for students to successfully pursue and complete bachelor’s degrees. A tiered analysis of state supports for improved upward transfer may begin with: 1) statewide conferences, workshops, and best practices sharing on transfer-related support topics; 2) state legislation, outcome-based funding, and data-based accountability focused on improving students’ upward transfer in addition to other success outcomes; and 3) state-college collaboratives structured for policy design, innovation, and systemic implementation of high-impact practices associated with students’ upward transfer. Figure 8-1 below summarizes this tiered-support and offers examples in each tier.

Figure 8.1 – Tiers of State Support for the 2/4 Transfer Function



All three case study states offer programming in the first tier: conferences, workshops, and best practices sharing among job-alike groups and in different areas of students' progression (such as innovations to help students better progress from developmental education to college-level work and to avoid developmental education altogether, first-year experience programming, and college completion planning). Some of stronger state policy levers for improving state's upward transfer rates include legislation directed at improved articulation, outcome-based funding that includes the upward transfer outcome, or data-based accountability with respect to improving students' upward transfer. State policy attention and incentives for colleges to close gaps between student groups on the transfer outcome would also be beneficial. Case study states are just beginning to strengthen state-college collaboratives focused on systemic redesign of college operations and practices focused on student success for different student populations and for students at different stages of transfer readiness.¹⁹²

According to research by Jenkins and Kerrigan (2009), transfer data is the least utilized in decision-making among data on community college student outcomes by Washington administrators, faculty, and staff in Achieving the Dream colleges. Across the three case study states, colleges responded with more attention and focus to areas most emphasized in state-level policy-making. In Washington, the lack of trust in the reliability and tracking of transfer data was a barrier to colleges' full accountability to owning 2/4 transfer as an outcome for their students. Four-year institutions must also be fully invested and supportive of improving students' upward

¹⁹² Examples include: Completion by Design and the Developmental Education Initiative in Florida (see: <http://www.completionbydesign.org/>), Washington state's Student Completion Initiative from 2009-2012 (Retrieved online 6.23.13 from http://www.sbctc.edu/college/e_studentcompletioninitiative.aspx), and state-level partnerships between the University System of Georgia and the Technical College System of Georgia (formed in 2012). (See Complete College Georgia, Georgia's Higher Education Completion Plan 2012, retrieved 03.18.13 from: http://www.usg.edu/educational_access/documents/GaHigherEducationCompletionPlan2012.pdf) See also: David Alstadt (2012, May). How states can accelerate community college innovation by supporting faculty leadership. Policy Bulletin. Boston, MA: Jobs for the Future. Retrieved online 6.23.13 from: <http://www.jff.org/publications/education/how-states-can-accelerate-community-coll/1419>

transfer pathways from community college, and this also requires state-level policy support for removing any barriers to collaboration and enabling creative problem-solving (online degree program offerings, university programs co-located on community college campuses, etc.).

Policy-innovative states such as Florida, Georgia, and Washington are actively engaged in differentiating policies and supports such that students entering lower-division (or community college) programs with different levels of academic preparation and different career objectives can effectively persist and succeed through a bachelor's degree program if they so choose and be competitive in jobs requiring a bachelor's degree. Given all the competing priorities in a state, the diversity of students, myriad degree options, complex labor market, and fluctuations in local and regional economies, the design of a comprehensive, coordinated system of support for improving students' upward transfer from lower-division to upper-division courses (through bachelor's degree attainment) is difficult to say the least. Middle and high schools can also be much more strongly engaged in helping students prepare for successful college-level work by offering mandatory workshops or seminars in college and career planning, college financing, and 2/4 transfer planning (if community college is the desired entry point). While colleges' practices in working with high schools and districts to assist students in effectively transitioning to community college and maximizing its value were not the focus of this research, I learned that colleges have begun expanding their outreach to middle and high schools for this purpose. State-level support and collaborative planning is needed at each stage of design and implementation of a successful P-20 pathway and system of support for students' successful transitions and completion of degrees, particularly among student groups traditionally less successful in postsecondary attainment.

Contributions and Limitations

The strength of my quantitative inquiry is my use of a large, recent national survey sample of beginning community college students to determine how variation in students' upward transfer probability is explained by certain state transfer policies, community college characteristics, student decisions and academic performance, and student background characteristics, as well as by local and state economic conditions. However, the study also had substantial challenges in data definition and measurement. Data limitations include: misalignment between available measures of academic and social integration for the community college student population; lack of annual, specific measures of state articulation and transfer policies for the appropriate period; the lack of measures of articulation and transfer policy implementation strength; and a lack of measurement and data on community colleges' relevant practices as well as other limitations to data on college-level characteristics such as transfer-out rate (for only first-time, full-time students).

The strength of the qualitative analysis lies in its findings about college practices and state policies that are being developed to improve students' upward transfer, particularly for at-risk student populations, and how college leaders engage in ongoing innovation around these practices. The contrasts between high performing and average colleges on the transfer outcome are instructive in learning about promising practices and challenges operating in diverse colleges with respect to student academic advising, institutional research, and institution-wide planning. Even though the examination of a broad scope of interventions and practices within community colleges could be viewed as a strength of this study, the broad scope of inquiry may also be considered a limitation insofar as breadth and depth have to be traded off. Each of these domains

(transfer advising, transfer data use, transfer-related innovations, and state supports for colleges' systems of support for improving students' upward transfer) could be a study of its own.

Another limitation built into the design is that my multi-level model analyses in the quantitative strand do not support any causal claims regarding the advantage to transfer probability from enrolling in community colleges with certain characteristics, from participation in various advising, support services, or community college programs, from community college course-taking sequences, or from various state policy components. Causality can better be established with experimental and quasi-experimental research designs (Shadish, Cook, & Campbell, 2002) than from secondary analyses of survey data. Rather, the analyses here report on factors and policies statistically associated with community college students' transfer outcomes utilizing national survey data of beginning postsecondary students from the recent period, 2003-2009. Case studies of community colleges performing above-average and about average with respect to students' 2/4 transfer in three policy-innovative state contexts offered insights into policy implementation puzzles regarding how to meet diverse community college students' needs and expectations.

While a sequential, explanatory research design has advantages for a study conducted by a sole researcher, fully unified data analyses of both qualitative and quantitative strands are limited here by differences in data collection timeframes, sampling, and analytical frameworks of the Beginning Postsecondary Study 2003-2009 and case studies conducted in 2012-13 (Castro, Kellison, Boyd, & Kopak, 2010). One of the challenges with a multi-state and multiple college case-study design is the reliable integration of information across observations or cases (Kirk & Miller, 1986). In a mixed-methods design such as this, difficulties arise in assessing links and

associations across populations, observations, cases, and constructs. However, analyses in each strand adhered to rigorous application of the particular analytical methods utilized.

The qualitative, multi-state and multi-college case studies offer a grounded, practice-rich understanding of promising (and those not as constructive or effective) practices and policies that cannot be obtained from the national quantitative analyses. Mixed-methods studies such as this are rare, and offer complementary information to leaders in community colleges and in state policy offices regarding strategies for improving low-income students' transfer and eventual baccalaureate degree completion. Both study strands offer insight regarding how students' decisions and performance interact with community college characteristics and decision-making, as well as the contextual role of state policy conditions and decision-making. In this way, the quantitative and qualitative analyses offer complementary findings regarding strategies, policies, and factors influencing improvements to students' upward transfer, particularly for students most at risk of not transferring and attaining a baccalaureate degree.

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¹⁹³ Appendices E and F are included in a supplemental file because they are formatted to 8 ½ x 14 size.

Appendix A. NCES Description of the Beginning Postsecondary Study

The Beginning Postsecondary Students Longitudinal Study (BPS) focuses on a nationally representative sample of students who are enrolled in postsecondary education for the first time (collectively referred to as first-time beginners or FTBs). Study eligibility is determined by a student's first postsecondary enrollment date rather than age-related determinants such as the student's high school graduation year. In this way, BPS includes non-traditional students from a variety of backgrounds. In addition, BPS collects data on sample members' complete postsecondary enrollment history during the period between the base year study and the final follow-up, making it distinct from typical within-institution retention and attainment studies that do not track students as they move between schools. BPS:04 is the third cohort of FTBs to be tracked by NCES since 1990. It follows first-time beginners identified in the 2003–04 National Postsecondary Student Aid Study (NPSAS:04) through two follow-up data collections conducted during the third and sixth years after the base year study. BPS:04/09 is the second follow-up data collection of the BPS:04 cohort. As with previous BPS studies, BPS:04/09 includes a multi-mode student interview component that collects information on students' education and employment since their first enrollment in postsecondary education. While six years is not a long enough time horizon for students beginning in community college to study baccalaureate degree attainment, it is reasonable to study transfer outcomes from two-year to four-year institutions.

For the first time in the BPS series of studies, BPS:04/09 includes a transcript component that provides researchers with additional institution- and student-level data for analysis. The first-time beginners in the BPS:04/09 study were interviewed three times: in 2004, at the end of their first year in postsecondary education; in 2006, 3 years after they had started in postsecondary education; and in 2009, 6 years after they had started. In 2004, they were interviewed about a variety of subjects, including their academic and social experiences during the first year, their work experiences while enrolled, their education plans and long-term goals, their demographic characteristics, and their family responsibilities and background. Between March and September of 2006 they were interviewed again, with a focus on their enrollment patterns since 2004, including any transfers, stopout periods, attendance intensity, and completion of certificates and degrees. Those who were no longer enrolled were asked about their employment experiences. The third-year survey is called BPS:04/06, and the results of both the 2004 and the 2006 interviews have been published in a previous report (Berkner and Choy, 2008).

The 2009 interview, conducted between February and October of 2009, focused on the degree completion of those still enrolled after 2006, graduate school enrollment of those who had completed bachelor's degrees, and employment of those no longer enrolled. The BPS:04/09 study draws on many sources of data. Information about the beginning postsecondary students during their first year comes from NPSAS:04, which includes a student interview, institutional records, federal financial aid applications, and federal student loan and Pell Grant records. Data on 2003–04 beginning postsecondary students in 2006 and 2009 are primarily based on the follow-up student interviews. However, both the 2006 and 2009 studies integrate students' enrollment records from the National Student Clearinghouse and data from the same federal databases used in the base year, to link and capture students as they transfer. The 2006 study also contains information from college admissions test agencies, and the 2009 study includes college transcript data from July 1, 2003, through June 30, 2009. In all three study years (2004, 2006, and 2009), student interviews were distributed as web-based questionnaires that were either self-administered or conducted via telephone with a trained interviewer. In 2009, about 15,000 students completed the interview, resulting in a weighted interview response rate of 82 percent. National Student Clearinghouse data or transcript data provided information on another 1,500 cases, resulting in an overall weighted response rate of 89 percent.

Appendix B. Unconditional Model Results

Appendix B1. Summary of Unconditional (Null) Three-Level Model of Log-Likelihood of Transfer to a Four-Year Institution by U.S. Students Beginning in Public Two Year Institutions in 2003-2004 Within Six-Year Period

Unconditional Logistic Model of 2/4 Transfer: (population-average with robust standard errors by Laplace approximation in HLM 6.08) (unweighted n=5,010 students in 500 community colleges in 50 states, n's and d.f.'s rounded to the nearest ten, weighted n=1,528,900)						Transfer Probability
Fixed Effects	B	S.E.	d.f.	T-Ratio	Confidence Interval	
γ_{000} (student level)	-1.1***	0.07	50	-16.7	(0.3, 0.4)	0.26
Random Effects (Level 1)	$\pi^{2/3}$ (Vermunt, 2003)					
Variance between students in multi-level logistic reg.	3.29 ¹⁹⁴					
Random Effects (Level 2)	σ^2	S.D.	d.f.	χ^2	p-value	
τ_{π} (between institutions)	0.2	0.4	460	536.8	0.006**	
Random Effects (Level 3)	σ^2	S.D.	d.f.	χ^2	p-value	
τ_{β} (between states)	0.07	0.3	50	89.3	0.000***	
*** Indicates that the probability of transfer is 26% for this population (unweighted n= 5,010, weighted n=1,528,900) and that the transfer probability differs for students from different institutions in different states (p<.001).						

Between Institutions' (Level 2) intra class correlation: $\rho_{L2} = \tau_{\pi} / (\sigma^2 + \tau_{\pi} + \tau_{\beta}) =$

$0.2 / (3.29 + 0.2 + 0.07) = 0.2 / 3.56 = 0.06$, i.e. **6% of variance explained by institution variables on probability of students' 2/4 transfer**

Between States' (Level 3) intra class correlation: $\rho_{L3} = \tau_{\beta} / (\sigma^2 + \tau_{\pi} + \tau_{\beta}) =$

$0.07 / (3.29 + 0.2 + 0.07) = 0.07 / 3.56 = 0.02$, i.e. **2% of variance explained by state variables on probability of students' 2/4 transfer**

¹⁹⁴ See: Evans, M., Hastings, N., and Peacock, B. (2000). *Statistical distributions (3rd Ed.)* New York: Wiley; and Vermunt, J. K. (2003). Multilevel latent class models. *Sociological methodology*, 33, 213-239. <http://www.jstor.org/stable/1519857>

Separate analyses were conducted with the same variables on the sample of students who planned to transfer in 2003-04, and transfer probability differed for students attending community college in different states, but community college differences did not affect transfer probabilities within states. In other words, for a student who already planned to transfer in 2003-04, the likelihood of transferring at any community college in a state is about the same, over this six-year period.

