Exploring Applications of Rootedness in Sociolinguistic Research in Southern Oregon

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A dissertation
submitted in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy

University of Washington

2021

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Program Authorized to Offer Degree:
Linguistics

University of Washington

Abstract

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The present dissertation discusses the importance of rootedness, defined as orientation towards place, and how it factors into sociolinguistic studies. Although rootedness is not a new concept in sociolinguistics, it has been infrequently operationalized to understand its role in language change. Linguists have discussed concepts similar to rootedness using other terms such as local loyalty (e.g., Ito and Preston 1998), cultural identity (e.g., Hazen 2002), regional identity (e.g., Miller 2008), and regionality index (e.g., Chambers 2000). Rootedness could be operationalized by assigning a numerical value to a person's level of attachment to their community, based on their attitudes towards that community and plans around their future in the area. This method of quantifying rootedness is akin to the operationalization of other sociolinguistic variables such as age, socioeconomic status, gender, etc., in that it is a grouping mechanism for measuring how shared identities influence language use. Rootedness here is not a measure of how long a person has physically been in a place in contrast to Chambers (2000) and is not a measure of an individual's interactions (e.g., Milroy 1980). Recent work has shown that rootedness is a variable that systematically correlates with speech patterns (e.g., Reed 2016). The objective of this research is to synthesize previous work in this field to develop an

operationalization of rootedness for a specific study conducted in Jackson and Josephine Counties, Oregon from Fall 2017 through Spring 2018. The impetus for conducting research in this area comes from wanting to understand what the characteristics of the vowel system of a relatively rural Southern Oregon community are. This area is unique because of its location along the California-Oregon border and because of social changes due to in-migration from California and a changing agricultural industry. Because I thought traditional extralinguistic variables may not be explanatory for the region, I wanted to create a rootedness measure to investigate how attitudes towards place could potentially be expressed using language. The operationalization investigates questions such as travel, future plans in the area, and attitudes about living in the community. To demonstrate effectiveness of the operationalization, I apply it to the thirteen interview participants to determine if it differentiates people who would otherwise be grouped together or conversely groups people who would not be grouped together using traditional extralinguistic variables. The vowel system of these speakers is of particular interest in light of recent research regarding vowel systems on the West Coast (e.g., Fridland, Kendall, Evans & Wassink 2016). Using a small set of acoustic data, I explore the vowel system of the community and whether age, gender, and/or rootedness are helpful in understanding variation in the community. Given the presence of the low-back merger or near merger, BOOT fronting, BAT backing, BAN raising, and BEG raising for some speakers, it appears that the speakers are the most alike to speakers in Redding, California, located approximately 140 miles south. Some of these linguistic features are associated with California and some of them are associated with Washington state. However, like in Redding, the use of linguistic features associated with California is likely to not be speakers aligning themselves linguistically with California and/or urban California (Podesva, D'Onofrio, Van Hofwegen & Kim 2015). I found that women are

leading in BAT backing. Regarding the rootedness metric conducted for this study, the inclusion of the rootedness score improved the performance of the statistical model for BAN raising, and a post hoc analysis of the rootedness score found that people who identified more neutrally towards Southern Oregon raised BEG more. Ultimately, this dissertation concludes that more rural communities and borderland communities are important to study and that linguists should consider including rootedness in their study design.

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Acknowledgements

I came to graduate school with two goals: to encourage undergraduate students to respect all language varieties and to further knowledge of language varieties on the West Coast. Although my path through graduate school to accomplish these two goals was non-linear and came with some unexpected challenges, I am pleased with how much I have accomplished towards those two goals. I have many people I'd like to thank for directly or indirectly supporting me during graduate school and in the completion of this dissertation. I do not consider this to be an exhaustive list. I'd first like to start with my parents. They always supported me the best they could in my various interests over the years and were always excited about my pursuits. They taught me the value of learning for the sake of learning, which I leaned heavily on throughout graduate school.

I would also like to thank my husband Nat Mote. We met and started dating our first week as Freshman undergraduate students the University of Washington. Nat has been my rock though my entire academic career, and I could not have asked for a better support figure in my life. Thank you for all the endless tech help, proofreading, pep talks, takeout, and everything else, and thank you for pretending you were only mildly bored when listening to me talk about linguistics for the umpteenth time. You are my number one cheerleader.

I'd like to thank my committee for their support during graduate school. I could not have asked for a better advisor than Betsy Evans, who helped me cultivate my own research interests and navigate graduate school. Richard Wright provided invaluable, overtime support when I was working on my first major project as a graduate student when I especially needed it. Alicia Beckford Wassink taught my first sociolinguistics class and provided valuable comments on my work.

I'd also like to thank my friends at the Seattle Art Museum. Working as a security guard during my graduate school experience significantly helped me get through it. You were so supportive and excited for me, and I needed it more than I realized. Even when I was applying for graduate school, some of you provided encouragement and some of you even helped me study for the GRE during lunch. For the last few years, many of you let me vent and share my success. You helped me stay excited about linguistics by asking me about my research and the classes I was teaching. I enjoyed hearing about the projects you were working on outside of work. I am so thankful my Seattle Art Museum friends were in my life before and during graduate school.

I'd also like to thank some friends. I'd like to thank my good friend Ian Walsh for all his support and my childhood best friend Lan Anh Van-Dinh, who I especially value as a friend. I'd especially like to thank my friend group who self identifies as *The Mirandas*; you are my favorite people. I'd like to thank my friends from BAM, a low-key graduate student sociolinguistics reading and support group and my graduate school cohort!

I would like to add a special thanks to Alec Sugar, Michael Goodman, Ed Battistella, and Maureen Battistella. Your help was invaluable me when I was working on this research. I'd also like to thank the Hannon Library for allowing be the opportunity to record there.

I would also like to thank my participants and all of the kind people I met while working on this project in Southern Oregon! It was only with your help that I was able accomplish this work!

Chapter 1: Introduction

The focus of this dissertation is participants' locally bound conceptualizations of place and those conceptualizations' contributions to language change in variationist sociolinguistic studies. The places of interest in this dissertation are Jackson and Josephine Counties located in Southern Oregon. Variationist sociolinguistics evolved from previous work completed by dialectologists who were predominantly interested in mapping linguistic variants. Although modern-day sociolinguists discuss various non-linguistic variables that correlate with linguistic variation, region was once the most important variable for sociolinguists. As Chambers (2000) discussed, region was the variable for dialectologists whose goal was to document where people said which variant. Chambers and Trudgill (1998) described the motivation for dialect geography as seeking, "to provide an empirical basis for conclusions about the linguistic variety that occurs in a certain locale" (p. 21). To accomplish this goal, questionnaires were developed to provide dialectologists a systematic method of collecting data from a variety of participants. The data collected in these questionnaires is governed by the individuals who participate in a study. In the case of older studies, most participants were nonmobile, older, rural males who are often referred to as NORMs. Chambers and Trudgill (1998) stated that a justification for including nonmobile participants is to, "guarantee that their speech is characteristic of the region in which they live" (p. 30). Linguists aimed to collect speech of a 'bygone era' by studying NORMS as a means of understanding language change. Additionally, rural speakers were sought because of the perception that urban areas are too dynamic and the people who live in cities are more mobile. Male participants were prioritized because of the assumption that, "in the western nations women's speech is considered to be more self-conscious and class-conscious than men's" (Chambers & Trudgill 1998, p. 30). These dialect studies are a treasure trove of data; however,

by focusing on NORMS, the speech of large swathes of the population was largely overlooked. Chambers (2000) argued that the increase in mobility resulted in region becoming less explanatory as a sociolinguistic variable given that traditional dialectology depended on the notion that people tended to live their whole lives in one community. As mobility became more common and the reality of communities changed, it became necessary to redefine region as a concept. The seminal work Weinreich, Labov, and Herzog (1968), dictated principles of language change which promoted investigation of the structure of linguistic variation as opposed to equating linguistic structure with linguistic homogeneity. Hence, there was motivation to work towards more diverse recruitment and the completion of research in urban areas. Methods in urban areas involved locating people who would be representative of the community in order to understand the speech community. Chambers and Trudgill (1998) summarized that, "traditional dialectology concentrated on the relationship between language and geography, and on spatial differentiation of language," while, "urban dialectology has looked more towards the relationships that obtain between language and social features" (p. 57). Urban dialectology fed directly into the development of modern-day variationist sociolinguistics as certain linguists became more interested in the systematicity of language variation. Eckert (2016) described the history of variationist sociolinguistic research as three waves: First, Second, and Third. The classification of these waves can be thought of as chronological developments in the field but also as a gradual broadening of the varied aims of sociolinguists to approach and explain language variation.

Large quantitative samples in First Wave sociolinguistics dominated the field for many years. To process large quantitative samples, it was necessary to categorize people into certain social groups such as man or woman or different social classes. These macrosocial categories

were successful in demonstrating that language variation can be described systematically (e.g., Labov 1972). However, there have been criticisms regarding the approach. As Eckert (2012) summarized, speakers were viewed as, "bundles of demographic characteristics" (p. 88). Namely, assigning respondents to large groups overlooks how individuals negotiate different linguistic forms they encounter and why they choose the forms they do. Additionally, sound change was deemed as, "prosocial, originating in the most unconscious and systematic reaches of the speaker's linguistic system" (Eckert 2016, p. 69). In other words, language change occurred below the level of consciousness and was motivated by speakers' need to conform to societal norms. Furthermore, Eckert (2016) stated that linguistic variation in the First Wave was explained via the attention to speech model. Labov (1972) argued that the more attention someone was paying to their speech, the less likely it was for overtly stigmatized forms to be present. Although the attention to speech model could explain some systematic linguistic variation within a speaker, it was not explanatory enough. As Wolfram and Schilling (2016) summarized, it is not always the case that a formal situation causes a person to pay more attention to their speech or conversely that an informal situation results in a speaker paying less attention to their speech. Additionally, as Eckert (2012) explained, the attention to speech model could not explain the perseverance of certain stigmatized linguistic features. As a response to First Wave sociolinguistic studies, there was a push towards more qualitative methods which provided researchers with a more nuanced perspective in Second Wave sociolinguistics. These more nuanced perspectives in Second Wave sociolinguistics were constructed upon previous macrosocial categories which were demonstrated in First Wave sociolinguistics. As a response to the attention to speech model, a, "more constructivist view of the connection between variation and social categories," was adopted (Eckert 2016, p. 69). This constructivist

view resulted in researchers incorporating more ethnographic methods which help researchers, "explore the local categories and configurations that inhabit, or constitute these broader categories" such as age, socioeconomic class, and ethnicity (Eckert 2012, p. 87). The social constructivist view also assisted researchers when demonstrating the role of the interlocutor (Giles, Mulac, Bradac, & Johnson 1987). A quintessential example of Second Wave research is Milroy and Milroy (1978) who pioneered social network research in sociolinguistics. Their aim was to understand how language usage related to the plexity and density of a speaker's social network in Belfast, Ireland. Another important study was Eckert (1989), which successfully demonstrated the importance of how students' use of linguistic features was related to different social groups which were important at the school. As Eckert (2012) explained, Second Wave studies found that when examining communities and social categories more closely, "linguistic categories do not index categories, but characteristics," (p. 93). This focus on social categories led to Third Wave sociolinguistics.

Currently in sociolinguistics, qualitative methods and quantitative methods are valued for the ability to assist linguists in understanding the validity of certain claims made about language use. Third Wave sociolinguistics views language as, "a system of signs, whose meanings emerge in their role in styles that enact social personae or types…constrained by, and contribut[ing] to macrosocial patterns." (Eckert 2016, p. 69). The connection between macrosocial variables and linguistic variables is indirect, emergent and not, "broadly consensual and stable," as presumed before (Eckert 2016, p. 69). This view that communities and language variation are dynamic entities matches the view in linguistic anthropology and addresses some of the criticisms of First and Second Wave sociolinguistics by linguistic anthropologists (Llamas & Watt 2010). This wave of sociolinguistics allows the study of orientation towards place more

than any other time before because of its focus on how people within their community view social categories and the focus on viewing these categories as dynamic. As the field has continued to grow, so has the understanding of macrosocial variables. Categories which once seemed simple have become recognized as more complex as the understanding of the macrosocial variables has increased. However, space has been largely ignored by variationist sociolinguistics, a point that is addressed in the next section.

