Who Pays to (Re)Build our Schools? Resource Equity in State School Capital Finance Policy: The Case of Washington

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Abstract

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Modern, high quality school facilities are essential to safe and effective learning environments for K-12 students. However, current spending on school facilities has been identified as insufficient to meet the health, safety, and educational needs of students across the country (Filardo, 2021). This problem persists in part because school districts rely heavily on local financing for capital projects, which creates highly varied access to funding. States also are inconsistent and often lacking in policy and funding available to support school construction. While the school finance literature is robust in examining resource equity in operational school spending, less attention has been paid to the distribution of school capital resources, and specifically a state's role in allocating resources. In this thesis, I use a resource equity framework to examine the long-standing School Construction Assistance Program (SCAP) in Washington state, which provides supplementary funding to school districts for capital construction projects supported by local revenue. I use data on historic SCAP allocations, school district elections, and current inventory of all public school buildings in Washington to provide a landscape analysis of

Washington school capital finance and identify systemic patterns of funding distribution that demonstrate inequitable access to high-quality school buildings. As one of the first studies to examine the relationship between building age and quality, elections outcomes, and state and local capital funding, this thesis serves as both an advance to the school finance literature and an important program evaluation of school capital finance policy in Washington.

Prologue

Wenatchee High School is nestled in the eastern foothills of the Northern Cascade Mountains, just a mile and a half from the banks of the Columbia River in Central Washington. On a dark Tuesday morning, over 2,000 high schoolers jostle shoulder-to-shoulder through the front doors of the school. The building was only built to fit 1,600 students, so the cramped, overcrowded conditions are familiar to students. In the 51 year life span of WHS, the Wenatchee region has grown over 120 percent, mirroring a statewide trend of a rapidly growing school-age population within the largely Latino community of the region.[1] Like many areas outside of the tech-clad Puget Sound, rural Wenatchee is primarily an agriculture and industry town, and has been for over a century. The region still stands as a major global exporter of the iconic Washington apple though the median household incomes are almost half that of Seattle. Over half of the student population at Wenatchee High School is classified as low-income.

The school building age and size constraint at WHS is not something students, or teachers, can ignore. Eight modular classrooms and other small additions made in 1993 and 2004 relieve crowding from the main building, however; the main classrooms leave a lot to be desired. The 1972 open floor plan design has not translated well into the 21st century. Thin, hastily constructed walls barely mask neighboring classroom noise, student accessibility and effective pedagogy is challenged by the small spaces, and many classrooms are completely windowless. The HVAC and plumbing systems, in place since the 1970's, are now severely outdated, overtaxed, and increasingly expensive to maintain and repair.

[1] https://washington.reaproject.org/analysis/comparative-trends-analysis/population/tools/98250000/530000/

The Wenatchee School Board is aware of these problems and is actively doing something about them. The superintendent and board chair have begun discussions on a bond proposal that would include major renovations to Wenatchee High School. Pessimism on this approach abounds amongst district leadership. What would make this attempt any different than previous failed measures to rebuild Wenatchee High School? At the special election in April 2018, the $120 million bond proposal failed with 57 percent of voters approving the measure. Washington requires a supermajority, or 60 percent voter approval, for school districts to finance construction bonds with taxpayer money. The fate and future of Wenatchee High School's 2,000 students was determined by the difference of 280 votes.[2]

What many Washingtonians might not have known is the $120 million in property tax revenue wasn't the only funding on the line for Wenatchee. If voters had passed the bond, an additional $35 million in "matching" funds from the Washington School Construction Assistance Program (SCAP) would have added another 30 percent in revenues to finance the massive WHS renovation. The SCAP was created by the legislature in the early 1980s to provide financial support to school districts for constructing new school buildings or renovating existing ones only when they can provide demonstrated need and a source of matching revenue. Without an approved bond, there is no state money for Wenatchee. No money to replace the corroded plumbing that leaks sewer gases into the building, no money to construct more classrooms and redesign existing ones so students can learn in accessible and comfortable environments, and no money to modernize a school in a thriving and growing community.

[2] https://results.vote.wa.gov/results/20180424/chelan/

So, Wenatchee High School makes do with what they have. On Tuesday morning, teachers are in their classrooms early to turn on a space heater, position extra fans, and find what they need from the overflow storage in the hallway. Students shuffle to first period, hoping today is not the day an unexpected fire alarm or gun shots test the evacuation plans in their windowless classrooms. ‘It’s not that bad,’ ‘we could have it worse,’ or ‘you just have to be creative to make it work,’ some might say. Wenatchee High School is but one of many Washington schools in this condition: buildings are degrading, local tax bases are overburdened, and voters repeatedly turn down bond measures, thus receiving little financial assistance school construction for major renovation from the state. This begs the question, what place does fairness have when education financing systems fail our students, and most importantly, who pays to rebuild our schools?

Chapter 1

School Capital Finance and the Resource Equity Framework

Introduction

The quality and condition of many school facilities across the country threatens to meet the health, safety, and educational needs of students (Filardo, 2021). In some areas, oversized buildings are wearing to an irreparable state. Others are bursting at the seams, relying on modular classrooms that have moved from a temporary to a permanent status on the school campus. This problem persists in part due to the nearly universal reliance on local, voter-approved bond measures to finance major school construction projects. Though some states aid school districts in funding or financing capital construction, states vary in the type of policy and funding available to support these projects (Duncombe & Wang, 2009). Because data systems that catalogue the age and quality of school buildings are fractured, or data are not tracked at all on the state level, little is known about the landscape of U.S. school building age and condition. Additionally, the multifaceted funding and financing of school capital construction is not fully understood as a dynamic of equity in school finance research.

Much of school finance research focuses on resource equity[3] within general fund budgets of districts and schools (those that support the daily operations such as teacher salaries and other student services), and specifically analyzes how those budgets are affected by state and local revenue streams and formulas (e.g., Baker et al., 2018; Chingos & Blagg, 2017). These types of

[3] Resource equity, a term used throughout this thesis, generally means how public money, from the state or taxed through a local district, is distributed between schools and/or school districts with attention to the variation of distribution across student socioeconomic status.

analyses are made possible through the availability of national and state-level datasets that relate funding levels to student and educator outcomes. There has been less research on the resource equity of district capital budgets, those that support school facilities, especially related to the distribution of capital resources, a state's role in directly supporting school construction and renovation, the outcome of capital elections for schools, and school building age and quality. These analyses are more challenging to conduct due to fragmented data systems, however, school capital finance is a core component of how public resources support educational opportunities and attainment for students, and attention should be paid to how these resources are collected and distributed.

This thesis has two primary objectives: First, I add to the development of a conceptual resource equity framework to understand the role of school capital finance in broader educational contexts by leveraging a school capital resource equity policy typology. Previous school finance literature, when this framework is applied, does not typically include capital facilities, such as school buildings, as a core element of resource equity. I argue that the financing of facilities is critical in facilitating the education of students and faces many of the same structural funding concerns as general operational funding. I then apply this framework to a key policy in Washington, the School Construction Assistance Program (SCAP), situating Washington policy along several dimensions of resource equity in school capital finance. This policy analysis is both an important puzzle piece in understanding the landscape of Washington school finance and serves as a meaningful advance in applying a conceptual resource equity framework to school finance research. Ultimately, I aim to help state policymakers and researchers answer the question, 'Is Washington school capital finance policy constructed to advance educational equity?'

My second objective builds on the first through rigorous quantitative analyses of systemic components and outcomes of this system, asking 'to what extent does Washington school capital finance policy influence access to capital resources in Washington?'. Made possible by the availability of a new statewide inventory of school building age and quality, historic school district elections data, and 30 years of SCAP allocation data, this is an impactful and thorough evaluation of how Washington's type of school capital finance policy plays out on the district and the school level with regards to student socioeconomic status. This will serve as an important outcomes evaluation of SCAP and guide to Washington policymakers as they face decisions about school finance adequacy and equity, changing statewide student demographics, and the possibility of new revenue sources.

In preview, I find that school capital finance policy in Washington, including the SCAP, has both strengths and weaknesses in supporting equitable funding outcomes and resource distribution. Through in-depth quantitative landscape analysis, I find that this policy environment creates systemic inequities in school building age and condition in which students in school districts with higher percentages of poverty are much more likely to attend older, poorer condition schools. I find this is attributed to related inequities in school capital resource expenditure and local capital financing elections outcomes. This is consequential for the administration of the SCAP program which seeks to increase Washington school building age and condition through a progressively allocated formula yet remains largely inaccessible to districts that cannot pass a capital measure, and thus reinforcing capital spending and building age and condition inequities.

This work proceeds in three chapters. In the first chapter, I provide a literature review of school finance literature with an emphasis on resource distribution equity, why school funding

matters, and Washington's school finance context. Additionally, I will examine what the literature says about the funding and financing of school capital and why buildings matter in education. With this, I propose an adaptation to a Resource Equity Framework that is inclusive of an Equity Investment Typology to describe how state policy affects educational equity through the distribution of resources to school construction. In chapter two, I apply this framework to examine how Washington deploys resources through policy to fund school infrastructure. In the third chapter I take a closer look at how these policies impact resource equity and building age and quality in Washington. I provide a landscape analysis of the condition of school buildings across the state in which I describe the type of school districts that have successfully and unsuccessfully passed local bonds and capital levies to support school capital construction. Lastly, I evaluate how well the primary state school capital funding program, the SCAP, promotes resource equity across Washington school districts. I close the thesis by discussing the implications of this work for state policymakers in how they may prioritize school capital policy and funding strategies that center resource equity and implications for the broader school finance literature in including school infrastructure more closely in conceptualizations of school finance equity.

Literature Review

Equity and school finance

The United States' relatively decentralized governance structure has led to a patchwork of education policies, especially related to when, what, where, and how public schools are funded (Ed Build, 2023). Critical education historians argue that the federalist public education model, rooted in a state's right and obligation to build an education system, has created lasting racialized effects on the equitable distribution of financial resources between and within states (Walters,

2001). Simply put, money matters in the provision of public education (Baker, 2021; Jackson, 2020; Candelaria & Shores, 2019; Knight et al., 2022). The inequitable distribution of resources perpetuates systemic racism and injustice in our education system by facilitating unequal access to revenue sources (Chingos & Blagg, 2017a) thus impacting a school district's ability to hire and retain teachers (Mangaliman, 2011; Knight & Strunk, 2016), provide the necessary academic and holistic supports for students of color (Roza & Knight, 2022; Jarmolowski et al., 2022), and maintain safe and effective learning spaces (Blagg et al., 2023; Vincent et al., 2022). Unequal educational experiences create unfair and unbalanced social and economic outcomes for individuals that have direct impact on our community and democracy (Chetty, 2016).

Legal and regulatory frameworks are the driving heartbeat of systemic inequity in US education. Scholars such as Ladson-Billings (2006) argue that understanding educational resource distribution systems in the context of critical race theory can help us in part uncover the "educational debt"[4] that is owed to generations of students of color who were intentionally underserved by public schools in America. In the context of school finance, scholars have identified how the unique structures of law and broader sociopolitical dynamics perpetuate racialized school fundings outcomes. For example, in examining Texas school finance statutes, Alemán (2007) finds that majority-Mexican American school districts were disadvantaged by a school finance reform attempting to improve educational attainment and outcome through funding equalization. Similarly, a school funding equalization program in Arizona left Navajo Nation schools with access to fewer resources than peer public schools (Martinez et al., 2019). On the local level, state school finance reform has implicitly sanctioned inequity within school

[4] This analogy, evoking the US national debt, is further used by Ladson-Billings to illustrate the movement away from the terminology "racial achievement gap" which exists as a point-in-time snapshot of inequity, similar to the national deficit.

district allocation implementation. Studies in California found that after the introduction of the Local Control Funding Formula, which intended to balance access to school funding, racialized epistemologies still drove the actual distribution of resources across schools (López, 2019), resulting in inequitable variation of spending across schools (Knight, 2019). New frameworks, such as the Critical School Level Resources framework, describe how local school budget decisions are conceptualized by broader groups of school stakeholders to comprehend the historical, cultural, and political significance of certain school expenditures (Yang & Knight, 2022). Such approaches to examining school finance are essential to dismantling unfair and inherently racist policy structures.

Tools to measure school finance equity

Research related to school finance equity seeks to measure the variation of spending across and within states and school districts. Equity is here defined as a variable level of resources (funding) provided to schools to account for student populations who need different levels of resources to achieve those outcomes (attainment and achievement). To account for equity in school finance, Bruce Baker introduces four measures of school funding "fairness" that accounts for adjusted state funding level, a) funding distribution, which shows whether a state provides funding to school based on school district concentrations of poverty, b) funding effort, c) state fiscal capacity, and d) coverage of funding to children attending school (2018). In the most recent *National Report Card,* Baker et al. find that there continues to be a wide disparity in funding among states and a majority continue to distribute resources unfairly (2018). To illustrate this, in the 2019-2020 school year, the average per-pupil total expenditure by state was $16,070, with the low in Idaho at $10,135 per student and the high in New York at $30,100 per student (Cornman et al., 2023); however, according to Baker et al.'s analysis, Idaho had a more

progressively oriented distribution of resources than New York.[5] This demonstrates the complex intra-district analysis needed to compare school funding fairness between states.

In another report*, Do poor kids get their fair share of school funding?*, the Urban Institute measures fairness as the relative spending differences between groups of low and high income students (Chingos & Blagg, 2017). This provides a parallel, though not identical tool of measuring school finance equity in relation to state policy. Their report finds that though many states have progressive funding formulas, they often do not achieve progressive funding outcomes due to patterns of student income segregation. Parallel research has found that increases in racial segregation over time leads to more racial disparities in school spending even when accounting for student poverty levels (Sosina & Weathers, 2019).

A focus of much school finance equity literature has been the distribution component of Baker's fairness measures and assess if a state's school finance policies and formulas result in a "progressive", "regressive", or "flat" allocation of resources. A progressive school finance system is one that directs a greater dollar amount per pupil to schools or school districts with a higher number of students experiencing poverty[6], and a regressive system is one that results in the opposite. A flat allocation implies that per-pupil expenditures are relatively similar regardless of student income status. The reason that a more progressive school finance system results in more fairness, and thus higher amounts of educational equity, is because money matters in education and more funding to higher need students makes a difference in achieving desired educational outcomes (Baker, 2021). Research shows increases in per-pupil expenditures are

[5] Despite this, Baker's analysis still ranks New York as the number 1 "fairest" school finance system, while Idaho ranks at 49th in large part due to the adequacy of New York's school finance system.
[6] The measure used to gauge student poverty is also contended. Some scholars use the proportion of students enrolled in the federal Free and Reduced Lunch (FRL) entitlement program, while others use the US Census' Small Area Income and Poverty Estimates (SAIPE) (see Greenberg et al., 2019).

typically linked to higher staffing levels, smaller class sizes, better pay for teachers (Baker et al., 2016; Sun et al., 2022), which in turn lead to the closing of outcomes gaps, including increases in academic performance, graduation and college-going rates (Lafortune et al., 2016; Kirabo Jackson et al., 2015). School finance equity is improved when spending in and on schools increases in a way that enhances funding progressivity.

State v. local revenue shares

A significant policy driver of systemic inequity in school finance resource distribution is the reliance on local property tax revenue to fund the operations in local school districts. Nearly every public school district in the US relies on local funding, which are primarily voter-approved levies that collect tax revenues based on the assessed value of a school district resident's property (Alexander et al., 2015). Like the disparities in overall funding detailed above, a patchwork of state policies results in great variation in local revenue generation and utilization. For example, in 2016 the average local share of school districts revenues was 44.8% and the state share was 47%. However, local contributions range from a low in Hawaii[7] of 1.9% to a high in Illinois of 67.4% (Skinner & Riddle, 2019).

This variation is largely due to the type of school finance policy and system adopted by the state, often known as funding formulas. There are four common policy structures for these formulas as identified by Odden and Picus (2008): (1) flat grants, (2) foundation grants, (3) guaranteed tax base programs, and (4) combination foundation and guaranteed tax base programs. These distinctions generally have to do with the assumption made on how much the state contributes to a school district in relation to a local revenue contribution. A flat grant model

[7] Hawaii has a single state school district which partially explains its low local contribution.

awards an equal per-pupil revenue to all school districts, while guaranteed tax base and foundation grants provide variable state revenue dependent on the amount of collected local revenue. Local tax share limits, caps, or minimums are a common element of a guaranteed tax base or foundation system (EdBuild, 2023). Additionally, depending on state policy there can be variation among districts in both the per-pupil amount of revenues being collected on the local and state level, and the amount of relative property tax burden in school levy contributions (Odden & Picus, 2008). Empirical research has found that state and local funding shares exacerbate variation in school finance outcomes across states particularly related to local taxation effort and tax base ability to pay (Baker et al., 2022; Corcoran & Evans, 2010). Local tax limitations largely implemented in the 1990s have also had a negative effect on student outcomes, particularly in low-income districts, if not supported by a parallel increase in state funding (Downes et al., 1998; Figlio, 1997). Several studies have also examined the behavior of school districts' management of local funds when reacting to exogenous shocks in state aid and found both incentives to invest more or fewer local funds depending on the policy (Steinberg et al., 2016; Sun et al., 2022). These studies highlight how state school finance policy has an outsized impact on funding outcomes and pursuit of resource equity within our schools. While much of the literature has focused on general operating funding streams, less attention has been paid to how school capital infrastructure is funded and supported by state and local sources.

School capital infrastructure

There are approximately 100,000 K-12 public school buildings in the United States (Nowicki, 2020). These buildings serve a primary mission of providing physical space for public education including classrooms, libraries, gymnasiums and fields, cafeterias, and auditoriums. School buildings are also often utilized as a critical civic infrastructure, serving as places for

community gatherings, voting locations, and emergency shelters and meeting points. During the COVID-19 pandemic, schools were also sites for food assistance and vaccination clinics (Park et al., 2021). These publicly owned and operated buildings are failing at a rapid pace. A recent report from the US Government Accountability Office found that 54 percent of school districts need to upgrade or replace multiple building systems in their schools, with 41 percent in need of HVAC updates (Nowicki, 2020). Functioning HVAC systems in schools are particularly critical given the increasing concerns about the airborne spread of communicable viruses, such as COVID-19 (Vincent, 2020; Sauter & Heming, 2022).

Experts have identified an $85 billion gap in annual school building construction and maintenance accumulating every year (Filardo, 2021). This gap likely underestimates true need given that data on school building age, quality, risk, and infrastructure needs are not collected on the federal level, and rarely aggregated by states. Most assessment and determination for action on school infrastructure is left to school districts (Nowicki, 2020). A 1999 National Center for Education Statistics report highlights how the increase of school construction during the “baby boomer” period of 1950-1969 constituted 45 percent of the U.S.’s school building stock (NCES, 1999). However, without serious renovation, after 20-30 years in operation a school needs frequent replacement of equipment, in 30-40 years major systems such as roof and electric systems should be replaced, after 40 years the school begins rapidly deteriorating, and after 60 years without repairs most schools are abandoned (Ornstein, 1994). Although K-12 school facilities in the US are the second largest infrastructure spending item behind highways (Filardo, 2021), our schools are structurally failing. Unmaintained buildings create poor and limiting conditions for students to learn and communities to thrive.

School capital financing

The reason school buildings across the country are failing is nearly wholly attributed to funding access. Funding for capital construction or infrastructure for schools is different than the revenue streams described in the discussion of school finance equity above. School districts generally adopt a separate budget in their annual budget cycle dedicated to capital funding. Capital budgets of school districts pertain to expenditures that are one time, such as technology purchases, building construction, or facilities renovation[8] (Kioko & Marlowe, 2020). Over the last ten years, local school districts paid 77 percent of capital costs, states paid 22 percent, and approximately 1 percent from federal funds (Filardo, 2022). Few ongoing federal funding sources contribute to the maintenance and construction of public schools in America primarily targeted to the most extreme cases of disrepair such as disaster relief, or environmental hazard mitigation (Shohfi, 2020; Nowicki, 2020). However, recent research has shown that one-time federal emergency COVID-19 assistance to all school districts (ESSER and GEER) was a significant driver of spending on school facilities. Surveyed school districts reported spending 22-30 percent of funds and on upgrades to air filtration, HVAC, windows, doors, and roofs, and lighting in schools (Sauter & Heming, 2022; McMorris & Knight, 2022). Even as such, states and local school governments are primarily responsible for the building and upkeep of public schools.

In 2019, average spending on capital outlay was approximately $1,400 per student, down from a high of approximately $1,900 per student in 2007[9] (Blagg et al., 2023). The decline and slow recovery of capital expenditures in the early 2000s has been attributed by researchers to the

[8] In public finance, there is little centralized guidance on what items in the capital budget should be distinguished from the operating budget and one time expenditures often show up in the general fund budget.
[9] Adjusted to 2019 dollars.

impact of the Great Recession (Jackson et al., 2021; Leachman et al., 2017). The impact of the COVID-19 pandemic on capital expenditure trends is still relatively unknown.

The primary local revenue source for the construction or renovation of school buildings is an unlimited tax general obligation bond (UTGO). This financing vehicle utilizes the district's line of credit[10] to sell bonds in the municipal bond market which are backed by voter-approved authorization of increased property tax. UTGO for school construction are specific to the project identified in the bond measure and cannot be used for other school district expenditures such as salaries, utilities, or other on-going costs. Most bonds are structured in a term ranging from a 15-30 year maturity with a level debt service repayment structure, with annual repayments calculated as follows:

$$P = A\left[\frac{1-(1+r)-t}{r}\right] \quad (1),$$

where *P* is the initial principal, or the amount borrowed for construction, *A* is the annual debt service owed by the school district, *r* is the average interest rate assessed by the market lenders, and *t* is the term of the bond in years (Dively, 2022). To calculate the annual rate that property owners pay, you divide the annual debt service (*A*) by the school district's total assessed property value. This rate, when multiplied by one thousand, is called the millage rate for the bond, and represents how much is owed by the property owner for every $1,000 in assessed property value. When the bond term is over, taxpayers stop paying the tax, though it is likely the building or

[10] In some states, the state can sell bonds on behalf of the authorized school district, thus using the state's often superior credit rating (see Duncombe & Wang, 2009).

projects the bond funded have been constructed and been in use for many years.[11] School renovation projects can also be financed by a capital levy. A capital levy functions similarly to an operational school levy in that property owners pay a certain rate for an established duration, but unlike a bond, levy funds are not financed in the market, so contributions towards a major construction expense are either pooled and invested or spent on an on-going basis.

In 2019, local school districts held $486 billion in long-term debt, just over $11,000 per student on average, and districts paid a collective $20 billion annually to finance the interest on the debt (Filardo, 2021). Rebuilding America's schools is also an increasingly expensive activity. Construction costs for new schools have risen at almost twice the rate of inflation since 2005, increasing by a staggering 127 percent[12] (U.S. Bureau of Labor Statistics, 2023).

Equity and school capital finance

A significant amount of recent research highlights resource inequity in capital school finance. Because of the dominant reliance on local funding, there is not equal nor equitable per pupil revenues supporting capital construction between states (Filardo, 2021) and between school districts within a state (Duncombe & Wang, 2009). Increased school capital spending follows areas of increased property wealth (Arsen & Davis, 2006) and bonds are typically most successfully passed in large comprehensive packages on their first time on the ballot (Bowers & Lee, 2013), with passage favoring reconstruction over new construction (Zimmer et al., 2011). As described above, this is largely because taxation on property wealth pays for new construction and school construction costs are typically fixed outside of regional labor and materials cost

[11] Delivery time to construct a new school is approximately 12-24 months depending on relevant labor and material markets as well as local permitting processes.
[12] The consumer price index during the same period, 2005-2023, rose 55 percent.

variation. Capital expenditure trends have also changed over time with some states like Wyoming, North Dakota, and Kansas steadily increasing investment per pupil, while other states like California, Connecticut, and Florida decreasing per pupil capital spending (Blagg, 2023). Several studies have found significant differences in capital expenditures by student poverty level. Low income school districts spent on average $300 less per student in 2015-16, representing a larger overall share of students than high-income districts (Nowicki, 2020). Additionally, expenditures on maintenance and operations (M&O) which fund ongoing repairs and small projects were higher on average in low-poverty school districts than in high poverty districts (Filardo, 2021). Research in California has identified that capital outlays vary across districts where districts with lower assessed property value per-pupil and larger share of Black, Hispanic, and low-income students access less capital revenue (Brunner et al., 2021). These findings indicate that students facing the highest amounts of poverty continue to see the lowest funding levels in the maintenance and construction of facilities.