Appendix B2. Summary of Unconditional (Null) Three-Level Model of Log-Likelihood of Transfer to a Four-Year Institution by U.S. Students Beginning in Public Two Year Institutions in 2003-2004 Within Six-Year Period

Unconditional Logistic Model of 2/4 Transfer: (population-average with robust standard errors by Laplace approximation in HLM 6.08) (n=2,760 students in 370 community colleges in 40 states (n's and d.f.'s rounded to the nearest ten, weighted n=839,050)						Transfer Probability
Fixed Effects	β	S.E.	d.f.	T-Ratio	Confidence Interval	
γ_{000} (student level)	-0.6***	0.06	40	-8.6	(0.5, 0.7)	0.37
Random Effects (Level 1)	$\pi^{2/3}$ (Vermont, 2003)					
Variance between students in multi-level logistic reg.	3.29					
Random Effects (Level 2)	σ^2	S.D.	d.f.	χ^2	p-value	
τ_{π} (between institutions)	0.08	0.2	330	352.2	0.2	
Random Effects (Level 3)	σ^2	S.D.	d.f.	χ^2	p-value	
τ_{β} (between states)	0.06	0.2	40	72.8	0.002**	
*** Indicates that the probability of transfer is 37% for this population (unweighted n=2,760, weighted n=839,050) and that the transfer probability differs for students attending community colleges in different states (p<.01), but not for students attending different community colleges.						

Between States' (Level 3) intra class correlation: $\rho_{LVL3} = \tau_{\beta} / (\sigma^2 + \tau_{\pi} + \tau_{\beta}) =$

$0.06 / (3.29 + 0.2 + 0.06) = 0.06 / 3.55 = 0.02$, i.e. **2% of variance explained by state variables on probability of students' 2/4 transfer**

Appendix C. Means and Standard Deviations

Model Variables Potentially Predicting Transfer Probability for Full Community College Sample and Planned to Transfer Sample

Characteristic Potentially Influencing Transfer Probability	<u>Full Community College Sample</u> Means and Standard Deviations for full BPS sample in community colleges [Student Weighted N=1,528,900, N=500 community colleges, ~50 states]	<u>Planned to Transfer Sample</u> Means and Standard Deviations for students who planned to transfer in Year 1 (2003-04) [Student Weighted N=839,050, N=370 community colleges, ~40 states]
State Characteristics		
Has Statewide Policy	0.7 (0.5)	0.7 (0.5)
Has Cooperative Agreements	0.8 (0.4)	0.8 (0.4)
Has Transfer Data Reporting	0.7 (0.5)	0.7 (0.4)
Has Transfer Related Incentives (e.g. priority admission, scholarship fund)	0.4 (0.5)	0.4 (0.5)
Has a State Transfer Guide	0.6 (0.5)	0.6 (0.5)
Has a Common Core Transferable Curriculum	0.5 (0.5)	0.5 (0.5)
Has Common Course Numbering	0.1 (0.3)	0.1 (0.3)
State Avg. Unemployment Rate 2003-2008	5.0 (0.9)	5.1 (0.9)
Proportion of Community College Students to Adult Population (18+) (2006)	2.5 (1.0)	2.5 (1.0)
Ratio of CC to Public Four Year Tuition	0.5 (0.1)	0.4 (0.1)
Community College Characteristics		
Total Enrollment Average (in thousands) 2003-04 to 2008-09	8.3 (7.7)	9.2 (8.1)
Percent Students Part Time (2003-2009)	0.3 (0.1)	0.3 (0.1)
Faculty-to-Student Ratio (2003-2009)	20.4 (6.9)	20.8 (6.4)
Percent Faculty Part Time (2003-2009)	0.4 (0.2)	0.4 (0.1)
Per-student expenditures (total deductions) (2003-2009)	\$12,579 (\$13,999)	\$11,992 (\$12,380)
Per-student expenditures on instruction	\$5,074 (\$5,055)	\$4,644 (\$3,844)
Per-student expenditures on student services	\$1,135 (\$1,083)	\$1,136 (\$1,149)
Hispanic-serving institution	0.11 (0.3)	0.13 (0.3)
Historically Black institution	0.01 (0.1)	0.01 (0.1)

Characteristic Potentially Influencing Transfer Probability	<u>Full Community College Sample</u> Means and Standard Deviations for full BPS sample in community colleges [Student Weighted N=1,528,900, N=500 community colleges, ~50 states]	<u>Planned to Transfer Sample</u> Means and Standard Deviations for students who planned to transfer in Year 1 (2003-04) [Student Weighted N=839,050, N=370 community colleges, ~40 states]
Student Characteristics		
Female	0.6 (0.5)	0.6 (0.5)
Age at Entry (2003-04)	22.7 (8.2)	20.7 (5.9)
Age (Squared)	582.4 (533)	463.8 (367.3)
Age 15-19 at postsecondary entry	0.6 (0.5)	0.7 (0.5)
First Generation (Neither parent earned a BA or higher)	0.7 (0.5)	0.7 (0.5)
TRIO Income Categories		
Low Income and First Generation (at least one parent <i>did not</i> earn a BA)	0.3 (0.5)	0.3 (0.4)
First Generation Only; Not Low Income	0.4 (0.5)	0.4 (0.5)
Low Income Only; Not First Generation	0.1 (0.3)	0.1 (0.3)
Not Low Income; Not First Generation	0.2 (0.4)	0.3 (0.4)
Racial/Ethnic Categories		
Latino	0.13 (0.3)	0.15 (0.35)
African-American	0.17 (0.4)	0.17 (0.38)
Asian-American	0.04 (0.2)	0.06 (0.23)
Native American	0.02 (0.2)	0.02 (0.1)
Pacific Islander	0.01 (0.1)	0.01 (0.1)
Other Race	0.10 (0.3)	0.11 (0.3)
Caucasian	0.7 (0.5)	0.7 (0.5)
Marital Status and Number of Dependents		
Single at postsecondary entry (2003-04)	0.85 (0.4)	0.9 (0.3)
Single through 2009	0.6 (0.5)	0.7 (0.5)
Married through 2009	0.3 (0.5)	0.2 (0.4)
Separated, Divorced, Widowed through 2009	0.1 (0.3)	0.1 (0.3)
Number of Dependents through 2009	0.8 (1.2)	0.6 (1.0)
Single*Number of Dependents through 2009	0.2 (0.6)	0.2 (0.6)
Married*Number of Dependents through 2009	0.4 (1.0)	0.3 (0.8)
Separated, Divorced, or Widowed*Number of Dependents through 2009	0.2 (0.6)	0.1 (0.5)
Transfer and Bachelor's Degree Aspirations		
Planned to Transfer in Year 1 (full sample only)	0.6 (0.5)	Not applicable (selection variable)
Expected BA or higher in Year 1	0.8 (0.4)	0.96 (0.2)
Highest Degree Expected <i>Lowered</i> from BA or Higher (by 2009)	0.4 (0.5)	0.4 (0.5)
Highest Degree Expected <i>Increased</i> from lower than BA (by 2009)	0.1 (0.3)	0.02 (0.1)
College Academic Readiness and Performance		
GPA in 2003-04	2.87 (0.9)	2.83 (0.8)
Took any Remedial Education in Year 1	0.3 (0.5)	0.4 (0.5)

Characteristic Potentially Influencing Transfer Probability	<u>Full Community College Sample</u> Means and Standard Deviations for full BPS sample in community colleges [Student Weighted N=1,528,900, N=500 community colleges, ~50 states]	<u>Planned to Transfer Sample</u> Means and Standard Deviations for students who planned to transfer in Year 1 (2003-04) [Student Weighted N=839,050, N=370 community colleges, ~40 states]
College Major Declared in Year 1		
Arts and Sciences Major in Yr1	0.1 (0.3)	0.1 (0.3)
STEM Major in Yr1	0.1 (0.3)	0.1 (0.3)
Education Major in Yr1	0.1 (0.3)	0.1 (0.3)
Business Major in Yr1	0.1 (0.3)	0.1 (0.3)
Health Major in Yr1	0.2 (0.4)	0.1 (0.3)
Vocational/Technical Major in Yr1	0.1 (0.3)	0.1 (0.3)
Undeclared Major in Yr1	0.3 (0.5)	0.3 (0.5)
Academic and Social Integration Measures		
Met informally with faculty often or sometimes	0.3 (0.5)	0.3 (0.5)
Talked with faculty outside class often or sometimes	0.7 (0.5)	0.7 (0.4)
Met academic advisor often or sometimes	0.6 (0.5)	0.7 (0.5)
Participated in Clubs often or sometimes	0.1 (0.3)	0.2 (0.4)
Participated in Arts often or sometimes	0.2 (0.4)	0.2 (0.4)
Participated in Sports often or sometimes	0.1 (0.3)	0.1 (0.3)
Participated in Study Groups often or sometimes	0.4 (0.5)	0.4 (0.5)
Enrollment and Work Hours Intensity		
Primarily Full-time (FT) enrollment (60% or more of total months enrolled)	0.7 (0.5)	0.7 (0.4)
Primarily Part-time (PT) enrollment (60% or more of total months enrolled)	0.2 (0.4)	0.2 (0.4)
Worked zero hrs. per wk. (average 2004 & 2006) vs. worked 1-19 hrs. (excludes work study)	0.1 (0.4)	0.1 (0.3)
Worked 1-19 hrs. per wk. (average 2004 & 2006) (excludes work study)	0.3 (0.5)	0.3 (0.5)
Worked 20-39 hrs. per wk. (average 2004 & 2006) (excludes work study)	0.5 (0.5)	0.5 (0.5)
Worked 40-60 hrs. per wk. (average 2004 & 2006) (excludes work study)	0.1 (0.3)	0.1 (0.3)

Appendix D. Bivariate Multi-Level Regressions and Odds Ratios

Potential Transfer Probability Variables for full community college student sample (Caution: Odds Ratios Over-Estimate when outcome has greater than 10% probability, such as the case with this population and 2/4 transfer outcome)¹⁹⁵

Significance:

.001 = ***/ .01 = **/ .05 = */ .10 = †

Characteristic Potentially Influencing Transfer Probability	Parameter Estimate (Standard Error)	Odds Ratio (95% Confidence Interval)
State Characteristics		
Has Statewide Policy	-0.2 (0.2)	0.8 (0.6, 1.2)
Has Cooperative Agreements	0.0 (0.2)	1.0 (0.7, 1.5)
Has Transfer Data Reporting	0.3 (0.1)*	1.3 (1.0, 1.7)
Has Transfer Related Incentives (e.g. priority admission, scholarship fund)	-0.1 (0.1)	0.9 (0.7, 1.2)
Has a State Transfer Guide	-0.1 (0.1)	0.9 (0.7, 1.1)
Has a Common Core Transferable Curriculum	-0.2 (0.1)	0.8 (0.6, 1.1)
Has Common Course Numbering	0.0 (0.1)	0.9 (0.7, 1.2)
Total Number of Policy Components	0.0 (0.1)	1.0 (0.9, 1.1)
<i>State Avg. Unemployment Rate 2003-2008</i>	0.0 (0.1)	1.0 (0.9, 1.1)
<i>Proportion of Community College Students to Adult Population (18+) (2006)</i>	0.1 (0.1)	1.1 (0.9, 1.1)
<i>Ratio of CC to Public Four Year Tuition</i>	0.2 (0.6)	1.2 (0.4, 4.2)
Community College Characteristics		
<i>Total Enrollment Average (in thousands) 2003-04 to 2008-09</i>	0.0 (0.0)**	1.0 (1.0, 1.0)
<i>Percent Students Part Time (2003-2009)</i>	-1.4 (0.6)*	0.2 (0.1, 0.8)
<i>Student to Faculty Ratio (2003-2009)</i>	0.0 (0.0)***	1.0 (1.0, 1.1)
<i>Percent Faculty Part Time (2003-2009)</i>	-0.5 (0.3)	0.6 (0.3, 1.1)
<i>Per-student expenditures (total deductions) (2003-2009)</i>	-0.2 (0.1)	0.84 (0.7, 1.0)
<i>Per-student expenditures on instruction</i>	-0.4 (0.2)*	0.67 (0.5, 1.0)
<i>Per-student expenditures on student services</i>	-0.3 (0.1)**	0.76 (0.6, 0.9)
Hispanic-serving institution	-0.2 (0.1)***	0.77 (0.7, 0.9)
Historically Black institution	0.4 (0.2)†	1.5 (1.0, 2.4)

¹⁹⁵ In the full community college sample, the Student Weighted N=1,528,900, N=500 community colleges, ~50 states. Note: Italics indicates grand-mean centering in relation to students across community colleges. Group-mean centering is not used because there are sometimes few student cases representing one community college. Weighted with BPS 2009 panel weight, i.e. WTB000.