Importance of Space and its Connection with Language Use

Britain (2010) outlined the importance of space in sociolinguistic research and described the treatment of space by variationist sociolinguistics in research. As Britain (2008) said, "the role of space was largely reduced to that of a canvas onto which dialectological findings could be painted" in early dialectology (p. 5). As described in the Introduction, early variationist sociolinguistic research concerned itself more with variables such as gender and socioeconomic status over analyzing the relationship between space and language use. As Britain (2010) argued, given that all variation occurs in geographic space, the relationship between space and language should be of concern to variationist sociolinguistics. In particular, sociolinguists should aim to understand spatial diffusion of language and local perceptions of space. As described in the Introduction, a focus of Third Wave sociolinguistics is how people within their communities view social categories. Britain (2008) observed that there has been a renewed interest in space in variationist sociolinguistics where it is viewed as, "always in a state of evolution, in which social and economic processes are constantly being played out through a geographically differentiated filter" (p. 11).

Speakers of a language can use regional features to highlight certain aspects of their identity depending on the situation as demonstrated by Johnstone (1995) in her work in rural Texas. Johnstone (2004) urged linguists to not only pay attention to geographical space but to also allow for a "phenomenological perspective," where, "speakers are seen as constructing place as they experience physical and social space, and different speakers may orient to place, linguistically, in very different ways and for very different purposes" (p. 66). Watt & Llamas (2017) summarized the importance of place by writing that language is:

> used as a proxy for place, in the sense that pronunciations, grammatical structures, words, and writing systems come to be associated with particular localities or regions, meaning that we can deploy linguistic resources to index non-linguistic information about our geographical provenance. Moreover, the choices that speakers make among alternative forms in their linguistic repertoires act as signals that help listeners to align speakers with relevant ingroups and outgroups.
>
> (p. 194)

In other words, speakers can utilize language to indicate that they are from a certain locale or to indicate associations with certain groups. Linguistic features can represent place to language speakers whether that is conscious or subconscious. Watt and Llamas (2017), added that, "discovering how this kind of knowledge is acquired and activated in interactions is of course one of the key objectives of sociolinguistic inquiry" (p. 194).

Given the interest in more qualitative work in Third Wave sociolinguistics and the renewed interest in space, the focus of this dissertation is to understand Southern Oregonians' understanding of place and how it factors into language change occurring on the West Coast. Southern Oregon is an area of interest due to contemporary socio-political issues in the area explained in great detail in Chapter 2. The specific linguistic phenomena of interest in this study are features of the region that have been recently described, namely, the California Vowel Shift

(CVS)[1] (Eckert 2004) and prevelar raising (Reed, 1952, and Wassink, Squizzero, Scanlon, Schirra & Conn 2009). As described by Cardoso, Hall-Lew, Kementchedjhieva & Purse (2016), the CVS is characterized by, "the lowering and retraction of BIT and BET, a fronting of BOOT and BOAT, a merger of BOT and BOUGHT, a fronting of BUT, and a 'nasal split' whereby BAN (BAT before nasals) raises and fronts and BAT before nonnasals lowers and retracts" (p. 34). Prevelar raising is the phenomenon where, "front lax vowels BAT and BET are raised before voiced velar consonants (BAG and BEG, respectively)" (Cardoso et. al. 2016, p 36). These linguistic phenomena will be explained in greater detail in Chapter 3. In addition to the well-studied extralinguistic factors gender, ethnicity, and age, this dissertation incorporates an additional extra-linguistic factor, rootedness. Rootedness, defined here as orientation towards place, has been studied less than the previously mentioned extra-linguistic factors. These extra-linguistic factors are described in Chapter 4. This dissertation seeks to answer the following research questions:

RQ 1: What are the characteristics of the vowel system of a relatively rural Southern Oregon community?

RQ 2: If there is variation in the respondents' vowel systems, is there a correlation between rootedness and the vowel systems of the respondents?

To answer the aforementioned research questions, I used data collected and recorded during 2017-2018 fieldwork in Jackson and Josephine Counties which contains 13 interviews with 13

[1] Often referred to as California English in this dissertation.

different participants. These interviews contain informal conversations and reading tasks. All participants are Southern Oregon natives, who have spent most of their lives in Southern Oregon. I discuss individual participant demographics in Chapter 4 of this dissertation including age, gender, and ethnicity. In addition to those demographics, I have created a rootedness score for each of the participants described in more detail in Chapter 4, as it is the ultimate goal of this dissertation to explore applications of rootedness in sociolinguistic research. I focused on the word list portion of the interview for my data analysis. In particular, I was interested in the CVS and prevelar raising. The word list was preliminarily transcribed using CLOx. The transcripts and sound files were then imported into ELAN (ELAN 2018). FAVE was used to align the transcript to the audio (Rosenfelder, Fruehwald, Evanini, Seyfarth, Gorman, Prichard, & Yuan 2014). A Praat script was used to automate finding relevant formant values (Boersma & Weenink, 2020). The data was then manipulated and normalized in R (R Core Team 2013). The statistical relationships between the independent variables and acoustic data are described in Chapter 6. The results indicate that the participants are participating in aspects of the CVS and prevelar raising. As will be further described in Chapters 6 and 7, the rootedness metric did not yield statistically significant results; however, a post hoc analysis indicated that parts of the rootedness metric were significant for BEG raising.

Chapter 2 An Overview of Southern Oregon

The present chapter provides a brief history of Southern Oregon that is relevant for the present study. In particular, I discuss the earliest English speakers and key socio-political movements in the region. In comparison to other parts of the United States, Oregon has a relatively short history of English speakers. These speakers' origins are relevant when discussing Oregonians' speech. As in much of the United States, indigenous people lived in Southern Oregon long before English speaking settlers moved to the area. The tribes included the Modocs, the Shastas, Rogue Rivers, and Umpquas, with occasional settlement and raiding by the Klickitats and the Deschutes (*Jackson County Oregon*, 2020). The first English speakers were most likely fur traders who explored the area as early as 1828; however, there are no recorded settlements before 1851 (*Jackson County Oregon*, 2020). The Oregon Trail was significant to Oregon's history, and it was active from the early 1840s through the 1860s (Hill, 2019). It stretched from Missouri to the trail's terminus located in the Willamette Valley in Northern Oregon (Hill, 2019). There were various reasons why people chose to move to Oregon during this time such as: the promise of fertile land, a belief in Manifest Destiny, the promise of better economic opportunities, and the promise of adventure (Hill, 2019). The journey to Oregon was treacherous especially around the Columbia River in Northern Oregon. The mortal danger posed at the Columbia River resulted in a need for safer routes for travelers. One of these alternative routes became known as the Applegate Trail. The Applegate Trail is currently a prominent aspect of Southern Oregon lore.

In 1843, The Applegate brothers from Missouri personally lost two family members on the Oregon Trail in the Columbia River and were motivated to find safer options for the Oregon Trail. The brothers, along with integral member Levi Scott and twelve other Oregon settlers,

formed a travel party and travelled south on an existing route to the California border (LaLande 2019a). They then journeyed east to the Klamath Basin and then later traveled southeast to Humboldt, Nevada (LaLande 2019a). In Nevada, the party connected their new trail to the California Trail; the California Trail was an existing trail whose path was utilized mostly by farmers until gold was discovered at Sutter's Mill (Moore, Alexander & Aranda 2020). While some others stayed in Humboldt, Applegate continued up the California Trail to Idaho where it met with the Oregon Trail. There he promoted the Applegate Trail and convinced some travelers to attempt this new, supposedly safer trail. Like much of the Oregon Trail, the journey on the Applegate Trail was arduous and the terrain was especially unforgiving for travel by covered wagons. Although the trail never replaced the established Oregon Trail along the Columbia River, it did result in some settlement in Southern Oregon (LaLande 2019a). Prospectors were attracted by the ample land promised by the government to western bound migrants and the discovery of gold in 1851 near modern-day Jacksonville, Oregon (Davidson & Webber 1995). In 1853, a large number of migrants arrived in the area (Davidson et. al. 1995). In the early years of settlement, there were many conflicts with Native American communities in the region; eventually, the White newcomers overpowered the Native communities. Oregon became a state in 1859, soon after White settlers first traveled across the Oregon Trail (Davidson et. al. 1995). Although the first English speakers in the Pacific Northwest were British, the first English speakers who travelled through Southern Oregon were most likely from New England. Migrants on the Oregon Trail came from mostly the Ohio Valley and Tennessee with later waves coming from Missouri, Illinois, and Iowa (Wolfram & Schilling 2016).

After the achievement of statehood for Oregon, there were many industrial changes in the world. These changes resulted in connecting the relatively isolated Pacific Northwest to other

parts of the country and the world. In the latter half of the 1800s, railroad lines were built across the United States, with a connection finished between the Puget Sound (Washington State) and the Great Lakes in 1883 (Schwantes 1996). In 1887, a rail line was completed which connected all of the West Coast; this rail line went through Ashland, Oregon (Davidson et. al. 1995). Industries related to logging flourished, as did other industries related to foodstuffs and to a certain extent mining (Schwantes 1996). The population exploded in Oregon during the 1880s with an increase of 79.5%, which contributed to an expansion in the growth of industries (Schwantes 1996). People came mostly from the middle western portion of the United States, but there were many immigrants who came from Western Europe. Later, there were more immigrants from Eastern Europe. Chinese immigrants have had a long history in the Pacific Northwest, and in the early 1900s, many Japanese immigrants came (Schwantes 1996). Mexicans also have a long history in the Pacific Northwest, but migration greatly accelerated with the growth of the agricultural industry in the early twentieth century (Schwantes 1996). Not many African Americans settled in Oregon, which can be attributed to institutionalized racism (Schwantes 1996).

As Oregon industrialized, there were numerous boom-and-bust cycles which had political consequences. One political movement in particular, known as the State of Jefferson, has a special status in Southern Oregon lore. The State of Jefferson was a secessionist movement around World War II involving Southern Oregon and the very northern part of California. The goal of the movement was to draw attention to the citizens' needs for more infrastructure such as roads (LaLande 2019b). The movement might have received more attention if not for the urgency of American involvement in World War II following the attack on Pearl Harbor. The State of Jefferson is a concept still present in Southern Oregon and Northern California. As

outlined in Laufer (2013) some people strongly believe that Southern Oregon and Northern California share a similar identity and culture compared to urban areas such as Portland and San Francisco and use the name the State of Jefferson to evoke that sense of a shared identity. People who do invoke the name the State of Jefferson may do so for different reasons. Some appreciate the natural beauty and/or the shared history and culture of the area. One may argue that someone from Southern Oregon has more in common with someone from the very northern part of California than someone from Portland. Others take a view that the area should secede due to political influences in Salem and Sacramento (respectively the state capitals of Oregon and California) not allowing locals to live their lives the way they please. Figure 1 shows one representation of the proposed State of Jefferson, with Jackson and Josephine counties in the middle.

Figure 1 State of Jefferson Map

(https://www.oregonlive.com/travel/2010/05/jefferson_a_state_beyond_but_w.html)

Agriculture and settlement patterns in Southern Oregon continue to be relevant, as shown in the following section.

A Contemporary History of Southern Oregon and Attitudes Towards California

Climate change is having an effect on where plants can be grown, and this effect is resulting in changes for Oregon's agricultural industry. Parts of Oregon, in particular Southern Oregon, are becoming prominent wine growing regions as the Californian climate becomes more inhospitable for growing certain grapes (Selsky 2018). Cannabis has had a long-term presence in Oregon, with many local growers illicitly growing their crops (Johnson 2017). Oregon was one of the first states to legalize cannabis, and cannabis legalization in Oregon in 2014 has changed some local dynamics (Roger 2020). Southern Oregon has been a prominent cannabis growing region since the resurgence of the popularity of the substance in the 60s and 70s (Johnson 2017). Legalization has resulted in some conflict between well-established independent local cannabis farmers, local residents, the newcomers to the industry; the concerns are especially prominent in discussions about water rights and land use laws (Perkowsky 2018). There are also concerns among the local cannabis growers that large grow operations will put them out of business (Stoa 2018).