Another line of inquiry into school construction finance equity looks at the implications of district credit rating and the use of other financial tools to support access to school construction bonds. Studies have found that school districts in lower wealth regions have lower credit rating and thus, 24 states offer credit enhancement programs which have been found to increase per student capital spending while decreasing the interest rates faced by district borrowers, reducing the disparity of per-pupil capital expenditures between high and low income districts (Yang, 2022; Anglum, 2019). Additionally, a study in Iowa finds that “penny swap programs”, which allow districts to essentially refinance voter-approved debt instead incentivizes the shift of expenditures away from non-capital uses such as instruction and administration (Nguyen-Hoang & Damiano, 2023).

Isolating the impact of improved capital infrastructure on the academic achievement of students can introduce measurement challenges in covariation (Berner, 1993), but several pieces of empirical research have demonstrated positive effects on students when using advanced econometric models. A regression discontinuity design examining California school bond referendum outcomes found a significant increase in math and reading achievement in response to bond passage, but the effect only emerged six years after bond passage (Cellini et al., 2010). Other studies in Connecticut and Michigan found similar outcomes amongst a high poverty student population in response to a concerted construction effort over a period of twenty years (Nielson & Zimmerman, 2014; Hong & Zimmer, 2016) and even more corroborate these positive impacts (Lafortune & Schönholzer, 2019; Park et al., 2020; Haverinen-Shaughnessy et al., 2015). However, some studies find limited, to no correlation between school capital construction and student achievement even when accounting for the delayed onset of benefits (Brunner, Hoen, & Hyman, 2022; Martorell, Stange, & McFarlin Jr, 2016; Conlin & Thompson, 2017).

Additionally, specific types of capital investments, such as new facilities to reduce crowding, air conditioning, and ventilation, are positively associated with improved child health outcomes and thus academic performance (Blackmore et al., 2011; Gilraine & Zheng, 2022; Howard et al., 2021). Poor building quality has also been linked to lower teacher (Buckley et al., 2005) and student attendance (Duran-Narucki, 2008). Schools serving larger shares of students of color and low-income students are more likely to be overcrowded (Ready et al., 2004) and be exposed to unhealthy environmental factors within their schools (Chakroborty & Zandbergen, 2007; Grineski & Collins, 2018; Latham & Jennings, 2022). School quality has an outsized impact on the educational outcome of children in poverty and their educators.

State aid for school capital

While 39 states have programs that provide some form of funding to support school construction (Filardo, 2021), there is large variation in the type and distribution of this aid across state policy (Duncombe & Wang, 2009). 19 states have dedicated revenue sources (sales tax, lottery, etc.) to fund these programs (Fisher, 2023). Each different state policy and capital program leads to varying levels of systemic progressivity, like that described in Baker et al. (2018). In an examination of equality of capital outlay distribution by type of state building aid policy, Duncombe & Wang (2009) found that states with a funding policy that required the presence of matching funds had a higher on average per-pupil capital expenditure than states with lump-sum (entitlement or flat grant) funding or a combination of the two (see Table 1). They also find that states with no capital aid program or a matching aid program have higher rates of inequity in district capital spending. States that provide a form of lump sum aid have the lowest levels of capital expenditure inequality, however most states have a matching aid program in place. In a recent review, Blagg et al. (2023) corroborate the finding that state policy choices affect equity in accessing school capital revenue, but that only a handful of states specifically aim to direct more funding to school districts with higher shares of economically disadvantaged households.

State case studies identify a more discrete relationship between state school capital finance policy and funding outcomes. Research in California found that policy changes related to the funding formulas of matching programs may decrease gaps in per pupil capital spending gap in top and bottom income quintiles (Biasi, Lafortune, & Schönholzer, 2021). Additionally, researchers in Texas found that while the state aid sought to target lower property wealth school

districts, the funding formula did not make up for the voter taxation constraints experienced by the low wealth districts (Rivera & Lopez, 2019).

Litigation across the country has also touched on the topic of state school capital finance, recognizing the limitations of local financing and a state's responsibility to provide public education. Recent cases typically fall into two categories, either they arise in a suit that is comprehensive of the entire state school finance system, such as cases in New Jersey, Ohio, Arkansas, New York, and Wyoming, or in cases that are solely focused on school facility funding or conditions, including Arizona, Idaho, and California (Sciarra et al., 2006). These cases all surround the adequacy of the state in providing educational facilities in public schools. While the outcomes of these cases resulted in positive policy shifts in state capital aid, there are open questions surrounding the viability of the judicial strategy, lasting adequacy, and equity within the state systems.

This thesis seeks to fill a gap in the literature in understanding how school facility conditions are an outcome directly related to capital expenditures, elections, and state funding and how that relates to the equitable distribution of facilities. This is different from previous studies described above that look at funding or student achievement as a key outcome related to capital facilities. In doing such, I aim to provide a novel research approach with direct policy implications on how to increase access to high-quality school buildings.

Conceptual Framework

A framework in which to conceptualize the role of resource distribution in school capital finance can be used to ground and position the literature described above and my subsequent analysis. Several existing critical theories and frameworks help inform my utilization and

expansion of the existing Resource Equity Framework to describe inequities in school capital finance.

Critical theories help contextualize how experiences of oppression and discrimination among certain groups are systematized by formal laws, regulations, and rules, and informal processes and practices. Critical perspectives call upon us as members of these systems to center the experiences of historically marginalized groups. There are many different critical fields, each with their own contributions (e.g., critical race, feminism, queer studies, neo-institutionalism, etc.), but in education, critical analysis often targets the structures, decision-making, curriculum, resources, outcomes measurement, and goals of the education system. Diem et al (2014) highlight the field of critical approaches in education policy as those focused on the difference between policy rhetoric and reality, the roots and development of policy, the distribution of power, resources, and knowledge, the effect a policy has on inequality and privilege, and the resistance of non-dominant groups by engaging in activism and participation within schooling contexts.

Critical Race Theory (CRT) was developed by legal scholars of color to understand how race and racism intentionally exist within the legal and regulatory constructs of American society centuries after the formal end of slavery (Crenshaw et al., 1995). In education, CRT helps center non-whiteness and the experiences of people of color while also highlighting the fundamental inequities of institutional and legal practices in a way that moves society towards fairer and more socially just systems (Ladson-Billings & Tate, 1997). Its tenets are greatly beneficial to understanding how and why inequity in resource distribution occurs a priori to other traditional frameworks such as Human Capital Theory (Alemán, 2013). For example, CRT applications outline how historical access to property rights under the U.S. Constitution and state law has

impacted the racialization of present-day wealth accumulation. Thus, the still prominent use of levies on property tax wealth to differentially fund highly localized school districts in racially and economically segregated locales results in inequitable resource distribution (Ladson-Billings & Tate, 1997).

Critical Policy Analysis (CPA) is a tool for both the analysis and structuring of policy that seeks to support marginalized communities access to public goods. There are five tenets of CPA as outlined by Horsford et al (2019): 1) challenging traditional notions of power, politics, and governance, 2) examining policy as discourse and political spectacle, 3) centering the perspectives of the marginalized and oppressed, 4) interrogating the distribution of power and resources, and 5) holding those in power accountable for policy outcomes. In particular, interrogating the distribution of power and resources related to school finance could ground research around equity in school capital construction, although prior research does not explicitly adopt frameworks that center power in relation to resource access (e.g., Blagg et al., 2023; Filardo, 2021; Brunner et al., 2021). I intend to utilize these CPA tenets, that law and practice are highly racialized in a post-slavery world and that systems and institutions, not individuals, should be held accountable for these outcomes, in developing my framework.

The Resource Equity Framework was developed by Education Resource Strategies to represent how different dimensions of education contribute to successful outcomes for students (Travers, 2018). Pursuing equity within this framework acknowledges that not every student, school, or school district may receive the same level and type of resources, but that every student should be provided with the resources (people, time, and money) they need to achieve success. Thus, “fair” means that students the furthest away from educational justice, often low-income and/or students of color, should be systemically provided with more resources in education.

Through consulting with education leaders and practitioners across the country, the Resource Equity Framework identifies eleven "dimensions of resource equity" which work together to impact the student experience and cultivate a successful learning environment both directly and indirectly. These include *teaching quality, empowering, rigorous content, instructional time and attention, early intervention, early learning, whole child approach, family academic engagement, school funding, school leadership quality, diverse and inclusive schools,* and *learning-ready facilities* (see Table 2 for descriptions of each).

In this framework, the "core" represents the student. The "inner circle" comprises of elements that directly impact students experience in school. In the "outer circle" are dimensions of resource equity that indirectly affect students including school funding and learning-ready facilities (see Figure 1). Thus, indirect elements must be robustly supported in order to affect direct dimensions of student learning. The dimension *learning-ready facilities* relates to my analysis. The Resources Equity Framework identifies that "[Education] systems must be deliberate about investing in facilities and focus scarce resources and attention on the investments that will matter the most" (pg. 14). I challenge the notion of scarcity as inherent to the distribution of capital resources and in fact think of it as a way that dominant powers justify maintaining oppressive and inherently unfair status quos. Resource allocation decisions, including both adequacy and distribution, in public finance are rarely about scarcity and more often about prioritization, institutionalism, capitalism and political will. The variation across Baker's analysis of state fiscal effort in education is an example of this, where states contribute anywhere from $25 to $53 per $1000 in 2015 gross state product (2018). This context must inform a framework about school capital finance.

The Equity Investment Typology developed by Rivera (2017) speaks directly to what equity in school capital finance looks like when constructed in state policy. The typology also provides a specific definition of equity that, "For public educational facilities to be equitably provided, funding should be sufficient and reliable enough to provide for high quality, equitable facilities in all school districts, independent of their local ability to pay" (pg. 10). This implies that funding for school facilities should not only be adequately funded (challenging scarcity dilemmas), but that there should be removal of property wealth from the predictors of school building funding sufficiency. The definition also compels a notion of reliability in funding streams that supports levels of adequacy seeking to challenge unfair distribution of building quality. The typology outlined by Rivera relies upon both critical policy analysis (Burch, 2009) and fiscal sociology[13] (Martin et al., 2009). The components include *state spending/aid policies, taxation policies (sources of funding),* and *public debt policies.* Each of these buckets contain specific qualities of policy such as percentage of state share, or tax caps/limits that ultimately affect the construction of school buildings in the state (see Table 3). A policy analysis can then be conducted on state policy given the "low", "medium", or "high" provision of these items (high being a more comprehensive provision of state support). Rivera's application of this typology using five states results in a range of assessment. If applying numeric values to the equity analysis outcomes (0 for "low", 1 for "moderate", and 2 for "high") Texas's school capital finance policy results in a score of 6, Wyoming a 20, New Jersey 13, Massachusetts 19, and Ohio 10. Thus, Wyoming would have the most equitable state school capital finance policy, and Texas the least. Utilizing this typology to enable critical policy analysis of state school capital law helps us understand how the complex policy environment of capital funding provision affects the

[13] This field examines how fiscal policy affects different stakeholders.

distribution of resources in a way that contributes to or detracts from broader school finance equity.

I propose using a conceptual framework to describe issues of equity within school capital finance policy that is connected to the "recipe" of resource equity as described by Travers (2018) and mitigated by a measure of equity as generated by Rivera's equity investment typology (2017). A model is proposed in Figure 2. In this model the resource equity framework from Figure 1 is still intact (right-hand side) and the equity investment typology feeds into the *learning-ready facilities* indirect dimension of the framework. Thus, through this model we can better understand how the input of *learning-ready facilities* to the Resource Equity Framework is affected by the policy and resource environment it exists within as assessed by the equity investment typology. The addition of the typology also allows researchers to conduct evaluations of the specific policy components affecting school capital finance to better understand how these levers can be adjusted to improve policy.

In the next two chapters I will use this framework to guide two different types of analysis. First, I will apply the framework to understand how policy is constructed in Washington state, and then I explore how that policy environment is affecting actual equity outcomes related to school capital finance across and withing schools and districts in the state including capital spending revenues, building age and condition, elections, and SCAP receipt and award amounts.

Chapter 2

Washington School Capital Finance Policy

Introduction

Washington state has a population of 7.74 million people. There are 295 school districts which collectively contain just over 2,500 schools educating approximately 1.1 million students (OSPI, 2023). Geographically, most of Washington's population and schools reside in the Puget Sound region, where Seattle is located, with increasing sparsity as you head east across the Cascade Mountains. In 2021 the average per-pupil expenditure for operating costs (excluding capital outlay) was $17,199 in Washington, which is above the national average of $14,789 (NCES, 2023).

Funding for the daily operations of schools comes from local, state, and federal sources. The 2012 *McCleary v. Washington* State Supreme Court case established that funding basic education was the "paramount duty of the state" and thus increased the state funding share available to districts via the Prototypical School Funding formula and new levy caps on the allowable amount of property taxes imposed by districts (Knight et al., 2022). This reform did not substantially increase the state's school finance progressivity, focusing instead on the adequacy of funding in all districts. The result was that funding increases disproportionately benefited school districts with larger populations of white and higher wealth students (Knight & Plecki, 2021). Additionally, this school finance reform did not address the adequacy or progressivity of state funding for school capital construction. This now remains an open question with the legislature since the Washington Supreme Court ruled in favor of the state over

Wahkiakum School District, a small rural district, which contended that their crumbling facilities are in part due to the state's negligence in providing capital funding (Bazzaz, 2023). With this context in mind, an analysis of Washington school capital finance policy would be particularly relevant to current legal and policy discussions as it relates to elements that address both funding adequacy, or funding progressivity which could either substantiate or refute equity concerns with the status quo.

Thus, in this chapter, I seek to address the following research questions:

1. What type of state policy and funding supports school capital construction in Washington?
2. How does state policy and funding to support school capital construction in Washington regard equity as defined in Chapter 1?

To answer these questions, I apply the conceptual framework described in Chapter 1 to critically analyze Washington state school capital finance policy as situated through a resource equity lens. This will enable a thorough examination of the layered landscape of policy addressing how and who finances school capital construction to both inform policymakers and my quantitative analysis in Chapter 3. In the next sections I will describe my data and methods, findings related to the two research questions, and provide a discussion of these findings that highlights implications for state policymakers and future research and program evaluation.

Data & Methods

In conducting this analysis, I rely on the most recent Washington state law and administrative code related to school capital construction located on the official state website[14]. I also utilize data from the 2023 *50-State Comparison – K-12 School Construction Funding* resource from the Education Commission of the States, which provides a table of data points on school construction policy such as revenue source, description of primary programs, and revenue share requirements (Fisher, 2023), and the *2021 State of Our Schools Report* from 21st Century School Fund which outlines capital funding levels by state (Filardo, 2021). Additionally, I draw information from the Duncombe and Wang (2009) and Blagg et al. (2023) reviews of state school capital policy and utilize school finance statistics related to state revenue collected for capital outlay (variable C11) and school district capital outlay expenditures (variable F12 and G15) from the US Census/NCES F-33 School Finance Survey (2018). In collecting this data, I aggregate district-level finance data from Washington up to the statewide level.

I use document review methods of this collection of data sources to answer research question one. This includes surveying state law and other data sources outlined above to understand the school capital finance policy that exists in Washington, and how it works. To address research question two, I apply the equity investment typology categorization as described in my conceptual framework (see Table 3) to assess how school capital finance policy attempts to center equity in Washington. Similar to the methods used in Rivera (2017), I quantify "low", "moderate", or "high" scores along the typology. A score of "high" is always that which is more equity-enhancing. Unique to my analysis, I provide numeric scores that correspond with

[14] https://leg.wa.gov/LawsAndAgencyRules/Pages/default.aspx

the values to help quantify Washington's position along these measures. "Low" is equal to a value of 0, "moderate" is equal to a value of 1, and "high" equals a value of 2. I make some adjustments to Rivera's original classifications for updated averages in capital outlays expenditures as extracted from the most recent F-33 survey. For example, when measuring "State Share" I found from F-33 that the average state share of total capital outlays was around 9 percent. Thus, for this analysis, the 75th percentile above this figure will be consider "high", and below the 25th percentile of this figure would be "low". Additionally, in measuring "Adequacy" I mean-center the average state revenue for capital outlay per pupil at $251. The 75th percentile above this figure will be consider "high", and below the 25th percentile of this figure is "low". All other assessments of policy measures specified by the typology are conducted via the review of Washington state school capital finance policy I completed in answering research question one. Lastly, I sum the assessment scores across categories and contextualize what this score might imply about the prioritization of equity in Washington policy and compare it to the five states assessed in Rivera's work (2017). This analysis will create understanding about the degree to which the package of state policies surrounding school construction in Washington State conceptually advance equity.

Findings

Research Question 1

The primary state program that finances Washington school construction is the School Construction Assistance Program (SCAP). SCAP is a matching grant program with an open-ended percentage-based match for eligible new construction or major renovations. It is financed by the legislature through the Common School Construction Fund which was constitutionally established in 1966 "to be used exclusively for the purpose of financing the construction of

facilities for the common schools"[15]. Revenue is generated into the Common School Construction Fund from the sale of timber, public lands, interest accrued on the permanent fund principal, and other revenue sources designated by the legislature, such as that from the taxation of capital gains.[16] The total amount allocated for SCAP in 2022 was $265 million, though this amount fluctuates annually, depending on how many school projects are eligible for SCAP.[17] Typically, the Office of the Superintendent of Public Instruction (OSPI) presents the legislature with a list of projects eligible for SCAP, and how much state assistance those school districts are entitled to via the SCAP formula. While projects go through a prioritization process, the legislature has funded all eligible SCAP projects on the list for at least the past decade (OSPI, 2023).

There are several steps a school district must take to construct or majorly renovate a school, and the process often starts years before a district secures funding to begin the visible components of school renovation or construction. These include working directly with the School Facilities & Organization staff at the OSPI on advance planning, and a study and survey of existing school building quality and capacity. School districts must also submit multiple "D" forms of project application throughout the process to achieve final completion and acceptance, school occupancy and asset preservation. The steps outlined in the school construction process (see Figure 3 for a process flow chart produced by OSPI) occur regardless of a project's eligibility for SCAP funding. Since the primary factor by which school districts become eligible to access SCAP is the provision of local funding for the construction project, many districts that

[15] Washington Constitution. art. IX, § 3
[16] This is a potential new revenue source after the *Quinn v. State of Washington* case in March 2023 determined that tax collections on individual capital gains were a constitutional state revenue. Part of the proceeds of that fund are expected to go to school construction.
[17] For comparison, the state provided over $13 billion in operating revenue to schools in the 2020-21 school year.

locally raise construction funds are deemed eligible for state aid. Local revenues are typically provided by the school district in the form of a bond or capital levy[18] (OSPI, 2023). In Washington, these capital measures are issued based upon the outcome of an election by the voting members of a school district and are financed via property taxation. However, the SCAP is not a direct matching program, in that the state does not calculate its share of funding based on the amount raised by the district. Instead, the SCAP deploys the following formula to calculate a SCAP award:

Eligible Area **X** Construction Cost Allocation **X** Funding Assistance Percentage =

Maximum Allowable State Funding Assistance

(2),

The "eligible area" is defined as the square footage of instructional space for which the state will provide funding assistance. It compares the district's current inventory of instructional space to its projected enrollment, multiplied by the Student Space Allocation (SSA). The SSA is a statutory per-student amount of space needed for the educational facility they attend. For grades K-6 the SSA is 90 square feet, for grades 7-8 it is 117 square feet, for grades 9-12 it is 130 square feet, and for students with disabilities it is 144 square feet[19] (OSPI, 2011). Enrollment projections are calculated annually by OSPI. The eligible area figure will be reported in square feet.

[18] The sale of short-term obligations, limited general obligation bonds, investment proceeds, mitigation and impact fees, and insurance funds are also eligible but much less common matching instruments.
[19] The OSPI definition of students with disabilities for this program is "each student assigned to a specially designed self-contained classroom for at least 100 minutes per school day" (OSPI, 2011).

The "construction cost allocation" is the maximum cost per square foot that the state will fund for a project. The amount is established by the Washington legislature in the biennial budgeting process and has historically increased every year. In 2023, the construction cost allocation was $258.92 per square foot (OSPI, 2023).

Lastly, the "funding assistance percentage" is a formula-based multiplier that is uniquely assigned to each school district. The intent of this component of the SCAP formula is to "equalize (statewide) the local burden of financing school facilities" (OSPI, 2011). This formula, established in Washington law[20], takes into account a school district's ability to raise property tax revenues in terms of assessed property value per student. The minimum funding assistance percentage is 20 percent, and the maximum is 100 percent. An example SCAP calculation is provided below:

50,000 square feet x $258.92 x 40% = **$5,178,400** SCAP allocation (3),

Other SCAP eligibility criteria are related to the type of school construction project. New construction is eligible when additional instruction space is needed for "unhoused" students[21], and the replacement of existing facilities is eligible when either the school is more than 20 years old and the modernization would meet the needs of unhoused students, or the building is more than 30 years old (OSPI, 2011).

There are two reasons why a school district may be ineligible for SCAP. Either they have local funds, but do not have enrollment and/or the buildings they want to renovate are under 30

[20] RCW 28A.525.166 (2): "The ratio of the school district's adjusted valuation per pupil divided by the ratio of the total state adjusted valuation per pupil shall be subtracted from three, and then the result of the foregoing shall be divided by three plus (the ratio of the school district's adjusted valuation per pupil divided by the ratio of the total state adjusted valuation per pupil)."

[21] This term refers to over-enrolled schools, that is where the per student space allocation is less than the state recommended square footage.

years old, or the district cannot provide matching local revenues. In the latter case, where a district might otherwise have SCAP eligibility, but no revenue means, there are few alternative state revenue sources for school construction and renovation. One prominent, yet far less generous program in Washington is the Small Rural District Modernization Grant. The aim of this program is to assist school districts with fewer than 1,000 students access funding to help repair and replace significant building system deficiencies. The funding is not intended for full school replacement or extensive modernization (OSPI, 2023). For example, in 2023, the legislature approved approximately $93 million in small and tribal district construction projects across 41 districts, a record high funding cycle[22]. In the former case, where a district has means, but no other SCAP eligibility, a district may decide to 100 percent self-finance a construction project.

Lastly, there are several relevant Washington tax expenditure limitations related to school construction in Washington. While Washington has a property tax system that caps property tax revenues collected locally to 1 percent year-over-year increases for non-voted taxes, this limitation does not apply to school districts who finance via direct voter approval (Washington Department of Revenue, 2023). School districts in Washington are subject to caps on enrichment (operational) levies, but there are no caps or restrictions on levies that generate revenue for capital projects. Property tax rates from bonds are also uncapped, however, constitutionally school districts may not exceed an indebtedness of more than 5 percent of the district's total assessed property value[23]. Additionally, while not necessarily a tax limitation, Washington's voter-approval passage threshold for issuing school district bonds is a super-majority of 60

[22] 2023-25 Capital Budget. LEAP Capital Document No. OSPI-1-2023. https://fiscal.wa.gov/statebudgets/2023proposals/Documents/cc/ccOSPI-1-2023SDSTCMod.pdf
[23] Washington Const. art. VIII, § 6

percent (three-fifths) if the bond exceeds three-eighths of one percent of the value of the taxable property in the district[24]. Washington is one of ten states requiring a super majority approval on local school bond measures (Fisher et al., 2023). All told, the SCAP continues to be the state's primary and most powerful means of leveraging funds for the complete modernization and construction of Washington schools. While the addition of the funding assistance percentage in the SCAP formula intends to increase equity in its distribution of more funding to lower wealth districts, its impact to reach all common schools, even those that do not pass bonds is limited. This is evidenced by the emergence of the Small Rural School Modernization grant as a growing stop-gap to fix a category of schools that are not served by the SCAP, and the super-majority voting requirements to finance long-term debt which ultimately unlocks access to the "open-check book" funding model of SCAP.

Research Question 2

I use the equity investment typology developed by Rivera (2017) to assess the extent to which Washington school capital construction finance policy enhances equity by facilitating resource parity between high and low income school districts. Table 4 is the application of the equity investment typology in response to research question two as well as comparative state outcomes from Texas, Wyoming, New Jersey, Massachusetts, and Ohio as presented by Rivera (2017). I will present my findings for Washington according to the typology rubric across the policy categories State Spending/Aid, Taxation, and Public Debt.

Across measures of State Spending and Aid policies, Washington rates highly. This is indicative of the measures used in the SCAP funding formula as described in Research Question

[24] RCW 39.36.020

1. For example, in the *Aid Formula/Funding Program* design, Washington uses multiple measures including local wealth and enrollment trends to determine the state funding assistance percentage multiplier, ranging from 20-100 percent, which is a main driver of per-pupil SCAP grant variation. Washington also funds a secondary program, the Small Rural School Modernization Grant, that attempts to target schools that may not be reached by SCAP. This results in a score of "High" (2 points) for this measure. In my assessment of Washington's *State Share* of state revenue for capital construction as compared to other states, I find that Approximately 9% of capital outlay expenditures come from the state, which is just about average. This policy measure is "Moderate" (1 point). The *Adequacy* of Washington's state capital funding program is also around the national average. Washington spent $197 per pupil in state revenue for capital outlay in 2017, including the SCAP, Small Rural District Modernization Grant, and other smaller funding streams. This is in the 39th percentile nationally for that year, putting it at a "Moderate" (1 point) outcome. Washington provides comprehensive *Technical Assistance* to all school districts via a dedicated Office of School Facilities and Organization within OSPI which administers facilities surveys, construction study grants and provides assistance in accessing grant programs once eligible. These policy and implementation features result in a "High" (2 points) rating. Lastly, the *Stability* of Washington's school capital funding program is strong especially in the SCAP program which has been funded at the requested level since the 1990's. Unlike other state capital budget items, the demand and eligibility for receiving a SCAP grant seems to drive the total funded amount and not vice versa. This results in an assessment of "High" (2 points) for this measure.