Characteristic Potentially Influencing Transfer Probability	Parameter Estimate (Standard Error)	Odds Ratio (95% Confidence Interval)
Student Characteristics		
Female	-0.1 (0.1)	0.9 (0.7, 1.0)
<i>Age at Entry (2003-04)</i>	-0.1 (0.0)***	0.92 (0.9, 0.9)
<i>Age (Squared)</i>	0.0 (0.0)***	1.0 (1.0, 1.0)
<i>Age 15-19 at postsecondary entry</i>	1.1 (0.1)***	3.0 (2.5, 3.7)
<i>First Generation (Neither parent earned a BA or higher)</i>	-0.7 (0.1)***	0.5 (0.4, 0.6)
TRIO Income Categories		
<i>Low Income and First Generation (at least one parent did not earn a BA)</i>	-0.9 (0.1)***	0.41 (0.3, 0.5)
<i>First Generation Only; Not Low Income</i>	-0.8 (0.1)***	0.47 (0.4, 0.6)
<i>Low Income Only; Not First Generation</i>	-0.6 (0.2)***	0.55 (0.4, 0.6)
<i>Not Low Income; Not First Generation</i>	0.8 (0.1)***	2.2 (1.9, 2.6)
Racial/Ethnic Categories		
<i>Latino</i>	-0.3 (0.1)**	0.73 (0.6, 0.9)
<i>African-American</i>	-0.3 (0.1)**	0.75 (0.6, 0.9)
<i>Asian-American</i>	0.7 (0.2)***	2.0 (1.5, 2.8)
<i>Native American</i>	-1.3 (0.3)***	0.27 (0.1, 0.5)
<i>Pacific Islander</i>	-0.7 (0.6)	0.5 (0.1, 1.6)
<i>Other Race</i>	-0.2 (0.1)*	0.79 (0.6, 1.0)
<i>Caucasian</i>	0.2 (0.1)	1.2 (1.0, 1.4)
Marital Status and Number of Dependents		
<i>Single through 2009</i>	1.0 (0.1)***	2.73 (2.3, 3.2)
<i>Married through 2009</i>	-0.8 (0.1)***	0.44 (0.4, 0.5)
<i>Separated, Divorced, or Widowed through 2009</i>	-0.1 (0.2)	0.9 (0.6, 1.2)
<i>Number of Dependents through 2009</i>	-0.5 (0.1)***	0.63 (0.6, 0.7)
<i>Single*Number of Dependents through 2009</i>	-0.3 (0.1)*	0.77 (0.6, 1.0)
<i>Married*Number of Dependents through 2009</i>	-0.4 (0.1)***	0.64 (0.6, 0.7)
<i>Separated, Divorced, or Widowed*Number of Dependents through 2009</i>	-0.4 (0.1)***	0.7 (0.6, 0.8)
Transfer and Bachelor's Degree Aspirations		
<i>Planned to Transfer in Year 1 (full sample only)</i>	1.5 (0.1)***	4.55 (3.6, 5.7)
College Academic Readiness and Performance		
<i>GPA in 2003-04</i>	0.0 (0.0)***	1.0 (1.0, 1.0)
<i>Took any Remedial Education in Year1</i>	-0.2 (0.1)*	0.8 (0.7, 1.0)

Characteristic Potentially Influencing Transfer Probability	Parameter Estimate (Standard Error)	Odds Ratio (95% Confidence Interval)
College Major Declared in Year 1		
Arts and Sciences Major in Yr1	0.3 (0.1)**	1.4 (1.1, 1.8)
STEM Major in Yr1	0.4 (0.1)**	1.5 (1.1, 2.0)
Education Major in Yr1	0.3 (0.2)*	1.4 (1.0, 1.9)
Business Major in Yr1	0.0 (0.2)	1.0 (0.7, 1.4)
Health Major in Yr1	-0.6 (0.1)***	0.57 (0.4, 0.7)
Vocational/Technical Major in Yr1	-0.3 (0.1)†	0.76 (0.6, 1.0)
Undeclared Major in Yr1	0.0 (0.1)	1.0 (0.9, 1.1)
Academic and Social Integration Measures		
Met informally with faculty often or sometimes	0.2 (0.1)*	1.3 (1.0, 1.6)
Talked with faculty outside class often or sometimes	0.5 (0.1)***	1.6 (1.2, 2.0)
Met academic advisor often or sometimes	0.5 (0.1)***	1.64 (1.4, 2.0)
Participated in Clubs often or sometimes	0.6 (0.1)***	1.76 (1.4, 2.1)
Participated in Arts often or sometimes	0.6 (0.1)***	1.75 (1.5, 2.1)
Participated in Sports often or sometimes	0.6 (0.1)***	1.87 (1.4, 2.5)
Participated in Study Groups often or sometimes	0.4 (0.1)***	1.48 (1.2, 1.8)
Enrollment and Work Hours Intensity		
Primarily Full-time (FT) enrollment (60% or more of total months enrolled)	1.6 (0.1)***	5.1 (4.0, 6.6)
Primarily Part-time (PT) enrollment (60% or more of total months enrolled)	-2.0 (0.1)***	0.13 (0.1, 0.2)
Worked zero hrs. per wk. (average 2004 & 2006) vs. worked 1-19 hrs. (excludes work study)	-0.3 (0.1)*	0.74 (0.6, 1.0)
Worked 1-19 hrs. per wk. (average 2004 & 2006) (excludes work study)	0.8 (0.1)***	2.1 (1.7, 2.6)
Worked 20-39 hrs. per wk. (average 2004 & 2006) (excludes work study)	-0.4 (0.1)***	0.65 (0.5, 0.8)
Worked 40-60 hrs. per wk. (average 2004 & 2006) (excludes work study)	-0.4 (0.2)*	0.67 (0.5, 0.9)

Appendices E and F. Supplemental File of Correlations Tables and State Policy Data

[See supplemental file. Formatted to 8 ½ x 14.]

Appendix G. Summary of Variables Listing

Outcome: CCSTAT6Y (Coded as 1 if “Transferred to 4 year without AA” or “Transferred to 4-Year with AA”)

BPS student-data weight variable used: WTB000, which is the base panel weight for the 2003-2009 data.

College panel weight variables based on first institution attended, not clustered by community college attended for the longest period, so the college weight variables are not perfectly aligned. However, most students in the sample attended their primary community college as the first institution.

A. Student Background (BPS)

1. Income Group 2003-04 and Parent’s Education Level in 2003-04 (TRIO) Based on TRIO eligibility by CINCOME and PAREduc in 2003-04 (Dummy variables are: 1) first generation/not low income, 2) first generation/low income, 3) not first generation/low income, reference=not first generation/not low income)
2. (AGE) as of 12/31/03 (Ages 15-19 vs. 20 or older at time of college entrance)
3. Gender (Female=1; Male=0)
4. Race/Ethnicity [African-American (RABLACK), Latino (HISPANIC), Asian (RAASIAN), Native American or Pacific Islander (RAINDIAN or RAISLAND), Reference=Caucasian (RAWHITE)]
5. Single (Single, never married = 1 vs. married/widowed/divorced/separated=0) (MARITAL09)

B. Precollegiate Academic Aspirations and Experiences (BPS)

1. 4-Year Institution Transfer Plans 2003-04 (1= plans to transfer to four-year institution in 2003-04; 0=not) (TRANSPLN)

C. Risk Factors Associated with Retention and Persistence (BPS)

- a. Have dependents (DEPNUM09)
- b. Work hours (averaged between 2003-04 and 2005-06 - calculated as the average hours worked from JOB HOUR (2004) and JOBHR06)
- c. Attended primarily part-time 2004-2006 (calculated from ENMNPT3Y/TOTMN3Y, if 60% or higher, coded as primarily part-time) vs. Attended primarily full-time 2004-2006 (calculated from ENMNFT3Y/TOTMN3Y, if 60% or higher, coded as primarily full-time) vs. Attended primarily mixed full and part-time 2004-2006 (calculated as mixed if the proportion of full-time/part-time enrollment were both between 40-60%)

D. College Experience, Integration, and Performance (BPS)

1. Academic Integration 2004 variables 1-4:
 - a. social contact with faculty (FREQ04A) coded as 1 if often or sometimes
 - b. participation in study groups (FREQ04G) coded as 1 if often or sometimes
 - c. met with an academic advisor (FREQ04C) coded as 1 if often or sometimes
 - d. talked with faculty about academic matters outside of class (FREQ04B) coded as 1 if often or sometimes
2. Social Integration 2004 variables 1-3:
 - a. attended fine arts activities (FREQ04D),
 - b. participated in intramural or varsity sports (FREQ04F), or
 - c. participated in school clubs (FREQ04E)]
3. Any remedial course taken in 2003-04 (Yes=1, No=0) (REMETOOK)
4. College GPA in the first year (2003-04) on 4.0 scale (measured from zero to 400) (GPA) recoded to tenths (e.g. 4.0)
5. College Major: (based on MAJORS12 in 2003-04) –Categories are: Humanities and Social Sciences (1, 2), Math or Scientific (3, 4, 5, 6, 7), Education (8), Business (9), Health (10), Vocational/Technical (11 or 12) vs. reference= undeclared] – recoded as Transfer-oriented major (1, 2, 3, 4, 5, 6, 7, 8) vs. health/vocational/technical (10,11,12) vs. business/undeclared (reference)

E. Community College Institutional Characteristics

1. Size/Locale of two-year institution (Categories are: Public Community Development and Career Institution/less than 2000 students; Public Community Connector Institutions 2000-9999 students; Public Community Mega Connector Institutions/at least 10,000 students)
2. Total enrollment (average undergraduate fall enrollment 2003-2008) in thousands
3. Faculty to Student ratio averaged from 2003-2008 [linked from IPEDS, calculated as: (e.g. for 2003, All full time faculty status + all part time faculty status*0.334)/Undergraduate fall enrollment total 2003] This is an approximate weight for part-time faculty in the calculation, used by IPEDS in calculating student-to-faculty ratio.
4. Per-student (FTE) expenditures for instruction and student services (linked from IPEDS) (standardized) based on fall enrollment data
5. Per-student (FTE) total expenditures (linked from IPEDS, standardized) based on fall enrollment data
6. Proportion of full-time students (6 year average based on IPEDS fall enrollment data, full-time undergraduate students/total enrollment of undergraduates)
7. Proportion of full-time faculty (6 year average based on IPEDS faculty data, full-time faculty/total full-time faculty)
8. Minority-serving institution status (Historically Black College or University or Hispanic-Serving Institution in 2003)
9. % of tenured and tenure track faculty (linked from IPEDS, calculated as (All faculty status employees with Tenure + All faculty status on tenure track that do not yet have tenure)/All faculty status employees total; there are too few part-time tenured faculty, so I did not weight FT/PT here)

F. State Policy Variables in 2005-06 (imputed from ECS, 2001, 2010, are coded as 1=policy is present, 0=policy is not present)

1. **Statewide articulation and transfer policy:** Legislatures and higher education systems adopted articulation policies at the state level.
2. **Cooperative agreements:** Cooperative agreements between postsecondary institutions allow articulation on course-to-course, department-to-department, or institution-to-institution basis, oftentimes in situations where no state or system policy exists.
3. **Transfer data reporting:** States that collect data on transfer and student persistence currently have or are developing the capacity to monitor the success of articulation programs.
4. **Incentives and rewards:** In an effort to encourage 2/4 transfer, some states provide extra incentives by offering financial aid, guaranteed transfer, or priority admission.
5. **Statewide articulation guide:** Provides concrete descriptions of these requirements and answer questions students have about the transfer process.
6. **Common core curriculum:** Streamlines articulation process by establishing a general education core curriculum that fulfills BA graduation requirements.
7. **Common course numbering:** Identical course numbering for similar courses between two-year and four-year institutions facilitates ease of transfer, and reduces number of students taking non-transferable credits.

G. College and State Context Variables

1. Average county level unemployment rate (averaged over 2003, 2004, 2005, and 2006) of county of student's primary community college attended (Bureau of Labor)
2. Percent of state population with bachelor's degree or higher in 2003 (U.S. Census)
3. Gross State Product per capita in 2003 (Bureau of Economic Analysis)
4. % of state postsecondary enrollment in community colleges relative to state population of 18-24 year olds in 2005-06
5. Ratio of two-year tuition to four-year tuition for in-state public institutions (averaged over the period)

6. Distance from primary community college attended to nearest public, four-year institution (use of latitude and longitude data from IPEDS)
7. Distance from primary community college attended to nearest non or less-selective public, four-year institution (use of Barron's selectivity data from NCES)

Appendix H. Case Selection Methodology

State selection

Washington, Florida, and Georgia are among those states consistently found by researchers to have notable policies in promoting student success in transfer (Moore, Shulock, and Jensen, 2009; National Center for Public Policy and Higher Education [NCPPE], 2012). See Appendix I for overview table of state articulation/transfer policies. Washington is among the top few states in its proportion of community college enrollment relative to its total student population (50% per NCPPE, 2011). Florida and Georgia are among the top ten states in terms of projected number of high school graduates and thus are important to national goals and have fairly high reliance on two-year and community colleges (28% and 35%, respectively, of students in higher education enrolled at two-year colleges in 2007-08). Georgia, Florida, and Washington each have relatively racially and economically diverse populations, which are the particular focus of this dissertation. See Appendix I for overview table of state demographics.