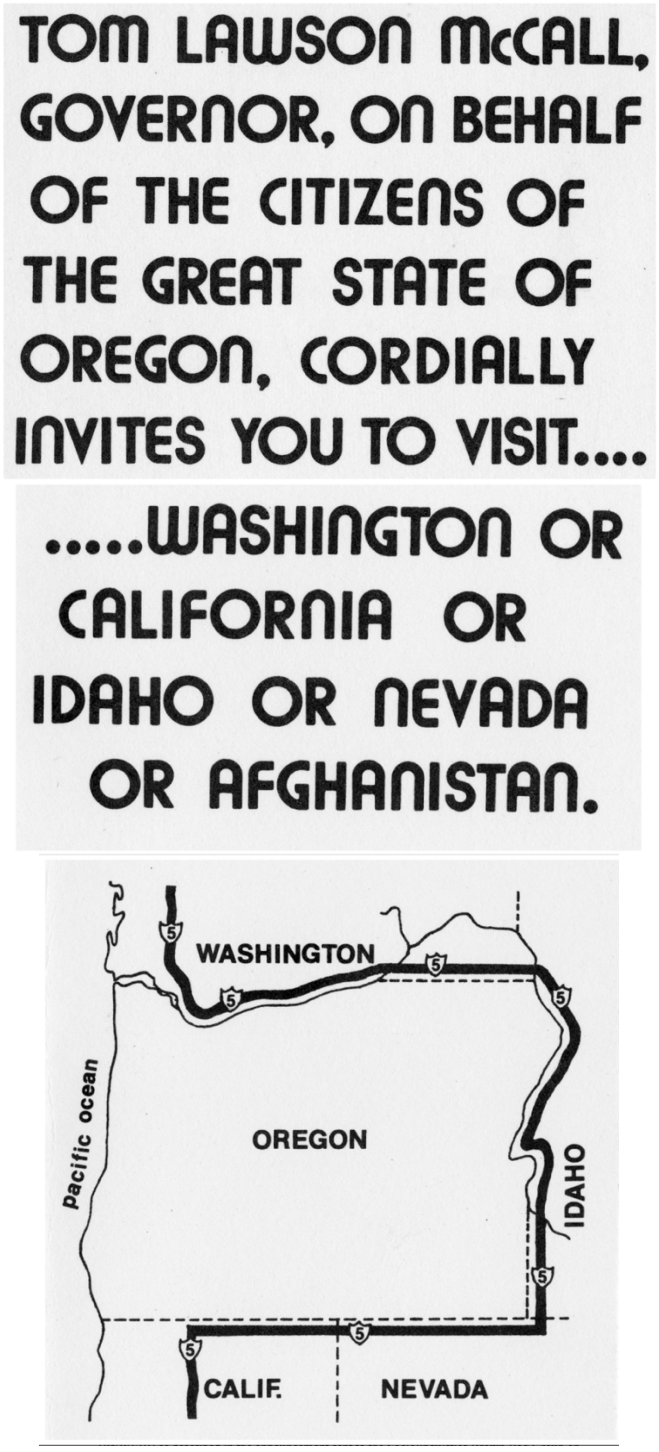
There is a housing shortage in Oregon, and housing prices are rising. This led Oregon to be the first state to impose statewide rent control in 2019 (Frazin 2019). According to Lehner (2017), there are several factors contributing to Oregon's present-day shortage: builders and developers are more risk adverse, there are not enough skilled construction workers, and it is expensive to pay those workers, Oregon's use laws, issues with zoning and finding lots to build

on, and financing issues. Some of these factors can be attributed to the housing bubble bursting and the great recession. Although many different people are moving to Oregon as shown in Table 1, Californians seem to be singled out as scapegoats for local issues such as the housing shortage (e.g., https://thatoregonlife.com/2016/10/oregonians-hate-californians/). This issue of attitudes towards California has not received scholarly attention but there is abundant anecdotal evidence of Californians being the target of negative attitudes. Some people loathe Californians while others enjoy making jokes at the expense of Californians.

One of the first examples of the modern-day anti-immigration to Oregon movement was the James G. Blaine Society which began in the 1960s. The society's mission was for there to be zero population growth in Oregon so as to protect the state's natural resources (Perry 2017). The sentiments voiced by the Blaine Society were also voiced by government officials. In the 1970's, Oregon governor Tom McCall was particularly wary of newcomers coming to the region and became nationally famous because of a statement he made regarding incoming residents to Oregon. In a 1971 interview with CBS correspondent Terry Drinkwater, McCall said "Come visit us again and again. This is a state of excitement. But for heaven's sake, don't come here to live" (Stratton 2018). Around this time, Oregon 'ungreeting' cards were for sale, the purpose of which was to joke about the many people moving into Oregon. These were physical cards that were available for purchase in stores. One of the most popular cards was, "In Oregon people don't tan, they rust" ("The Oregon Attitude", 1973). Another card, shown in Figure 2 depicts I-5, the major interstate that runs along the entire West Coast from Mexico to Canada, as going around Oregon. The card includes a parody of McCall's quote.

Figure 2 Oregon Ungreeting Card

(http://ohsresearchlibrary.tumblr.com/post/131181355534)



Although the ‘ungreeting’ cards were lighthearted, they echoed sentiments that were felt by the greater population regarding growth and tourism in Oregon. This sentiment for protecting Oregon’s resources by limiting growth was stated by Tom McCall in an interview with Bill Moyers:

> It’s got to be couched in humor because there’s no way you can do it legally. I mean, it’s anti-Constitution to say don’t come, and you can’t come. So it’s a terribly difficult line to hew because it’s got to be done tongue-in-cheek; it’s got to be done with humor. And you’ve got to prove to them, because their feelings are hurt, that all you’re trying to do is to make sure that we preserve the kind of life that they would came [sic] to Oregon as a vacationist to enjoy. That they would came [sic] to Oregon as a retiree to enjoy. We’ve got to keep our kids in our state by having enough jobs for them and small immigration and, at the same time, spreading our population is the most important thing — to get away from the Willamette Valley, which is a great center of population where you’ve got seventy-five percent of the people on twelve percent of the land.
>
> (“The Oregon Attitude”, 1973)

This sentiment surfaces repeatedly. For example, in 1999, the Oregon senate proposed a sign for the Oregon border that said “Visit…But Please Don’t Stay”. This slogan was rooted in the idea that population growth leads to the damage of natural resources. People joked that the unwelcoming sign would be cheaper than a border fence. Ultimately, the slogan “Welcome – Keep Oregon Green” was chosen to be more neutral while still highlighting the green priorities of the state (“TOURISM: Oregon Senate scraps 'Please Don't Stay' sign”, 1999).

This anti-migration to Oregon sentiment from the 70s is still discussed today. One can order a t-shirt with a photo of McCall and the slogan “come visit don’t stay” as shown in Figure 3.

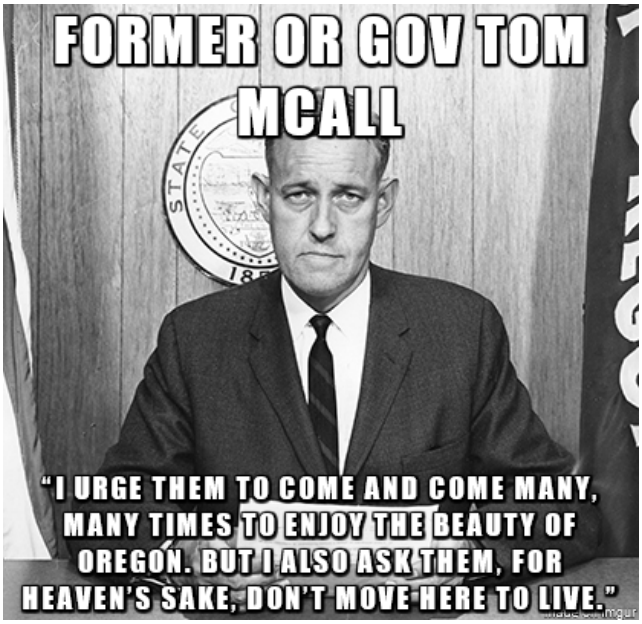
Figure 3 Tom McCall T-Shirt

(https://www.redbubble.com/shop/t-shirt/16089040)

Tom McCall's anti-immigration quote is showcased below on a 2016 meme in Figure 4. Essentially, the creator of the meme is showcasing the governor and the quote in a positive light.

Figure 4 Tom McCall Meme

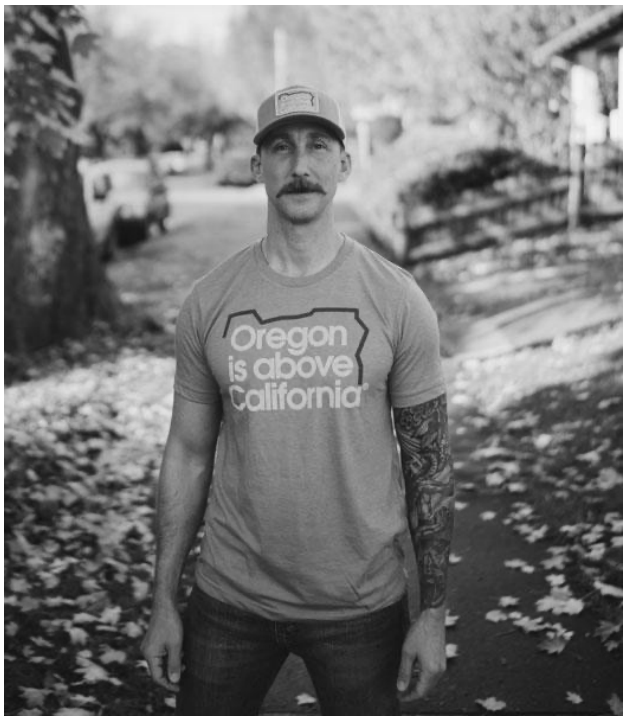
(https://imgur.com/QfKOhbk)



This meme and the shirt indicate that people are still discussing this quote and the relevance and persistence of the sentiments from the 70s. Numerous Reddit threads, blog posts, and news articles related to the topic[2] provide current examples. Some of the examples are lighthearted, such as the t-shirt in Figure 5, which could point to Oregon being better than California or point to the fact that Oregonians often must describe where Oregon is geographically in relation to California.

Figure 5 Oregon is Above California T-Shirt

(https://grafletics.com/products/oregon-is-above-california-tee)



[2] https://sfist.com/2015/09/04/people_in_portland_are_putting_no_c/
https://www.sfgate.com/expensive-san-francisco/article/move-bay-area-to-pacific-northwest-oregon-boise-13120449.php
https://www.reddit.com/r/oregon/comments/36j8xd/why_do_so_many_oregonians_on_here_hate/
https://thatoregonlife.com/2016/10/oregonians-hate-californians/

This parody 'Welcome to Oregon' sign shown in Figure 6 is also fairly lighthearted although not an actual sign that can be found on the Oregon border.

Figure 6 Parody of Welcome to Oregon Sign

(https://thatoregonlife.com/2016/10/oregonians-hate-californians/)

In addition, referring to the University of Oregon in Eugene, UC-Eugene (UC meaning University of California) is also very lighthearted and provides commentary on the number of Californians enrolling at that university[3]. However, this rivalry with California is not always lighthearted. In a serious incident, a couple with California license plates had their home and car vandalized in Portland with anti-California graffiti as shown in Figure 7.