When analyzing Taxation policies related to school construction in Washington, many policy areas ranked low in the equity typology. In *Tax Caps/Limits*, I found that there is a 5

percent limit on total district indebtedness, which limits the amount of taxation for school construction bonds. Additionally, bonds must be passed by a 60 percent voting margin in order to be issued by a school district. There is no limit, however, on capital levies which may be used to fund school construction and renovation. This results in a score of "Low" (0 points) in this measure. Regarding the *Diversity of Revenue Sources*, the vast majority of funding comes from property tax, with the state supporting 9 percent of capital outlays typically with state general obligation bonds and some smaller supporting revenue sources. There is, however, a dedicated common school construction fund. This scores "Moderate" (1 point). Lastly, in *Statewide v. Local Tax Collection*, Washington does not collect a statewide tax for the purposes of distribution to school capital construction. Furthermore, property taxes are levied to support a local bond, and only projects with local revenue can access SCAP. A score of "Low" (0 points) is assigned to this rubric measure.

Last, when looking at Public Debt policies for school construction in Washington, there were mixed outcomes that impact equity for facilities funding in Washington. First, in *Credit Enhancements*, I did find that school districts may participate in a state credit enhancement program that improves their credit rating for better interest rates and financing options for bonds. This contributes to a score of "High" (2 points) in this measure. However, when looking at *Debt Payment Assistance Programs*, there was no evidence of formal state program for district debt repayment assistance to aid districts that cannot pay their debt service, resulting in a score of "Low" (0 points). Additionally, in *Debt v. Pay-as-you-go* policies, Washington is heavily reliant on debt to finance school construction including in SCAP, other state capital budget items, and the local issuance of bonds. While capital levies (on-going local funding) can support school

construction, debt is prominent. Given the presence of capital levies in Washington's school finance system, this measure scores "Moderate" (1 point).

The equity investment typology for Washington's school construction policy environment resulted in a 12 out of 22 point score, with different strengths and weaknesses across policy measures. In comparing to the states surveyed in the Rivera study (2017), I found that Washington scores near the middle of the pack compared to a high total score in Massachusetts of 20 and low score of 6 in Texas. When looking at the specific categories, I find that while Washington has strong State Spending and Aid policies which could contribute to equitable outcomes in capital spending (8 of 10 points in category), Taxation and Public Debt policies lean towards equity-limiting (1 of 6 points and 3 of 6 points in each category, respectively), in that the function of the revenue raising for school capital construction does not create a policy environment in which all school districts have access to the same outcome of high quality, safe public schools. This assessment and comparative analysis helps situate Washington's school capital finance policy in the larger landscape.

Discussion

The findings in this chapter help researchers and policymakers understand both the type of school capital finance policy that exists in Washington and the extent to which elements of that policy environment support equitable access to state and local capital resources. This approach directly supports my conceptual framework (Figure 3), which was developed to understand how individual aspects of school capital finance policy come together to contribute to learning-ready facilities, a foundational component of pursuing resource equity in education.

In my analysis I find that Washington's primary school construction and renovation funding program is the School Construction Assistance Program (SCAP), which is a formula-based matching grant program for school districts who have local capital revenue and meet other eligibility criteria. Once eligible for the SCAP, school districts with lower levels of property wealth are assigned higher "state funding assistance percentages", thus increasing their per-pupil funding levels as compared to other districts. Additionally, small, rural, and/or tribal school districts may be eligible for a much smaller grant program without leveraging local funding. There are two major tax limitations affecting the issuance of bonds, the primary financing vehicle and access point to SCAP, in Washington. First, school districts can only become indebted to a level up to 5 percent of the total assessed value of the school district, and second, school bonds must pass by 60 percent vote margins. In the second part of the analysis, I find that when examining specific policy measures in the equity investment typology, Washington strives towards centering distribution equity in State Spending and Aid policy for school capital finance but is lacking in equity enhancing Taxation and Public Debt policy. This situates the state in the middle of previously assessed states for equity in capital finance policy. In this section I will discuss how this situates Washington school capital finance system in the national landscape and with the literature, state policy implications, and directions for future research.

Rivera's analysis of equity in school capital finance policy and subsequent introduction of the equity investment typology (2017), does not examine Washington, but her case study analyses of Texas, Wyoming, New Jersey, Massachusetts, and Ohio do provide important comparisons to my analysis. With a total score of 12, Washington would be situated in the middle of the pack of these states. If assuming that Rivera's sample of state's was generalizable, this implies that Washington's policy environment for enhancing school capital finance equity is

slightly below average. If only considering the funding adequacy of state school construction funding, this aligns with both Filardo (2021) and Duncombe and Wang's (2009) position of Washington as contributing less than the national average of state revenue for capital outlay. Additionally, Duncombe and Wang's examination of school capital finance policy type and total capital resources by state can inform what we can expect for the funding output of a program like SCAP. As a matching aid program, it can be expected that while there may be higher levels of adequacy in school capital funding, there is less progressivity of resource distribution within the state. This brings my conceptualization of school capital finance policy in Washington in line with Baker's (2021) notions of school funding fairness in that state policy contributes to the measure of adequacy and progressivity. Thus, I contend that the below average performance of equity-centered policy measures in the Washington school capital finance system results in a regressive environment that provides funding adequacy to only some, but not all school districts. In this way, the limited-access SCAP program, in which participation is based on a school district's willingness and ability to pay, may center equitable distribution within the program, but cannot possibly achieve school capital finance equity across the state.

Policy Implications

My findings in this chapter compel important policy considerations in Washington. The application of the equity investment typology highlights how the weakness of state taxation and public debt policy mitigate the strengths of current spending and aid policy. I contend that this ultimately perpetuates a regressive school capital finance system that only becomes progressive for those who can access the primary state capital funding program, SCAP. Thus, a key question for policymakers resulting from this analysis should be: How can Washington improve access to

state aid and taxation and public debt policy to enhance adequate and progressive funding for school construction across all districts?

Prior to proposing any legislative or policy changes to address this question, however, Washington policymakers need clarity on the purpose and mission of programs supporting school construction. As it stands, the legislative purpose of SCAP is to "provide funding assistance to school districts…meeting eligibility requirements" (OSPI, 2023). This definition is untethered from any notions of distributional equity as actually exists within the program, and furthermore does not describe why this funding assistance would be important to Washington's mission of "transform[ing] K–12 education to a system that is centered on closing opportunity gaps."[25] My research has highlighted that there is a role for the maintenance of high-quality, modern school buildings in the pursuit of educational equity and the closing of opportunity gaps. Thus, for Washington to effectively pursue systemic school finance fairness, state leaders need to orient efforts to financially support school construction and renovation in line with the state's own values. A mission-driven approach to state school capital finance policy can pave the way for programmatic and policy shifts for districts that have struggled to access SCAP in the past.

Given the adoption of an equity-centered mission within the state school capital finance program, possible policy changes could include a full overhaul of the system, or smaller programmatic and policy adjustments. A full overhaul could do away with all or some matching requirements, instead focusing on achieving a certain outcome level of building age and quality across the system and creating funding goals to meet that. A starting point could be to target schools that have not been constructed or majorly renovated in 30 years, an eligibility criteria of

[25] https://ospi.k12.wa.us/about-ospi/about-agency

the existing SCAP. This approach, which could be induced legislatively or judicially, would change the access point for school districts from an input, local revenue, to an output, age and condition of school buildings. There are certain challenges with this approach, starting with the sheer quantity of funding it may take to address all deferred maintenance and necessary building upgrades across Washington's 2,500 schools, which is estimated to be a $743 million annual gap (Filardo, 2021). Raising Washington's overall school building age and quality to any minimum level could take years of increased state investment and a long-term commitment. There should also be considerations for districts that have the financial and political willingness to continue financing school construction bonds. A key question in this rehaul is, should local revenues be utilized to finance "basic" repairs, or just those above and beyond minimum age, quality, and enrollment baselines? It is no coincidence that this is the same line of policy questioning that resulted in the McCleary reforms. However, the recent ruling in *Wahkiakum v. State* indicates that the state has minimal constitutional mandate to provide for basic repairs (2023). Fairness in the entirety of Washington's school finance system must first address the question of who pays, and then how are those funds accessed.

Smaller policy and program adjustments could also seek to improve the type and quantity of districts that have access to state funding for school capital construction and renovation, particularly in the areas of taxation and public debt policy. For example, a constitutional amendment could lower the 60 percent voting margin for issuing local government debt, at least for school districts, to a simple majority. Additionally, the state could increase its contributions via the Small/Rural grant program, or other targeted programs to increase adequacy of state school capital spending and expand them to cover major renovation costs. Lastly, by tapping into a new revenue source like a statewide capital gains tax, the Washington school capital finance

system could both diversify its revenue sources and move to a more pay-as-you-go statewide funding program. While several of these solutions could increase state funding for school construction, a key feature of the present system remains, access to these funds is limited. Finally, it should be stated that as beneficial and corrective as all these recommendations seem, their success in adoption and implementation hinges on the complexities of state and party politics, and economic conditions. The impact of these factors should not be underestimated in any discussion of policy change, major or minor.

Direction for Future Research

This chapter presents a high-level examination of Washington school capital finance policy but leaves several questions on the table related to the implementation and outcomes of the state school capital finance system and programs at large. I want to highlight how future research could evaluate additional aspects of school capital finance policy in Washington. First, the implementation of school construction and its related funding takes place in a series of regular and infrequent actions taken by school district leadership. Undertaking a study on the barriers and entry points to advancing a school construction or renovation project within a variety of school district contexts may further illuminate how state policy interacts with district decision-making and how other factors contribute to differential access to school construction prioritization and funding. Additionally, an implementation study of the levers that OSPI utilizes during the school construction approval and funding process may highlight the role the state agency plays in both executing existing policy and the dynamics that created a progressive SCAP program within a more regressive tax and public debt environment.

Second, additional research should examine how Washington's school capital finance policy environment relates to measurements of building age and condition, per-pupil capital

expenditures, and student income levels. Such an analysis could not only re-affirm Duncombe and Wang's findings related to variation in spending based on school capital policy type (2009) but would provide an important quantitative landscape analysis on how my findings about the status of school capital finance policy relates to actual outcomes for Washington schools. In examining SCAP receipt, funding, and school capital finance outcomes, a quantitative analysis could also serve as a test to my hypothesis developed in this chapter, that Washington's school capital financing is progressive for those who access SCAP, yet regressive across the state as a whole. This could be a critical component to both understanding the relationship between capital funding and capital outcomes as related to resource equity, and in mobilizing policy change in Washington. I conduct this exact analysis in Chapter 3.

Chapter 3

Assessing Equity in Washington School Capital Finance

Introduction

There are over 2,500 schools in Washington, many with multiple buildings on site. Maintaining these public buildings is no small feat operationally and financially, and some districts have done better than others in this regard. In Chapter 1 I outlined that a combination of policy factors can influence whether a state's school capital finance system provides equal access to capital resources regardless of school district's wealth or student population. Then by applying the equity investment typology to Washington policy in Chapter 2, I found that while the state school capital aid program, the School Construction Assistance Program (SCAP), is designed to be progressively allocated, larger statewide taxation and public debt policies may contribute to a regressive policy environment across all Washington schools. While these findings can cause us to imagine how school capital finance policy affects outcomes for capital expenditures, allocation, and school building age and condition, an in-depth quantitative evaluation of the factors contributing to this hypothesized phenomenon would greatly enhance policymakers understanding of the issue. In this final chapter, I conduct a three-part evaluation of the Washington school capital finance system focusing on the relationship between school building age and condition, student poverty rates, capital resources, capital measure election outcomes, and SCAP receipt and allocation levels across district characteristics. This comprehensive assessment will inform researchers and policymakers about the specific levers that perpetuate systemic inequity in school capital finance and will greatly expand our knowledge of the state of school buildings and capital financing in Washington.

The analysis in this chapter is broken into three sections. In the first section I explore the landscape of school buildings and capital spending in Washington to descriptively understand the current state of school facilities and how that relates to student poverty. I also perform an analysis of the relationship between capital resources and building outcomes. Thus, I propose the following research questions:

3. What is the landscape of public school buildings in Washington and to what extent is student poverty related to the age and condition of the schools they attend?
4. To what extent are increased resources for school capital construction related to school building age and condition?

In Research Question 3, I will look at the number of school buildings in Washington, where they are located, and how many students they serve. I will also examine patterns between building age and condition and poverty within and across schools, school districts, and educational service districts. Given the prior literature on the relationship between poverty and school capital (Arsen & Davis, 2006; Brunner et al., 2021), I provide the following hypothesis for Research Question 3.

> H3: As the percentage of low-income students increases, the average age and quality of the school building decreases.

Research Question 4 is compelled by a theory of action rooted in my conceptualization of school capital finance equity presented in Chapter 1. I contend that the age and condition of schools serving larger shares of low-income students can be improved by increasing capital resources to those schools, thus by improving physical school infrastructure there will be a meaningful impact on student outcomes. The impact of quality building on student outcomes is supported by the

literature (Lafortune & Schönholzer, 2019; Park et al., 2020; Blackmore et al., 2011; Gilraine & Zheng, 2022; Howard et al., 2021). I provide the following hypothesis for Research Question 4, supported by prior literature (Filardo, 2021; Rivera, 2017) and my understanding of the SCAP funding formulas as the main driver of state revenue for capital in Washington.

> H4: As capital resources increase, school building age and condition improves, and as the percentage of low-income students increases, capital spending decreases, but state revenue for capital increases.

Given that bond and capital levy election outcomes play a significant role in gaining access to school district capital financing, the next section of this analysis explores school district capital measure elections outcomes. I again deploy both summary statistic and regression-based research questions to identify patterns of election outcomes across school district characteristics, and the extent to which these elections have impacted school building age and condition. I propose the following research questions for section two:

5. What is the landscape of capital measure election outcomes in Washington and to what extent is community level poverty related to those election outcomes?
6. To what extent are capital measure election outcomes related to resources for school capital construction and school building age and condition?

In Research Question 5 I will measure the number of capital measure elections and outcomes across Washington school districts and examine patterns of introducing and passing capital measures by the community poverty rate of a school district. Based on prior literature that explores the relationship between community wealth and relative property taxation rates and

credit scores (ex. Anglum, 2019) and the generally fixed costs associated with construction projects, I propose the following hypothesis.

H5: As community poverty rates increase, capital measure attempts and passage will fall.

Research Question 6 seeks to understand the relationship between the outcome of school capital election measures, capital resources, and building age and condition. The theory of action compelling this contends that if the key to increasing funding to support school building age and condition is via capital measure elections, then either increasing the number of elections in higher poverty school districts or providing non-election based funding streams to those districts could improve resource equity in school capital. I provide the following hypothesis based on the theory of action.

H6: Capital resources will increase when a capital measure passes, thus building age and condition will also improve.

The final section of my analysis will look at resource equity in the Washington School Construction Assistance Program, which is the primary way in which the state funds school capital construction in Washington. This will connect my findings back to Chapter 2, to pinpoint quantitative measures of how the SCAP improves school building quality. I run both summary statistic and regression-based analyses to address the following research questions:

7. Which districts have received SCAP, how much were the awards, and to what extent are district student poverty levels related to SCAP receipt, times accessed, and per-pupil allocation?
8. To what extent does receiving SCAP relate to resources for school capital construction and school building age and condition?

Research Question 7 will look at the trends of SCAP awards over time including the number, type, amount and spread across district-level poverty characteristics. Because of my findings in Chapter 2 related to the design of the program, I provide the following hypothesis.

> H7: Receiving SCAP and times accessed is negatively associated with district student poverty levels, while the amount of per-pupil SCAP is positively related to student poverty.

Lastly, in Research Question 8 I examine how receiving, number of years received, and SCAP award amount relates to the amount spent on school capital construction and a district's average school building age and condition. The theory of action behind this is if SCAP can target low income districts and effectively improve building age and quality then it should be expanded to continue to correct resource equity and elections issues uncovered in earlier analyses. I can use my findings from Chapter 2 again to propose the hypothesis.

> H8: Receiving SCAP, times accessing SCAP, and the amount of per-pupil aid will lead to greater school district capital expenditures, thus better building age and condition.

The rest of this chapter will proceed as follows. First, I describe the multiple datasets I rely on for this analysis, including a discussion of how I utilized several administrative datasets to assess average school building age and condition score, elections outcomes, and SCAP allocations. I then turn to the methods I use for this analysis in which I describe the multivariate regression models I deploy for each of the three sections. Next, I present my findings and analysis of each research question, and finally, I present a discussion of my findings including how they relate to my findings in Chapter 2, and what it means for future Washington policy and research. This comprehensive assessment will inform researchers and policymakers about the

potential levers that perpetuate systemic inequity in school capital finance and greatly enhance our knowledge of the role of state policy in inducing certain school capital finance and building outcomes.

Data

I rely on five datasets from state and federal government sources to complete the three sections of my analysis. The data used is all publicly available, though some state administrative data was specially requested from the Office of the Superintendent of Public Instruction (OSPI). These data were all cleaned and compiled via STATA data science software, though many required advanced preparation of Microsoft Excel files. Below, I will walk through each of the five datasets I worked with and describe the nuances of utilizing the administrative data for this analysis.

School-level student data

I use a single-year school-level dataset for school-to-school assessment of building age and condition related to student poverty levels within a single school and across schools within the same district to address Research Question 3. To access the student data, I use OSPI's *Report Card Enrollment 2022-23 School Year*. This provides count of students disaggregated by school and district at the state level and includes counts of the following groups: grade level, gender, race/ethnicity, and student programs and special characteristics, including a count of "low-income" students, which I utilize for my analysis. When conducting analyses on district and educational service districts student counts and poverty rates, I aggregated school enrollment counts up to those totals.

District-level finance data

To assess school district capital revenues and expenditures, I use the National Center for Education Statistics Local Education Agency (School District) Finance Survey, known as F-33. This dataset provides revenue and expenditure information for all school districts in the United States. I utilize a longitudinal F-33 dataset that spans from 1995-2018 (the most recently available F-33 data year). Because district capital expenditures and revenues are an outcome variable of interest, I use this dataset for Research Questions 4, 6, and 8. The F-33 survey has many relevant school finance variables, but to measure capital expenditures by district I combine variables F12 (Capital Outlay – Construction) and variable G15 (Capital Outlay – Land and Existing Structures). I do not include other capital outlay variables (K09, K10, K11) that are related to equipment expenditures. For capital revenues, the F-33 only reports C11 (State Revenue – Capital Outlay and Debt Services Programs), but no variables for local revenues for capital outlay. However, I exert caution in interpreting the difference between total annual capital expenditures and total annual state revenue as the local share of capital revenue because the expenditures on capital may not all occur in the same year they are collected. In any case, I do not conduct longitudinal analyses of these capital finance outcomes, instead I use a CPI-adjusted, per-pupil average of the capital expenditures and state capital revenues for each Washington school district in the 1995-2018 period. The denominator of the per-pupil averages is also tabulated by panel averages, but I use F-33's district enrollment count (variable V33). Lastly, I use the F-33 measure of student poverty rates (percentage of students receiving free-and-reduced lunch services) when examining student demographic data in combination with district school finance data (Research Question 4).

School Building Age and Condition

The Information and Conditions of Schools (ICOS) is a web-based portal hosted and maintained by the Washington OSPI to inventory and track school building and facilities information. The typical users of ICOS are school district facilities staff who use the system to maintain records and submit requests, such as the D-forms required for a SCAP grant. While the data on school building age and condition is public, it is not publicly available. I had to submit a public records request to OSPI to obtain this data. Since the ICOS data is continuously updated by district and OSPI staff, the version I accessed was a snapshot of data captured in December 2022. The key variables of interest from ICOS that I use in Research Questions 3, 4, 6, and 8 are two-fold: building age and condition. The age of the school building indicates what year the buildings were constructed or last majorly renovated (for example, 1956 or 2017), thus a greater numeric output is a newer school building. The condition of school buildings is rated on a 0-100 scale and is conducted either by routine district inspections or in formal architectural "study and surveys" which are required as part of the SCAP application process. The dataset also provides the total square footage of a building, which I use as a control variable and in weighting the average age and condition of school buildings by school, district and ESD, which I will explain below.

In cleaning the ICOS data I found that many school sites had more than one building reported in ICOS. For example, a high school might report a separate wing of the school, gymnasium, or greenhouse in addition to their primary school building. In total there were 40 different building types classified in ICOS. To achieve one row per school, I collapsed the average school building age and condition score weighted by the square footage of each campus building. This means that the age and condition of the larger buildings (most often where the

actual classrooms are located) are given more importance in the overall average age and condition score of the school. I weighed these factors the same way when aggregating to the district and ESD level. I also developed a variable to count the number of buildings per school, district, and ESD which I use as a control variable. I found, however, that the total number of school sites reported in ICOS was slightly less (1,984) than the estimated number of public schools in Washington (2,460). There are two possible explanations for this: either the school district did not report information in ICOS for that school, or there is a case where two schools (such as a middle school and high school) share a school site. To the former explanation, there are three school districts that did not report any condition scores: Stehekin School District (one school building), Naselle-Grays River Valley School District (three school buildings), and St. John School District (one school building). Since ICOS includes all but three districts, I suspect many of the 476 schools appearing in OSPI enrollment data, but not ICOS represent either single buildings with multiple schools, or schools not reported in ICOS by an otherwise reporting district. I will further describe the summary statistics related to this data in the findings of Research Question 3.

The final step in prepping the ICOS data for my analysis is linking the weighted average school building age, condition score, square feet, and number of buildings with school-level enrollment data from OSPI. Unfortunately, while the ICOS data does list a district identification number that is mergeable to OSPI and F-33 data, there is no school identification number listed, only school names. To address this, I ran a string merge on school name and district identification number. This resulted in about half of schools matching to OSPI data. I identified that the primary reason for non-match was school name inconsistencies. For example, the OSPI data may list Dr. Dolores Silas High School in Tacoma School District, but the ICOS data lists

Silas High School in Tacoma School District. These are obviously the same school. In cases like these, I would change the ICOS school name to Dr. Dolores Silas High to create a match. Thus, for the unmatched schools, I hand-matched names by analyzing and correcting name inconsistencies in the ICOS data. Additionally, as described above, there are also cases where ICOS reports a shared school building, but OSPI reports these as two different schools in the enrollment data. For example, in ICOS, Tonasket Middle-High School is listed as one school site, however, these are two separate schools in OSPI data. In these cases, because within district (and within school site) student demographic variation amongst these small schools were likely to be low, I changed the ICOS site name to that of the school with the larger student enrollment population according the OSPI enrollment data. With those changes, 1,878 of the 2,460 schools (76 percent) in ICOS matched with OSPI enrollment data, or 95 percent of 1,984 schools listed in the ICOS data. Those that didn't match from the OSPI (master data) and those that did not match from ICOS (using data) were often either alternative school sites, or inexplicably unmatched. Because of the status of the ICOS database as infrequently updated by district staff and primarily for administrative use, I posit that the unmatched schools are those that have name changes, closed, or opened since the last time the district updated their ICOS data. Thus, it would be nearly impossible to address these unmatched schools without an in-depth consultation from every district in Washington.

Election Outcomes

The outcomes of elections are publicly available information in Washington, though the data is often not readily available prior to the modern era of the internet. The OSPI aggregates county elections data related to school district financing for all 295 Washington school districts from 2009-present, called *Election Results for School Financing*. This includes information on

school levy and bond attempts, outcomes, rates, values, and collection periods for every introduced school finance measure. I use this data to answer Research Questions 5 and 6. In cleaning this data, I first aggregate total school finance elections outcomes by year in the respective categories of Bond, Capital Projects Levy, Tech Levy, Enrichment Levy, and Transportation Levy. Occasionally a school district will run two or more of these measure types in a single year, so the collapse by year is important. In my subsequent analysis I link this data to district-level enrollment, F-33, and ICOS data by school district identification number and look both at elections outcomes (passage and CPI-adjusted per-pupil amount) by year and in sum for a district in the 2009-2022 timeframe. I define capital measures as Bonds and Capital Projects Levies. Full descriptive statistics of this data are in the findings of Research Question 5.