In Ewell and Kelly's (2009) analysis of national state transfer rates using data from the National Student Clearinghouse (NSC). In my analysis of data reported by Ewell and Kelly (2009), Georgia is a state that exceeded expectations with respect to its' four-year transfer rate (2002-2006), at 25% (outside +2 standard deviations on the studentized deleted residual¹⁹⁶). Georgia, however, had a relatively low amount of coverage with respect to the National Student Clearinghouse data used for Ewell and Kelly's (2009) analysis. Even though the results of my regression should be treated with caution, the selected states offered useful policy-innovative contexts for this investigation. My ordinary least squares regression that aimed to find states performing above-average with respect to 2/4 transfer, controlled for a range of state characteristics including: percent of low income families with children; percent of the state population that is African-American, Latino, and Native American; percent that earned a bachelor's degree or higher; average state unemployment rate from 2003-2006; percent of the state population enrolled in two-year institutions in 2005-06; the proportion of students enrolled in two-year institutions in 2002 cohort (from IPEDS) (as a measure of the state's enrollment in community colleges); ratio of tuition difference between two-year and four-year institutions in 2005-06; the level of governance centralization in the state in 2002; and the presence of state policies related to articulation and transfer.¹⁹⁷

¹⁹⁶ As described by Field (2009), studentized deleted residuals are a measure of the influence of a particular case of data (which is this analysis, the individual is the state aggregate, since this is not student-level data), which is a standardized version of the deleted residual. The deleted residual is the difference between the adjusted predicted value for a case (of one state) and the original observed value for that case (of the same state). The studentized residual is the unstandardized residual divided by an estimate of its standard deviation that varies for each data point. These residuals have the same properties as standardized residuals but usually provide a more precise estimate of the error variance of a specific case (state).

¹⁹⁷ State policies were catalogued by the National Center for Higher Education Management Systems (NCHEMS) in 2008: 1) has a transfer policy, 2) transferable general education curriculum, 3) does AA/AS satisfy general education requirement?, 4) do specific courses transfer?, and were entered separately in the regression. According to NCHEMS' analysis, all but six states (CA, NY, MD, VT, MI, CT) had an explicit transfer policy in 2008, either written into law or promulgated by a state governing or coordinating board. CA subsequently adopted transfer legislation and Maryland was reported as developing state transfer policy at that time. NY, VT, and CT reported system level agreements. The Education Commission of the States (2010) also catalogued state articulation and

The only variable that explained variation in state transfer rates with this available data and equation was the percentage of the state's population with a bachelor's degree or higher. A more highly educated state population is associated with higher 2/4 transfer rates. None of the state policy components were significant predictors of state transfer rate, nor any of the above listed predictors when considered together in the complete model. Kansas and Vermont were also notable outliers in exceeding predicted values for state transfer rates, relative to these state policy and population indicators. However, Vermont had only six thousand students in the 2002 cohort of students who entered two-year institutions¹⁹⁸, and Kansas had just over 75,000 students compared with nearly 137,000 in Georgia's 2002 cohort. Georgia also has a more racially diverse population. Florida and Washington were not notable outliers in the multiple regression on state transfer rate, controlling for state population characteristics, state articulation transfer policies, etc. According to the National Student Clearinghouse 2002 cohort data, the four-year transfer rate of first-time-in-college students¹⁹⁹ for Florida was 14.1% and for Washington was 16.6%. Florida and Washington's 2/4 transfer rate during this period was about average among 45 states²⁰⁰ [range was 5% (Indiana) to 30% (Vermont), mean 15.5%, median 15]. However, Florida and Washington's coverage in the NSC data was very high (Florida had 86% coverage and Washington had 99% coverage), which is not the case for all the states.

Roksa's Figure 2A (2009) provides a helpful tool on the proportion of state's postsecondary students in public community colleges and state policies in place, based on 2002 enrollment and policy data:

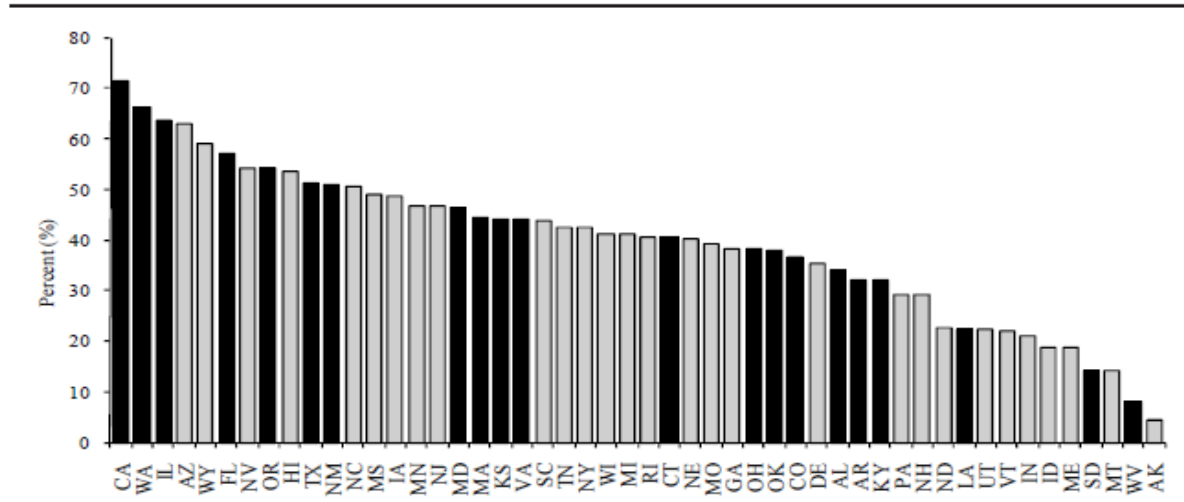
transfer policies, noting the presence of state cooperative agreements, transfer data reporting to state authorities, transfer-related incentives (in the form of guaranteed admission, scholarships, etc.), a statewide articulation and transfer guide for students and parents, and common course numbering.

¹⁹⁸ Vermont has only three associates' degree granting institutions: Community College of Vermont, Vermont Technical College, and Landmark College (private).

¹⁹⁹ The sample included 986,439 first-time half-time-or-greater students for the two-year cohort in the fifty states. Students were defined as "enrolled" in a given academic year if they were present in the database between July 1 and June 30. For example, the 2002-2003 academic year was defined as beginning on July 1, 2002 and ending on June 30, 2003. Students were counted only once for enrollment or degree completion purposes within that period. First time students were defined as those enrolled in the 2002 academic year with no prior instance of enrollment in the database for any of the years NSC has data. Both full-time and part-time students attending half-time or more were included in the two-year cohort. The two-year cohorts included first time students who were less than 40 years old since the majority of students 40 and older have no intentions of transferring to a four-year institution.

²⁰⁰ Numbers were too small to report in Alaska, Arizona, Delaware, New Hampshire and West Virginia.

Figure 2A. Articulation policies and the percentage of students in public higher education attending community colleges, by state



Case selection

Washington: Using data from the State Board of Community and Technical Colleges (SBCTC), I conducted a regression analysis to determine community colleges performing above average, average, or below average (relative to their student population characteristics) with respect to a cohort-based transfer rate of transfer aspirants. The transfer outcome was calculated as: the number of transfers with no associate’s degree from 2006-2010 plus 70% of students with tipping point or associate’s degree (estimated number of those who transferred from this group) (SBCTC, 2010).

Factors such as percent of students in developmental math, community college enrollment size, percent of transfer-oriented students from minority race/ethnic backgrounds, percent of transfer oriented students with less than a HS diploma or GED, percent working full time while enrolled, and percent of students who are single with children did not explain variance in transfer outcome, as defined here. Fall 2011 demographic data was used as a proxy for 2006 student population demographics. These regression results were also shared with SBCTC’s Research Director who also provided a list of colleges with above-average transfer rates and ones with about average transfer rates, as an elaboration of the results from this preliminary analysis.

Data sources used:

1. Community College Reports on *Four Year Transfer Success for Completers “+” and All Other Students in Cohort that Made Achievement Gains Before Leaving College (Fall 2006 to Spring 2010)* from Transfer Cohort, Washington State Governance Institute for Student Success (GISS) Measures,
2. Role of Pre-College (Developmental and Remedial) Education for Recent High School Graduates Attending Washington Community and Technical Colleges, Research Report No. 09-5. Washington State Board for Community and Technical Colleges, December 2009.

3. Fall 2011 Enrollment and Staffing Report, Washington State Board for Community and Technical Colleges, January 2012. Featured - Demographics/Students Served. Online: http://www.sbctc.edu/college/d_index.aspx

Cohort-based reports about transfer in Washington state produced by the Higher Education Coordinating Board (HECB), which is now the Washington Student Achievement Council, were also consulted. Aspen Prize data which calculates top 120 community colleges with respect to transfer and graduation outcomes, as well as equitable achievement for African-Americans and Latinos, for example was also considered. In 2011, 120 two-year institutions from 32 states were selected by Aspen from nearly 1,200 possible institutions based on an equation giving equal weight to institution's measured outcomes in IPEDS in three areas: 1) Performance (term to term retention rates, graduation rates including transfers, and degrees and certificates per 100 "full time equivalent" students); 2) Improvement (improvement of completion performance over time); and 3) Equity (institutional record for gaps in completion outcomes for low-income and minority students) (Aspen Institute, 2011).

Participation in the Achieving the Dream (ATD) network of colleges was also a factor of consideration, in selecting Washington and Florida colleges with average performance in transfer. Both average-transfer rate performing college study participants in Washington and Florida participate in the Achieving the Dream network. Founded in 2004, Lumina Foundation for Education supports nearly 200 institutions in 32 states and the District of Columbia to improve success among community college students, particularly low-income students and under-represented minorities. Community colleges create and implement interventions, data-based decision-making processes, and reforms in developmental education and college-level "gatekeeper" courses to improve grades, term-to-term retention, degree completion, and progress in completing a transfer-ready curriculum (Rutschow et al., 2011). Participation in this type of network signals attentiveness to these principles which are relevant to the study's inquiries.

Georgia: I conducted an OLS regression using data from the University System of Georgia on the three-year transfer rate (fall 2006 to fall 2009) for Georgia's 15 "access institutions" which are historically and primarily AA-granting institutions, though all but one college offers some bachelor's degrees (i.e. Bainbridge). Included in the regression were the following data elements from the Integrated Postsecondary Education Data System (IPEDS):

- Included instruction expenditures per undergraduate FTE, student services expenditures per FTE, percent full time faculty, percent full time students in fall 2006, percent African American in fall 2006, percent Pell Grant avg 2008-2010, total fall enrollment/institution size, and two-year college vs. state college designation.
- Only significant predictors: percent African American (negative) and percent full time students (positive).
- Two colleges emerged as high (i.e. +2 standard deviations higher than regression line), however, one of the colleges is consistently high on the transfer outcome when compared to 2002-2006 cohort-based transfer rates, and other was in the middle of consolidation/leadership change at the time of my study. While I did not include an institution identified in the regression, the high-performing college had an above average transfer rate and the average-performing college was a well-suited complement to the study. With an n=15, the standard errors are larger than optimal, and a general rule of

thumb is to have 20 cases for every parameter estimated. The regression, therefore, was not the guiding source of information on college selection.

College selection was primarily guided by knowledgeable state policy persons in the University System of Georgia and the Southern Regional Education Board, after review of transfer rate data and college status (e.g. under consolidation or not). Both the high-performing and average-performing college were selected based upon state recommendations of colleges experimenting with new initiatives to increase transfer among low-income and minority student populations, using data analysis to inform decision-making, and having strong, relatively new leadership.

Florida: I originally requested cohort-based transfer rate data from Florida's 28 colleges in July, 2012 and received it in late January, 2013. Therefore, I used transfer-out rates from IPEDS, Aspen Prize data, and recommendations from knowledgeable state policy experts to guide my selection of colleges in Florida. I also conducted exploratory interviews to obtain a preliminary overview of colleges' system of support for transfer, including the use of data in decision-making and conditions making transfer rates what they are. Both selected colleges are participants in Achieving the Dream.

Using data from the Florida Department of Education, I conducted an OLS regression analysis of the transfer rate to a four-year institution by fall 2010 among fall 2006 first-time in college students. The regression controls for institution size, percent of students who are AA/AS degree seeking, % African American, % Latino, % full time students, % Pell grant recipients in fall 2006. Only the percent of students who were AA/AS degree-seeking was a significant predictor of transfer rates, among these characteristics. The college selected as above-average on the transfer outcome relative to their student characteristics has been consistently one of the strongest in the state with respect to 2/4 transfer, and does not offer bachelor's degrees. The college selected as about average has about 70% part-time students, is much larger, and has had the largest improvement of any college in the state in its transfer-out rate among the full-time, first-time college students from 2008-2011 (from 10 to 16%). However, this is a very small percentage of its student population. With respect to the fall 2006 cohort data from the Florida Department of Education, the above average college had a 19% transfer rate of total first-time-in-college students enrolled and the about average college had an 8% transfer rate of the total first-time-in-college students enrolled.

Participant selection

Washington: In the Washington colleges, my invitations to participate in the study went to the Vice Presidents of Academic Affairs as leading persons connected to primary stakeholders of interest in my study. My initial email requested one-hour interviews with "key persons in student success and transfer, student affairs, cross-institutional partnerships, academic affairs, institutional assessment/research and institutional data use, and support services for low-income, first-generation, and under-represented minority students (such as in TRIO programs)." I also requested interviews and/or focus group with students who are just about to transfer, who are Pell Grant recipients, African American or Latino or Native American, and/or first-generation to earn college degree in their family (e.g. TRIO program eligible). I reviewed organizational charts of both selected colleges and identified initial persons to interview. I expanded the list of interviewees as I completed initial interviews and others made referrals to relevant informants. Interviews were generally conducted over three full days, and included key faculty involved in

improving advising support, transfer advising and programming staff, TRIO directors, Mesa program coordinator (where present), directors of learning support, directors of workforce education, VPs of academic and student affairs, etc. I conducted a total of 30 interviews across these two colleges. Students received gift cards for their participation (e.g. \$5-10) as a small token of appreciation for their time.