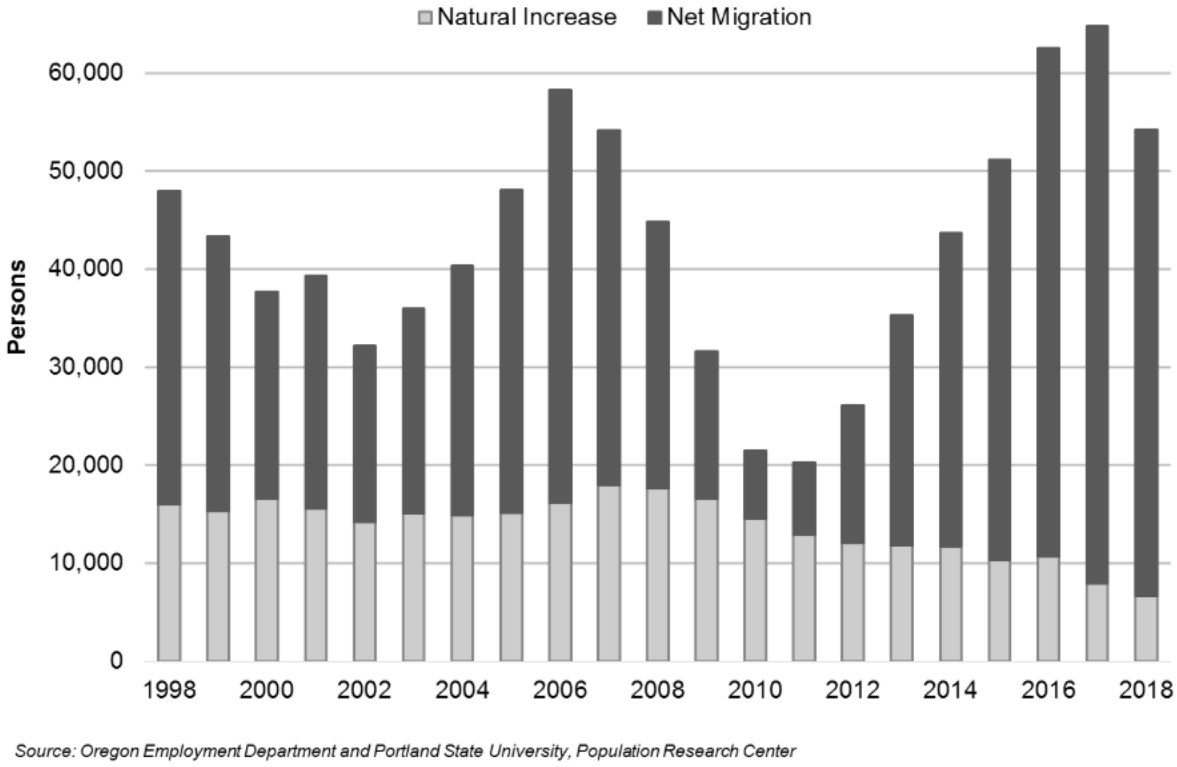
[3] https://www.dailyemerald.com/news/academics/uc-eugene-why-californian-students-keep-coming-and-what-it/article_340f997d-246d-50a4-a4ff-0d4d5f6dbb72.html

Figure 7 Vandalized Car with Anti-California Graffiti

(https://www.oregonlive.com/portland/2017/07/go_back_to_california_vandalis.html)

The modern-day discourse about California and migration to Oregon revolves around the concern that Oregon will be 'turned into' California by the many Californians moving to the area. There are stereotypes that Californians mistreat the environment, and that Californians are raising housing costs by moving to Oregon and contributing heavily to suburban sprawl. Oregonians are perceiving a population increase in Oregon, and in fact, many people are moving to Oregon. As can be seen in Figure 8, net migration is the main reason for the increase in Oregon's population.

Figure 8 Increase in Oregon's Population



(Bechtoldt 2019)

In 2018, approximately 47% of the people living in Oregon were not born in the state (Lehner 2018). The largest number of migrants are indeed from California, and within California most of the migrants are coming from Southern California (Lehner 2013). Table 1 illustrates Oregon's in- and out-migration in 2016.

Table 1 Oregon In and Out Migration

	Where Current Oregon Residents were Born	Where Oregon-born Individuals Live Today
1.	Oregon *1,173,240 (42.9%)*	Oregon *1,173,240 (60.6%)*
2.	California *492,486 (18.0%)*	Washington *226,831 (11.7%)*
3.	Washington *175,829 (6.4%)*	California *144,573 (7.5%)*
4.	Illinois *59,671 (2.2%)*	Arizona *43,027 (2.2%)*
5.	New York *53,331 (1.9%)*	Idaho *40,786 (2.1%)*
6.	Texas *49,230 (1.8%)*	Texas *25,997 (1.3%)*
7.	Idaho *41,782 (1.5%)*	Colorado *22,421 (1.2%)*
8.	Minnesota *39,166 (1.4%)*	Nevada *20,213 (1.0%)*
9.	Michigan *36,950 (1.4%)*	Utah *19,893 (1.0%)*
10.	Colorado *33,293 (1.2%)*	Florida *16,004 (0.8%)*

(Lehner 2018)

The second highest number of migrants to Oregon is from Washington state, but the discourse regarding Washington is more positive in nature. This may be because Oregon and Washington share many geographic and cultural similarities and have been historically bound together because of these features (Robbins 1983). Additionally, Washingtonians also share in the

discourse about criticizing California. Like Oregonians, some Washingtonians take criticizing more seriously than others. For some, calling someone a Californian or mentioning California can be like uttering a curse word (e.g., https://www.reddit.com/r/oregon/comments/36j8xd/why_do_so_many_oregonians_on_here_hate/). Since this discourse about California is so prevalent and the attitudes are so overwhelmingly negative in Washington and in Oregon, it potentially could be a factor in whether people adopt certain linguistic features that sound Californian to Oregonians. Another factor in whether Southern Oregonians adopt certain linguistic features could be if the features are associated with urban areas or rural areas.

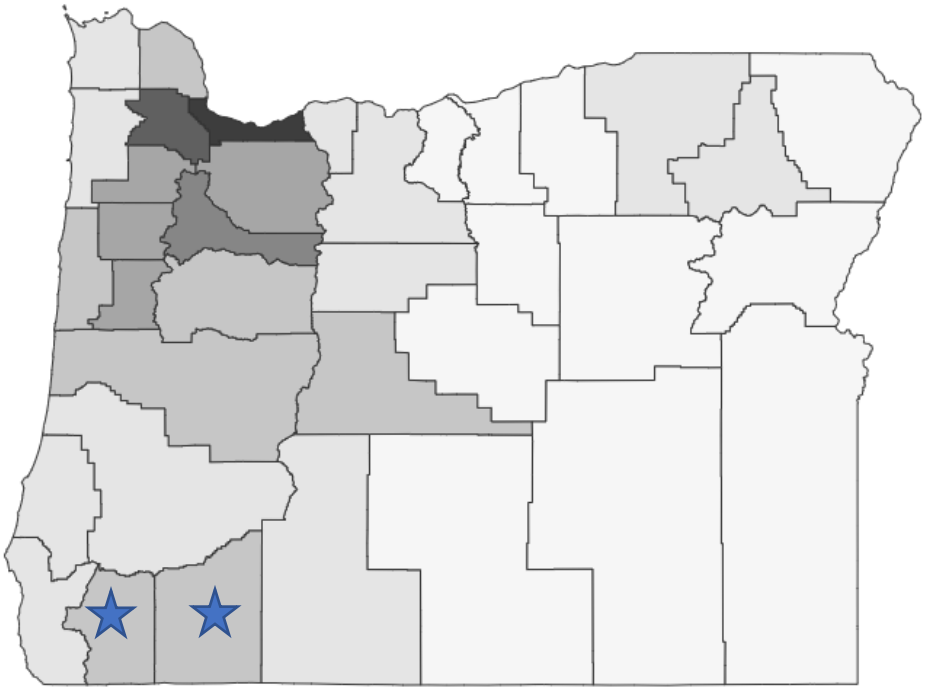
Urban-Rural Areas in Oregon

There are many different methods by which to classify whether an area is urban, rural, or in between. One of the methods includes counting where people are presently located. The US Census defines urbanized areas as, areas with a population of 50,000 or more, urban areas as, "any incorporated place or census designated place of at least 2,500 and less than 50,000 people", and rural areas as any area that is not urban (*US Census Bureau,* 2017). Some human geographers take a different approach, defining an area as rural by considering how the area is socially constructed with regard to economic activity, demographics, and attitudes of residents and visitors (Warf 2006). Rural areas in the United States are changing in order to survive in the global economy, which in turn perhaps also changes what it means for an area to be called rural. Hibbard, Selthzer, Weber, and Emshoff (2011) discuss rural-urban interdependence from the perspective of the economy, commuting patterns, and politics in Oregon. In general, the

population of Oregon is fairly sparse; it is ranked the thirty-ninth state in terms of population density ("Oregon Population", 2019). Figure 9 shows population density by county in Oregon, the darker the color, the more population.

Figure 9 Population Density by County in Oregon

(Adapted from https://worldpopulationreview.com/states/oregon-population/)



The majority of the population lives in the Willamette Valley in the north. The two counties in the south indicated by the blue stars in Figure 9 are Jackson (population 201,564) and Josephine (population 87,393) counties. Considering population density, Jackson and Josephine counties could be labeled as more urban especially compared to other parts of the state; however, such a label would neglect the perceptions of the members living in those counties. The stance taken in the present research, given the research questions that will be discussed in Chapter 5, follows that of human geographers in that attitudes regarding the region are important when discussing

rurality. In the present study, Medford and Ashland, both located in Southern Oregon (in Jackson County), are fieldwork sites; Medford is the eighth biggest city in Oregon with a population of 85,518, and Ashland has the twenty-seventh spot with a population of 22,048 ("Oregon Population", 2019). Participants in the present study overwhelmingly labeled Southern Oregon as rural. Interestingly, they often mentioned that even though Medford might appear to be a big city, the people are rural. Many participants noted that Ashland has a few blocks that appear urban in the central part of town; however, overall, they considered Ashland to be rural. In interviews discussed further below in Chapter 4, these attitudes about Southern Oregon rurality were particularly relevant when discussing migration changes in the region. Participants' perception was that many of the California transplants moving to Southern Oregon were moving from urban areas in California. These transplants were perceived as longing for Southern Oregon to be as urban as the places they were moving from. This perception of locals was coupled with the Californians' dislike of the weather. Some participants thought it was silly that urbanites were moving to a rural area with a particular climate while the urbanites also wished it were more urban and had different weather. It is possible a linguistic study could show that linguistic features associated with rurality can be a means for presenting a Southern Oregon identity as a contrast to a more urban California-centric identity.

Summary

The information presented in this chapter provides context for this study in particular: settlement patterns, local issues, and ideas about rurality. It is time to look at the situation on the southern border of the Pacific Northwest to explore what residents think it means to sound local

in this borderland. This area is of particular importance because it is not only the border of Oregon but the Pacific Northwest region. The settlement patterns of Southern Oregon are similar to other parts of Oregon, namely migrants came from the Ohio Valley, Tennessee with later waves coming from Missouri, Illinois and Iowa (Wolfram & Schilling 2016). The people who migrated to Oregon moved into areas which were already the home of Modocs, the Shastas, Rogue Rivers, and Umpquas, and occasionally the Klickitats and the Deschutes. People with Asian and Latinx ancestry have a long history in the Pacific Northwest as well. Contemporary issues that Southern Oregon faces include managing the changing agricultural industry and a housing shortage. Of particular interest are attitudes towards Californians which are overwhelmingly negative. These attitudes have the potential to be relevant when discussing whether Southern Oregonians share language features associated with California. While some might classify Southern Oregon as rural, this study will take the view of some human geographers who say that perception is paramount. Participants labeled Southern Oregon as rural with a few minor exceptions. Perhaps these spatial perceptions will be relevant when discussing linguistic features associated by participants with more urban areas such as Portland. Chapter 3 builds off of this contemporary history by providing an understanding of the linguistic influences which might be relevant in Southern Oregon.