SCAP Allocation

Lastly, I utilize publicly available information on the allocation of SCAP grants to answer Research Questions 7 and 8. Annual SCAP funding *Project Release* Excel files are available on OSPI's website from 2016 – present. Via a request to the OSPI, I was able to secure additional Excel files from 1995 – 2015. Each project release file is a report that contains the SCAP project list approved by the legislature (in the spring) that year and released on July 1. Each row is a funded project, and there are often several construction projects listed per receiving school district in a given year. This happens for two reasons, either the bond or levy used for SCAP eligibility funded multiple building projects, and/or the specific site has multiple "types" of projects distinguished within SCAP. The type of SCAP projects delineated in the report include New-in-Lieu (NL) which is a new building that is built in lieu of modernizing an existing building consistent with the cost/benefit analysis, New Construction (NC) which is either an entirely new school based on enrollment projections or an addition to an existing school, or a

Modernization (M), which is an existing building being remodeled. For example, a SCAP grant to Cascade Elementary School could include funding for both a New-in-Lieu remodel for part of the building footprint and funding for a Modification in another part of the building. The data also includes the district's funding assistance percentage, project total and eligible square feet, the amount of local funds contributing towards the project, the amount of SCAP (state) funds allocated to the project, and the month and year when the corresponding bond or levy passed for the construction project.

Cleaning and merging this SCAP data into my larger district-level dataset also had its challenges. First, while the SCAP reports listed the district name, it did not list the district identification number. I hand-matched all the districts to their identification number. Additionally, because each project release listed multiple projects per district, per year (tall style), I had to restructure the data to list one district and all its project data per year (long style). After formatting the SCAP data in this way for each year I merged by year and district in the 1995-2022 timeframe to the district-level enrollment, F-33, ICOS, and elections dataset. I CPI-adjusted each financial outcome (local and state funds) for this data and reported it in per-pupil terms based on relevant district enrollment data. Full descriptive statistics of this data are in the findings of Research Question 7.

Methods

Each of my three sections of analysis follow a similar pattern, the first research question of the set is descriptive in nature, identifying summary statistics, trends, and outcomes in the area I set out to examine (building age and condition, capital measure elections, and SCAP grants). The second research question in each section is a regression-based examination in which I identify how specific levers affect the capital finance outcome in question. Below I describe my

analytical approach for each research question in the chapter and highlight how that will aid me in testing the hypothesis related to each question.

Research Question 3

I use descriptive analysis of the ICOS data related to building age and condition by school and district to address this research question including means, sums, and counts of school building statistics. Since the ICOS data has not (to my knowledge) been compiled and analyzed across the state, this will help me understand the landscape of school buildings in Washington. As described in the data section, I used square-foot weighted average school building age and condition for school sites with more than one building and for district and ESD measures. Additionally, this research question asks about student poverty characteristics as related to building age and condition and per-pupil capital expenditures and state revenues. In the regression model below (4), I estimate the relationship between student poverty rates on building age and condition both across and within schools, districts, and ESDs.

$$Building\ Age, Cond_{sde} = \beta_0 + \beta_1 StudentPoverty_{sde} + \lambda' covar_{sde} + \varphi_{de} + \varepsilon_{sde} \quad (4),$$

Where Building Age_{sde} and $Cond_{sde}$ are two separate measures of building age and condition. I use co-variates ($\lambda' covar_{sde}$) of small enrollment, urbanicity[26], the number of buildings, and total square feet all of which might also affect the building age and condition outside of poverty. Each of these is applied at the relevant organizational level, school (*s*), district (*d*), and ESD (*e*). For the across district and ESD analyses, I include district and ESD fixed effects (φ_{de}) which enables me to examine the impact of poverty on building age and condition within schools in a

[26] Urbanicity is measured by membership in the densest ESD, Puget Sound ESD.

district, districts within an ESD and schools within an ESD. The error term ε_{sde} is also measured at the school, district, and ESD level depending on level of analysis. This model tells us the isolated impact of student poverty on building age and condition in an educational unit that has similar enrollment, urbanicity, number of buildings and total square feet. It will address my hypothesis that as the percentage of low-income students increases, the average age and quality of the school building decreases.

Research Question 4

In this research question I run a multivariate regression that examines the estimated impact of student poverty on per-pupil capital expenditures and state capital revenues, model (5) below.

$$PPCapExp, StateRev_d = \beta_0 + \beta_1 StudentPoverty_d + \lambda' covar_d + \varepsilon_d \quad (5),$$

Where $PPCapExp_d$ and $StateRev_d$ are two separate district measures of capital resources. In this model I use the same co-variates as model 4, small enrollment, urbanicity, the number of buildings, and total square feet, all of which may impact district spending on capital. The error term ε_d is measured at the district level. Because the F-33 school finance data is only gathered at the district level, that is where this analysis lies. This model tells us the isolated impact of student poverty on per-pupil capital resources in a district that has similar enrollment, urbanicity, number of buildings and total square feet. This allows me to test the second part of my hypothesis for this research question, that as the percentage of low-income students increases, capital spending decreases.

The second regression model (6) in this research question measures the estimated impact of district per-pupil capital revenues on building age and condition on the district level.

$$Building\ Age, Cond_d = \beta_0 + \beta_1 PPCapExp, StateRev_d + \lambda' covar_d + + \varepsilon_d \quad (6),$$

Where $PPCapExp_d$, $StateRev_d$, Building Age_d, and $Cond_d$ are the same measures as used in Research Question 3. I use co-variates ($\lambda' covar_d$) of small enrollment, urbanicity, the number of buildings, building total square feet, and student poverty levels as controls. The error term ε_d is measured at the district level. Like model 5, this analysis is only run on the district level because the F-33 school finance data availability. This model will tell me the isolated estimated impact of per-pupil capital resources on building age and condition in a district that has similar enrollment, urbanicity, number of buildings, total square feet, and student poverty rates. This compels my theory of action that money matters in improving building quality and tests my hypothesis that as capital resources increase, school building age and condition improve.

Research Question 5

In this research question I employ descriptive analysis of both longitudinal and total capital measure outcomes. This will look at how many and the percentage of districts attempted, passed, and/or failed capital measures (bonds and capital levies) annually and in sum as well as the inflation-adjusted sums of those measures. I then look at these same summative figures by descriptive poverty quintile and run the following regression model (7) to assess the estimated impact of district community level poverty rate on district capital elections outcomes.

$$CapitalElectionOutcome_{abl} = \beta_0 + \beta_1 Community\ Poverty\ Rate_d + \lambda' covar_d + \varepsilon_d \quad (7),$$

Where in the CapitalElectionsOutcomes variable there are six outputs: having ever attempted and/or passed any capital measure (*a*), having ever attempted and/or passed a bond (*b*), and having ever attempted or passed a capital levy (*l*). For this analysis I only use the co-variates ($\lambda' covar_d$) of small enrollment and urbanicity where error term ε_d is measured at the district level. This model will tell me about the isolated relationship between community level poverty rates and having ever attempted and/or passed different capital measures addressing my hypothesis that community poverty rates are negatively correlated with capital elections outcomes due to the relationship between property wealth and relative taxation rates associated with capital measures.

Research Question 6

In my analysis of the estimated impact of capital elections outcomes on district capital resources, building age, and condition, the elections outcomes variables as described above become my independent variable. In the regression model (8) below I look at the election impact on district per-pupil capital expenditures and state revenues.

$$PPCapExp, StateRev_d = \beta_0 + \beta_1 CapitalElectionOutcome_{abl} + \lambda' covar_d + \varepsilon_d \quad (8),$$

Where the CapitalElectionsOutcomes variable is the same construct as Research Question 5. The vector of district controls ($\lambda' covar_d$) for this analysis include small enrollment, urbanicity, the number of buildings, building total square feet, and student poverty levels. The error term ε_d is

measured at the district level. This model shows me the isolated estimated impact of capital elections outcomes between 2009-2022 on average per-pupil capital expenditures and state revenues during the same period, controlling for co-variates. This compels my theory of action that capital measure elections are likely to increase capital expenditures and resources gained from the state (largely via the SCAP program) and tests my hypothesis that capital spending and revenues increase when capital measures are passed.

The second part of this research question looks at the estimated impact of capital election outcomes on building age and condition, presented in the regression model (9) below.

$$Building\ Age, Cond_d = \beta_0 + \beta_1 CapitalElectionOutcome_{abl} + \lambda' covar_d + \varepsilon_d \quad (9),$$

Where the elections outcomes variables and co-variates are the same as above. Model 9 will inform me about the controlled estimated impact of the six different capital elections outcomes between 2009 and 2022 on the building age and condition measured in December 2022. This compels my theory of action that capital measure elections largely drive the improvement of school buildings and tests my hypothesis that as school building age and condition improves when capital measures are passed.

Research Question 7

In the last section of analysis, I look at the allocation of the SCAP grant program within and across districts in the state. To address the research question, I first conduct a descriptive, summary analysis of SCAP awards from 1995-2022 looking at trends in the number of school districts receiving SCAP each year, CPI-adjusted total annual award amount and local revenues, and the types of projects funded. I collapse the panel data by mean per-pupil SCAP funding to

observe average funding and total number of projects by poverty quintile. I then run the following regression model (10) to assess the estimated impact of average district student poverty rate on SCAP outcomes.

$$SCAPReceipt, Accessed, PerPupil\ SCAP_d = \beta_0 + \beta_1 StudentPoverty_d + \lambda' covar_d + \varepsilon_d \quad (10),$$

Where *StudentPoverty* is an average measure of student participation in FRL since 1995, *SCAPReceipt* is whether a district ever received a SCAP grant, *Accessed* is the number of years a district was awarded a SCAP grant since 1995, and *PerPupilSCAP* is an inflation-adjusted average of all SCAP funding a district ever received, including those districts who never received a SCAP grant. I use co-variates ($\lambda' covar_d$) of small enrollment, urbanicity, the number of buildings, building total square feet, as controls. The error term ε_d is measured at the district level. This model will provide an assessment of the relationship of district student poverty levels in the receipt and amount awarded from SCAP over last 20-plus years. It will test my hypothesis that receiving SCAP is not associated with district student poverty levels, while the amount of per-pupil SCAP is positively related to student poverty.

Research Question 8

My final research question uses SCAP receipt and average per-pupil awards as an independent variable to predict per-pupil capital expenditures, state revenues, and building age and condition, similar to the approach in Research Question 6. In the regression model (11) below I look at how receiving SCAP and SCAP award amount affects district per-pupil capital resources.

$$PPCapExp, StateRev_d = \beta_0 + \beta_1 SCAPReceipt, Access, PerPupil\ SCAP_d + \lambda' covar_d + \varepsilon_d$$

(11),

Where the independent variable related to SCAP are the same measures as the dependent variables in Research Question 7. The co-variates ($\lambda' covar_d$) of small enrollment and urbanicity are used and error term ε_d is measured at the district level. This model will isolate the estimated impact of SCAP on capital resource utilization across several years of data and will address my theory of action that this state program is effective in stimulating school capital finance investment. This will address my hypothesis that receiving SCAP, and the amount of per-pupil aid will lead to greater school district capital expenditures.

Lastly, I look at the impact SCAP outcomes on present building age and condition as measured in ICOS. I use the following regression model (12) to examine this question.

$$Building\ Age, Cond_d = \beta_0 + \beta_1 SCAP\ Receipt, Access, PerPupil\ SCAP_{\ d} + \lambda' covar_d + \varepsilon_d$$

(12),

Where the district building age, condition, and SCAP measures are all the same as previous analysis. I use a vector of district controls ($\lambda' covar_d$) for this analysis including small enrollment, urbanicity, the number of buildings, and building total square feet with the error term ε_d measured at the district level. I isolate the estimated impact of SCAP on district average building age and condition in this model which addresses the second part of my theory of action for this causal research question, that SCAP serves as a primary vehicle for the state to improve school building age and condition. This is directly related to the hypothesis that I am testing in this model, that receiving SCAP and increased per-pupil average SCAP awards will lead to better school building age and condition.

Methods Limitations

In all these regressions, it is possible that there is omitted variable bias given that the factors contributing to my key outcome variables of building age and condition, capital elections outcomes, and SCAP award and amount are nuanced. In the case of building age and condition, there could be other minor factors at play that explain variation beyond my independent variable and co-variates selection, for example weather conditions, quality of construction, specific use cases, historical continuity, and building upkeep. Per-pupil capital expenditures and state revenues are another variable to highlight for possible omitted variable bias. It could be the case that a district spends more or less on capital due to local economic factors, increased or decreased wear-and-tear on a building, or specific intensive resource needs not accounted for in my models. In the case of elections outcomes, there could be variation explained by factors I didn't measure and can't be explained by community poverty levels, such as political orientation, debt limitation, or other political environments. Lastly, the SCAP award and amounts could have been affected by a factor such as enrollment eligibility requirements for districts to participate in the program. Without something like a randomized control trial of distributed capital resources and building quality, it would be hard to avoid such possible biases.[27] I do believe, however, that my models capture the most apparent sources of co-variation on the dependent variable and think them sound enough to infer estimated impact of the independent variable.

[27] This approach would also certainly raise ethical considerations.

Findings

Research Question 3

Table 5 shows descriptive findings related to public school buildings in Washington. There are a total of 1,984 physical school sites across 295 school districts in Washington, though the total number of school district owned buildings in Washington is 4,441. Elementary schools are the largest category of Washington school buildings (52%), followed by high schools (25%), middle/junior high schools (16%), then all other types of property and school types (7%). The average district has 23 schools, with the minimum being 1 school, and the maximum 104 schools. The typical school is in a district with 12,581 students, with a minimum of 6 and a maximum of 51,474. The average school enrollment is 447, with a minimum of 1 and maximum of 3,155. These sites, while primarily classified in ICOS as a school, can host multiple buildings, structures, and/or components including covered play areas, auditoriums, gymnasiums, or administrative units. The average school has 2 buildings listed in ICOS, with a minimum of 1 and maximum of 19, though many schools, 970 of the 1,984 (49 percent), have only one building. The average district manages 48 buildings.

School sites with more buildings are more likely to have larger square footage than those with fewer buildings. The average square footage of a school site is 77,036, the minimum being 1,200 and maximum 510,703. Square footage increases with the number of students that attend the school across all schools. There are significantly more rural schools (1,528) than urban school buildings (406), though the definition of these terms is used in a specific way in the ICOS data that may not align with other density measures.

The average age of a school building in Washington is 31 years old, meaning it was last built or majorly modified in 1992. The oldest school building in operation was built in 1904, and the newest was constructed in 2022. About half of buildings are under 30 years old, 24 percent of schools are older than 40 years old, and 10 percent are older than 60 years old, built in 1963 or earlier without major repair (see Figure 4). The average condition of the building(s) on a school site is 78 out of 100. There is no meaningful difference in age and quality between rural and urban school sites. The average age of a school district's inventory of buildings is 28 years old, or last built/majorly modified in 1994, the average districtwide building condition score is 79. There is a strong pairwise correlation ($p<0.001$) between building age and condition on both the school and district level, implying that newer buildings are of better condition. There is also a positive relationship between site size (square feet) and building age, as well as size and building quality ($p<0.001$). This implies that newer buildings are likely to be larger and larger buildings are likely to be of higher assessed quality. Additionally, as the number of students in a school increase, the condition score improves and the age of the school is likely to be newer ($p<0.001$), however; as the square foot *per student* increases, the condition of the building is likely to be poorer and the age older ($p<0.01$).

I now look at the relationship between student poverty rates and the age and condition of the school buildings students attend. In the 2022-23 school year, approximately 49 percent of students were classified as low-income in Washington at the school-level. Table 6 shows the average student demographic rates by building age and condition classes. Average enrollment rates of low-income, Hispanic, and special education students are higher in buildings that are older and in worse condition than the statewide averages. I utilize regression model 4 to produce the results found in Table 7. When looking at the correlation between student poverty rates

across all schools I find that there is a significant negative relationship ($p<0.001$) between percentage of low-income students at a school and that school's building condition (-7.12) and age (-8.76). This implies that for each 10 percentage point increase in the percent of low-income students, the average age of buildings they attend is older and the average condition score is lower. The same significant negative relationship ($p<0.001$) is found when looking across school district building condition (-11.99) and age (-14.9). With even higher coefficients than the school-level analysis, this could imply that the aggregate differences of building age and quality across districts show an even stronger pattern than just that of comparing schools. The same relationship does not hold true when looking across educational service districts (ESDs), but the coefficients are still negative. This could be due to the small sample size of ESDs ($n=10$).

I then use model 4 to look at variation between school building age and quality within districts and schools amongst educational service districts and schools within school districts, as it relates to student poverty levels. I do this by employing a fixed effects model on both ESDs and school districts, which tells me if student poverty at the school level is a predictor of school building age and condition within those organizational units. Amongst schools within a district, there is not a significant relationship between the level of poverty at a school and that school building's age and condition, however the coefficient is negative. This implies that there are not statistically significant "sorting" patterns appearing within districts and we cannot say with certainty that within a school district, schools with higher percentages of low-income students are likely to be buildings that are older and of poorer quality. However, when looking amongst districts and schools within an ESD, a statistically significant, negative relationship ($p<0.001$) between student poverty and building condition (-4.32) and age (-7.88) returns. This means that within an ESD, higher poverty students are more likely to be at older, lower condition schools.

These findings support my hypothesis, H3, that as the percentage of low-income students increases, the school building age and quality decrease, and thus I can reject the null hypothesis. This phenomenon holds when comparing school-to-school and district-to-district, and within ESDs, but does not come to fruition when looking across ESDs and within schools of the same district.

Research Question 4

Next, I examine average district-level revenues and spending on capital construction in Washington from 1995-2018, adjusted for inflation. Table 8 shows findings related to this analysis. I find that the average per-pupil expenditure on capital outlay[28] across all districts during this time is $1,171. However, when disaggregating spending by school district student poverty levels, I find that the highest poverty districts in Washington spend less on capital than their lower poverty peers ($1,515 v. $954 per-pupil). Additionally, when looking at the revenue side of the equation, I find that the average state revenue for school district capital construction (not generated by local revenue sources) is $197 per-pupil. There is more variation in the averages of the same poverty quintiles, but the trend is upward sloping, meaning that higher poverty schools receive on average more state aid for capital per-pupil, however; average annual per-pupil capital expenditures consistently outpace the amount of state revenues for capital (see Figure 5). For districts that receive state revenue, in the lowest poverty quintile average state revenues make up approximately 13 percent of average capital expenditures, while in the highest poverty quintile they are 46 percent. However, the overall percentage of districts receiving state revenue has been low since 1995, 27 percent, but drops by 2018 to 13 percent (Figure 6). Lastly,

[28] This includes construction, land and existing structures expenditures.

I find that districts that receive any state revenue spent significantly more on capital than those who receive none, though the lowest poverty districts without state revenue spend closer to their state revenue receiving peers than do the highest poverty districts (Figure 7).

I then look at the student poverty impacts on per-pupil capital expenditures and state revenues for capital. I use regression model 5 for this analysis. In Table 9 I find that as student poverty rates increases, per-pupil capital expenditures decrease by a coefficient of -2071.34 ($p<0.001$). Per-pupil state capital revenue increases by a coefficient of 512.19 when student poverty increases ($p<0.001$). This implies that school districts with higher levels of poverty spend less on capital, but that they receive more than lower poverty districts in state revenue for capital. However, as observed in Figure 4, the magnitude of the dollar values is different in each category with state revenue being much lower amounts than capital expenditures.

Lastly, I examine the impact of capital expenditures and state capital revenues on building condition and age outcomes via regression model 6. Table 10 shows results from this model. I find that as the average per-pupil capital expenditures increase, the building condition and age also improves ($p<0.001$). Additionally, as average per-pupil state revenue for capital increase, building condition and age also increase ($p<0.001$).

These findings allow me to reject the null hypothesis of H4 and corroborate that as student poverty rates increase, capital expenditures decrease, yet state capital revenues increase. The magnitude of difference between per-pupil capital expenditures and state capital revenues especially amongst the highest poverty school districts highlights that even with increased revenues, there is a gap between non-local capital revenues and needed capital expenditures. This supports the second part of my H4 hypothesis, that both increased per-pupil capital expenditures and state revenues positively impact school building age and condition. It is clear from this

analysis that money matters in maintaining quality school facilities, and that the state is not doing enough to make up for differential access to capital expenditures.

Research Question 5

To address this research question, I examine elections data for school construction bond and capital levy data from 2009-22. Results are presented in Table 11. There have been a total of 359 school construction bonds attempted during this period, and 46 percent (164) of those measures passed. Bonds need a 60 percent supermajority to pass. 44 percent of school districts passed a bond since 2009. The total value of these bonds (inflation-adjusted) is approximately $21.5 billion. The number of district construction bonds proposed annually and passed since 2009 is volatile, but the cumulative value of passing bonds has generally increased (Figure 7). The COVID-19 pandemic affected school districts' decisions to issue bonds for construction projects which is seen in both the depression of bonds introduced in 2021 (0) and the high failure rate in 2022.

Additionally, 270 capital levy measures which can fund ongoing or one-time construction work and provide matching funds for SCAP, were proposed from 2009-2022. Capital levies need a simple majority to pass. These measures show a higher passage rate than bonds at 88 percent (237), though the total passed value is much lower than that of bonds, at $1.3 billion (Figure 8). 45 percent of districts passed a capital levy during this period with many districts renewing capital levies every few years. Overall, I find that during this period, 629 bond and capital levy measures were introduced with 66 percent of introduced measures passing.

In looking at the relationship between community poverty rates and capital measure outcomes I find that districts in the lower poverty quintiles pass and introduce more capital

measures. Table 12 shows descriptive findings of elections outcomes across poverty quintiles. For example, the first poverty quintile (lowest poverty) introduced 78 and passed 45 bond measures (58% passage) from 2009-2022, compared to the fifth quintile (highest community poverty levels) which introduced 56 and passed 25 bonds (45% passage). The value of passed bonds per bond is two times higher in the lowest poverty quintile than in the highest (Figure 9). I find a similar trend with capital levies in that higher poverty districts introduce fewer capital levy measures and that those that do are less likely to pass. The difference in value is even more extreme in capital levies with the lowest quintile approving levy values over ten times those of the highest quintile, per levy. In looking at districts that have ever passed any capital measure, 75 percent of the two lowest poverty district quintiles have passed capital funding, while 58 percent of the two highest poverty district quintiles have passed any capital measures since 2009.

Finally, I use regression model 7 to generate findings presented in Table 13, assessing the impact of community poverty rates on capital measure outcomes. I find that as average rates of community poverty go up, the likelihood of ever attempting a capital measure, regardless of outcome, goes down by a coefficient of -1.36 ($p<0.001$). Additionally, there is a similar negative, significant relationship between average community poverty levels in a school district and ever passing a capital measure with a coefficient of -1.49 ($p<0.001$). This implies that with any capital measure (bond or capital levy), if there are higher levels of poverty in that district, a measure is neither likely to have ever been attempted, nor passed. I then break down my analysis to examine the impact on bond and capital levy measures separately. I find that there is still a negative, significant relationship between community poverty and bond attempt (-0.78) and passage (-0.99), but the correlation is not as strong ($p<0.05$). However, with capital levies a strong,

negative correlation returns with attempting (-1.40, $p<0.001$) and passing a measure (-1.32, $p<0.01$).

With these findings I can reject the null hypothesis and say that as community poverty rate increases, capital measure attempt and passage fall (H5). Furthermore, this analysis shows that while this is true for both the outcome of bond and capital levy measures, attempting and passing a bond was a weaker relationship than that of capital levies. This could be attributed to the small bond pass sample size. In my descriptive analysis I found that more bonds have been introduced than capital levies, but their average pass rate is almost half that of capital levies. Additionally, the dollar amount of bonds is significantly greater than capital levies. These findings have implications for understanding what type of school districts access capital measures that drive their local share of capital-supporting revenue.

Research Question 6

I now look at how the outcomes of a capital measure election affect capital resource and building quality. Table 14 shows results related to regression model 8, which describes the relationship between capital elections outcomes and average per-pupil capital expenditures and state revenues. Like the regression analysis in Research Question 5, I look at the outcomes from attempting and passing any capital measure, and then by bond and capital levy separately. First, I find that there is no statistically significant relationship between ever attempting any capital measure, bond, or capital levy on average per-pupil capital expenditures, but the coefficients are positive. Passing a capital measure also results in no significance, but a positive coefficient. When I break it done by capital measure type, however, the results diverge. Ever passing a bond is positively correlated by a coefficient of 271.21 ($p<0.001$) but passing a capital levy is not statistically significant. This implies that bonds are much more effective in driving up capital

expenditures than capital levies. This could be due to the sheer funding magnitude of bonds compared to capital levies as described in Research Question 5. When looking at the impact of capital measure elections on state revenues I find that attempting any capital measure is not significantly related to state revenues for capital, but the coefficient is negative. Attempting a bond is also not significant, but the coefficient is positive. However, when looking at ever attempting a capital levy, there is a negative, significant relationship (-102.80, $p<0.001$). In ever passing any capital measure, there is no statistical relationship, however, passing a bond is associated with a positive, significant coefficient of 85.34 ($p<0.001$) and passing a capital levy a negative, significant coefficient of -119.34 ($p<0.001$). These dynamics are likely to track with the implementation of the SCAP program which largely awards state revenue based on bond-funded projects and not ongoing capital levies in most cases.