State policy persons were selected based upon recommendations and referrals from key contacts in the Washington Student Achievement Council and the State Board of Community and Technical Colleges, and I interviewed five persons including a Policy Specialist/Interim Director of the Washington Council of Presidents (comprised of baccalaureate-granting institutions).

Georgia: In the Georgia colleges, my invitations to participate in the study went to the Presidents and VPs of Academic Affairs. The VPs of Academic Affairs organized my three-day visit schedule with key stakeholders (18-19 interviews per college), based upon my study focus and criteria. Persons with a strong role in institutional research, strategic planning, and student success programs were included. At the colleges in Georgia, students active in the Brother-to-Brother programs and network were encouraged to participate.²⁰¹ A focus group was conducted at each college (about 15 students total), and participating students received \$10 gift cards. I interviewed the presidents of both Georgia colleges, in addition to the broader range of administrators, faculty, and staff.

State policy persons were selected based upon recommendations and referrals from key contacts in the University System of Georgia, and I interviewed five persons knowledgeable about current initiatives relative to Georgia's College Completion initiative and development of state cooperative agreements related to articulation and transfer.

Florida: The Chiefs of Staff at each college organized my three-day visit schedule with key stakeholders (21 interviews at College 1 and 27 interviews at College 2). I interviewed the presidents of both Florida colleges, in addition to a selection of relevant administrators, faculty, and staff. A focus group was conducted at each college (about 22 students total), and students received \$10 gift cards. Interviews included leaders of specialized programs and services, as well as a cross-section of faculty and/or deans from various academic disciplines.

State policy persons were selected based upon recommendations and referrals from key contacts in the Florida College system, beginning with the research office. I interviewed nine persons knowledgeable about current initiatives relative to Florida's system of support for student success, such as updates relative to common course numbering, 2+2 articulation and transfer, new legislation about the general education curriculum, equity reporting, strategic planning, community college baccalaureate programs and policies, statewide initiatives in developmental education, and the work of the councils of student and instructional affairs.

²⁰¹ The Brother-2-Brother (B2B) program is an official student organization of collegiate trailblazing students whose purpose is to increase the enrollment, retention, and graduation rates of African American and Latino male students. The B2B program offers support in academic advising, time management, studying techniques, learning styles, test preparation, career planning, and grade monitoring. B2B is part of a state-wide initiative of the African American Male Initiative (AAMI[®]) of the Board of Regents of the University System of Georgia.

Appendix I. States/Case Study Selection Tables

	State policy (per Smith, 2010)	Cooperative agreements (per Smith, 2010)	State governance structure and other notable policy components
Florida	<p>SBE Rule 6A-10.024 and Title 48, K-20 EDUC. CODE Ch. 1007 Articulation and Access Statewide articulation agreement (1007.23).</p> <p>Per NCHEMS: "This policy is mandatory for public universities and community colleges. Eligible private colleges may opt in to the course numbering system." See: https://www.flrules.org/gateway/readFile.asp?sid=0&tid=1069733&type=1&file=6A-10.024.doc which is rule 6A-10.024 in the Florida Administrative Code.</p> <p>The specifics of the policy are: 1) Statewide Course Numbering System guarantees course transfer, 2) Guaranteed transfer of 36 credit hour general education block if completed at the first institution, 3) Common prerequisites for all university majors that allow completion as part of an AA, 4) Guaranteed transfer of AA recipients into the state university system, but not into a specific university, and 5) Statewide articulation for certain AS degree program majors.</p> <p>From: http://www.nciems.org/c2sp/documents/Florida.pdf</p>	<p>The 2+2 articulation agreement states that associate in arts (A.A.) degree graduates of a state-approved Florida community college must be admitted as a junior to any state university as long as the university has space, money and the curriculum to meet the students' needs.</p>	<p>"Florida was the first state to develop and implement a K–20 governance system. Almost all lines of state education authority, from early childhood education through postsecondary education, fall under the State Board of Education, whose commissioner reports to the governor" (Venezia and Finney, 2006, p. 1). Title 48, Ch. 1007.25 directed the Florida Department of Education to create 36 hour transferable general education core, and established a statewide course numbering system. Transfer data reporting each term. Florida Academic Counseling and Tracking System (FACTS) is available at www.facts.org. In 2001, Florida legislature granted its community colleges the opportunity to provide access to the baccalaureate degree in Section 35, Senate Bill 1162.</p>
Georgia	<p>No statute or legislation regarding transfer according to ECS. However, NCHEMS denotes Georgia's system wide transfer agreement as a state policy. See: http://www.nciems.org/c2sp/documents/Georgia.pdf (Question 6). "The policy covers all 35 public institutions in the University System of Georgia (USG). There is also a limited transfer policy between the USG and the Department of Technical and Adult Education (DTAE). The University System of Georgia has adopted a common set of principles and framework for its core curriculum and for articulation. While these principles and framework allow institutions some flexibility in defining learning outcomes, they ensure that the core curriculum completed at one System institution is fully transferable to another System institution. The Core Curriculum is divided into Areas A-F. Students completing an area of the core curriculum will receive full credit for that area upon transfer to another System institution within the same major. In area A, students will</p>	<p>Students who complete the core curriculum at an institution in the University System of Georgia (includes primarily associates' degree granting colleges) are guaranteed full credit for transfer at all public two-year and four-year colleges and universities, if they do not change majors or programs of study.</p>	<p>Created in 1931, the University System of Georgia (USG) consists of the state's four public research universities, two public regional universities, 13 public state universities, and eight public state colleges, as well as the state's eight public two-year colleges. In theory and practice, this structure offers fairly well-defined institutional missions and transfer paths between the two-year and four-year institutions within USG. Even though the University System of Georgia (USG) has constitutional autonomy, the governor appoints the boards for USG and the State Board of Education, as well as approves their budgets, thereby giving him influence over their priorities. Georgia's governorship also has strong constitutional authority in the state budget process.</p>

	<p>receive credit for courses taken regardless of whether the area is completed. For students completing the core curriculum, the total number of hours required of transfer students for the baccalaureate degree shall not exceed the number of hours required of native students for the same major field. For additional information see http://www.usg.edu/academics/handbook/section2/2.04/2.04.phtml</p> <p>At its January, 2002 meeting, the Board of Regents approved the agreement between the USG and the DTAE known as the 'Mini-Core Project.' According to this agreement, basic skills courses in English and mathematics with common course content will transfer between USG and COC-accredited DTAE institutions, and comparable placement and exit test results will be honored between Systems. At its March 2002 meeting, the Board of Regents approved the specific language for the Board of Regents policy manual. See: http://www.usg.edu/academics/handbook/section2/2.24.phtml for additional information."</p>		
<p>Washington</p>	<p>WASH. REV. CODE ANN. § 28B.80.280 and WASH. REV. CODE ANN § 28B.80.350 (both recodified in 2004 from as early as 1983/1985)</p> <p>Per NCHEMS: "The most visible policy for statewide transfer and articulation is contained in the Intercollegiate Relations Commission (ICRC) handbook. The Higher Education Coordinating Board is responsible for setting transfer policy within the state and the board has specified that the procedures that govern transfer will be contained in an agreement which is published, maintained, and updated by the ICRC and its appropriate subcommittees. The policies apply to both public and private institutions. Specific policies can be found at: http://www.washingtoncouncil.org/icrc/resources/documents/icrchandbook.pdf</p> <p>From: http://www.nchems.org/c2sp/documents/Washington.pdf</p>	<p>Transferable A.A. degree across all public institutions and most private institutions also participate. Policy regarding a transferable A.S. degree is in process (2011). Also, major-specific pathways of courses in some fields.</p>	<p>34 community and technical colleges governed by SBCTC beginning in 1991, and transformation of previous HECB to new Student Achievement Council beginning 2012. Transfer data reporting every spring, proportionality agreement for transfer student acceptance at in-state institutions (transfer students have admissions priority), transferable common curriculum among community colleges, common course numbering among community colleges.</p>

	Population profile by race/ethnicity (2010)	Population profile by income (2009)	Population profile – BA degree completion (2010)	Projected number of high school graduates in 2022 and dependence on community colleges (NCPPE, 2011)	National Student Clearinghouse cohort-based transfer rate 2002-2006 (Ewell & Kelly, 2009)
Florida	18.8 million – 16% Black, 58% White (not Hispanic) 22.5% Latino	15% persons below poverty level compared to 14.3% USA average – median household income \$5,466 lower than USA average (\$50,221)	25.6% possess BA degree or higher compared to 27.5% USA average	191,608; 28% of HE students enrolled at 2-year institutions in 2007-08	14% over four year period from 2002-06
Georgia	9.7 million – 56% White (not Hispanic) 30.5% Black 8.8% Latino	16.6% persons below poverty level compared to 14.3% USA average – median household income \$2,752 lower than USA average (\$50,221)	27.1% possess BA degree or higher compared to 27.5% USA average	101,108; 35% students enrolled at 2-year institutions in 2007-08	25% over four year period from 2002-06 (Note: Kansas has the highest transfer rate [28%] over the same four-year period, however, it has a lower percentage of under-represented minorities than the US average). Based on 34% NSC coverage, however, and should be treated with caution.
Washington	6.7 million – 3.6% Black, 11.2% Latino, 72.5% White (not Hispanic)	12.3% persons below poverty level compared to 14.3% USA average – median household income \$6,258 higher than USA average (\$50,221)	30.8% possess BA degree or higher compared to 27.5% USA average but BA production is low (per NCPPE, Measuring Up, 2008)	68,519; 50% students enrolled at 2-year institutions	17% over four year period from 2002-06

U.S. Census data obtained from: <http://quickfacts.census.gov/qfd/index.html> (January 2, 2012)

Appendix J. Interview Protocols (Version Completed 06.27.12)

Questions for Community College Students Who are Near Completion of Transferable Curriculum

What influenced you to choose to attend community college? Did you originally plan to transfer? If so, why? If not, why not? Are you planning to transfer now, and if so when?

What is your major field of study? Have you ever changed it? If so, why? How satisfied are you about your chosen major field of study?

How did you learn what you needed to successfully transfer to a four-year institution?

What types of difficulties have you experienced in preparing to transfer? Academic? Other?

Academic:

What were the most valuable courses? Why?

Which courses challenged you the most? Why?

When and if you had academic difficulty, what happened? What supports were most helpful to get you through them?

Financial:

What helped you manage to stay in school financially?

Other:

Personal, family, children, job(s), health, travel, or other as described by student

Which persons most influenced you to pursue your chosen degree? transfer? And in what ways?

- | | |
|--|--------------------------------------|
| - Academic advisors | - Clubs, Sports, Campus Organization |
| - Study Group, Tutors | - Family |
| - Faculty | - Spouse/Significant Other |
| - Other students in your classes, in your major? | - Friends outside of college |

How would you describe the culture of the college with respect to encouraging and supporting students to transfer? What adjectives stand out to describe the personality of the college or the experience of being there?

What types of specific programs, services, people, or experiences are most helpful to you in preparing to transfer?

How do you hope to use your community college and eventual baccalaureate experience to further your goals?

Student Focus Group Protocol (abbreviated from above)

[Focus groups had up to 10 students participating, so I adapted the above questions to ask three questions]

1. Intros around the table: Please share your program of study and where you hope to transfer.
2. Comments around the table: Tell me one positive support for transferring you have received and how it makes a difference for you, and one challenge you have faced in preparing to transfer.
3. Open discussion about recommendations: What recommendations do you have for improving the college's supports for students' transfer to four-year institutions?

Community College President or Vice President of Instruction/Student Success

Of the range of programs or strategies you have implemented to improve your students' transfer to four-year institutions, which have been the most successful? How do you know they have been successful?

What have you learned about how to help low-income students persist in college? Students without adequate high school preparation for college-level work?

How do your programs and services reflect this? What are accountability mechanisms to achieve your goals with this population?

In what ways does the college promote and encourage students' access of academic advising, study groups, supportive relationships with faculty, active involvement on campus?

What types of information do you use to inform your decisions regarding improving transfer pathways—from faculty, student services, financial aid, institutional research, students, course-taking, external evaluations, registrar reports, etc.?

Over the past six months (i.e. recent past), how have you used this information to affirm or change your strategies in order to improve students' persistence and success in attaining AA degrees and also transferring to four-year institutions to pursue bachelor's degrees?

What are the most formidable barriers to improving student outcomes (AA degrees, transfer to four-year institutions)?

In what ways have partnerships with high schools and/or four-year institutions in the state helped your college improve students' pathways to earn BA degrees?

How does the state funding structure and policy system (e.g. articulation and transfer policies) support or restrict your capacity to boost students' transfer to four-year institutions?

How have recent financial stringencies affected your institutional capacity to effectively serve low-income students' needs? Students in need of developmental education?

How have recent financial stringencies changed your institutional priorities? Programming strategies? Staffing responsibilities? Organizational infrastructure?

In what ways does state policy on articulation and transfer, and developmental education issues help you serve your students such that they achieve their degree completion goals? In what ways could state policy be better directed to serve your students such that they achieve their degree completion goals?