Chapter 3: What are the possible linguistic influences for Southern Oregon?

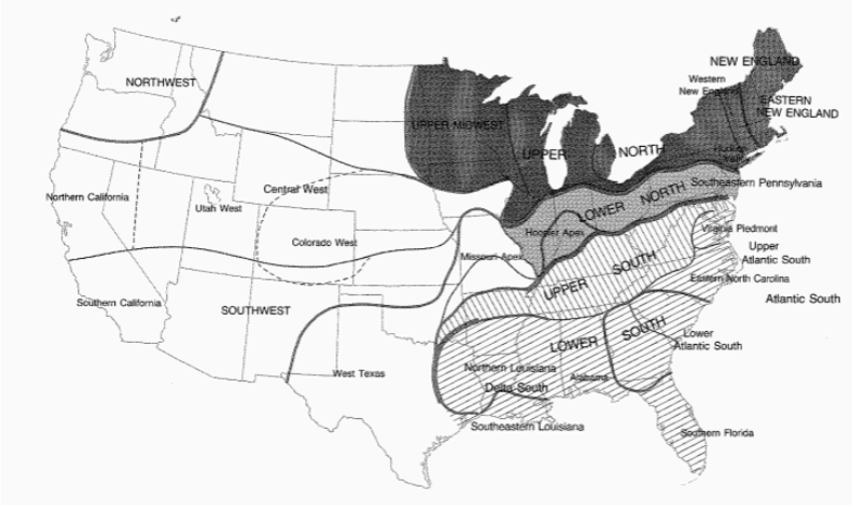
Oregon is the least studied of the West Coast states. This chapter will discuss linguists' current understanding of language variation on the West Coast as it relates to Southern Oregon. The focus of this section is on California, Washington, and Oregon, due to the interconnectedness among those states described in Chapter 2. Because this research is fairly recent there is little information on many aspects of the vowel systems. The two main changes are the California Vowel Shift (CVS) which has mostly been documented in California and prevelar raising which has mostly been documented in the Pacific Northwest. Oregon, Washington, and California are, without controversy, located in the Western Dialect region; however further divisions are much harder to pinpoint.

Large Scale Surveys

Carver (1987) attempted to form a summary of the then-current state of American dialect regions given past research. He conducted this summary from a geographic perspective. His summary primarily consisted of lexical items from the Dictionary of American Regional English (DARE) and various linguistic atlas projects. Carver (1987) defined the West as the area west of the Mississippi River. The methodological issues that Carver (1987) discussed regarding conducting research in the West are relevant today. These issues include the relatively short amount of time English speakers have been in the region, the scarcity of historical data, and the fact that many people who live in the West were not born there. Carver (1987) considered that what unifies the West is its newness and that it will most likely take one or two centuries before

there are more defined dialect areas in the West. As previously stated, Carver's analysis consisted of lexical items, and he provided a fascinating history as to why there are certain lexical items in particular areas. His summary of American dialects is shown in Figure 10. In Figure 10, he grouped Jackson and Josephine Counties, described in Chapter 2, outside of the Northwest, and did not differentiate them from Northern California. He did however state that the Northwest, "is a relatively well-defined region of the West, with its own small set of unique isoglosses" (Carver 1987, p. 242). While discussing dialect boundaries, Carver (1987) clearly communicated that he was marking tendencies on his maps and not definitive boundaries. Carver's (1987) main conclusion regarding the West was that the dialect region was fairly young and had not yet gone through all the dialect leveling processes that had already occurred in the East; however there already was some differentiation between different areas of the West. His evidence for this claim was based off of lexical items which can often be explained by the different geographical and settlement patterns.

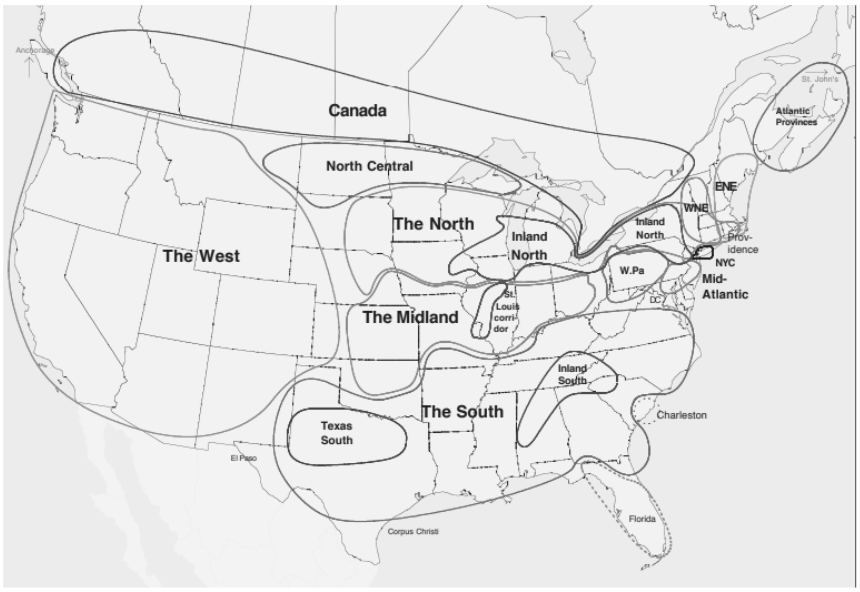
Figure 10 Map of American Dialects by Carver



(Carver 1987, p. 248)

Labov, Ash, & Boberg, (2006), the seminal work the *Atlas of North American English* (ANAE), relied on previous research conducted in the United States and Canada on English. The data collection for this work was conducted 1992-1999. The researchers' focus was pronunciation and phonology in urban areas. Using their results, the goal of the ANAE was to provide a broad representation of speech in the United States and Canada at a point of time. A limitation of their study was that a limited number of speakers were interviewed in each urban area of interest. Of particular interest were sound changes occurring in North America. Broadly speaking the West Coast states of Washington, Oregon, and California are located in the large dialect region defined by Labov et. al. (2006) as the West as shown in Figure 11.

Figure 11 Map of American Dialects from the ANAE



(Labov et. al. 2006, p. 148)

Labov et. al. (2006) stated that compared to other regions of the US, English speakers have been in the West less time and that the region, "shows considerable mixing of the linguistic patterns,"

shown in the Eastern US (p.137). According to Labov et. al. 2006 the following were characteristics of the West:

- "Differential fronting of /uw/ and /ow/: The F2 of /uw/ after coronals (the most advanced class) is more than 500 Hz greater than the F2 of /ow/
- Compete or nearly complete low back merger: /o/ and /oh/ are identical either in production or perception
- No Canadian raising of /ay/ before voiceless segments. The difference between the F1 of /ay/ before voiced and voiceless segments is not more than 50 Hz."

(Labov et. al. 2006, p. 137)

They believed that the Western Dialect region is still forming and stated that they did not think there was phonological evidence to name a subregion consisting of Seattle and Portland unlike Carvers (1987) analysis. They did state that there was a general lack of consistency relative to other dialects. Since then, there have been several studies on specific areas in the West, which provided a more nuanced analysis of communities and further understanding of language changes occurring in the community.

Contemporary Sociolinguistic Research in the West Coast States

Given the lack of general research in the West, several sociolinguists aimed to synthesize previous research in the West to build a foundation for future work in Washington, Oregon, and California. Partly due to Labov et. al. (2006), they were mostly interested in vowel descriptions. The result of their work is *Speech in the Western States Volume 1: The Coastal States* (Fridland, Kendall, Evans, and Wassink 2016), and I discuss several chapters from this work in the present chapter. The existence of this collection indicates an uptick of research in the region which demonstrates an interest by sociolinguists to further understand Washington, Oregon, and

California. The primary linguistic features of interest in this collection were the CVS and prevelar raising. According to Cardoso et. al. (2016), the CVS is characterized by, "the lowering and retraction of BIT and BET, a fronting of BOOT and BOAT, a merger of BOT and BOUGHT, a fronting of BUT, and a 'nasal split' whereby BAN (BAT before nasals) raises and fronts and BAT before nonnasals lowers and retracts" (p. 34). Prevelar raising is the phenomenon where, "front lax vowels BAT and BET are raised before voiced velar consonants (BAG and BEG, respectively)" (Cardoso et. al. 2016, p 36).

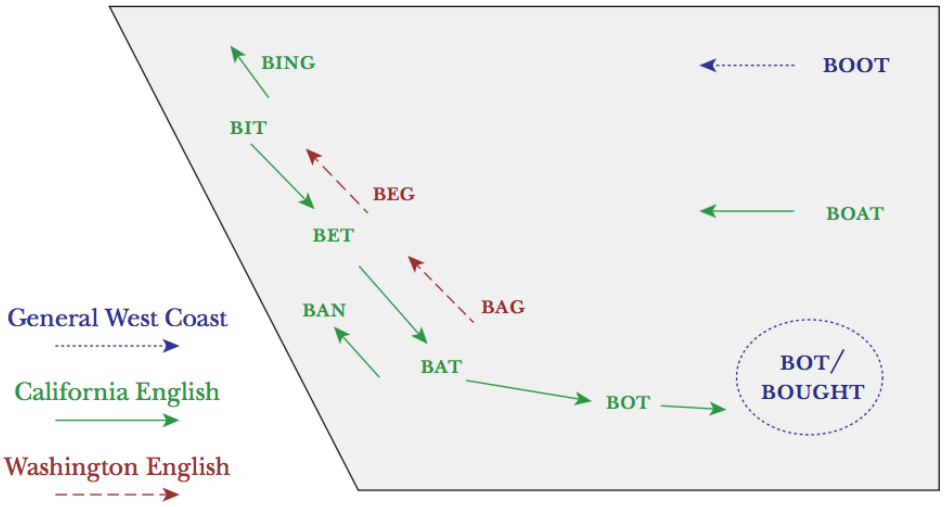
The present discussion begins with Oregon since it is the state of interest in this study. Oregon is the least studied of the West Coast states. Nelson (2011) recorded participants in a conversational setting and conducted recordings in Eugene, Springfield, and Cottage Grove, all of which are located in Western Central Oregon. She had two genders (described as male or female) and three generations represented, Younger (18-29), Middle (30-49), and Older (50-). She described the following results as parallel to the CVS: "front lax vowels are lowering and backing, there are no generational changes in the tense vowels, [and] fronting of back vowels (possibly not [o])" (p. 23). The differences included, "low-back merger not moving into [ɔ] space, mid central stressed vowel backing, [and] inglides of [æ]" (p. 26). This finding corroborates material presented in Chapter 6 regarding attitudes towards California.

McLarty, Kendall, & Farrington (2016) compared DARE recordings from 1967 to contemporary speakers in the Willamette Valley in order to gain a better understanding of language changes occurring in the region. They found that younger speakers have the low back merger. Additionally, they found the pattern associated with the CVS where /ɪ/ is lowered and overlaps some with /e/. /ɛ/ is lowering and backing. /u/ and /o/ are fronting more so than /o/. Lastly /ʊ/ is fronting and lowering, approaching /ʌ/. The older speakers also demonstrated /u/

and /o/ fronting, and /ʊ/ is fronting and lowering, approaching /ʌ/. They also had the low back merger. McLarty et. al. (2016) found prevelar raising in this group of speakers but not in their young group, and McLarty et. al. (2016) did not find evidence of the CVS among their archival speakers. They stated that any vowel changes related to the CVS must have begun to develop between 1914 and 1955, due to the ages of the speakers in the DARE files and the contemporary data set. McLarty et. al. concluded that more research should be conducted in Oregon given that there are many cultural sub regions in Oregon as well as a need for more research on ethnicity and language in Oregon given that most participants in studies in Oregon are white.

Becker, Aden, Best, & Jacobson (2016) discussed in great detail the location of Western Oregon regarding general West Coast features, Californian features and Washingtonian features. The study took place in the Portland metropolitan area. There were 22 participants who were raised in that area and the remaining 12 grew up in other parts of Western Oregon. Figure 12 indicates which vowels were of interest in the study and demarcates which features were connected with general West Coast English, California English, or Washington English.