The second part of this research question seeks to understand how election outcomes affect district building age and condition. Regressions from model 9 are reported in Table 15. My findings indicate that there is no statistically significant relationship with ever attempting and passing any capital measure with building age and condition. Further, there is no statistically significant relationship between ever attempting and passing any capital levy with building age and condition. When looking at bonds, while there is no significant relationship with building age and condition and attempting a bond, when a district passes a bond, the average age of buildings in the district are predicted to go up be a coefficient of 4.70 ($p<0.05$) and the average condition of buildings increases by a predicted coefficient of 2.49 ($p<0.1$). This suggests that passing a bond seems to be the most effective way for a school district to improve the age and condition of their buildings.

My findings in the regression analysis of capital elections outcomes as an independent variable to district capital resource and school building quality do not support a complete rejection of my hypothesis (H6) that capital resources will increase when a capital measure passes, thus improving building age and condition. While this certainly holds true for bonds, the same cannot be said for capital levies, thus depressing the overall impact of capital measure outcomes on these factors when considering both classes of measures. This could be due to the differences in funding scope that bonds and capital levies are likely to bring and the close relationship that bonds have with SCAP eligibility and program participation. These findings do, in some ways, continue to support my theory of action for this section: when bonds pass (not all capital measures), more resources are channeled to districts which directly improves school building age and condition.

Research Question 7

In the last section of analysis, I look at the landscape and impact of the Washington SCAP program. Table 16 shows findings related to this research question. I find that while total SCAP funding has generally increased since 1995, the number of SCAP projects funded has declined in the same period (Figure 10). Additionally, the amount of total school construction project funding (including local and state revenue) has increased at a steeper rate since 1995 than just the total SCAP funding (Figure 11). This implies that school districts are footing more of their school construction projects through local revenues (bonds and capital levies) now than they were 25 years ago. The percentage of school districts annually served by SCAP has remained relatively constant, with a low of 5 percent in 2012 and 2013, and a high of 16 percent in 1999. There are three different types of construction projects that can be funded by SCAP: major building modifications, new school construction, and new-in-lieu building projects. Since 1995,

the share of new-in-lieu projects has increased while major modification projects have tapered down. Purely new school construction has held steady (Figure 12). This could be due to increased cost efficiency in construction and environmental and health abatement costs by tearing down and replacing a building as opposed to simply modifying an existing building. 72 percent of school districts (221) have ever received a SCAP grant since 1995, and the inflation-adjusted average per-pupil SCAP allocation is $5,188 for those who receive it. Of those districts that accessed SCAP, a third only accessed the program once, but one district accessed the program 17 different years.

I now look at the relationship between student poverty levels, ever receiving SCAP, times accessing SCAP, and average per-pupil SCAP funding levels across school districts. I use model 10 to produce the regression findings in Table 17. I find that there is no statistically significant relationship between student poverty rates and ever receiving SCAP, but the coefficient is negative, implying that school districts with higher rates of poverty are predicted to be less likely to access the program. These findings are further modeled by poverty quintile in Figure 13. The insignificance of this result could also be due to the high rate of districts who have ever received a grant since 1995 (72 percent). I do find that there is a negative correlation between average student poverty rates and the number of years in the panel a district has accessed SCAP ($p<0.1$). This implies that those districts that have accessed the program are likely to have been districts with lower student poverty rates. Lastly, I find that there is a positive, statistically significant relationship between student poverty and average per-pupil SCAP awards ($p<0.001$). This aligns with my findings around the design of the SCAP program, which provides a progressive allocation to higher poverty districts (funding assistance percentage).

These findings are not statistically clear enough to reject my null hypothesis (H7) that receiving SCAP is negatively associated with district student poverty levels, though there is a negative bent to the coefficient outcome. However, I can reject the null that higher poverty districts have not accessed SCAP as frequently as lower poverty districts and that the amount of per-pupil SCAP is positively related to student poverty due to program design.

Research Question 8

Finally, I examine the estimated impact of SCAP receipt, times accessing SCAP, and per-pupil SCAP awards on the outcomes of capital expenditures and state revenues for capital and building age and condition. Table 18 shows regression results from model 11. I find that there is a statistically significant, positive relationship between school districts that receive SCAP and both average per-pupil capital expenditures and per-pupil state capital revenues ($p<0.001$). This makes sense because receiving SCAP should both induce an increase of capital revenues and expenditures for a school district. Additionally, when looking at the relationship between the number of times a school district accessed SCAP and average per-pupil capital expenditures and state capital revenues, there is a statistically significant positive relationship for both ($p<0.001$). This implies that the more times a school district accessed SCAP since 1995 the higher their average per-pupil capital expenditures and state capital revenues. When looking at the relationship between average SCAP per-pupil award amounts and per-pupil capital expenditures I find no statistically significant correlation, though the coefficient is positive. This implies that as award amounts increase, there is not a meaningful change in capital expenditure within a district. However, an increase in average SCAP per-pupil award amounts is positively correlated with an increase of per-pupil state capital revenues ($p<0.5$). This makes sense because the SCAP is a driving factor of state revenue for capital construction in Washington.

I use model 12 to run a regression analysis presented in Table 19. I find that receiving SCAP is highly correlated with improved average school district building age and condition ($p<0.001$). Additionally, accessing SCAP a greater number of times in the last 27 years is significantly correlated with improved district building age and condition ($p<0.001$). Lastly, when examining the impact of award amounts on building quality, I find that larger per-pupil awards do not have a statistically significant impact on the age and condition of a district's school buildings.

These findings regarding the capital resource and building quality factors affected by SCAP compel me to partially reject the null hypothesis (H8). I find that receiving SCAP and an increased number of years accessing SCAP from 1995-2021 leads to greater school district capital expenditures and better building age and condition. However, the per-pupil SCAP award amount does not correlate with either district capital resources or building quality. The findings do support part of my theory of action in that participation and repeated participation in SCAP leads to improved resource and building quality outcomes for school districts, though receipt and not award size seems to be a driving factor in this trend.

Discussion

My findings are both affirmative of existing notions of school finance inequity and highlight compelling policy pinch points in the Washington school capital finance system as described in Chapter 2 of this thesis. Poorer kids may go to older, more run-down schools, but unpacking why that is the case and how to address it necessitates a deeper reflection of which entity, the state or the school district, holds the fiscal responsibility to maintain certain levels of school building quality for the prosperity of all Washington students.

In section one, I find that there is variation in the age and condition of school buildings in Washington, as well as how many buildings schools and school districts maintain across the state. Washington's schools are aging rapidly. The average age of a school in Washington is 31 years old, which according to Ornstein (1994) is when frequent repairs turn into the need for major renovations. 24 percent of schools are older than 40 years old, which is when buildings begin rapid deterioration, and 10 percent are older than 60 years old (built in 1963 or earlier without major repair), which in most cases would deem a building nearly uninhabitable. Building condition closely follows the age of the school. Understanding the relationship between student poverty levels and average building age and condition is a critical element to assessing the distribution of "learning ready facilities" as it relates to my conceptual framework of educational resource equity (Figure 2). In leveraging state administrative data on school building quality, I found that there is indeed a negative relationship between student poverty and building age and condition; lower income kids attend worse quality school buildings. This was true looking across schools and districts, but not within districts, implying that school districts are not engaging in inequitable patterns of student placement in schools of varying quality within the district per se, but that districts themselves are generally of greater or worse building quality depending on their overall student poverty rates. In positing that the major contributor to this trend was a depressed amount of capital expenditures in districts with higher levels of student poverty, I found that indeed these two variables are negatively correlated and that lower capital expenditures may lead to lower quality, older buildings remaining in service. State revenue is generally progressive, but it is not enough to offset differences in capital expenditures between high and low-poverty schools. In sum, poor building quality persists in low-income Washington school districts

because of regressive patterns of capital expenditures which have not been fully addressed by the state.

I then turn to what factors may be driving the local share of capital expenditures, capital measures elections, in section 2. I find that since 2009 less than half of school districts have attempted a bond measure on the ballot and fewer than half of those passed. Approximately the same number of districts attempted a capital levy, though the passage rate was double that of bonds. However, bonds brought in about 20 times the amount of money compared to a capital levy. Overall, districts with higher levels of community poverty were both less likely to attempt and less likely to pass any capital measure. This is an especially pressing factor driving inequity in capital resources and building quality outcomes where I find that passing a bond is the only significant way to improve capital expenditures, state revenue, building age, and condition. This finding also highlights the role that capital levies lack in both driving capital expenditures and improving building age and condition. This could in part be due to the fact that capital levies often finance smaller improvements and non-building capital items (like technology or equipment).

Finally, in section 3 I look at the factors affecting the state share of capital revenue, namely the allocation of the SCAP program. I find that about three-fourths of school districts have accessed SCAP since 1995, though only a third of those districts have only ever accessed it once. I did not find a statistically significant relationship between average district student poverty levels and ever accessing SCAP, though the coefficient was negative. This could be due to the large sample of districts who have accessed it since 1995, however, I did find that accessing SCAP multiple times is correlated with lower-poverty school districts. This implies that those who have benefited the most from the program through repetitive access are those with wealthier

populations of students. These are consequently the same districts that my earlier analysis finds spend more on capital and have improved building quality due to the increased likelihood of passing school construction bonds, then matched by SCAP. My analysis affirms that the SCAP itself does run a progressive funding scheme where lower-income districts receive more per-pupil funding, and that accessing SCAP an increased number of times drives up per-pupil capital expenditures, state revenue for capital, building age, and condition score. There was not a significant relationship between per-pupil SCAP awards and district capital resource measures and building quality. This could be because the variation of award amounts is almost wholly attributed to poverty rate and the variation with poverty as a control is minimal, or as an indicator that the SCAP award amounts correspond to equal levels of age and condition enhancement across all those who receive SCAP, thus receiving SCAP is a much stronger factor in building improvement than the actual amount of SCAP received.

Together, these findings paint a picture of issues that perpetuate systemic resource inequities in Washington's school capital landscape, money and access to it. There is differential access to both local and state revenue for capital in Washington, and thus variation in the quality of our public school buildings. Local revenue access is highly driven by elections outcomes which skew to favor wealthier districts who can afford increased property taxation rates of the construction bonds that directly improve their school buildings. State revenue via the SCAP is also a limited access endeavor by design. While higher-poverty districts who do pass bonds win a greater allocation of SCAP funds via the funding assistance percentage calculation, those who have accessed and repeatedly accessed the program tend to be those districts with lower student poverty rates. The system of restricted and regressive-leaning access to the state's major capital progressive aid program presents challenging notions of fairness in school capital finance policy.

Policy Implications

Washington policymakers should use these findings to advance policy changes to the state's school capital finance system. As described in Chapter 2, there are multiple pathways for change including a full overhaul of the system or smaller adjustments to existing programs and policies. My analysis indicates that doing nothing will likely perpetuate resource inequity in Washington public schools. Improvement of school building quality is limited by access to financial resources, and those financial resources are gated by both the local revenue election system and the state's primary matching aid program, SCAP. While state revenue allocation for school capital is progressively oriented, it is likely not enough to make up for systemic spending gaps that perpetuate real differences in school building quality by poverty rate. Policymakers should consider whether the state has an obligation to assure either a certain level of building quality or capital funding for school districts and if so, how the continuation of a match-based aid program could meet that mission.

A recent Washington Supreme Court decision, Wahkiakum v. State (2023), creates additional momentum for policy change. The court found that the state constitutional definition of a "paramount duty" to fund education does not extend to school capital construction. Therefore, the state is not 100 percent responsible for financing capital related to the provision of basic education under article IX, section 1 of the constitution. However, in a concurring opinion the Supreme Court encourages an examination of whether the use of the common school construction fund established by article IX, section 3 of the constitution provides an obligation for the state to provide funding in a certain way, that is, in a way that might intentionally benefit school districts for which local funding is out of reach. This implies that there may be a legal argument on whether the present-day SCAP program, which draws from the common school

construction fund, is meeting its constitutional mandate to assist in school construction for public schools in Washington. The concurring opinion highlights how the matching grant design of the SCAP program creates access barriers to high-poverty, rural districts for which passing a bond is financially out of reach.

> The way SCAP is structured seems to be the exact opposite of what the construction fund was created to provide. The existing program does not help the districts that need it the most because they cannot pass the necessary bond. The State should not selectively deny funds for high quality education environments based on the district's lack of local monetary support. (Johnson concurring, p. 4.)

The consequences of this selective denial are evident in my analysis. Districts that have not received SCAP have worse buildings than those who do. Those who have repeatedly accessed the program (who are also districts with lower poverty rates) are made even better off. State revenue does not make up for the difference in locally driven capital expenditures by poverty rate.

Finally, I want to highlight the need for improved school capital finance data in Washington and across the United States. The ICOS system is an incredible tool for district leaders, state policymakers, and researchers. From my understanding, Washington is one of the only states that maintains such a comprehensive online inventory of school buildings, yet I have not seen evidence that this data is facilitating agency-led evaluations of the state school capital finance systems that examine the outcome variable of building quality. Without knowing how investments and state policy are systemically affecting this outcome, answers around achieving resource equity outcomes become clouded. Additionally, the maintenance of data systems such as ICOS are equally as important to their existence. In a dynamic world of legislative funding

cycles, bond and capital levy elections, and on-going major school building repairs and renovations, building condition score and age is constantly shifting. It makes sense that district facilities staff should be responsible for the upkeep of this data, however, the accuracy of the data should not be barricaded by limited and intermittent district incentives for data upkeep. In Washington, updating ICOS data is a key step in the application for a SCAP grant via the "D-forms" process. If a district does not intend to access SCAP or has completed a singular building upgrade, there are limited policy motives to regularly update their data in ICOS. For example, three small districts in this study had no condition score information in ICOS though there presumably should have been one provided. Policymakers should consider ways, such as regular audits and other incentivization, to improve the abundance and reliability of ICOS data. Additionally, the F-33 survey lacks a variable that would have been useful to my analysis, local revenue for capital. While districts are required to report state revenue for capital outlays, the lack of the local capital revenue variable causes the researcher to infer that the difference between average state revenue for capital and capital expenditures is local capital revenue, given that federal capital revenue is such a small share (<1 percent). While this conclusion may be accurate enough to use as a proxy in my analysis, clarity within the F-33 survey would be superior.

Directions for Future Research

Future research should continue to build upon the outcome evaluation techniques used in my study to pinpoint the financial, electoral, and policy effects on school building quality. In my review of the literature related to school capital finance, this may have been the first study that directly assesses school building age and condition as an outcome of school capital resources and other measures. It was also one of the first to expand a conceptual framework that is inclusive of

capital spending as a direct pillar of achieving school resource equity. I believe utilizing this framework and the equity investment typology was helpful in conceptualizing capital finance outcomes within the context of larger policy environments, enabling a direct connection of my quantitative analysis to the implications for Washington policymakers. School finance researchers should both continue to include capital funding in their definitions of broader school finance conditions and apply this framework more frequently to analyses of topics related to policy levers. Additionally, if school building data is available in other states, parallel analyses should be conducted to gauge if there are similar poverty-driven gaps across school and school district building age and condition, and if local and state revenue dynamics contribute or detract from capital resource equity. These lines of inquiry could enhance studies such as Duncombe and Wang (2009), Brunner et al. (2021), and Arsen & Davis (2006) which primarily look at the relationships between capital spending and district student poverty and race demographics.

In Washington, further research on the implementation of school capital finance policy could assist the state in enhancing equity within its school funding system. For example, my analysis did not look at other smaller capital grant programs such as the Small/Rural School Modernization grant and how they might impact capital expenditure and building quality outcomes. While this program is cited as one to target districts ineligible for SCAP, is the policy design effective as a SCAP alternative? Furthermore, are there districts who regularly are both ineligible for the Small/Rural grant and SCAP? These questions could aid Washington policymakers in improving policy design and overall school capital funding levels.

Lastly, future research should explore my finding that the passage of school district capital levies does not generate a statistically significant amount of additional capital expenditures, nor an improvement of building age or condition. While I found that the raw dollar

value of capital levies are less than bonds, they are more commonly passed by districts. Considering this, one might think that they have some positive effect on school building quality. After all, capital levy campaigns often mention the improvement of facilities as a primary function of the levy. If a capital levy does not contribute to this goal, and in fact may be related to lower building condition in school districts (Table 14 shows a negative coefficient from ever passing a capital levy on building condition), then how are capital levy revenues being used by school districts?

Conclusion

Students deserve to be in modern, high-quality school buildings which research shows increases their opportunity for learning, community, and academic success. Building and maintaining facilities like this takes significant financial investment and prior literature has proved that these investments often fall along problematic paradigms of student wealth and race. This thesis deploys a resource equity framework to understand how Washington school capital finance policy is constructed and how it addresses equity within its programs. I find that Washington's primary matching capital aid program, the School Construction Assistance Program and larger taxation and public debt policy creates conflicting policy objectives regarding resource equity between high and low poverty districts. On the one hand, SCAP is designed to progressively allocate more funding to school districts with higher rates of poverty, but on the other hand local revenue requirements of the program systemically keep many districts out. Through a wide-reaching quantitative analysis, I examine the extent of this phenomenon and find that poorer school districts do not receive enough state revenue to make up a difference in capital expenditures that enable richer school districts to maintain an inventory of newer and better condition buildings. This is in large part due to trends in capital elections

outcomes, where high-poverty school districts are both less likely to attempt and pass capital measures that provide direct local revenue to capital outlay. State revenue is driven by the SCAP, and while I affirm that there is a progressive allocation of funds within the program, receipt and the number of times a district accesses SCAP lean regressive.

The bottom line is this: Washington state policy is not doing enough to ensure equitable access to high-quality school buildings for all students across the state. The root causes of this are found in the heavy reliance on local revenue to fund capital construction, the inequitable access to that type of revenue, and the limited nature of state support through the SCAP. Justice Johnson highlights this conclusion in the *Wahkiakum v. State* (2023) concurring opinion encouraging that if there is a question of equity in the school capital program, then "the district should make that argument." This research helps to make and build the argument that Washington's school capital finance system is not fair.

Epilogue

It's a foggy September morning as drop-off begins for the first day of the 2023-24 school year at Sacajawea Middle School in Spokane. Although siblings, parents, and grandparents have attended the school since its opening in 1960, middle schoolers anxiously make their way through the front doors of their newly reconstructed school building. Students at Sacajawea, who are 71 percent white and 40 percent low income, will soon forget the falling ceiling tiles, cramped science corridors, small windows and aging technology systems of the old building. The ICOS condition score of the old Sacajawea in December 2022 was 71 points, 7 points below the statewide average.

The complete replacement of Sacajawea was part of a $495 million bond Spokane School District passed in 2018 which provided enough funding to build three new middle schools; replace three existing middle schools, including Sacajawea; replace an aging, oversized stadium with a smaller multi-use stadium; provide safety, security, and technology updates for the entire school district; and make building, field, and playground improvements across all schools. The bond passed with 69 percent of voters supporting the measure. Administrators' strategy relied upon the levy swap "reductions" to the district millage rate to justify such a sizable bond in 2018. The strategy paid off. With a 69.23 funding assistance percentage, the bond generated an additional $57.9 million in revenue from the state SCAP program. Of the $78.1 million project cost for the Sacajawea replacement, $20.7 million came from the state, 26.5 percent of total project costs.

Last year, as the new middle school went up next to the old one, which is now set to be demolished, students shared rumors and dreams about what was to be expected in the new facility. Will it have a balcony overlooking the cafeteria, walls of windows, or learning pods to

foster student community? ‘It feels like a college campus’ said one teacher who participated in a summer preview tour. Things like improved energy efficiency and enhanced safety features are key behind the scenes elements in the new building that make facilities staff and administrators the most excited. As the doors open for an emerging class of 6th- 8th graders, the new Sacajawea will undoubtedly contribute to more effective learning spaces for students, teachers, and the greater south Spokane community. It will be a place kids want to be.

Now, Spokane School District leaders are considering another bond for the ballot in February 2024, slated at $200 million. The proposal is intended to continue the modernization and growth of the district school building inventory, while minimizing the impact to taxpayers. Given the recent increase in assessed property values in the district, leaders believe that passing a new bond is in the realm of the possible, and it may be given the characteristics of the district. And when the bond passes, state SCAP funding will be waiting to assist them with the final mile.

Appendix

TABLE 1

State school capital policy type and funding outcomes from Duncombe and Wang (2009)

Table 4. Inequality Statistics by Type of State Building Aid for Capital Outlays (1998–2002)

	Matching	Lump-sum	Both Matching & Lump-sum	No Aid	Total
Capital spending:					
Average spending	639.41	606.59	603.18	533.70	603.20
Median spending	474.94	472.56	403.54	360.51	427.21
Share of states with aid type by region:					
Northeast	100%	0%	0%	0%	100%
Midwest	25%	8%	17%	50%	100%
South	31%	25%	31%	13%	100%
West	36%	18%	18%	27%	100%
Inequality statistics:					
FRR	8.63	3.77	6.22	9.29	7.77
CV	0.65	0.47	0.70	0.75	0.65
Northeast states excluded					
FRR	5.47	3.77	6.22	9.29	6.06
CV	0.58	0.47	0.70	0.75	0.62
Variance decomposition:					
Within states	80	73	82	81	78
Between states	20	27	18	19	22
Overall	100	100	100	100	100
Number of districts	4973	754	2002	2632	10361
Number of states	21	7	9	11	48

Notes: Capital spending is per pupil and adjusted for CWI and poverty. Inequality statistics and variance decomposition are calculated based on a 5-year average of adjusted expenditures.

TABLE 2

Dimensions of Resource Equity from Travers (2018)

Factors that directly impact the student experience	
Teaching Quality	Research and experience tells us that consistent access to effective teaching has a dramatic effect on student achievement. However, too often districts have difficulty attracting and retaining their best teachers in high-need schools. Any definition of resource equity must ensure that students with greater needs have at least as much access to excellent teaching, if not more.
Empowering, Rigorous Content	Research has shown a relationship between the level of expectations that systems, schools, or teachers set for their students and their students' subsequent levels of achievement. Those expectations play out in richness and rigor of curriculum material, the way instruction is delivered, what assignments students receive and the rigor with which they are graded, and access to advanced course material. Though we typically find much lower rigor in high-need schools, high-performing schools and systems actively manage the level of intellectual rigor that teachers demand of all students.
Instructional Time & Attention	We typically see very little variation in total student instructional hours. Using time well means differentiating instruction to meet students and then accelerating progress to help students with diverse learning needs learn rigorous, grade-level content. In addition, when time is used effectively, adding instructional hours to the school year can be a powerful lever for improving student outcomes.
Early Intervention	Intervening early to keep students on track is much more effective than trying to "catch" students back up once they have fallen behind. This suggests that ensuring access to academic interventions (e.g., early warning systems and Response to Intervention programs designed to quickly identify specific student needs and address them before they become major problems) for all students is critical to ensuring resource equity.
Early Learning	Research on early childhood education suggest that access to high-quality pre-K programs are among the highest impact ways to improve outcomes for students. Providing access to early learning opportunities particularly for students coming from families living in poverty or who have special learning needs is critical to ensure that they can achieve at the same levels as their peers later in life.
Whole Child Approach	Research demonstrates that students need certain social, emotional, and academic development (SEAD) skills and competencies in order to participate in rigorous learning. And, students who arrive at school with unmet health, social, or emotional needs are at greater risk of poor performance. Schools that strategically organize resources focus on proactively supporting SEAD skills and competencies for all students and also integrate more intensive supports for students with greater social, emotional, or health needs. Schools that have higher concentrations of students with more intensive needs will need more resources to provide effective support.

Continued on next page.