Community College Institutional Research persons

What has the college learned about how to help low-income students persist in college and transfer to four-year institutions? Students without adequate high school preparation for college-level work?

Of the range of programs or strategies you have implemented to improve your students' transfer to four-year institutions, which have been the most successful? How do you know they have been successful?

How do your programs and services reflect this? What are accountability mechanisms to achieve your goals with this population?

Who do you report to and how does that person prioritize improving transfer rates? What are the reasons for the way in which the college prioritizes transfer to four-year institutions?

What types of information do you produce to inform the college's decisions regarding improving transfer pathways for faculty, student services, financial aid, course-taking, external evaluations, grants, etc.?

To the best of your knowledge - Over the recent past (say past six months) , how has this information been used to improve students' transfer to four year institutions? Or if not transfer, persistence and success in attaining AA degrees? Or both?

Based on what you know, what are the most formidable barriers to improving student outcomes (AA degrees, transfer to four-year institutions)? Is the college working to address these? In what ways? What are the resources allocated to these initiatives, programs, or supports?

How have recent financial stringencies affected your institutional capacity to effectively serve low-income students' needs? Students in need of developmental education?

In what ways does state policy on articulation and transfer, and developmental education policies (i.e. placement policies) help you serve your students such that they achieve their degree completion goals?

In what ways could state policy be better directed to serve your students such that they achieve their degree completion goals?

Community College student services director

Of the range of programs or strategies you have implemented to improve your students' transfer to four-year institutions, which have been the most successful? How do you know they have been successful?

What have you learned about how to help low-income students persist in college? Students without adequate high school preparation for college-level work?

How do your programs and services reflect this? What are accountability mechanisms to achieve your goals with this population?

In what ways does the college promote and encourage students' access of academic advising, study groups, supportive relationships with faculty, active involvement on campus?

What types of information do you use to inform your decisions regarding improving transfer pathways—from faculty, student services, financial aid, institutional research, students, course-taking, external evaluations, registrar reports, etc.?

Over the past six months (i.e. recent past), how have you used this information to affirm or change your strategies in order to improve students' persistence and success in attaining AA degrees and also transferring to four-year institutions to pursue bachelor's degrees?

What are the most formidable barriers to improving student outcomes (AA degrees, transfer to four-year institutions)?

In what ways have partnerships with high schools and/or four-year institutions in the state helped your college improve students' pathways to earn BA degrees?

How does the state funding structure and policy system (e.g. articulation and transfer policies) support or restrict your capacity to boost students' transfer to four-year institutions?

How have recent financial stringencies affected your institutional capacity to effectively serve low-income students' needs? Students in need of developmental education?

How have recent financial stringencies changed your institutional priorities? Programming strategies? Staffing responsibilities? Organizational infrastructure?

In what ways does state policy on articulation and transfer, and developmental education policy (such as placement, cut off scores, articulation efforts with K-12 education) help you serve your students such that they achieve their degree completion goals? In what ways could state policy be better directed to serve your students such that they achieve their degree completion goals?

Community College Faculty (to be selected on the recommendation of the Dean of Instruction, VP of Academic Affairs, etc.)

In what ways do you connect with students (whole group classes, tutoring, advising, special lectures or presentations, informal networking/receptions, project-specific guidance)?

What supports are in place to help students overcome barriers (financial, coursework, learning, personal)? How are faculty supported to connect students to resources that help the student to overcome barriers in...

Coursework (assignments are sufficiently challenging and meaningful, reasonable amount of group work vs. individual work)

Learning (e.g. deciding on a major, focus on completing academic tasks, study habits, computer literacy, literacy in English, time management)

How are you supported by other faculty and administrators to connect with students in ways that help them persist in college and transfer to a four-year institution?

What policies or practices have been implemented to improve transfer rates to four-year institutions? Are you aware of these or refer to them in your work with students?

In what ways have these been helpful?

In what ways does the college promote and encourage students' access of academic advising, study groups, supportive relationships with faculty, active involvement on campus?

If there has been a documented rise in students' transfer rates, what factors do you think most account for this increase?

If transfer rates have been about the same, what resources, supports, restructuring, or incentives do you think should be put in place to help improve student success/persistence to four-year institutions?

State policy person working with articulation and transfer agreements (e.g. Transfer/Articulation Specialist at Washington HECB, Executive Director of SBCTC in Washington State)

How does the state's policy structure work in support of getting more low-income and under-represented minorities to transfer to BA-granting institutions?

Based on document review from ECS, NCHEMS, state reports - consider these specific policy incentives for boosting students' transfer. Are these policies working well? How could they be improved?

- State and articulation transfer policies (e.g. automatic transfer guaranteed with AA, core transferable curriculum, common course numbering). This question would be based on knowledge of what state has in existence.
- Probe about performance funding initiatives
- Developmental education policy (e.g. common cut score, common placement test)
- Measuring milestone attainment in community college
- Need-based financial aid
- Mission definition for community colleges (how does the state work with community colleges that are less transfer-oriented and more vocationally oriented? Are there efforts in place to encourage 2/4 transfer across community colleges less focused on transfer orientation?)

In what ways do you communicate with community colleges about the types of policies and practices that need to be in place to reach statewide AA and BA degree attainment goals and workforce needs?

How have recent conversations and use of data/research about improving students' transfer from community colleges to four-year institutions resulted in new policy considerations? New priorities? Policy change?

Based on budget data from SHEEO:

What financial re-allocations or budgetary changes have occurred over the past years that have promoted or reduced supports for promoting students' success in college?

For the next few years, what are or should be the main goals, strategies, initiatives, and investments in increasing community college students' persistence to enroll in four- year institutions and attain bachelor's degrees?

What challenges can you anticipate to implementing these strategies, investments, goals, etc.?

What types of research or information would be most useful in your deliberations about increasing college persistence and BA degree attainment in the state?

Appendix K. Data Use and Promising Practices in Colleges (FL, GA, and WA): Findings and Policy Analysis Chart

College Pseudonym	Data Use	Promising Practices	Evidence of Effectiveness & Success	Policy Analysis
Harvest CC (WA)	E.g. Study of transfer across state lines using NSC data, showed that transfer rates were even higher than state data documented. Faculty conducted a study of writing preparedness of their associates' degree holders for bachelor's degree programs.	Mandatory student advising (registration holds until the student talks with a faculty or professional advisor every quarter). VP of Academic Affairs facilitates regular opportunities for faculty to share their effective practices with each other and supports collaborative planning and evaluation for instructional improvements. Also, the Transfer Specialist (position in place for 15+ years) works closely with the Vice President of Instruction & Academic Education, to keep degrees current and accurate, to maintain the printed and online degree guides, and to work on the articulation agreements with four-year colleges. Online and print resources on entrance requirements, program admission processes, program application information, degree requirements, criteria graduation, and sequencing plans for completing degrees are used to advise students, and keep faculty up-to-date on articulation/transfer.	Transfer-out rate reported to IPEDS likely includes mostly upward transfer, rather than lateral transfer. These rates were relatively high 23% for 2009 (fall 2006 cohort) and 20% for 2010 (fall 2007 cohort). This rate also does not include transfers across state lines, which would add more students to the transfer rate.	Mandatory student advising every quarter and a designated advising day creates a routine for students about working with an advisor as a necessary part of the college experience. The transfer specialist works collaboratively with student services and TRIO to develop a broader infrastructure for students' transfer success. Faculty members have created collaborative, affirming relationships within departments and across the college to maintain instructional rigor for students' successful preparation for upward transfer.
Emerald CC (WA)	Transfer data not used that much, waiting for state-level functionality in Mutual Records Transcript Exchange. Educational Planning conducted a study about students' self-advising to gauge how accurate self-report of GPA to support approval of registration for excess credit hours. Found that students' with lower-GPAs over-estimated their anticipated grades in order to obtain approval for additional credits, which has resulted in advising changes.	The Educational Planning Center organizes Transfer Fairs each quarter; quarterly meetings with faculty; transfer advising listserv for faculty and staff to message updates re: BA programs; classroom visits to ESL and developmental courses (current transfer advisor in her position for 10+ years). A separate transition/advising center has been created for students in adult basic skills education, and ABE and English faculty have experimented with new models of co-registration in college-level English for advanced ESL students, along with ABE support and ESL instruction (15 credits per term). A mandatory student orientation just rolled out in 2012 which includes support on course registration, student panels, and activities for students to get to know each other, faculty, and staff. A small group of faculty have worked on a plan to increase faculty engagement and effectiveness in advising practices (including: 1) "master advisors within each department who mentor and encourage faculty and departments to increase their knowledge of all the different areas of advising, and to see the value and importance of it," 2) faculty use of an "advising syllabus" which is like a course syllabus, but is essentially "a contract with the student" to develop their academic plan, access campus and program resources as appropriate (TRIO, Mesa, honors, the Center for Leadership and Service, etc.), and complete steps involved in transfer, and 3) a faculty summer institute to outline the advising syllabus and create a campus-wide plan for implementation.	Educational Planning Center advises between 1,000 and 2,000 students a month among 6,700 undergraduates; and transfer-out rate has increased from 11% in 2009 to 15% in 2010 to 25% in 2011 (IPEDS figures among first-time, full-time students; includes lateral transfer). Cohort-based, quasi-experimental research for new instructional model for high-level ESL students showed an additional 27% increase in students' progress to credit-bearing programs, compared to similar non-participants.	For a college with a high number of ABE students and one-third of the student body declared as transfer-intending and no achievement points awarded for upward transfer in the Washington Student Achievement Initiative, transfer success may have diluted priority. Supports such as TRIO and Mesa to augment the college's Educational Planning Center drop-in advising resource, as well as a bottom-up faculty initiative to improve advising, may each contribute to the rising transfer-out rate. Also, the college has on-site four-year partners offering BA programs and four-year institutions recruit heavily, which help contribute to a transfer-oriented college culture.

College Pseudonym	Data Use	Promising Practices	Evidence of Effectiveness & Success	Policy Analysis
<p>Hope CC (FL)</p>	<p>Institutional researchers compare students who are in college-preparatory courses vs. those that were not on the transfer outcome to guide planning. The college is currently running analyses on student graduation and transfer by discipline, and looking at ABC rates (percent of students receiving A, B, or C in their core courses, for example) and withdrawal rates. Study conducted to determine the impact of changing a program of study, and the results showing that once a student changed his/her program more than 3 times, he/she was unlikely to finish the associate's degree. Participation in a national study that analyzes course, completion, and transfer outcomes relative to expenditures, and faculty and student characteristics. Another large study planned to examine the first-time-in college (FTIC) students fall-to-fall retention (which is about 60%) to find out where students go after they leave the institution. Use of data to guide program development and changes in practices, such as in the area of developmental education. Work with external evaluators to document program effectiveness.</p>	<p>New students that have less than 18 credit hours of prior credit are required to do a first-time-in-college workshop to go over their degree audit and to plan out their goals and classes through the college's online learning plan with professional advisors. Registration is held until the student reviews their registration with an advisor through the first 18 hours, and students are then referred to faculty and academic-division based advisors. The Student Success Director worked with his staff to have a consistent message and plan for referring students to the Division/faculty advisor by calling ahead to make sure an advisor is ready to meet with the student being referred.</p> <p>In addition to the college's professional advisors, faculty receive training in the degree audit system. In the faculty contract, faculty are to spend thirty hours per semester providing out-of-class support to students – either through advising, tutoring students in the learning commons, and/or sponsoring a campus-based club. The college is restructuring advising to look at how to maximize faculty time relative to meeting with students throughout the semester, and match faculty and students' interests to the best extent possible, as well as assessing the effectiveness of faculty advising.</p> <p>Early each semester the Transfer and Graduation Specialist works with the Registrar on students' readiness for graduation with graduation checks, one-on-one advising, and coaching for completion of their degree and transfer planning. The President acts as a "transfer champion" by maintaining strong connections with nearby state four-year institutions.</p> <p>Instructional improvements and pilots are underway in pre-college education to improve success rates and transition of developmental students to college-level course work (e.g. Statway and a peer leader program in developmental courses).</p>	<p>This college showed 17 percent three-year cohort based transfer-out rate for fall 2006 entrants and 19 percent for fall 2007 entrants, based on state data, one of the highest transfer-out rates of Florida's colleges (this rate includes both full and part-time students who are first-time students). Among full-time first-time students, the IPEDs three-year transfer-out rate averages about 20% from 2008-2011.</p>	<p>The college has a strong transfer orientation, promoted from orientation through completion, especially through mandatory advising within the first 18 hours of courses. Transfer supports are particularly strong with historic connections with nearby state four-year institutions. The college's academic leaders are highly proactive, with support from state policy leaders, on reforms in student services (e.g. mandatory transfer advising before students reach 30 hours) and reforms in developmental education which accelerate students' progress from pre-college education to college-level coursework (e.g. Developmental Education Initiative). Staff and faculty are strongly supported in professional development and ongoing learning and research-based inquiry through the college's teaching and learning center. Institutional effectiveness/planning and research are combined to support data use and decision-making on a range of transfer-related supports.</p>