Figure 12 Summary Plot of Linguistic Features of Interest on the West Coast



(Becker et. al. 2016, p. 108)

As seen Figure 12 Washington English was connected with /æg/ and /ɛg/ raising as in BAG and BEG. California English was connected with the phenomenon known as the California Vowel Shift characterized by the lowering of /ɪ/ and /ɛ/ as in BIT and BET, and the backing of /æ/, and /ɑ/ as in BAT and BOT. In addition to these linguistic features, there was /ɪ/ tensing before velar nasals as in BING and /æg/ tensing before all nasals as in BAN. In addition, /ʊ/, /u/ and /o/ as in BOOK, BOOT, and BOAT are fronting. Becker et. al. (2016) stated that, /o/ fronting was a feature of California in this study and that, "its presence in Oregon would indicate a link to California while its absence would indicate a link to areas like Washington State" (p. 109). Becker's results indicate /u/ fronting and that the majority of speakers had the low back merger which were features connected with General West Coast English and other varieties of English. Regarding California features, they found /o/ fronting, /æ/ backing, and some /ɛ/ lowering and /ɑ/ backing. As illustrated in Table 2, speakers who had backed /ɑ/, also had lowered /ɛ/; those who had lowered /ɛ/ also had backed /æ/. Lastly those who had backed /æ/ also had fronted /o/.

Table 2 Implicational Relationship among Different Linguistic Features for Becker et. al. (2016) Participants

Labov, Ash, and Boberg's (2006) Benchmarks for California Vocalic Behavior

Speaker	*Fronted* BOAT *(F2 > 1278 Hz)*	*Backed* BAT *(F2 < 1825 Hz)*	*Lowered* BET *(F1 > 650 Hz)*	*Backed* BOT *(F2 < 1275)*	BIT *Lower Than* BAIT?
PNW011	✔	✔	✔	✔	✔
PNW018	✔	✔	✔	✔	✔
PNW038	✔	✔	✔	✔	
PNW039	✔	✔	✔	✔	
PNW022	✔	✔	✔	✔	
PNW024	✔	✔	✔	✔	
PNW025		✔	✔	✔	
PNW009	✔	✔	✔		✔
PNW016	✔	✔	✔		
PNW034	✔	✔	✔		
PNW023	✔	✔		✔	
PNW035	✔	✔		✔	
PNW041	✔	✔		✔	
PNW001	✔	✔			
PNW003	✔	✔			
PNW004	✔	✔			
PNW005	✔	✔			
PNW007	✔	✔			
PNW010	✔	✔			
PNW012	✔	✔			
PNW019	✔	✔			
PNW020	✔	✔			
PNW026	✔	✔			
PNW027	✔	✔			
PNW037	✔	✔			
PNW017	✔		✔		
PNW006	✔			✔	
PNW002	✔				
PNW013	✔				
PNW015	✔				
PNW028	✔				
PNW030	✔				
PNW031	✔				
PNW036	✔				

(p. 117)

Becker et. al. (2016) claimed that the information in Table 2 showed an implicational relationship among different linguistic features. Given this relationship, they claimed that there was, "evidence of change in apparent time –with young people leading in BOAT fronting, BAT retraction, and BIT retraction, and women leading in BET lowering and BOT retraction"; this suggested, "that California English features will continue to spread in Oregon" (Becker et. al. 2016, p. 127). Lastly, Becker et. al. (2016) found that prevelar raising was a feature that was receding since it was found in older male speakers but noted that their measure for prevelar raising might have not been adequate to find this feature.

North of Oregon is Washington state. Washington state is closely tied economically, culturally, and geographically to Oregon. This tie is especially pronounced in the Portland metropolitan area which spreads into Washington state. It is prudent then to discuss linguistic phenomena that are occurring in Washington State and compare them to phenomena in Oregon. In comparison to Oregon, there have been more studies in Washington State from a spatial and ethnic perspective. Wassink (2016) focused on the raising of /æg/ and /ɛg/, /u/ fronting, and /ɔ~ɑ/ merger. She opted to conduct a fairly representative sample of the state by focusing on Seattle in the western part of the state, the Yakima Valley and Richland in the Central part of the state, and Spokane in the Eastern part of the state. According to Wassink (2016) Seattle Caucasians had the following list of linguistic features, no /æ/ and /ɛ/ backing, no lowering of /ɪ/ and /ɛ/, monophthongal /e/ as in BAIT, monophthongal /o/ as in BOAT and no /o/ fronting, some r-insertion in words like wash (this feature is receding), and a three-way Mary, marry, and merry merger. Additionally, the /ɔ~ɑ/ merger was advanced with fronting. There was some /u/ and /ʊ/ fronting when compared to /o/, which was a phenomenon seen more in younger speakers. Prevelar raising was an innovation in the region where /æg/ was overlapping with /ɛ/ instead of

/e/. In particular Wassink (2016) was interested in understanding how different ethnic groups in Washington may have been participating in the linguistic changes occurring in the regions. She focused on people who identified as Japanese, African American, Mexican, or as a member of the Yakama nation. All the groups showed pre-velar raising. Japanese and Caucasian speakers were more advanced in the change, Mexican Americans came next, and Yakama and African Americans were the least advanced in the change. /ɔ~ɑ/ merger was present in all of the groups, but African Americans were the least advanced in this change. There was some /u/ and /ʊ/ fronting mostly in the Seattle area and mostly by Caucasians. Although there were some differences when taking ethnicity into account, Wassink (2016) clearly stated that her participants who identified as Japanese, Mexican, Yakama, and African American, '"sound Washingtonian'" (p. 98). Wassink (2016) noted that the linguistic system in Washington state is becoming more regular over time. It is possible that prevelar raising could potentially become a linguistic feature that demarcates dialect boundaries in the West.

Swan (2016) was interested in the vowel systems of Vancouver, Canada and Seattle, Washington. Her results from Seattle are relevant to the present study. She had 20 participants representing Seattle and an age and gender balanced sample. She found the presence of the low back merger. She found that /æ/ is backed more for women than men and that women front and lower /u/ more than men. Women also had a fronter /o/ than men. She also found evidence of prevelar raising BEG and BAG and BAN raising. Related to Swan (2016), Swan (2020) found that, "in Seattle, BAG raisers, have multigenerational ties to the area, take strong ideological stances against changes in the area's industries and economy, and oppose 'gentrification'" while, "nonraisers have more international ties, show stronger interest in moving elsewhere, and embrace Seattle's new industries (p. 46). She also found that younger women raised less.

Stanley (2020) explored vowel formant dynamics and language change in Cowlitz County, Washington, located in Southwest Washington on the Washington-Oregon border. He had 54 participants. He found evidence that there was, "a pull chain-like shift in Cowlitz County, with BAT retracting and lowering first and then BET following suit" (Stanley 2020, p. 108). He then speculated that BIT retraction among young women was the next stage of the change. The manifestation of BAT was characterized more by lowering than backing compared to California. Additionally, he presented evidence that BAT and BET had been shifting for a long time in Cowlitz county. He found evidence of BAN raising with different manifestations of it by men and women across different generations. BING was equally complicated. Stanley (2020) wrote, "women primarily used a variety of BING similar [e], except for the Millennials who used a more retracted form. Meanwhile the older two generations of men used a lower and more diphthongal BING while the younger two raised the vowel and shortened its trajectory" (p. 136). Additionally, he provided evidence of a lack of a low back merger. He found that "LOT was significantly more fronted and THOUGHT had a more dynamic trajectory" (Stanley 2020, p. 164). Stanley (2020) claimed that the decreasing prosperity in Cowlitz County had played a role in the vowel changes occurring in the region with younger speakers orienting more towards Portland, Oregon than their local community. Related to Stanley (2020), Stanley (2018) found that BAG raising was more prevalent in the older generation than the younger generation, and that, "those with positive feelings towards the area tended to use raised BAG more than others within their cohort" (p. 145). It also seemed overall that the older generation had a more positive view of the community in general.

California is the largest state on the West Coast in population and square miles and has its own challenges for discussing variation. Since the focus of this dissertation is Jackson and

Josephine Counties, the discussion of language change will be centered around the Bay Area, Los Angeles and around Redding. The reason for this focus is due to migration from urban areas to Southern Oregon, and due to cultural ties between the very northern part of California and Southern Oregon described in Chapter 2.

Kennedy and Grama (2012) discussed the centralization of BOAT and the lowering of BIT, BET, and BAT. Their participants were thirteen undergraduate students at the University of California, Santa Barbara who lived in the same neighborhood. Although the students lived in the same locale, they came from various areas of California. Many of the participants were from Southern California, but the data presented includes other areas as well. Table 3 shows demographic information for the participants.

Table 3 Subject List from Kennedy et. al. (2012)

Subject List

Subject	*Sex*	*Age*	*Origin within California*
1	F	22	Redlands
2	F	23	San Luis Obispo
3	F	23	Santa Barbara
4	F	22	San Diego
5	F	29	Los Angeles
6	F	21	Los Angeles
7	F	22	Monterey
8	F	21	Los Angeles
9	M	21	Orange County
10	M	25	Irvine
11	M	20	San Jose
12	M	19	San Luis Obispo/San Francisco
13	M	57	Los Angeles

(Kennedy et. al. (2012)

They found that GOAT was centralizing while BIT, BET, and BAT were lowering and retracting.

Cardoso et. al. (2016) discussed the status of prevelar raising and the CVS in a neighborhood in San Francisco. Their sample consisted of 22 speakers: eleven Chinese Americans and eleven European Americans. In both samples, there were six females and five males. Cardoso et. al. (2016) found that there was some evidence of prevelar raising, but that it was different than in Becker et. al. (2016) and Wassink (2016). BEG was fronted in comparison to BEN and BET[4]. BAG was raised in comparison to BAT[5] and it was not as raised as BANG and BAN. These researchers speculated that prevelar raising in this neighborhood, "might be better described as an inhibition of retraction and lowering rather than a raising movement per se" (Cardoso et. al. 2016, p. 49). The inhibition of retraction alluded to the CVS where it is expected that BET and BAT will lower and retract. In regard to the CVS, these speakers were participating in the lowering and retraction of BAT, the BAT nasal split, back vowel fronting, and the BOT~BOUGHT merger. Cardoso et. al. found that women were leaders for BET and BAT retraction, and European Americans compared to Chinese Americans had more BAT retraction and BAN raising.

Geenberg (2014) explored variation in the vowels BET and BAT and the pin-pen merger in Trinity County, located west of Redding California. These linguistic features were used to explore the presence of the CVS and Southern Shift in the county. Many people migrated to California from the South for economic opportunities which is one of the reasons to explore the Southern Shift in this area. Older people tended to have the pin-pen merger, while identity played more of a role for the younger generation with the pin-pen merger connected with rurality and perhaps whiteness. For TRAP, Geenberg (2014) found that, "young people, women, White people and Weavervillians appear to be backing and lowering TRAP more than other groups…

[4] In this context meaning all BET class words except the ones before nasals and /g/.
[5] In this context meaning all BAT class words except the ones before nasals and /g/.