Family Academic Engagement	Parent/caregiver interest and involvement in their child's academic work can have profound effects on behavioral and academic outcomes. However, some parents face physical, linguistic, emotional, and cultural barriers that disproportionately impact the parents of students who already face additional challenges at school. School and system leaders can organize and invest to lower these barriers to better engage with parents.
Factors that indirectly impact the student experience	
School Funding	While the relationship between school funding levels and outcomes is complex, recent studies point to a positive correlation between increased resources and the achievement of low-income students over time. But, we know that extra spending does not necessarily lead to accelerated learning because the dollars aren't always used on strategies likely to accelerate learning. Extra dollars only matter when they are used well.
School Leadership Quality	Strong leaders raise the overall effectiveness of their entire teaching staff by organizing to attract, retain, and develop strong teachers and teams. We consistently find that schools with higher needs have less-experienced leaders and fewer effective teachers to play leadership roles.
Diverse & Inclusive Schools	While it may seem odd to suggest that "who" students attend schools with is a "resource," the literature on the "peer effect" on student performance suggests that a student's classmates/schoolmates are an important driver of outcomes. When students have the opportunity to attend a school that enrolls a mix of races and backgrounds, it can promote greater understanding and effectiveness in working with others. Districts and communities can seek to increase school diversity through student assignment and choice or magnet policies, though these practices vary greatly in different communities and contexts.
Learning-Ready Facilities	Capital investments represent a large share of education spending, and inequities can have dramatic impacts on students, including school closings due to lack of heat or dangerous levels of lead in the water supply. However, the research suggests that not all investments in facilities have an equal impact on students. Leaders must weigh investing in new facilities alongside the other dimensions of resource equity to determine which actions will be most impactful for student learning.

TABLE 3

Equity Investment Typology from Rivera (2017)

Table 2: Equity Investment Typology			
	Low	**Moderate**	**High**
State Spending/Aid Policies			
Aid formula/ funding program(s)	Aid formula/funding programs do not consider equity	Aid distributed based on one or two relevant factors	Aid distributed based on comprehensive set of factors, including local ability to pay and facilities need
State share	Less than 25 percent state share	25 percent to 50 percent state share	Greater than 50 percent state share
Adequacy (FY1994-2013 (2014$) annual avg. school-construction capital outlay per 2013 student)	Less than $950 per student	Between $950-$1,200 per student	Greater than $1,200 per student
Technical assistance	State provides little to no technical assistance	State provides some technical assistance for some districts	State provides in depth-technical assistance for all districts
Stability	Revenue sources are inconsistent from year to year	Revenue sources are somewhat stable	Revenue sources are predictable and guaranteed year after year
Taxation Policies (Sources of Funding)			
Tax Caps/Limits	Low tax caps that prevent districts with facilities needs from issuing debt to fund facilities	High tax caps that typically allow districts to issue debt when necessary	Legislature and local districts have unlimited taxation power to fund schools
Diversity of revenue sources	Vast majority of funding comes from one source, such as local property taxes	Funding for facilities comes from two sources	Funding for facilities comes from a variety of sources
Statewide vs. local tax collection	Taxes are collected locally, with little or no redistribution	Taxes are collected both statewide and locally	Taxes for facilities are collected statewide
Public Debt Policies			
Credit enhancements	Districts cannot use state's credit rating		Districts can use state's credit rating
Debt payment assistance programs	State has no programs specifically structured to help districts pay their debt	State has small programs to help school districts pay their debt	State has comprehensive programs to help school districts pay their debt
Debt vs. pay-as-you-go	Heavily reliant on debt	Mix of debt and pay-as-you-go	Heavily reliant on pay-as-you-go system

TABLE 4

Equity Investment Typology Application, Washington and other states

Policy Measure	Outcome/Typology[29]					
State Spending/Aid Policies	**Washington**	**Texas**	**Wyoming**	**New Jersey**	**Massachusetts**	**Ohio**
Aid formula/funding program(s)	***High (2)****:* The SCAP funding formula uses multiple factors including local wealth and enrollment trends to determine a "state funding assistance percentage" ranging from 20-100%.	***Moderate (1)***: aid distributed based on property wealth sliding scale	***High (2)***: aid distributed based on capacity and building condition	***High (2)***: aid distributed based on property wealth and need	***High (2)***: aid distributed based on project need, urgency, and wealth	***Moderate (1)***: aid distributed based on district wealth
State Share[30]	***Moderate (1)****:* Approximately 9% of capital outlay expenditures come from the state, which is just about average.	***Low (0)***: 9 percent state share	***High (2)***: 63 percent state share	***Moderate (1)***: 32 percent state share	***High (2)***: 67 percent state share	***Moderate (1)***: 27 percent state share
Adequacy[31]	***Moderate (1)****:* Washington spent $197 per pupil in	***Moderate (1)***: $1,101	***High (2)***: $1,416	***Moderate (1)***: $1,007	***High (2)***: $1,383	***Moderate (1)***: $1,084

[29] Results from Texas, Wyoming, New Jersey, Massachusetts, and Ohio are from Table 11 of Rivera (2017). State share and adequacy calculations are based on FY1994-2013 averages which are different than the percentile based assessments I make for Washington.

[30] In 2017, the average state share of total capital outlays was around 9 percent. For this analysis, the 75th percentile above this figure will be consider "high", and below the 25th percentile of this figures would be "low".

[31] In 2017, average state revenue for capital outlay per pupil was $251. For this analysis, the 75th percentile above this figure will be consider "high", and below the 25th percentile of this figures would be "low".

	state revenue for capital outlay in 2017. This is in the 39th percentile for the year.					
Technical Assistance	***High (2):*** The state provides assistance to all districts through facilities survey and study grants and assistance in accessing grant program once eligible.	***Low (0)***: no facilities department and very limited assistance	***High (2)***: State provides in depth-technical assistance	***Moderate (1)***: State provides in depth technical assistance for high-need districts	***High (2)***: State provides in depth technical assistance	***High (2)***: State provides in depth technical assistance
Stability	***High (2)***: State consistently allocates funding from capital budget to program.	***Low (0)***: IFA program is not consistently funded by the Legislature	***Moderate (1)***: Coal lease bonuses were previously stable, but state is now looking for new funding	***Moderate (1)***: The state has run out of funding in the past, though it has always allocated more	***High (2)***: State consistently allocates portion of sales tax	***High (2)***: State consistently allocates funding to educational facilities
Sub-Total	**8** (out of 10 possible points)	**2**	**9**	**6**	**10**	**7**
Taxation Policies (Sources of Funding)						
Tax Caps/Limits	***Low (0)***: Bonds must be passed by a 60 percent voting margin in order to be issued by a	***Moderate (1)***: $0.50 per $100 of property value	***High (2)***: Legislature has unlimited taxation power to fund schools	***Moderate (1)***: Regular operating school districts have tax caps, but	***Moderate (1)***: MSBA has a debt limit of $10 billion. Local communities can issue up to 5 percent of	***Moderate (1)***: Ohio has the authority to issue bonds equal to 5 percent of

	school district and total debt limit is 5 percent. However, there is no cap on capital projects levies.			can tap into municipal valuation if necessary	their equalized assessed valuation.	the total revenue fund. The debt limit is on unvoted debt only; no limit on voter approved debt
Diversity of revenue sources	***Moderate (1)****:* The vast majority of funding comes from state funds and property tax, with some smaller supporting revenue sources.	***Low (0)***: Vast majority of funding comes from local property taxes (91 percent) with only 9 percent from state general revenues	***Moderate (1)***: Coal lease bonuses have been used, but the state can use bonds as well	***Moderate (1)***: Majority of funding comes from state and local bonds, but also includes state income taxes	***High (2)***: Revenue comes from sales tax, statewide bonds, and local bonds	***Moderate (1)***: Revenue comes primarily from state and local bonds, but also some one-time funds
Statewide v. local tax collection	***Low (0)****:* Property taxes are levied to support a local bond, and only projects with local revenue can access SCAP.	***Low (0)***: Local property tax only, no redistribution	***High (2)***: Taxes are collected statewide	***Moderate (1)***: Taxes are collected both statewide and locally	***Moderate (1)***: Taxes are collected both statewide and locally	***Moderate (1)***: Taxes are collected both statewide and locally
Sub-Total	**1** (out of 6 possible points)	**1**	**5**	**3**	**4**	**3**
Public Debt Policies						
Credit Enhancements	***High (2):*** School districts may participate in a state credit enhancement program.	***High (2)***: Districts can use state's credit rating, and state has established	***High (2)***: Districts can use state's credit rating	***High (2)***: State has established a guarantee fund for school	***High (2)***: Districts can use state's credit rating	***Low (0)***: Districts cannot use state's credit rating

		a guaranteed fund to ensure debt		district debt		
Debt payment assistance programs	***Low (0):*** There is no formal state funding program for district debt repayment assistance.	***Moderate (1)***: State has small programs to help school districts pay their debt	***High (2)***: Debt payment assistance programs with equity considerations (programs no longer exist, but only because there is no longer a need)	***High (2)***: The state offers a floor of 40 percent debt assistance aid for regular operating districts. High needs districts have no debt	***High (2)***: MSBA paid off the majority of school districts' debt held under old system and now helps school districts minimize overall debt	***Low (0)***: State has no programs specifically structured to help districts pay their debt.
Debt v. pay-as-you-go	***Moderate (1):*** The primary state funding vehicle for SCAP is state general obligation bonds, though districts use bonds and capital levies.	***Low (0)***: heavily reliant on debt	***High (2)***: pay-as-you-go system	***Low (0)***: heavily reliant on debt	***Moderate (1)***: partial pay-as-you-go system, partial debt	***Low (0)***: heavily reliant on debt
Sub-Total	**3** (out of 6 possible points)	**3**	**6**	**4**	**5**	**0**
SCORE	**12** (out of 22 total possible points)	**6**	**20**	**13**	**19**	**10**

TABLE 5
Summary Statistics of Washington School Buildings, December 2022

	Total	Average	Min	Max
School district owned buildings	4,441			
School sites	1,984			
Schools per district		23	1	104
Students per district		12,581	6	51,474
Students per school		447	1	3,155
Percent low-income per school		49.35%	0%	100%
Percent low-income per district		48.72%	0%	100%
Buildings per school		2	1	19
School buildings per district		48	1	154
Square footage per school		77,036	1,200	510,703
Square footage per district		1,988,756	2,700	9,630,166
Urban school sites	406			
Rural school sites	1,528			
Average school building age		1992	1904	2022
Average school building condition		78	30	100
Average district building age		1994	1908	2017
Average district building condition		79	35	97

Note: Data from ICOS and 2022-23 OSPI Enrollment Data, rounded to nearest whole number. Site sums may not equal 1,984 in all cases due to unreported data in ICOS. Average school building age and condition are weighted by individual site building square feet. 1,878 schools matched to OSPI data with 1,871 reporting age and 1,835 reporting condition scores.

TABLE 6

Student Demographics by Building Age and Condition, School Level weighted by total enrollment

		School Age				School Condition Score			
	Statewide Average	**Under 30 years**	**Over 30 years**	**Over 40 years**	**Over 60 years**	**Above 85**	**Above 78**	**Below 78**	**Below 70**
Average % Low-Income	46.9%	44.8%	*51.2%*	*55.1%*	*55.5%*	44.5%	44.6%	*51.5%*	*54.5%*
Average % Hispanic	25.5%	25.2%	*26.2%*	*28.5%*	*30.1%*	24.4%	24.4%	*28.0%*	*30.1%*
Average % Black	4.8%	*4.9%*	4.6%	4.6%	*4.9%*	*4.9%*	*4.9%*	4.6%	*4.9%*
Average % SpEd	14.4%	14.2%	*14.9%*	*15.2%*	*15.5%*	14.4%	14.2%	*14.8%*	*15.2%*
Average % White	49.3%	48.8%	*50.4%*	49.0%	48.8%	49.0%	*49.6%*	48.7%	47.2%

Note: Italics represent values that are above the statewide school average for student demographic groups. Data from ICOS and 2022-23 OSPI Enrollment Data. Average school building age and condition are weighted by individual site building square feet.

TABLE 7

Regression coefficients predicting building age and condition across Washington school districts, schools, and educational services districts, and amongst schools within the same school districts and districts within the same educational service district, by student poverty, weighted by student enrollment, and controlling for co-variates.

	Building Condition	**Building Age**
Across all schools		
Student Poverty Rate	-7.12***	-8.76***
Standard Error	1.27	1.75
Constant	82.60	1997.91
R-squared	0.09	0.10
n	1835	1871
Amongst schools within district		
Student Poverty Rate	-2.08	-0.73
Standard Error	2.14	3.18
Constant	80.67	1995.45
R-squared	0.41	0.32
n	1835	1871
Across all districts		
Student Poverty Rate	-11.99***	-14.9***
Standard Error	2.21	2.63
Constant	86.35	2003.14
R-squared	0.13	0.18
n	293	298
Across ESDs		
Student Poverty Rate	-22.56	-12.31
Standard Error	12.29	11.72
Constant	92.40	1998.58
R-squared	0.74	0.71
n	10	10
Amongst districts within ESD		
Student Poverty Rate	-9.31***	-14.89***
Standard Error	2.30	2.88
Constant	86.15	2004.09
R-squared	0.24	0.21
n	291	294
Amongst schools within ESD		
Student Poverty Rate	-4.32***	-7.88***
Standard Error	1.32	1.86
Constant	81.50	1998.07
R-squared	0.14	0.11
n	1833	1867

*p<0.05, **p<0.01, ***p<0.001

Note: Co-variates include small enrollment, urbanicity, number of buildings, and total square feet. Poverty rates are taken from 2022-23 OSPI enrollment data

TABLE 8

Descriptive Statistics on average Washington per-pupil school district expenditures on capital outlays and state revenues for capital, adjusted for inflation 1995-2018, by 2018 poverty quintile.

	Per-Pupil Capital Expenditures	Per-Pupil State Revenue for Capital
All Districts		
Mean	1170.81	197.28
Std Deviation	866.72	259.62
Min	0	0
Max	6224.78	1635.86
n	295	295
Poverty Quintile 1 (lowest poverty)		
Mean	1515.14	199.77
Std Deviation	1162.62	276.96
Min	0	0
Max	6224.78	1564.54
n	59	59
Poverty Quintile 2		
Mean	1233.45	187.48
Std Deviation	731.04	249.66
Min	57.61	0
Max	3644.31	1635.86
n	59	59
Poverty Quintile 3		
Mean	1018.17	157.17
Std Deviation	731.11	176.56
Min	32.91	0
Max	3207.07	896.86
n	59	59
Poverty Quintile 4		
Mean	1133.32	237.86
Std Deviation	878.38	287.25
Min	49.56	0
Max	4716.18	1167.11
n	59	59
Poverty Quintile 5 (highest poverty)		
Mean	953.96	204.13
Std Deviation	646.60	292.37
Min	0	0
Max	2262.15	1302.21
n	59	59

TABLE 9

Regression coefficients predicting per-pupil capital expenditures and state capital revenues across Washington school districts weighted by student enrollment and controlling for co-variates.

	Per-Pupil Capital Expenditures		Per-Pupil State Capital Revenue	
Student Poverty Rate	-2639.22***	**-2074.34*** **	526.18***	**512.19*** **
Standard Error	322.87	292.49	82.99	86.96
Constant	2276.99	1766.87	76.99	116.96
R-squared	0.18	0.41	0.12	0.15
n	295	295	295	295
Covariates		X		X

*p<0.05, **p<0.01, ***p<0.001

Note: Co-variates include small enrollment, the Puget Sound region, number of buildings, and total square feet. Averages based on data 1995-2018

TABLE 10

Regression coefficients predicting building age and condition across Washington school districts by average per-pupil capital resources, weighted by average student enrollment, and controlling for co-variates.

	Building Condition		Building Age	
Per-Pupil Capital Expenditures	41.78***	**0.005*** **	40.71***	**0.007*** **
Standard Error	5.16	0.00	3.98	0.00
Constant	-1790.43	76.34	-79674.8	1988.40
R-squared	0.18	0.27	0.26	0.35
n	292	292	295	295
Per-Pupil State Capital Revenue	1.76	**0.01*** **	3.95***	**0.019*** **
Standard Error	1.41	0.00	1.12	0.00
Constant	90.32	84.37	-7658.15	1999.10
R-squared	0.01	0.17	0.04	0.27
n	292	292	295	295
Co-variates		X		X

*p<0.05, **p<0.01, ***p<0.001

Note: Co-variates include small enrollment, the Puget Sound region, number of buildings, and total square feet and student poverty rate. Averages span from data years 1995-2018. Building condition and age data collected December 2022.

TABLE 11

Summary Statistics of Washington school district capital finance election (bond measures and capital levies) outcomes, 2009-2022

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	**Total**
Bonds Attempted	25	17	27	16	26	32	42	41	36	39	19	23	0	16	359
Bonds Passed	11	9	4	10	12	11	23	24	21	17	12	8	0	2	164
Bonds Failed	14	8	23	6	14	21	19	17	15	22	7	15	0	14	195
Bond Pass Rate	44%	53%	15%	63%	46%	34%	55%	59%	58%	44%	63%	35%	-	13%	46%
Passed Bond Value (in millions)	$872	$662	$113	$709	$1,381	$1,889	$1,886	$4,290	$2,373	$2,625	$1,695	$1,806	$ -	$1,194	$21,495
Capital Levies Attempted	0	32	16	32	12	11	15	21	11	21	26	45	9	19	270
Capital Levies Passed	0	31	14	28	10	8	13	20	9	20	24	40	7	13	237
Capital Levies Failed	0	1	2	4	2	3	2	1	2	1	2	5	2	6	33
Capital Levy Pass Rate	-	97%	88%	88%	83%	73%	87%	95%	82%	95%	92%	89%	78%	68%	88%
Passed Capital Levy Value (in millions)	$ -	$208	$32	$75	$137	$45	$7	$174	$5	$89	$290	$117	$35	$87	$1,301
Total Capital Measures	25	49	43	48	38	43	57	62	47	60	45	68	9	35	629
Total Pass Rate	44%	82%	42%	79%	58%	44%	63%	71%	64%	62%	80%	71%	78%	43%	64%

Note: Total number of districts in Washington during this time is 295. Values are CPI-adjusted.

TABLE 12

Summary Statistics of Washington school district capital finance election (bond measures and capital levies) by district-level poverty characteristics, 2009-2022

	Poverty Quintile (lowest to highest poverty rates)					
	1	2	3	4	5	All Districts
Bonds Attempted	78	82	74	69	56	359
Bonds Passed	45	37	29	28	25	164
Bonds Failed	33	45	45	41	31	195
Bond Pass Rate	58%	45%	39%	41%	45%	46%
Passed Bond Value (in millions)	$6,511	$3,698	$4,840	$3,676	$1,703	$21,495
Districts Ever Passed a Bond	33	32	22	23	19	129
Capital Levies Attempted	58	66	67	44	35	270
Capital Levies Passed	48	64	62	35	27	236
Capital Levies Failed	10	2	5	9	8	34
Capital Levy Pass Rate	83%	97%	93%	80%	77%	87%
Passed Capital Levy Value (in millions)	$416	$557	$193	$115	$21	$1,301
Districts Ever Passed a Cap Levy	27	35	32	20	20	134
Total Attempted Capital Measures	136	148	141	113	91	629
Total Passed Capital Measures	93	101	91	63	52	400
Total Pass Rate	68%	68%	65%	56%	57%	64%
Districts Ever Passed a Capital Measure	41	48	42	36	33	200

Note: Quintiles developed using 2018 community poverty rates. 59 districts per quintile.

TABLE 13

Regression coefficients predicting attempt and outcome of capital measure passage by the level of community poverty in the school district.

	Capital Measure Attempt	Capital Measure Pass	Bond Attempt	Bond Pass	Capital Levy Attempt	Capital Levy Pass
Comm. Poverty Rate (with co-variates)	**-1.36*** **	**-1.49*** **	**-0.78***	**-0.99***	**-1.40*** **	**-1.32****
Standard Error	0.32	0.39	0.37	0.41	0.43	0.43
Constant	1.10	0.97	0.89	0.66	0.78	0.67
R-squared	0.24	0.15	0.30	0.18	0.08	0.08
n	295	295	295	295	295	295
Comm. Poverty Rate (bivariate)	-1.66***	-1.86***	-1.33*	-1.58***	-1.78***	-1.68***
Standard Error	0.34	0.38	0.40	0.41	0.41	0.41
Constant	1.06	0.99	0.86	0.70	0.81	0.73
R-squared	0.08	0.07	0.04	0.05	0.06	0.05
n	295	295	295	295	295	295

*p<0.05, **p<0.01, ***p<0.001

Note: Co-variates include small enrollment, and the Puget Sound region. Districts average rates are calculated for the most recent 5 years of available data, 2013-2018.

TABLE 14

Regression coefficients predicting average school district per-pupil capital expenditures and state revenues for capital by capital measure election outcome in Washington school districts, controlled for co-variates and weighted by average district enrollment.

	Average Per-Pupil Capital Expenditure	Average Per-Pupil State Revenue for Capital
Ever Attempted Capital Measure	**199.92**	**-79.71**
Standard Error	213.77	62.54
Constant	1888.19	200.21
R-squared	0.38	0.13
n	295	295
Ever Passed Capital Measure	**168.31**	**18.32**
Standard Error	116.65	34.28
Constant	1942.82	107.03
R-squared	0.38	0.13
n	295	295
Ever Attempted Bond Measure	**-85.15**	**33.10**
Standard Error	112.18	32.84
Constant	2165.86	90.32
R-squared	0.38	0.13
n	295	295
Ever Passed Bond Measure	**271.21*** **	**85.34*** **
Standard Error	76.50	22.33
Constant	1865.07	53.62
R-squared	0.40	0.17
n	295	295
Ever Attempted Capital Levy Measure	**91.82**	**-102.80*** **
Standard Error	74.67	21.08
Constant	2031.65	180.37
R-squared	0.38	0.19
n	295	295
Ever Passed Capital Levy Measure	**131.50**	**-119.34*** **
Standard Error	75.33	21.05
Constant	2009.73	189.27
R-squared	0.38	0.21
n	295	295

*p<0.05, **p<0.01, ***p<0.001

Note: Co-variates include small enrollment, the Puget Sound region, and student poverty. Average per-pupil resource outcomes are a CPI-adjusted average from 2009-2019, the same period of data availability as the elections data. Districts average rates for co-variates are calculated for the most recent 5 years of available data, 2013-2018.

TABLE 15

Regression coefficients predicting average school district building age and condition score (weighted by square feet) by capital measure election outcome in Washington school districts, controlled for co-variates and weighted by average district enrollment.

	Building Age	Building Condition
Ever Attempted Capital Measure	**3.86**	**-2.22**
Standard Error	2.60	1.65
Constant	1987.72	81.69
R-squared	0.24	0.09
n	295	292
Ever Passed Capital Measure	**1.95**	**-1.30**
Standard Error	2.18	1.38
Constant	1989.55	80.76
R-squared	0.24	0.09
n	295	292
Ever Attempted Bond Measure	**2.33**	**-0.10**
Standard Error	2.37	1.50
Constant	1989.09	79.90
R-squared	0.24	0.09
n	295	292
Ever Passed Bond Measure	**4.70***	**2.49+**
Standard Error	2.13	1.34
Constant	1988.28	78.38
R-squared	0.25	0.10
n	295	292
Ever Attempted Capital Levy Measure	**-0.28**	**-1.81**
Standard Error	1.98	1.24
Constant	1991.11	80.87
R-squared	0.24	0.10
n	295	292
Ever Passed Capital Levy Measure	**0.07**	**-1.84**
Standard Error	1.97	1.24
Constant	1990.91	80.78
R-squared	0.24	0.10
n	295	292

*p<0.05, **p<0.01, ***p<0.001, +p<0.01

Note: Co-variates include small enrollment, the Puget Sound region, number of buildings, and total square feet and student poverty. Districts average rates are calculated for the most recent 5 years of available data, 2013-2018.

TABLE 16

Summary Statistics of Washington School Construction Assistance Program, 1995-2021

	Total SCAP Funding (in millions $)	Total Local Funding (in millions $)	Total Project Funding (in millions $)	Number New Construction Projects	Number New-in-Lieu Projects	Number Major Modification Projects	Number of SCAP projects	Number of Districts receiving SCAP	Percent of Districts receiving SCAP
1995	$366	-	-	29	18	34	81	39	13%
1996	$228	-	-	30	12	34	76	42	14%
1997	$226	-	-	22	18	32	72	40	14%
1998	$239	$467	$706	12	16	30	58	35	12%
1999	$300	$642	$942	22	33	53	108	46	16%
2000	$266	$539	$805	22	23	37	82	32	11%
2001	$160	$370	$530	17	19	25	61	31	11%
2002	$310	$490	$800	20	24	22	66	36	12%
2003	$257	$526	$783	11	20	25	56	29	10%
2004	$241	$648	$889	18	23	23	64	32	11%
2005	$386	$582	$968	9	22	18	49	27	9%
2006	$277	$542	$819	14	14	7	35	19	6%
2007	$509	$1,061	$1,570	19	31	23	73	33	11%
2008	$436	$854	$1,290	27	24	28	79	37	13%
2009	$183	$496	$679	7	17	15	39	22	7%
2010	$274	$537	$811	17	27	16	60	30	10%
2011	$375	$665	$1,040	9	21	13	43	24	8%
2012	$246	$361	$607	8	14	9	31	16	5%
2013	$210	$404	$614	6	12	6	24	16	5%
2014	$238	$416	$654	14	16	11	41	21	7%
2015	$255	$915	$1,170	10	19	10	39	19	6%
2016	$345	$735	$1,080	10	27	17	54	27	9%
2017	$365	$1,055	$1,420	12	26	18	56	32	11%
2018	$607	$1,533	$2,140	21	35	22	78	35	12%
2019	$402	$1,278	$1,680	12	28	8	48	29	10%
2020	632	$1,178	$1,810	25	29	20	74	35	12%
2021	$265	$855	$1,120	11	13	9	33	21	7%
TOTAL	$8,598	$17,149	$24,927	434	581	565	1580	212	72%

TABLE 17

Regression coefficients predicting ever receiving SCAP funds and average per-pupil SCAP funding by average district student poverty rates, controlling for co-variates and weighted by average student enrollment, 1995-2021.