College Pseudonym	Data Use	Promising Practices	Evidence of Effectiveness & Success	Policy Analysis
Sunshine State College (FL)	<p>College tracks data weekly on the College Experience initiatives (five projects whose metrics include: number of hours spent by faculty on out-of-class support, number of faculty taking their classes to the learning center during first three weeks of term, number of hours students are accessing tutoring, number of students with completed learning plans, number of students accessing different services for career planning such as resume-building). College tracks success metrics in Achieving the Dream (aligned with state strategic plan; i.e. completion of developmental courses, completion of gateway courses, completion of all courses with C or better, fall-to-spring retention rate, and graduation rate), and holds “courageous conversations” about the data (part of every meeting). These are all considered as intermediate process and outcome measures in support of transfer success.</p>	<p>Promising practices include collaborative decision-making practices reinforced by effective leadership practices. Data-informed decision-making is consistently reinforced and supported by the institutional research and planning department such that faculty and campus provosts crave data and have become researchers of their own campus initiatives and contributions to the overall college experience for students. Collaborative, regular communication between presidents and academic leaders of the college and nearby state four-year institutions helps to strengthen the overall system of support for transfer for students at the college. Additional supports include substantial baccalaureate offerings by the college and work by the Deans to unify lower-division and upper-division curriculum planning. The college also hosts a university partnership center with institutions offering online bachelor’s degree programs for specialized fields, including master’s degrees. Faculty receive \$1,500 each for professional development, and Deans work with faculty to apply their professional development to their ongoing leadership and teaching roles. The President works to engage everyone in listening to update calls on success metrics reported for improving the college experience, to create a culture of data use and shared work on improving key metrics.</p>	<p>The transfer-out rate was 8 percent among all fall first-time-in-college 2006 entrants and 9 percent among fall 2007 entrants (includes both full-time and part-time student population), based on Florida data. Among the fall 2006 cohort who were registered as AA/AS degree-seeking students, the transfer rate was 12%. From IPEDS data, the three-year transfer-out rate reported in 2008 among the full-time, first-time student cohort was 10 percent, and by 2011, this rate had increased to 16 percent.</p>	<p>The college engages proactively in state policymaking and analysis, by operating as if state-level performance funding proposals and principles are already in effect, as well as advancing and experimenting with new ideas for student advising models (relative to new state legislation), the new general education curriculum requirements, and developmental education. Drawing from best practices in turnaround leadership, business analytics, and organizational appreciative inquiry, the college is gradually working to improve student success outcomes, including transfer. Data-informed decision-making is fast becoming a routine part of each faculty, staff, and administrator’s job. Due to the large institutional size, many students may feel as though the advising model is not personalized enough to support longer-term planning for transfer, but departmental advising picks up where the professional advisors cannot meet this demand. The “each one, reach one” initiative is an effort for all persons at the college to take responsibility to reach out to help others succeed in all aspects of college. “Courageous conversations” are embedded in regular meetings and equity considerations a regular aspect of planning, data use, and programming.</p>

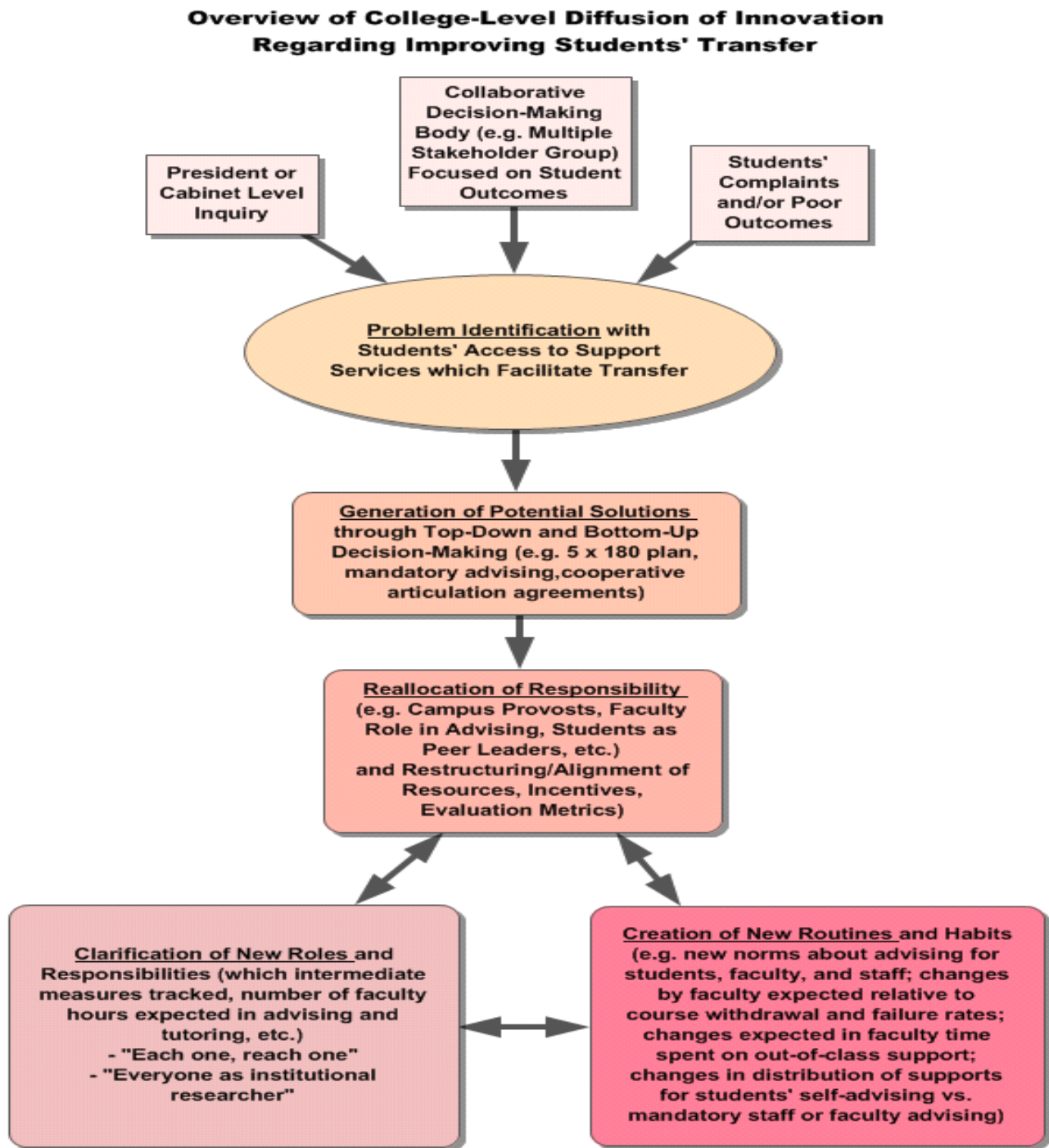
College Pseudonym	Data Use	Promising Practices	Evidence of Effectiveness & Success	Policy Analysis
Peachtree College	<p>Data collection and analysis primarily is coordinated by the Director of Academic Success and E-Learning, as well as the Vice President for Academic and Student Affairs. In the Division of Academic Success, about 14 staff including the Director has used <i>The Leadership Challenge</i> (by James Kouzes and Barry Posner) as a common read to guide the design of new initiatives and evaluation (each person has their own project). One project involves collecting data from the new early warning advising system and students' access and use of tutoring resources. Another pilot initiative has been created to strengthen transfer advising. The college adds to the USG system data on transfer by subscribing to the National Student Clearinghouse and tracking transfers through NSC which has captured more students.</p>	<p>Peachtree has early bird student advising, academic warning advising, as well as graduation/transfer advising. As a result of the USG Diversity Summits, the college formed its own diversity committee designed to analyze performance gaps between white, Latino, and African-American students and provide additional coaching, mentoring, and support for their academic progress and campus engagement. The Brother-to-Brother program has an active student-led structure, supported by the faculty advisor, which the college considers a significant factor in the course performance of Latino males in learning support classes. The college has the highest exit rates in the state from Reading and English learning support courses and many practices contribute to this success (substantial use of college's tutoring services, both in-person and online and extensive support for COMPASS test preparation).</p> <p>Research-based recommendations to implement "flipped classrooms" where classroom time is used for individualized questions and support and out-of-class time is devoted to video-based instruction and online tasks, have been implemented in most learning support classes in math.</p> <p>The Complete College Georgia initiative resulted in a proposal for a new center: "Adult and service learning," geared toward improving access and support for adult learners to come back to college and finish their degrees. Based on research, service learning was included to help non-traditional students be more strongly connected to the college and community as programs and services are designed to support non-traditional students' degree completion. A service learning/community engagement director was hired to coordinate students' field experiences and support service learning in coursework in an organized fashion, and this work also includes additional community engagement and outreach to middle and high schools to help students plan for college earlier.</p> <p>Faculty have engaged in a common read, <i>Creating Significant Learning Experiences</i> by L. Dee Fink, as a way of engaging in conversation about changing pedagogy to better engage the student population in challenging academics, many of whom were not challenged in high school (50% Pell grant recipients; 60% place in developmental coursework).</p>	<p>According to the college completion plan: [The college's] analysis of the Fall 2005 full-time first-time cohort reveals that the transfer rate within the USG stands at 29% (using a four-year transfer window). However, when transfers to all four-year institutions are included (using the National Student Clearinghouse), that rate increases to 43%. Transfers to the Technical Colleges increases the transfer rate to 57%. Likewise, the Fall 2006 first-time, full time cohort data show similar figures: 27% transfer within USG, 39% transfer to all four-year schools, and 58% transfer to all four-year schools plus TCSG institutions.</p>	<p>Data use has increased over the past several years, to supplement data that the USG provides to colleges. The former college president who retired was frustrated by the transfer rate data from USG (only first time freshman within USG tracked), which was the reason for tracking transfers through NSC. This data helps the college know trends in students' transfer pathways. The college also studies its own interventions and students' access of resources such as tutoring in order to learn about the effectiveness of the early warning advising, early bird advising, tutoring policies, etc. and make changes. Complete College Georgia has been influential to the college in strategizing about enrollment, delivery, instructional effectiveness, and outcomes for all student groups, particularly those with outcome gaps. The college has created new positions to lead the college's work in adapting courses to an online format (to increase students' access in this multi-campus rural setting), gathering information on best practices to guide online course development and implementation.</p>

College Pseudonym	Data Use	Promising Practices	Evidence of Effectiveness & Success	Policy Analysis
Cherokee Rose College	<p>A new IR/IE director was hired in 2009 to build a new culture of data use at the college, which was previously focused on mandated reporting and little data use. The college was put on academic warning by the accreditor in 2008 due to lack of assessment of student learning outcomes aligned with course and program specific objectives. Initially, faculty began attending conferences related to assessment and participating in workshops and viewed data use as a mandated activity. The IR director also met with all tenured, full time faculty one-on-one, to help shift the faculty mindset to use data for self-reflection in teaching and improvement in student learning. With respect to transfer rates, the IE/IR director analyzes transfer data for each of the college's campuses with NSC data. Since the college will have financial benefit from completions after a student transfers in the new performance funding formula (FY15 implementation), the college wants data on how well students are performing in courses once they transfer (not available in NSC data).</p>	<p>All students are required to take a first-year experience program orientation course (one credit for first two semesters), and have mandatory advising with a faculty member. (Mandatory advising in place for one year at the time of my visit). The mandatory orientation course includes a common read book, financial aid planning, registration advising, and training in academic writing. This course was implemented as part of the college's Student Achievement and Retention program (a statewide initiative with college specific implementation). Class size is about 20-25, and there are about 700 students taking it in fall term. Separate summer orientations are provided for students in residential housing and also for commuter students, and emphasize Academics, Money, and Parents (AMP). Students are coached on how to create a "program map" for completing their degree in their chosen field. Faculty advisors work with students during orientation. Department chairs work with the first-year experience course teachers to answer department-specific questions for spring registration. Faculty may have an average of 50-70 advisees, though some faculty have fewer.</p> <p>The college also has an early alert system to guide students to tutoring support based upon mid-term grades, if needed. The success of this system depends upon faculty members having graded assignments before mid-term to better help students reap the benefits of mid-term warnings, and faculty vary widely on this. Mid-term grade reports are shared with residential life and athletics to guide advising, tutoring support, mentoring, etc. Approximately 60% of student college residents had one-on-one consults because of having one or more "D's" on a mid-term report.</p> <p>Faculty members also have their own mentoring and professional development program. This program includes sessions on advising, and meets four times per year/two times per term.</p> <p>The VP of Student Success visited a small private college highly successful in student retention, and found that one of the reasons for this high rate is that every student is given a job on campus (between 10 and 20 hours per week) supported by endowment funds. The college started a small pilot and found initial success, particularly with the residential student population.</p>	<p>The four-year transfer rate for the fall 2006 cohort of first-time-in college students was 28%. This college's average three-year transfer-out rate for first-time, full time students is also 28% for the fall 2006 data (average transfer-out rate data from 2004-2011 is 26% for first-time full-time students, which includes lateral transfer).</p>	<p>Recent cutbacks in operations and student affairs have added to faculty and top administrators' workloads. However, leadership collaboration and team-building across campuses to improve processes, procedures, and programmatic/instructional accountability is an important step to creating a unified foundation for achieving the college's completion plan objectives and outcomes. Faculty and administrators' work across campuses to articulate learning outcomes by division/discipline, to coordinate registration and admission processes, and learn from each other on advising systems, etc. has the potential to stimulate more innovation. The college's value regarding faculty leading advising is likely having a positive effect for students' upward transfer. The IE/IR office has a strong philosophy of decision support and serves on the President's cabinet, such that data-based decision-making is a regular part of the college's planning for resident/commuter populations, students on different campuses, etc. The loss of specialized programming (such as TRIO) served as a catalyst to offer tutoring, advising, etc. at scale for all students, with intensive attention on reducing the gap between resident and commuter students in key academic milestones (course success, transfer, etc.).</p>