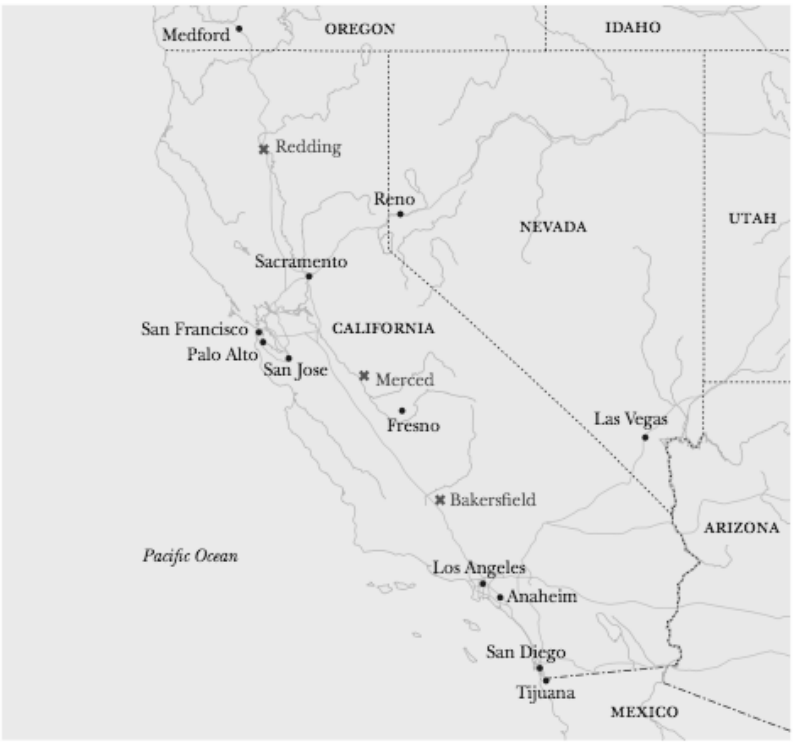
Outdoorsy people have higher and more front pronunciations of DRESS than indoorsy people" (p. 185). It also could have been the case that, "white less educated men may actually be raising the vowel" (p. 185). Some Nor-Rel-Muk speakers were included in the study, and the Geenberg (2014) found they did not participate the same way in the language changes occurring in the community.

Podesva, D'Onofrio, Van Hofwegen & Kim (2015), explored language variation and country ideology in and around Redding, California. They included 30 White speakers, and there were 15 who were grouped together as Countryfolk and 15 who were grouped together as Townies. Only people who clearly fit into those categories were included in this particular analysis. Their acoustic data came from the informal interview. There was a wide age range represented and there was almost an equal number of men and women. They explored BAT backing, BAN raising, the low back merger, and back vowel fronting and found that age was significant for all variables, where younger speakers were more progressed in the linguistic features of interest. They also found that, "Townies lead Countryfolk in the BOT-BOUGHT merger, while Countryfolk lead Townies in the fronting of the back vowels" (Podesva et. al. 2015, p. 175). Additionally, Countryfolk led in BAN raising. All speakers were participating in BOOT fronting, while BOAT is fronted less. They summarized that their speakers were participating in the CVS. The authors, from their ethnographic work in the area, surmised that the linguistic features that the Countryfolk used that were associated with the CVS, should not have been considered as the speakers aligning themselves with urban California and California, and instead were being used locally to indicate alignment with a country identity. They called for more work on understanding back vowel fronting as it was present in many varieties of English and said that perhaps understanding manifestation of back vowel fronting (e.g.,

monophthongal or diphthongal) could be a useful line of inquiry in understanding whether the Countryfolk back vowel fronting is more like urban California or the South.

D'Onofrio, Eckert, Podesva, Pratt & Van Hofwegen (2016), analyzed the development of the CVS in Bakersfield, Merced and Redding to respective locations three of which are shown in Figure 13.

Figure 13 Location of Redding, Merced, and Bakersfield

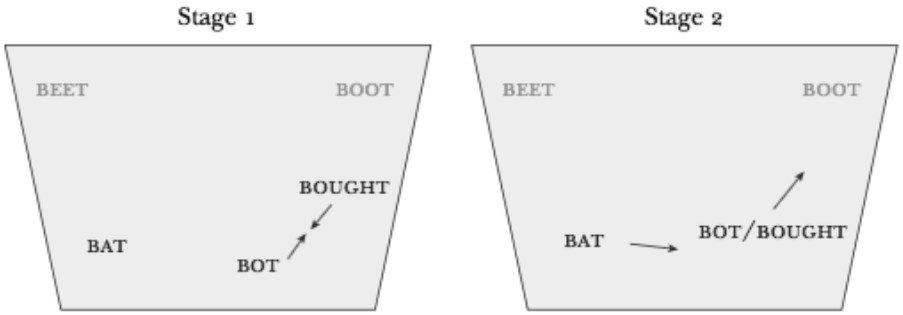


(D'Onofrio et. al. 2016, p. 14)

This section focuses on the work conducted in Redding due to the cultural similarities between the two areas as described in Chapter 1 and that it is the closest city to Southern Oregon that has been studied. There were 18 speakers from Redding in the sample: nine men and nine women. Redding was showing signs of the BOT~ BOUGHT merger and BAT retraction. They also

found that BOT~BOUGHT merger was higher in the vowel space than usually was found in other parts of the US. The oldest speakers in their sample pronounced BOT and BOUGHT so similarly that the merger must have happened before the birth of the older speakers. If these two classes are merged and higher in the vowel space, then there is room for BAT to retract. This phenomenon is shown in Figure 14.

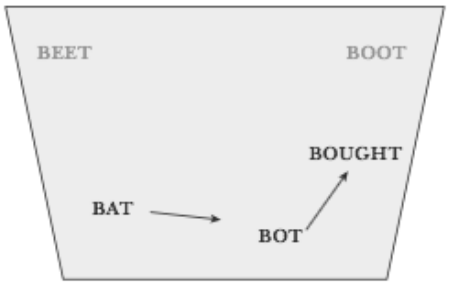
Figure 14 Low Back Merger Visualization for Speakers in Redding



(D'Onofrio et. al. 2016, p. 25)

It was found that in Merced and Bakersfield, BAT retraction and BOT raising was occurring in tandem, a depiction of which is shown in Figure 15, which was a different phenomenon than in Redding.

Figure 15 Low Back Merger Visualization for Speakers in Merced and Bakersfield



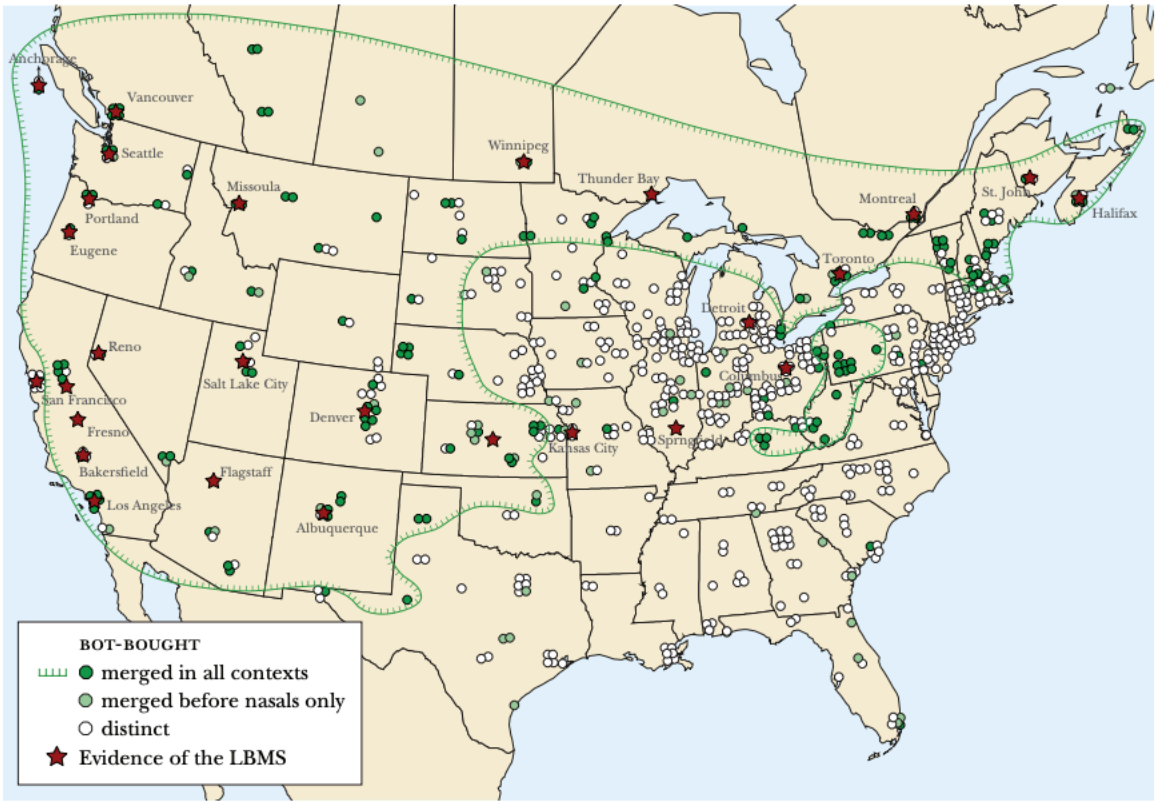
(D'Onofrio et. al. 2016, p. 26)

As stated by D'Onofrio et. al. (2016), "the fact that the low back vowels merged in Redding considerably earlier than in Merced or Bakersfield suggest that the merger may have its center farther north" (p. 27). Although not the focus of this study, the authors noted some examples of BEG raising which is related to prevelar raising. The authors speculated that:

> Redding may well be orienting linguistically to the north, because while it is at the northern rim of the Central Valley, it is not culturally or ecologically part of the valley. The mountain forest environment extending from Redding to the north constitutes an ecological zone that extends well into southern Oregon. This has yielded a distinct culture and considerable alienation from parts of either state outside of that zone.
>
> (D'Onofrio et. al. 2016, p. 27)

Since 2016, work has continued regarding the West, in particular the Low-Back Merger Shift (LBMS) as described in Becker (2019). The LBMS is an attempt at rebranding aspects of the California Vowel Shift and the Canadian Vowel Shift while discussing how the phenomenon progresses in other parts of the United States. The LBMS is characterized by the lowering and backing of BAT, BET, and BIT. Becker (2019) postulated that the catalyst for the LBMS is BOT moving towards BOUGHT. The main reason for promoting the LBMS according to Becker (2019), is that she and many other researchers take a conservative view of the definition of a chain shift. They were unhappy that the fronting of BOOT and BOAT is often included when discussing the CVS as the fronting of BOOT and BOAT is found in many Englishes and therefore not unique to the CVS. The presence of the LBMS has been indicated in many locations as shown in Figure 16.

Figure 16 Location of the Low Back Merger



(Becker 2019, p. 10)

Given the contemporary research on the vowel changes occurring in the West, the linguistic features of interest in Jackson and Josephine Counties include the BOUGHT~BOT merger, the LMBS, BOOT and BOAT fronting, prevelar raising, and BAN raising. Chapter 6 will discuss if any of these features are present in the data from Jackson and Josephine Counties. After establishing the vowel system of the present study's participants, one could examine relationships between vowel systems and traditional social factors such as ethnicity, gender, age. Given the social changes occurring in the region as described in Chapter 2, attitudes may be relevant as well. The social factors of interest in this study will be presented in Chapter 4.

Chapter 4 Extralinguistic Factors of Interest

Two goals of variationist sociolinguistics include understanding the social meaning of variants in a community and to use that information to understand the progression of language change. As Eckert (2012) surmised, Labov (1963), discussed in later in this Chapter in the Rootedness section, brought to focus, "that speakers exploit linguistic variability in a systematic way to add a layer of social meaning to the denotational meaning that is the primary focus of most linguists" (p. 88). Soon after the focus of sociolinguist inquiry was the understanding, "macrosociological categories as they reveal (and presumably structure) the spread of linguistic change through social space" (Eckert 2012, p. 88). Through this line of inquiry, variationist sociolinguists have repeatedly demonstrated that linguistic variation is systematic and can be correlated with social factors, and by understanding social factors, sociolinguists can make predictions on the progression of language change. In this study, gender, age, ethnicity and rootedness are the extralinguistic factors of interest. In Chapter 6, these extralinguistic factors are analyzed alongside the linguistic features of interest presented in Chapter 3.