	SCAP Receipt		**Times Accessed SCAP**		**Per-Pupil SCAP**	
Student Poverty	-0.09	**-0.02**	-5.38*	**-2.49+**	4795.06***	**4031.07*** **
Standard Error	0.096	0.095	2.40	1.42	1183.50	1138.80
Constant	0.98	0.93	9.48	4.02	368.37	1772.26
R-squared	0.003	0.12	0.02	0.69	0.05	0.21
n	295	295	295	295	295	295
Co-variates		X		X		X

+p<0.1, *p<0.05, **p<0.01, ***p<0.001

Note: Co-variates include district small enrollment, urbanicity, number of buildings, and total sq. ft.

TABLE 18

Regression coefficients predicting district average per-pupil capital expenditures and per-pupil state capital revenues by ever having received SCAP, times accessing SCAP, and average per-pupil SCAP funding allocation, controlling for co-variates and weighted by average enrollment, 1995-2021.

	Per-Pupil Capital Expenditures		**Per-Pupil State Capital Revenues**	
SCAP Receipt	1161.58***	**951.75*** **	193.06***	**230.25*** **
Standard Error	206.99	182.12	52.69	51.41
Constant	409.59	970.10	41.75	-113.76
R-squared	0.097	0.38	0.04	0.19
n	295	295	295	295
Times Accessed SCAP	65.84***	**43.83*** **	3.77	**8.10*** **
Standard Error	7.74	7.51	2.13	2.16
Constant	1001.53	1586.17	197.09	51.56
R-squared	0.20	0.39	0.01	0.17
n	295	295	295	295
Avg. SCAP PPE	-0.04*	**0.014**	0.02***	**0.01***
Standard Error	0.017	0.02	0.004	0.004
Constant	1593.31	1855.12	199.91	93.07
R-squared	0.02	0.32	0.05	0.15
n	295	295	295	295
Co-variates		X		X

*p<0.05, **p<0.01, ***p<0.001

Note: Co-variates include district small enrollment, urbanicity, and average student poverty levels.

TABLE 19

Regression coefficients predicting district average building age and condition by ever having received SCAP, times accessing SCAP, and average per-pupil SCAP funding allocation, controlling for co-variates and weighted by average enrollment, 1995-2021.

	Building Age		Building Condition	
SCAP Receipt	0.01***	**0.005*** **	0.02***	**0.01*** **
Standard Error	0.001	0.001	0.002	0.002
Constant	-21.76	-8.25	-0.58	-0.02
R-squared	0.212	0.48	0.17	0.51
n	295	295	292	292
Times Accessed SCAP	0.412***	**0.92*** **	0.34***	**0.96*** **
Standard Error	0.11	0.18	0.09	0.14
Constant	1991.48	1997.30	77.14	81.62
R-squared	0.05	0.22	0.05	0.25
n	295	295	292	292
Avg. SCAP PPE	-24.12	**-0.19**	-9.33	**16.96**
Standard Error	15.39	14.96	19.05	18.23
Constant	49854.67	2154.97	2481.30	329.59
R-squared	0.008	0.21	0.0008	0.21
n	295	295	292	292
Co-variates		X		X

*p<0.05, **p<0.01, ***p<0.001

Note: Co-variates include district small enrollment, urbanicity, number of buildings, total square feet, and average student poverty levels.

FIGURE 1 – the Resource Equity Framework from Travers (2018)

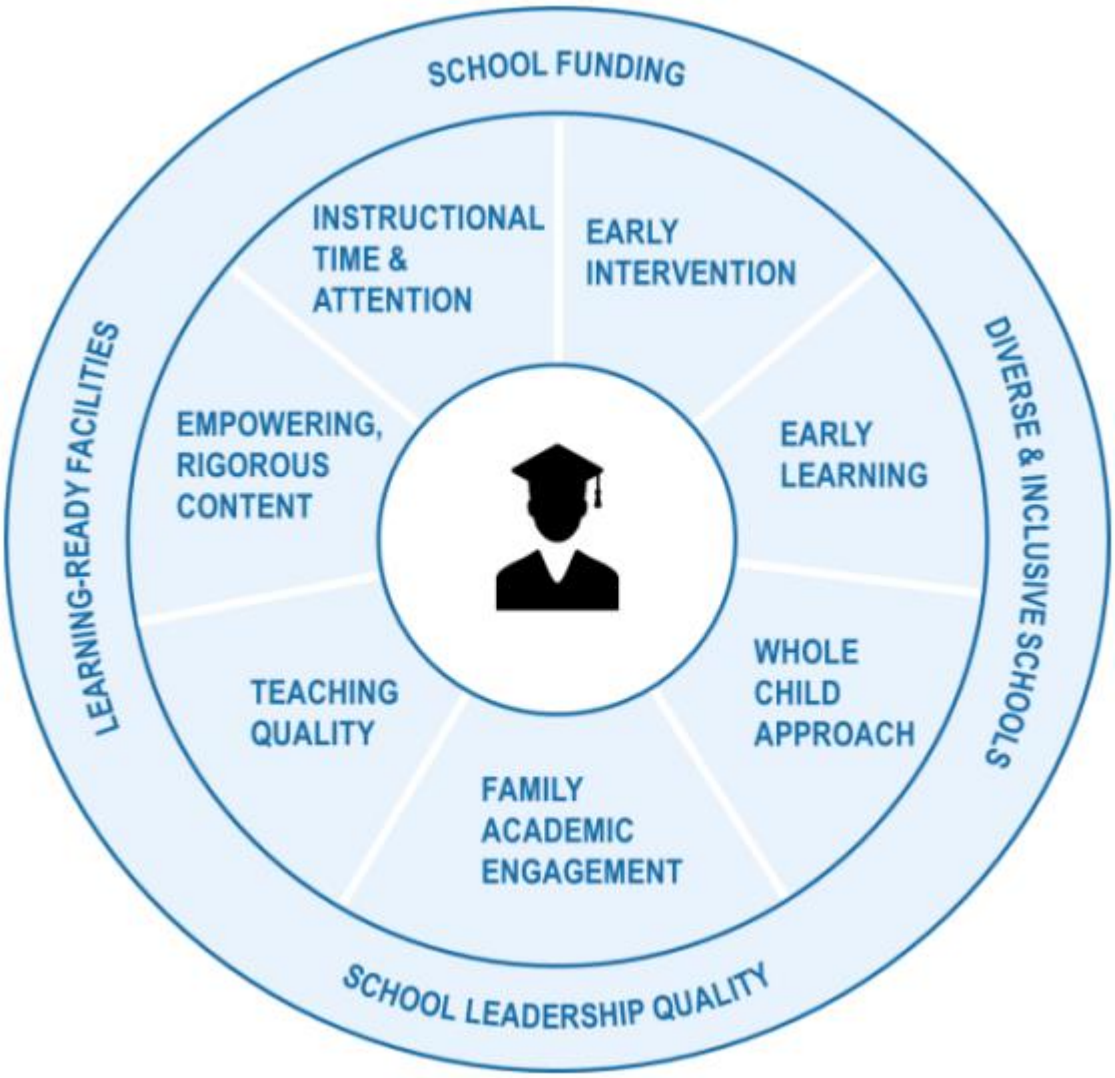


FIGURE 2 – New Conceptual Framework adapted from Travers (2018) and Rivera (2017)

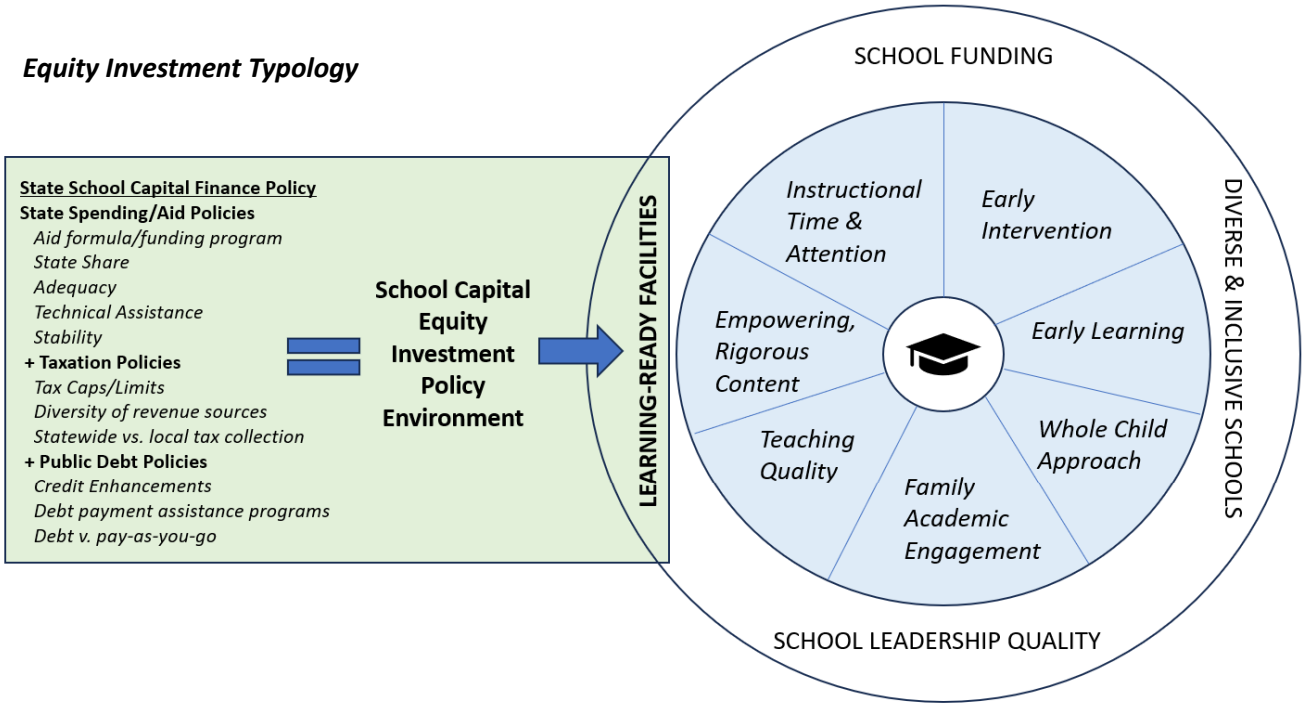


FIGURE 3 – Washington School Facilities Development Process (OSPI, 2011)

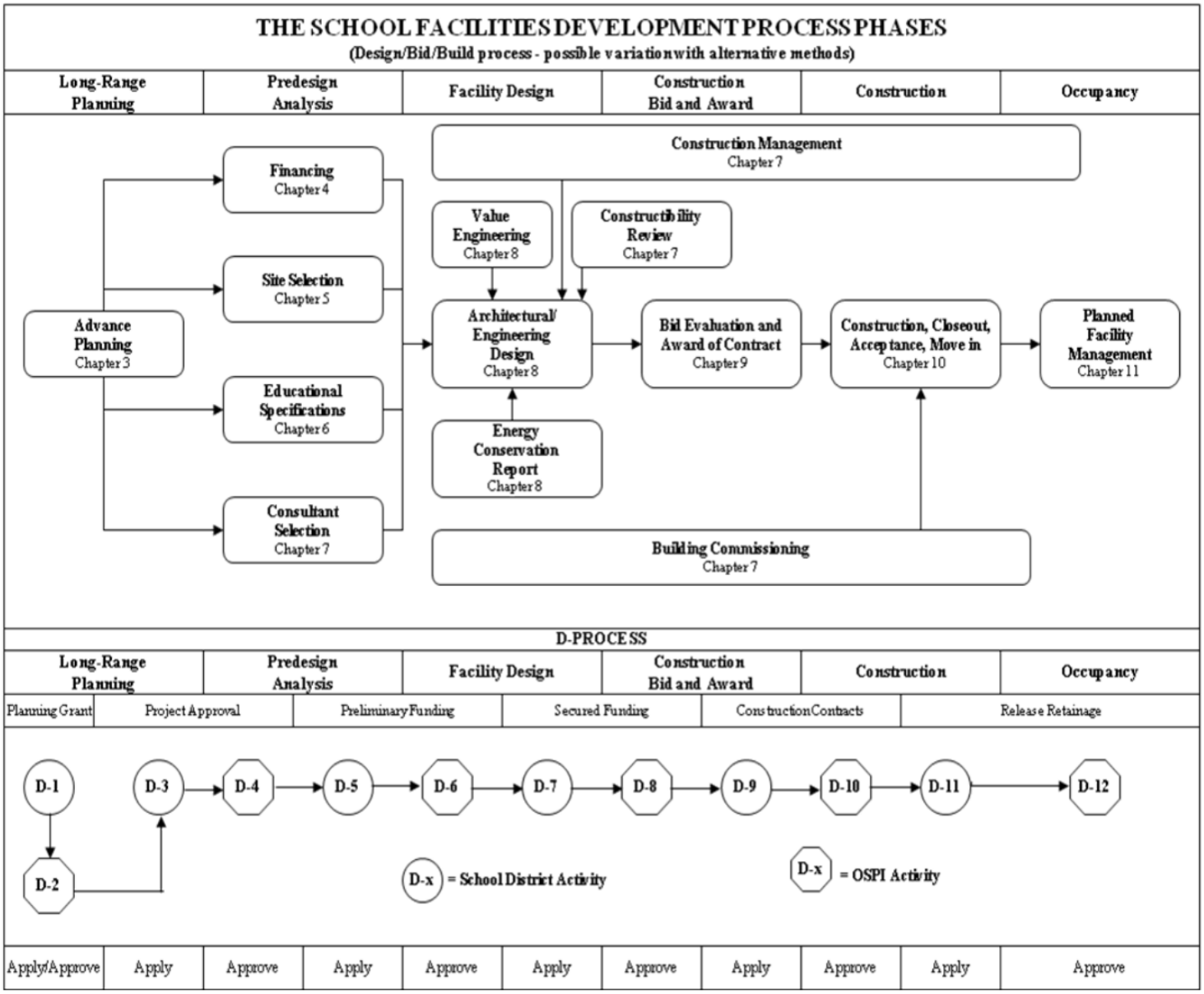
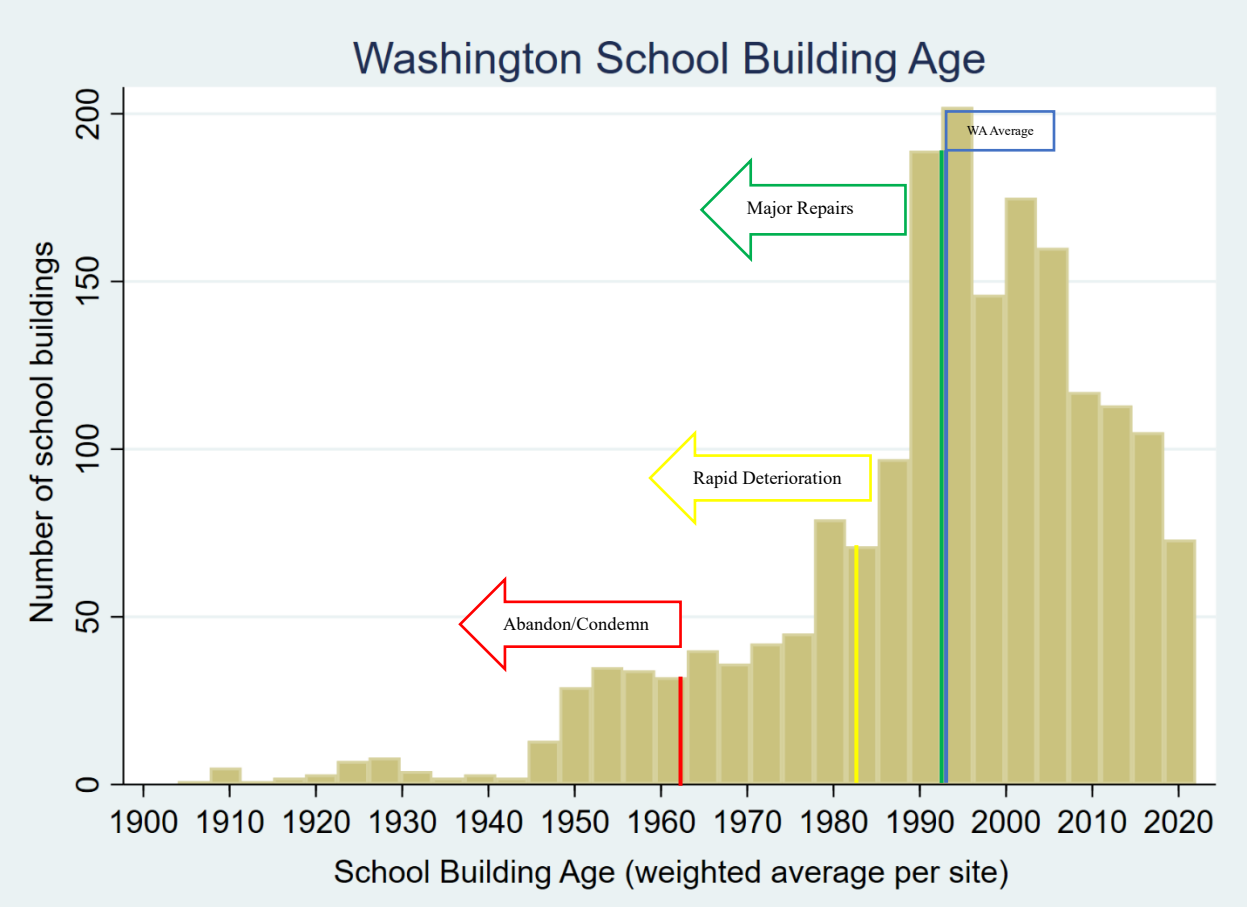
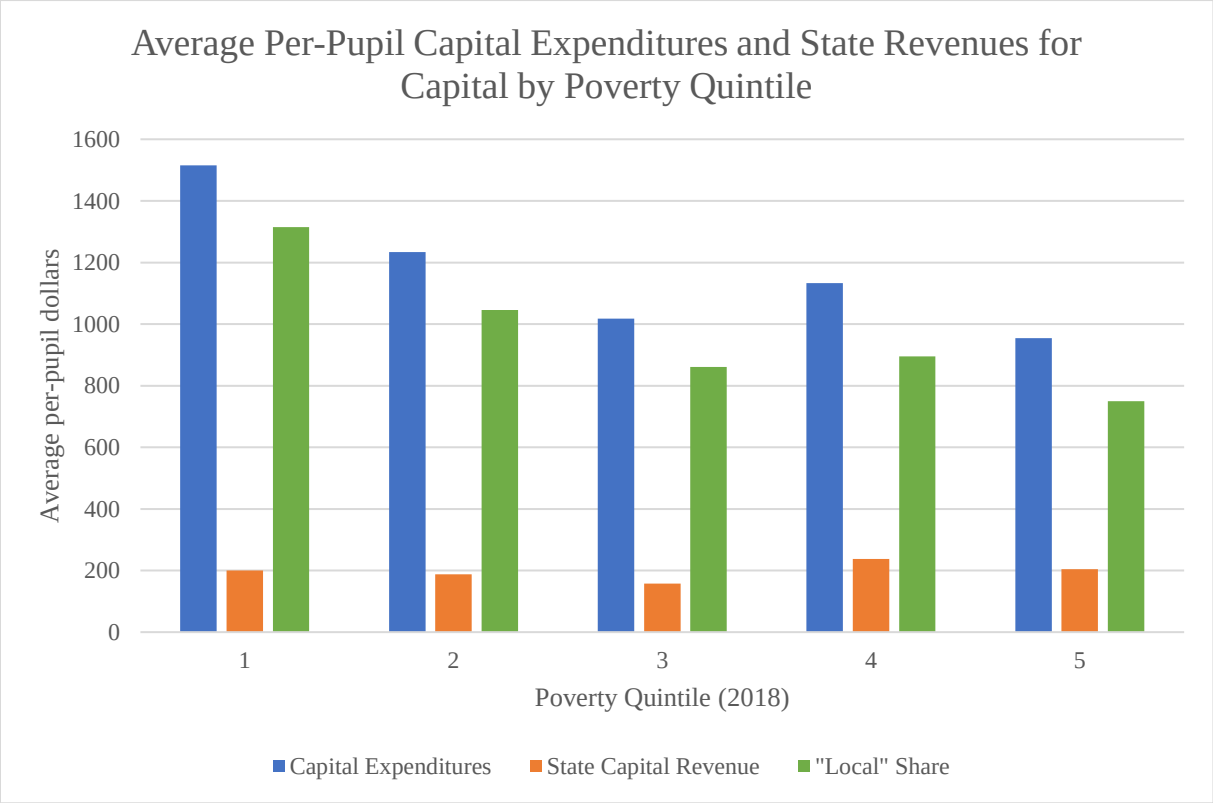


FIGURE 4 – Washington school buildings age



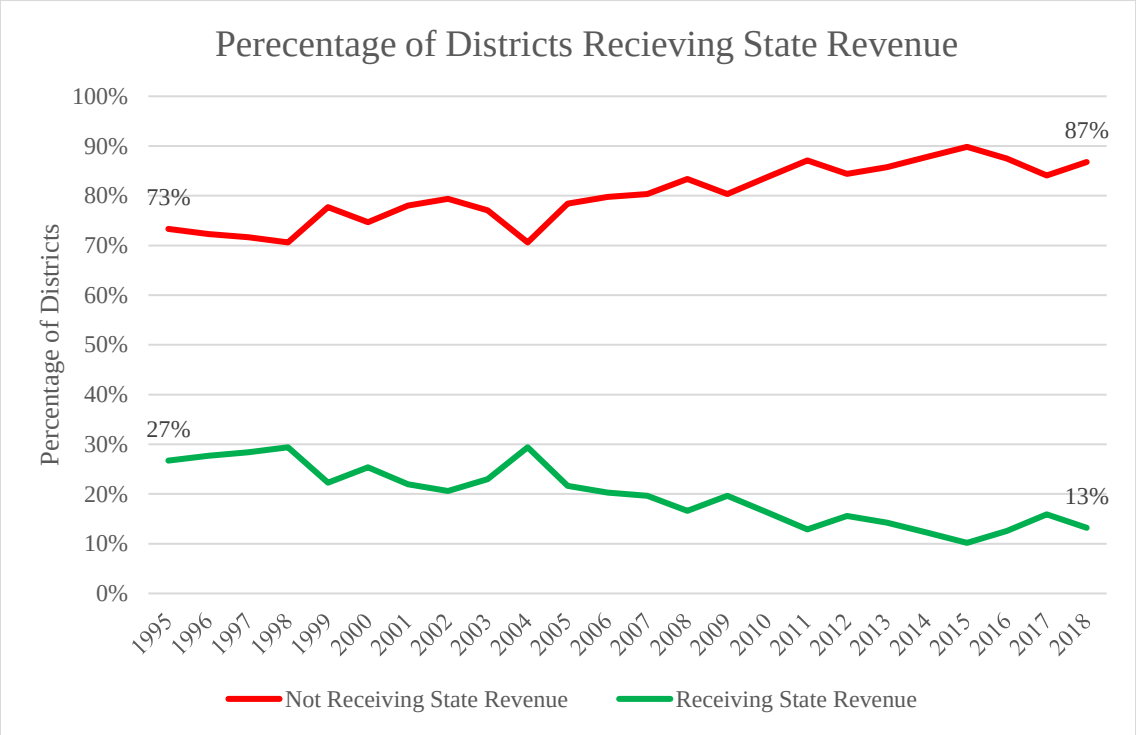
n=1,871 schools

FIGURE 5 – Capital expenditures and state revenue by poverty rate



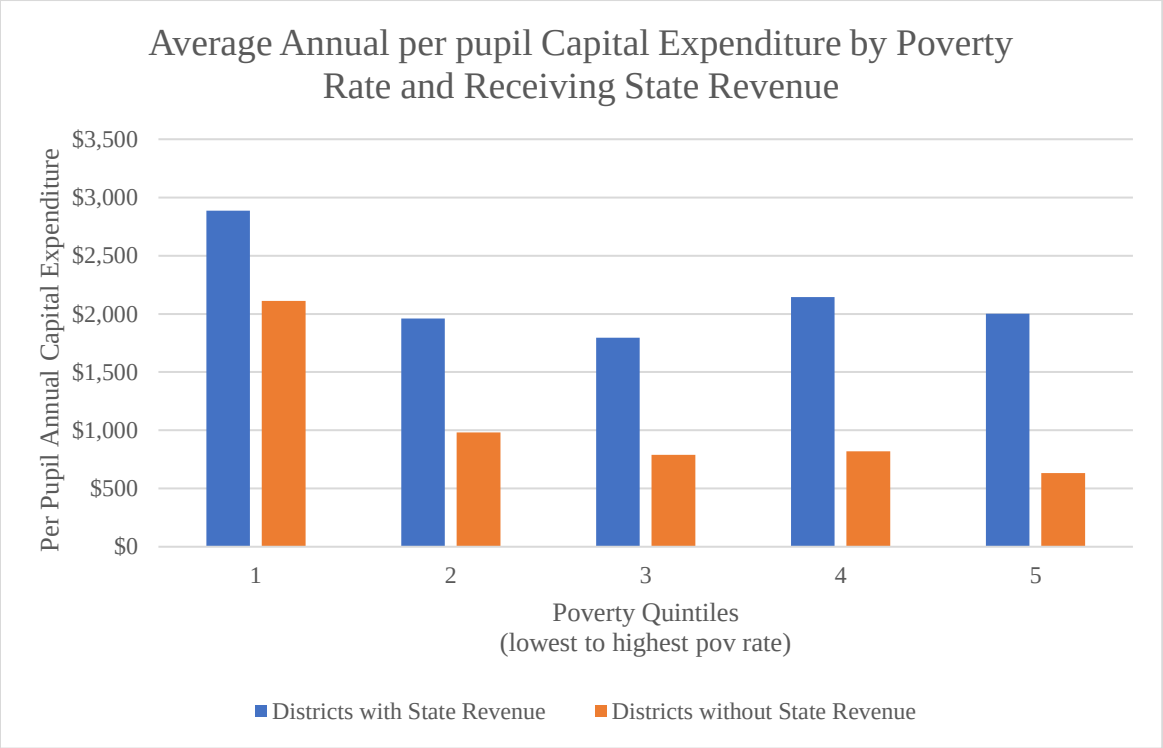
Note: Expenditure and revenue data are collected as a CPI-adjusted average from the F-33 survey, 1995-2018. "Local" share is an estimate of the difference between capital expenditures and state capital revenue.