Appendix L. Elements of State System of Support for Transfer/Articulation: Washington, Georgia, and Florida

State Initiative or Support for 2/4 Transfer	Washington	Georgia	Florida
Historical Transfer/Articulation Legislation	Umbrella Transfer Policy since 1984, and Proportionality Agreements for CC transfers at state universities since 1994.	None. However, Cooperative Agreements within USG since 1986, with Technical Colleges since 2011, and with others.	2 + 2 Articulation agreement since 1971; Common Course Numbering since 1975.
New Legislation/New State Initiatives Relative to Transfer	Updates and expansion of major-related pathways to state's Direct Transfer Agreement. Adoption of Transferable Portfolio of 45 credits (one year transfer portfolio). Common course numbering within SBCTC is a helpful support, developed by 2008.	Ramp up reverse award of AA degrees; consolidations of eight colleges to four; all but one USG state college offer limited baccalaureates.	HR 7135 reducing common core; requires 30 hour advising/transfer plan.
Support Collaboratives and Infrastructure Relative to Transfer	Joint Transfer Council, Intercollege Relations Commission, Articulation and Transfer Committee, etc. Discipline-specific committees meet annually with representation by community colleges and university faculty.	Georgia Transfer Articulation Cooperative Services (GATRACS). Discipline-specific committees meet annually with representation by USG faculty from state colleges and universities.	Articulation Coordinating Committee (ACC). Discipline-specific committees meet annually with representation by community colleges and university faculty.
Transfer Data Tracking and Reporting	WSAC reports to legislature on biennial basis on transfer. Cohort based studies conducted periodically (last four-year transfer rate tracked for fall 2006 cohort). Supported by Longitudinal Data System (P-20W) and Mutual Records Transcript Exchange.	Annually - Numbers of transfers by institution by major, GPA and Cohort rates. Supported by Georgia's Statewide Longitudinal Data System (SLDS) and Students Online Portal. Three year transfer cohort rates tracked for 2006-09, and before that 2002-06.	Annually - Numbers of transfers by institution by major, GPA. Supported by FLDOE Statewide Longitudinal Data Systems (SLDS) Program. Each student assigned a Statewide Unique Identifier (SID); all LEAS and colleges participate.
General Transferable Curriculum	DTAs (Direct Transfer Agreements) for AA, AS-T, 15 majors. Major revisions effective 1996 and 2011. Completed DTA recommended for transfer; but can transfer after one-year with "Washington 45" and necessary major-related courses for admission to specific institution programs.	The 2009 revised policy provides minimum requirements in each Core area and includes additional learning requirements in global perspectives, US perspectives, and critical thinking; maintains the USG's transfer guarantee of core courses; and keeps the total number of hours required (i.e., 42 semester credits) the same. USG and TCSG also agreed to 27 transferable courses within general education core.	General Education curriculum of 36 credits revised to 30 credits in Communication, Humanities, Mathematics, Sciences, and Social Sciences effective fall 2014. Strong incentive to complete AA degree with the 2+2 policy.
Status of the Transfer Outcome on State Performance Funding	Not in WA Student Achievement Initiative.	Proposed for inclusion in the outcome-funding model.	Performance Indicator 3.11 in New Strategic Plan; likely inclusion in performance funding as a result.
Connection to national initiatives to increase transfer, college completion, and other performance outcomes	Active in Achieving the Dream. Not in Complete College America. Student Completion Initiative supported by Gates Foundation and others.	Active in Complete College America. Statewide completion plan with historic partnership with TCSG. All USG and TCSG institutions have College Completion Plans/Intensive Facilitated Support.	Active in Achieving the Dream. Participant in Complete College America. Leader in Completion by Design Initiative. New Strategic Plan 2013-18 encompasses completion goals.
Reforms to Pre-College Education	I-BEST, Statway, Rethinking pre-college math project/Transition math project, Student Completion Initiative, Achieving the Dream, system-wide task force	Completion Innovation Challenge initiative; USG Retention, Progression, and Graduation initiative; USG-TCSG partnership to reform developmental education; Quantway, Complete College Georgia	Annual Connections Conference, Developmental Education Initiative, Completion by Design, Connect to Complete/Service Learning, Statway

Appendix M. Figure of College Level Diffusion of Innovation



Appendix N. Table of Case Study Findings and Evidentiary Support

	Main Findings	Evidence Used
1. Derek’s Story – Connections and Disconnections to Transfer	1) Personalized, caring connection matters most	Reason why he decided to come back and register
	2) Accessible tutoring, with group study support – important support	Reason why he passed classes
	3) Work study offered sense of purpose, network of advising since he works in enrollment management; financial support	Offered financial support to attend full-time
	4) External mentoring influential to his persistence and attitude shift	Spoke of strong support of church community to help him enroll and stay enrolled
	5) State resources not a direct impact; K-12 conditions not either; visits to colleges while in HS helped	College visits during HS exposed him to better options – was able to draw on this to plan a future
2. Academic and Transfer Advising	Above-average performers have: 1. Academic leaders who champion students’ transfer and successfully engage others in this work 2. Mandatory or “early bird/early warning” student advising models 3. Student affairs staff dedicated to coaching students’ on transfer 4. Faculty contracts which include student advising hrs. 5. Faculty and staff engaged in planning out-of-class supports and enrichment experiences for students that aid transfer 6. Campus supports for TRIO and similar STEM programs for low-income, minority, and first generation students	Interviews with VPs of academic affairs, VPs of Student Affairs, transfer advisors, and faculty active in advising at Harvest, Hope, and Peachtree
	<u>Key Support for Stronger Advising:</u> Active communication/coordination with public and private four-year institutions within major fields by administrators and faculty	Transfer advisor interviews at Harvest and Emerald; President interviews at Hope and Sunshine State
	<u>Shaping influences to college’s advising:</u> 1. Transfer not a universal outcome or push for all students... 2. College-level systems of support for transfer generally constrained...	Faculty at Hope, Emerald All VPs of Academic and Student Affairs; Presidents in FL and GA
	Challenges experienced in all colleges: uneven faculty and staff advising skill and interest	Faculty interviews; interviews with transfer advisors
	Challenges experienced by students in average-performing colleges: short appointment times, long-range planning limited	Student interviews - at Emerald and Sunshine State in particular; professional advising not available at Cherokee Rose; students not particularly engaged in faculty advising

	Challenges experienced by faculty in average-performing colleges: low morale, need for additional incentives, or initiative overwhelm	Faculty interviews at Cherokee Rose (low morale) at Emerald (need for incentives); Library director; faculty; deans; provosts at Sunshine State (initiative overwhelm)
	Specialized programs important to low-income, first-generation, under-represented minorities success	TRIO program at Harvest, Emerald; Mesa program at Emerald; Brother-to-Brother at Peachtree; Peer support program and CROP at Hope; MAX at Sunshine
	Main Findings	Evidence Used
3. Data Use for Decision Support about Transfer	Above-average colleges take additional steps to obtain accurate transfer data (i.e. pay for NSC data to document 2/4 transfer across neighboring states to inform transfer advising).	WA and GA above average colleges (Harvest CC and Peachtree College); and average-performing colleges in GA and FL (Cherokee Rose College and Sunshine State College)
	Participation in ATD influences IR offices to undertake more rigorous program evaluation: i.e. quasi-experimental research comparing participants and non-participants (e.g. developmental education reform pilots)	FL above average college and WA average college (both in Achieving the Dream since 2004)
	Leadership investment in better IT, business intelligence systems, and data use training for faculty and staff serves a support role to innovation in student success programming	ATD coordinator at Hope; VP Student Affairs at Harvest; President and VP of Institutional Effectiveness at Sunshine State
	State attention to reducing equity gaps in retention, graduation, and transfer influences colleges in that state to attend to programming to reduce those gaps	Presidents of GA and FL colleges; IE/IR directors in GA and FL colleges
	Challenges: 1) Accessibility of transfer data in P-20W longitudinal data systems 2) Delay in state provision of cohort-based transfer rates by college 3) Limited, if any, disaggregation of upward transfer data by sub-populations, students placed in pre-college courses, by major fields of study to guide college-level intervention 4) States and colleges each prioritize the transfer outcome differently with respect to performance or outcomes funding, and with respect to their own transfer-intending populations	VP of Academic Affairs, Emerald VP of Academic Affairs, Emerald All state higher education research directors Academic Affairs Policy Leads in all states; Presidents of FL and GA colleges; VPs of Academic Affairs, Washington colleges
4. Innovation and Supports for Low-Income, Minority, First-Generation Students to Transfer	One key facilitating support for college-level innovation directed at improved transfer is the depth and range of partnerships created by college presidents, other college leaders, and faculty between nearby two- and four-year institutions.	Hope CC President Sunshine State President and Former Interim President Harvest VP of Workforce Development Washington state policy officials Florida state policy officials Peachtree President and VP of Academic and Student Affairs

	<p>The strength of collaborative discussions aimed at smoothing students' upward transfer between two and four-year programs or institutions, in specific majors to align with regional labor market needs, as well as co-location of bachelor's degree offerings at the (primarily) associate's granting institution seems to be associated with higher transfer rates.</p>	<p>Georgia state policy officials Peachtree President Sunshine State Collaborative Labs Director; Sunshine State Former Interim President; Sunshine State VP of University Partnerships</p>
	<p>Main Findings</p>	<p>Evidence Used</p>
	<p>The success in colleges offering their own baccalaureate degree programs, particularly in nursing creates an internal press for improving students' upward transfer.</p> <p>A college with a larger proportion of bachelor's degree students over time appears to be associated with more dramatic gains in improved transfer.</p>	<p>Nursing Deans at Harvest, Sunshine State, and Cherokee Rose; and President and campus deans, Peachtree</p> <p>Former Interim President, Sunshine State; Sunshine State President</p>
	<p>State-level participation in a national network, such as Complete College America, to examine transfer success (as one of the key outcomes) of different groups of students, and engage colleges in designing interventions to improve graduation, retention, and transfer outcomes appears to be a catalyst for innovation coupled with accountability to improve transfer.</p>	<p>Georgia Chief Academic Officer; Academic policy officials</p>
	<p>Another catalyst for innovation, albeit not necessarily focused directing on improving transfer is college participation in Achieving the Dream, another national initiative aimed at improved student outcomes –through data-informed planning and implementation of innovative strategies.</p>	<p>ATD coordinator, Hope CC</p> <p>ATD coordinator, Sunshine State</p> <p>Adult Basic Education Director, Emerald</p>
	<p>All of these facilitating supports for innovation require strong leadership.</p> <p>With competing demands and priorities, improving upward transfer is sometimes marginalized.</p>	<p>All states and colleges; multiple stakeholders; prior research.</p> <p>Retention Director, Harvest; IR Director, Emerald; VPs of Academic Affairs, Peachtree and Cherokee Rose</p>
<p>5. Role of State Articulation and Transfer Context</p>	<p>The degree of a college's concentration of an institution on improving students' upward transfer is driven by several factors:</p> <p>(1) the proportion of students enrolled with transfer intentions and the college's historical partnerships supporting students' transfer,</p>	<p>VP of Student Affairs, Harvest; VP of Workforce Development, Harvest; IR Director, Emerald; ABE Director, Emerald; VP of Academic Affairs, Emerald</p>

	<p>(2) leadership focus and orientation on improving the college's 2/4 transfer rate, and</p> <p>(3) interdependence of supply and demand forces in the local higher education economy influencing the degree of recruiting from community college students at nearby four-year institutions.</p>	<p>VP of Student Affairs, Harvest; Retention/Student Success Director, Harvest</p> <p>Georgia state policy officials; Sunshine State President; Sunshine State Former Interim President; Sunshine State Collaborative Labs Director.</p>
	<p>Main Findings</p>	<p>Evidence Used</p>
	<p>The level of press and urgency generated by policy actors (e.g. legislature) may affect the college-level implementation of programs and practices associated with improving students' upward transfer.</p> <p>Examples: Complete College Georgia; Florida legislation requiring transfer advising before students reach 30 credit hours; Washington major-related direct transfer agreements</p>	<p>Georgia state policy officials and Presidents of Peachtree and Cherokee Rose</p> <p>Florida state policy officials; Sunshine State President and Former Interim President; Sunshine State Chief Student Affairs Officer</p> <p>Washington state policy officials and VPs of Academic Affairs at Harvest and Emerald</p>
	<p>The positive effects for first-generation students' transfer probability in states with common course numbering may be more related to the intensive degree of coordination and dialogue between actors in the two-year and four-year institutions, focused on articulation and transfer – not common course numbering itself.</p>	<p>Council of Presidents policy analyst, Washington; Director, Office of Articulation and Transfer, Florida</p>
	<p>The inclusion of upward transfer in performance-based or outcome-based public funding formulas for higher education may be a positive catalyst for improved transfer rates, particularly if the percentage of funding associated with outcome attainment is high (e.g. more than 50% of base).</p>	<p>Chief Academic Officer, Georgia; Faculty and administrators in Harvest and Emerald</p>

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