FIGURE 6 – Percentage districts receiving state revenue



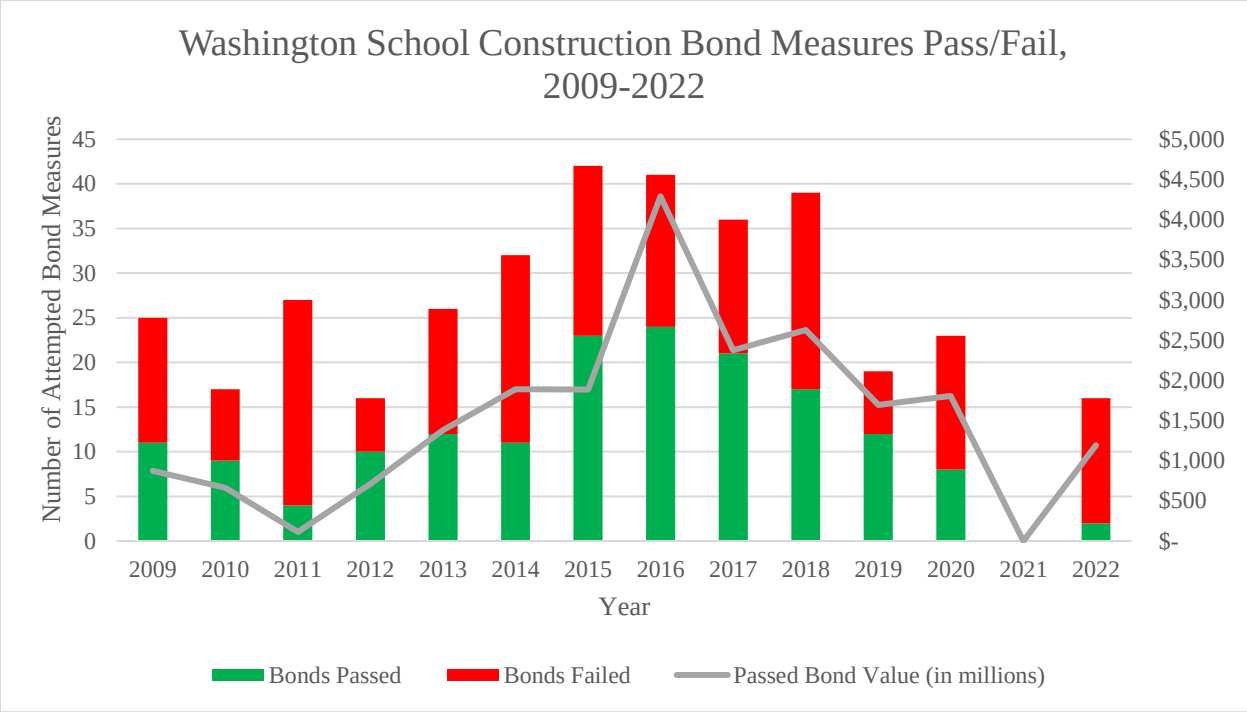
Note: Collected from F-33 survey, 1995-2018.

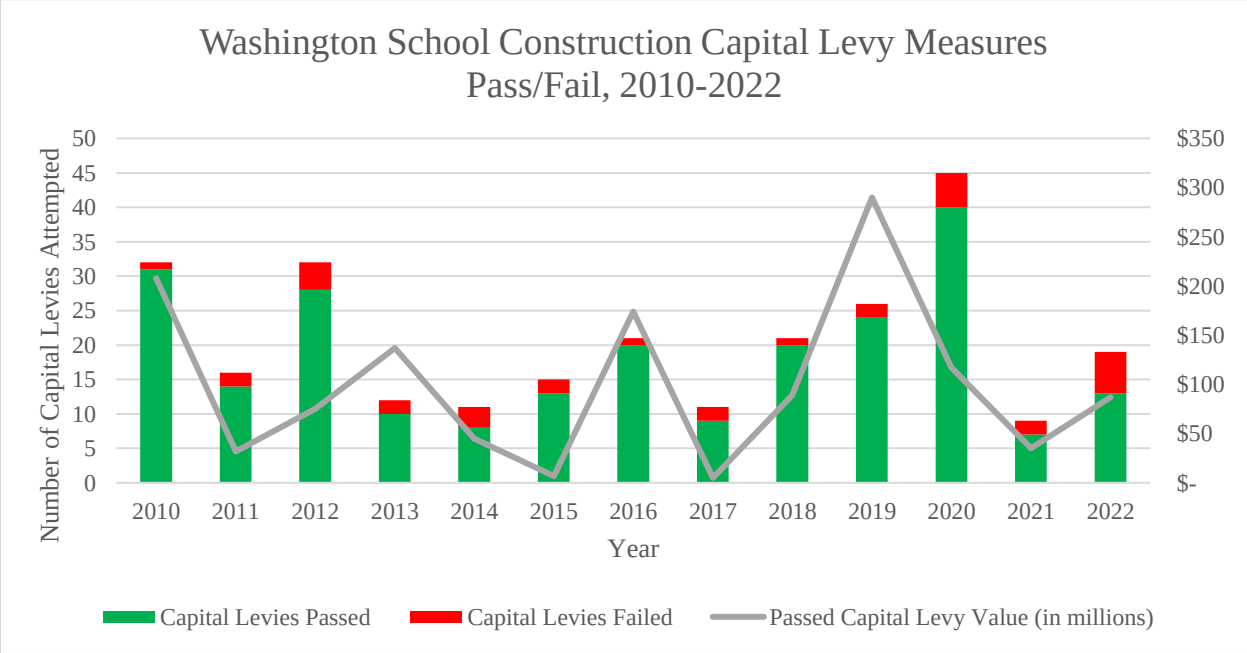
FIGURE 7 – Capital Expenditures of district with and without state revenue by poverty rate



Note: Revenue data are collected as a CPI-adjusted average from the F-33 survey, 1995-2018.

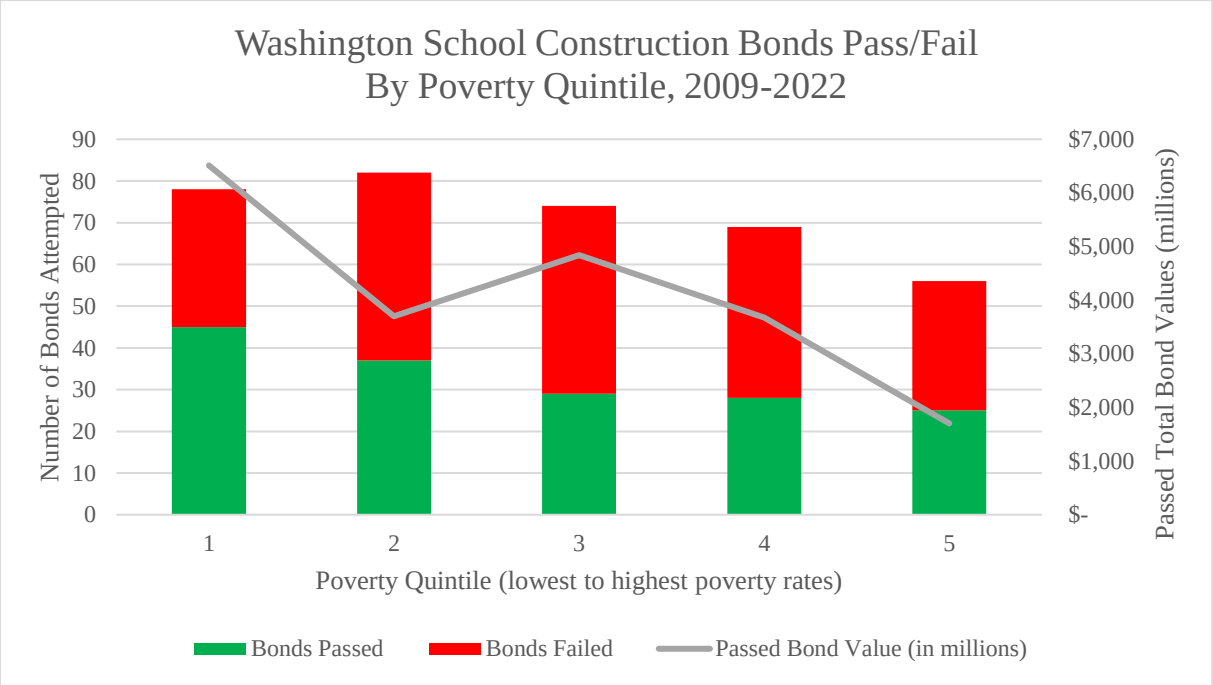
FIGURE 8 – Washington Capital Measures Passage and Total Value over time

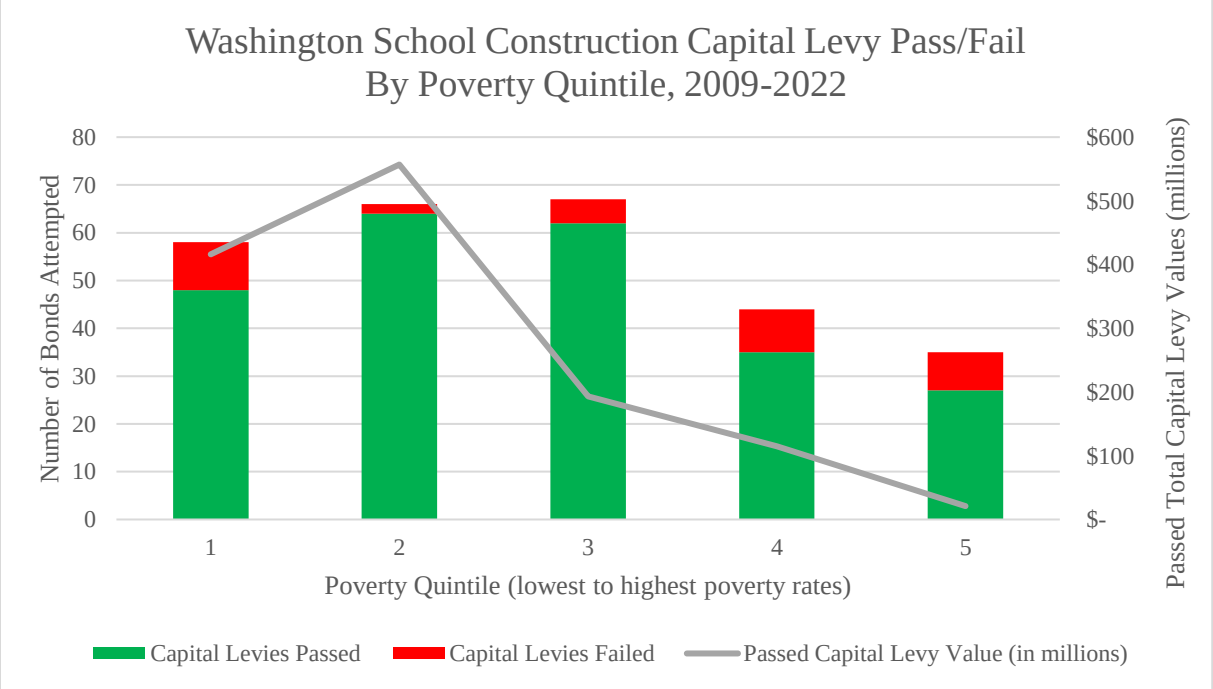




Note: Passed Values are CPI-adjusted to 2022.

FIGURE 9 – Capital measure outcomes by student poverty quintiles and passed value





Note: Passed Values are CPI-adjusted to 2022.

FIGURE 10 – Number of SCAP projects and funding over time

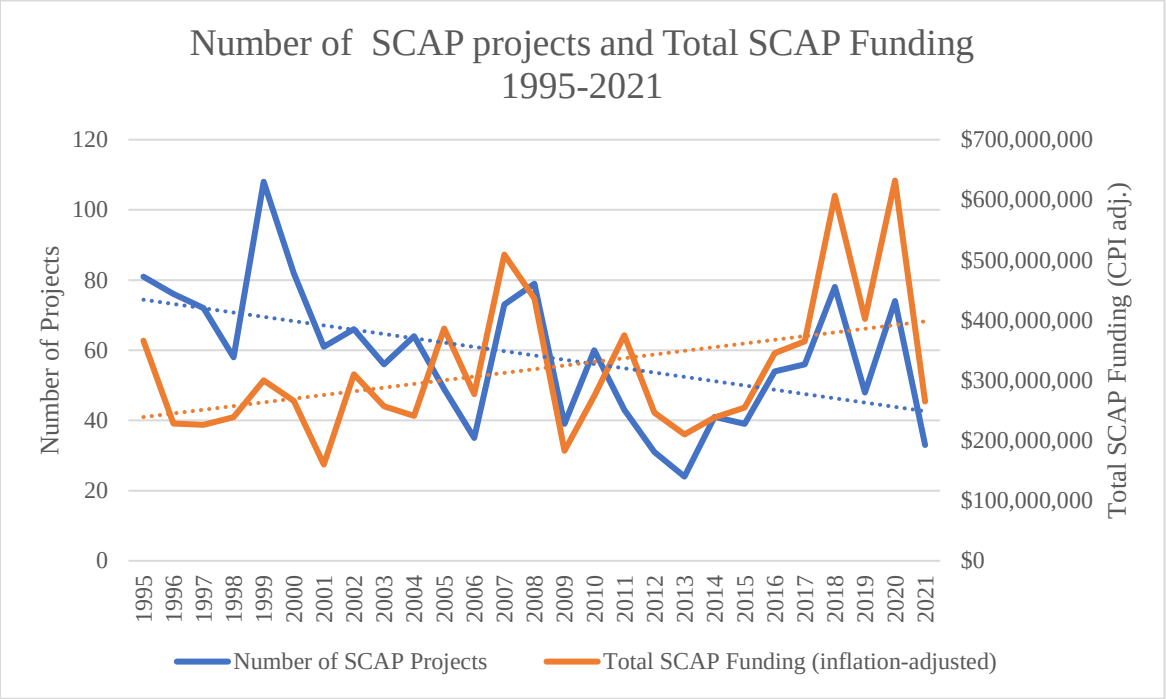


FIGURE 11 – SCAP and Total Construction Project Funding over time

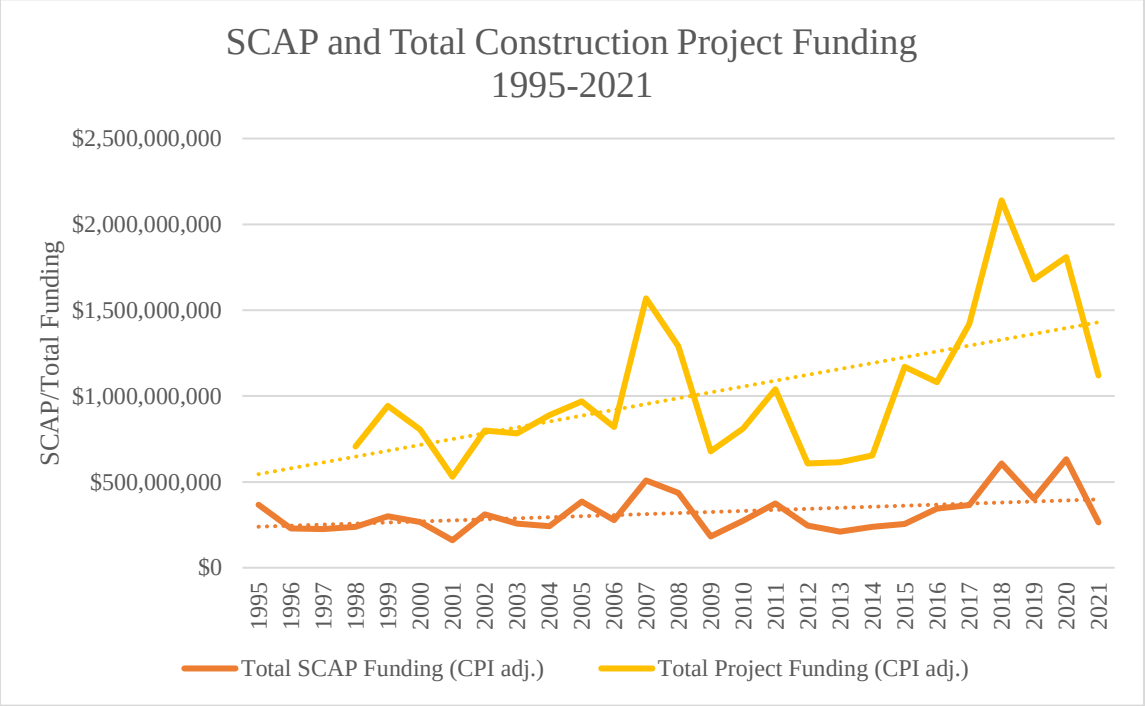


FIGURE 12 – SCAP project type over time

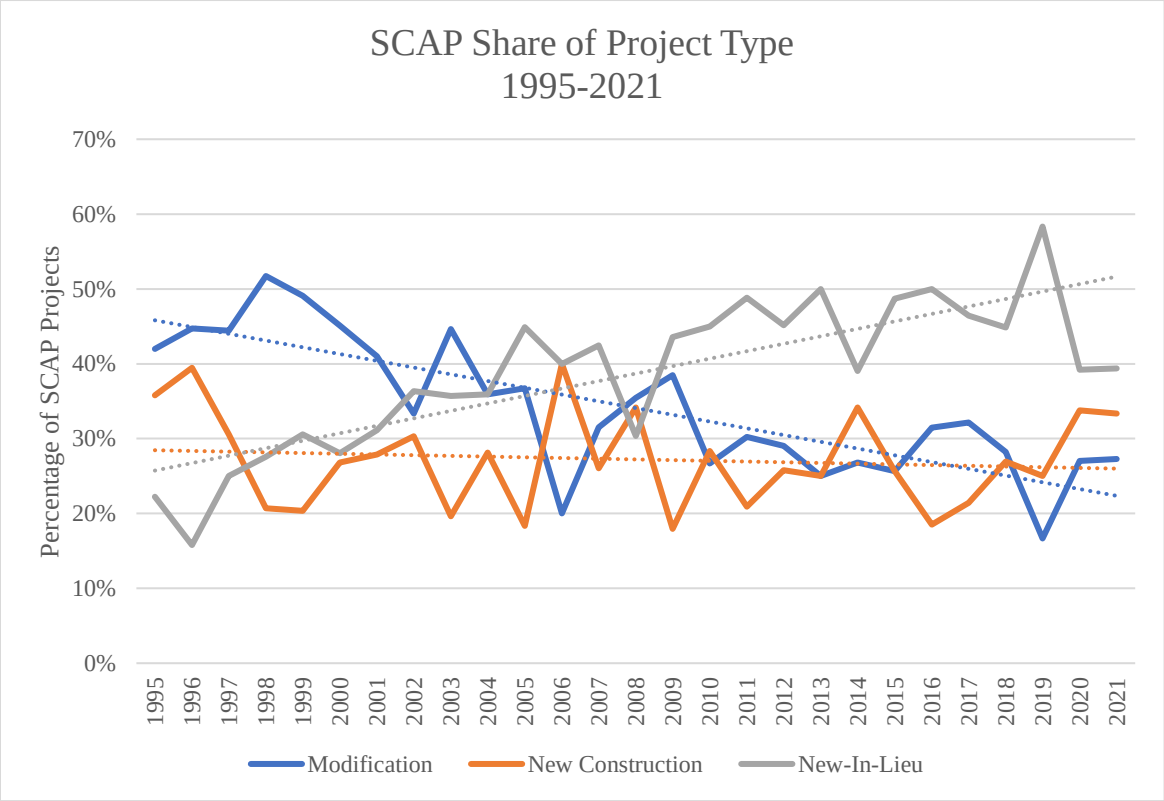
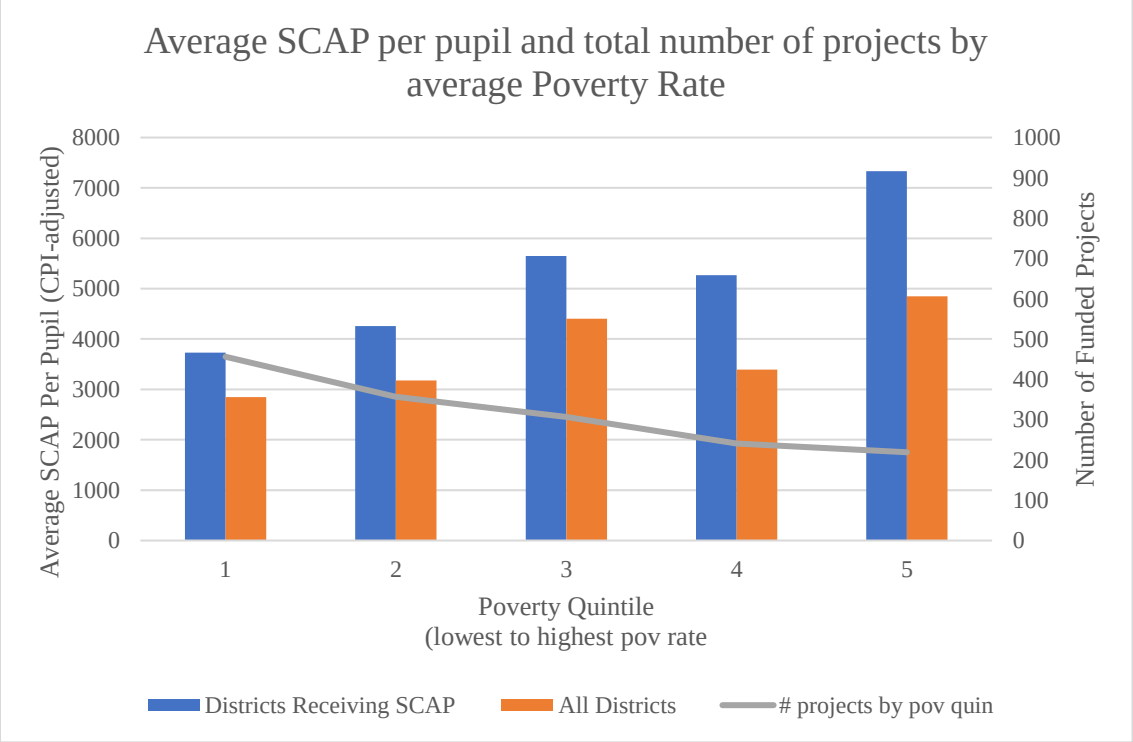


FIGURE 13 – SCAP funding and number of projects by student poverty quintiles



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