Gender

Gender is one of the most studied extralinguistic factors in sociolinguistics. Since the 70s, the thinking around gender has evolved. As Eckert & McConnell-Ginet (2003) wrote, "sex is the biological categorization based primarily on reproductive potential whereas gender is the social elaboration of biological sex" (p. 10). In older studies, the gender binary is pronounced, while newer studies have a more nuanced view of gender. Since gender is a social construct that has profound effects on the lived experience of people in society and has been repeated been

shown to correlate with language variation, it is important to include gender when conducting sociolinguistic research. In this study, participants were given a free response question for gender which will be discussed more in Chapter 5. However, participant responses resulted in a sample split according to binary gender categories: woman and man. Therefore, the focus of this section will not be on explaining the evolution of the understanding of gender in variationist sociolinguistics which can be found in Eckert & McConnell-Ginet (2003), but why it is important to collect information on gender in regard to language change.

Labov (2001) proposed four principles of language change related to gender based language variation.

> Principle 1: "Linguistic change from below originates in a central social group, located in the interior of the socioeconomic hierarchy" (p. 188).
> Principle 2: "For stable sociolinguistic variables, women show a lower rate of stigmatized variants and a higher rate of prestige variants than men" (p. 266).
> Principle 3: "In linguistic change from above, women adopt prestige forms at a higher rate than men" (p. 274).
> Principle 4: "In linguistic change from below, women use higher frequencies of innovative forms than men do" (p. 292)

Labov (2001) synthesized years of variationist study into Four Principles, which have been useful in understanding gender-based variation and language change in many contexts. Given the gender binary in the present study, it is possible that these Principles may help shine some light on the gender variation occurring in Southern Oregon. Perhaps by using these Principles, in particular 3 and 4, we might be able to make predictions regarding language change in Southern Oregon depending on who is using these linguistic features. However, one must remember that community understandings of gender are locally bound, and that gender variation may not fit neatly into the Principles listed in Labov (2001). As further discussed in Chapter 6, the data in this study indicate that women are leading in /æ/ backing. This finding potentially falls into Labov's Principle 4, if this change is occurring below the level of consciousness.

Age

In addition to gender, age is one of the more studied extralinguistic factors in sociolinguistics. This is mostly due to a desire to understand language change (Eckert (1992). As Eckert (1992) stated, "*age* is a person's place at a given time in relation to the social order: a stage, a condition, a place in history," while the related concept of, "aging is the movement through time" (p. 151). Both of these concepts are experienced by individuals and by a community through shared experiences. Age refers to a person's or group's, "place in history and life stage" (Eckert 1992, p. 151). For the purposes of this study, participant age will be used to understand language change in Southern Oregon. As will be discussed in Chapter 5, participants were provided a free response question for age. As Eckert (1992) outlined, "age stratification of linguistic variables, then, can reflect change in the speech community as it moves through time (historical change), and change in the speech of the individual as he or she moves through life (age grading)" (p. 151). Knowing this information, one can see if linguistic features are stratified based off of age and make some predictions regarding language change based on who is using these linguistic features, thereby making age an important extralinguistic factor to include in this study. In the present study and further discussed in Chapter 6, it appears that age is not a significant extralinguistic feature in this study, although it is possible that this is an issue with the small number of participants as there was a large range in the ages represented.

Ethnicity

Ethnicity, a recognized extralinguistic factor in sociolinguistics, has not been studied as much as age or gender. Ethnicity is challenging to define especially when trying to define race as well. Since ethnicity is a social construct that has profound effects on the lived experience of people in society and has been shown to correlate with language variation, it was included in the study (see Charity Hudley 2017 and Fought 2006 for an in-depth discussion on the relationship between language variation and ethnicity and defining race and ethnicity). As will be discussed in Chapter 5, participants were provided a free response question for ethnicity. 11 participants listed White and 2 participants listed White along with another ethnicity. One participant wrote White and Native American, and the other wrote White and Asian. Given the sample, strong conclusions cannot be made regarding the relationship between ethnicity and language variation. However, a discussion of the importance of including ethnicity and how ethnicity can help researchers interpret results is included in Chapters 7.

Rootedness

The influence of personal identity (e.g., Johnstone 1995) in language use is well-recognized by linguists, but traditional extralinguistic variables like gender and age have been the most frequently studied. This dissertation in particular explores the importance of rootedness, defined as orientation towards place, and how it factors into sociolinguistic studies. Although rootedness is not a new concept in sociolinguistics, it has rarely been operationalized to understand its role in language change. Linguists have discussed concepts similar to rootedness using other terms such as local loyalty (e.g., Ito and Preston 1998), cultural identity (e.g., Hazen

2002), regional identity (e.g., Miller 2008), and regionality index (e.g., Chambers 2000). Rootedness could be operationalized by assigning a numerical value to a person's level of attachment to their community, based on their attitudes towards that community and plans around their future in the area. This method of quantifying rootedness is akin to the operationalization of other sociolinguistic variables such as age, socioeconomic status, gender, etc., in that it is a grouping mechanism for measuring how shared identities influence language use. This operationalization of rootedness is a measure of attitudes, travel, and plans to move and not a measure of how long a person has physically been in a place. This contrasts with the research questions of other sociolinguistic studies such as Chambers (2000). Rootedness also contrasts with social network research (e.g., Milroy 1980) because it is not a measure of an individual's interactions. Recent work has shown that rootedness is an effective variable for systematically explaining speech patterns (e.g., Hazen 2002, Miller 2008, Reed 2016, Carmichael 2017). Previous studies have been successful at applying an operationalization of rootedness in their respective communities; however, each of the studies took a slightly different angle when approaching the variable. The objective of this section is to synthesize previous work in this field. The development of an operationalization of rootedness for the present study conducted in Jackson and Josephine Counties, Oregon from Fall 2017 through Spring 2018 will be discussed in Chapter 5.

Labov (1963) mentioned a finding related to rootedness in passing in his Martha's Vineyard study. As part of his research, he was a participant observer and conducted sociolinguistic interviews with locals asking about life on the island. In addition, he asked his participants to perform reading tasks designed to elicit different reading styles. Although his goal was to understand language change on the island, he discovered that people could use

linguistic features to signal localness (Labov 1963). The idea is directly related to this current discussion of rootedness. Before continuing, it is important to note that the island is a poorer part of the state where locals were being displaced by richer mainlanders who especially enjoy living on the island during the summer. He stated that, "a study of the data shows that high centralization of /ai/ and /au/ is closely correlated with expressions of strong resistance to the incursions of the summer people" (Labov 1963, p. 297). He additionally found that teenagers who planned on staying on the island were more likely to have centralized diphthongs. In other words, people who wanted to signal linguistically that they were the most local people on the island were the most likely to centralize. However, Labov did not demonstrate whether he operationalized the variable; instead, he focused more on explaining language variation by analyzing age, gender, ethnicity, socioeconomic status, and place of residence on the island. In response to having Labov (1963) frequently cited as an example of the importance of looking at a person's orientation towards place, Labov (2001) wrote:

> The Martha Vineyard Study (Labov 1963) is frequently cited as a demonstration of the importance of the concept of local identity in the motivation of linguistic change. However, we do not often find correlations between degrees of local identification and the progress of sound change….In other words, language change may simply reflect changes in interlocutor frequencies which are in turn the result of changes in social preferences and attitudes.
>
> (p. 191)

He did, however, mention Hazen (2000) (discussed later in the present section) as an excellent example of using expanded vs. local identity to explain variation among African Americans in Warren County, North Carolina.

Gordon (1997) speculated that attitudes might explain the speech patterns in Chelsea, Michigan. In this work, Gordon (1997) examined the status of people's adoption of the Northern Cities Shift (NCS) in two towns: Chelsea and Paw Paw. These two towns were similar in size

and economic structure and are located 100 miles away from each other. Assuming Trudgill's (1974) proposition that language change spreads to areas of higher population first, and then to areas of lower population next, Gordon chose Chelsea and Paw Paw because they are situated between the urban areas of Detroit and Chicago. Both Detroit and Chicago are large cities associated with the NCS. Since Chelsea is closer to an urban area, it was thought that Chelsea would be further advanced in the shift. However, the opposite was found. Gordon (1997) speculated that the new residents of Chelsea were the reason why the shift has progressed there less. He says that there was an assortment of opinions about the influx by locals in Chelsea. Some people were excited, while others felt resentment and, "a kind of protectiveness for the town and its traditional character" (Gordon 1997, p. 254). Gordon explained:

> It is not unreasonable to suggest that such attitudes could influence speech behavior. If the NCS variants are associated with speakers from cities like Ann Arbor and Detroit, then it is possible that the negative feelings Chelsea natives have toward the newcomers from these cities could carry over to their linguistic features as well. Thus, the low levels of shifting found in Chelsea may represent a reaction to the influx of new residents from cities. If this is the case, then the conservative forms of the NCS vowels could come to symbolize some aspect of native Chelsea identity, in much the same way as the older dialect forms (raised diphthongs) came to symbolize native island identity for residents of Martha's Vineyard (Labov 1963).
>
> (Gordon 1997, p. 254)

Gordon suggested that the NCS in the region seems to be below the level of consciousness according to his interview data, and the Chelsea speakers were subconsciously avoiding new features to show localness. Gordon interpreted Labov (1963) as displaying a situation where there was an exaggeration of local norms to show localness. Although Gordon (1997) did not operationalize local loyalty, he says that what he found shows the importance of looking at

"attitudinal factors" and that, "such aspects of the social dynamics in small towns like Chelsea could serve as a profitable area of future research" (p. 256).

Ito and Preston (1998) were also interested in analyzing the spread of the NCS in Michigan. They found that there was an inverse relationship between participation in the NCS and local loyalty scores in rural towns in northern Michigan: Ithaca, Mt. Pleasant, and Roscommon. The goal of the study was to look at the progression of the NCS in different parts of Michigan. Like in Gordon (1997), an assumption made in this study is that the shift would spread first to large cites and then to smaller urban towns. Another assumption was that young women would lead the shift. Their analysis consisted of analyzing the phonetic data in terms of the NCS and then taking a strong qualitative look at their participants' local orientation to look for a correlation with local orientation. In an effort to obtain information about respondents' local loyalty, they asked questions such as, "'Is this a good place to grow up? Why?', 'What is the best/worst thing about living here?', 'Do you see any differences (e.g., in lifestyle, personality) between people in big cities and people around here? Why?'" (Ito 1999, p. 51). Some examples of what participants said in interviews which indicate local loyalty are provided to the reader to understand the results of the phonetic analysis. Ito (1999) hoped that local loyalty "would be a powerful predictor for assessing degree of participation in the NCS" (p. 131). In the end, local loyalty was not operationalized. The ideal situation according to Ito (1999) would be to sample enough participants who would be locally loyal or non-locally loyal, but when looking at the data, all the participants had local loyalty, but some simply had less local loyalty. As Ito (1999) clearly stated, their assessment of local loyalty is speculative because they do not have statistical evidence to corroborate their claims, only anecdotal evidence from interviews.

Chambers (2000) was interested in examining lexical variation in the North American region: The Golden Horseshoe. Chambers (2000) selected three lexical variables known to vary in the region: *dresser*, *sneakers*, and *soda*. To understand region, he constructed a regionality index with the range indigenes to interlopers. He considered indigenes to be the most representative of the region (with a score of 1) and the least representative as interlopers (with a score of 7). This number he called a regionality index. He decided who was an indigene, an interloper, or someone in between with the questions in Table 4.

Table 4 Questions Pertaining to Region on the Dialect Topography Questionnaire

Where were you raised from ages 8 to 18? (What town, city, district? Name the province, etc., if useful.)_____
Where were you born? _____ Where do you live now? _____
Where was your father born?_____ Where was your mother born?_____

(Chambers 2000, p. 180)

The regionality index is defined as, "a gross measure of the subjects' links to the region" (Chambers 2000, p. 181). Table 5 illustrates an example of the kinds of profiles a person with a certain score would have.

Table 5 Regionality index (RI with profiles for the intervals from RI 1 to RI 7)

Status	RI	Profile (note: other combinations are possible)
indigenes	1	born, raised, living in same place as parents
↑	2	born, raised, living in region, parents born in province
	3	born, raised, living in region, parents born out of province
|	4	raised and living in region, but born elsewhere in province
	5	raised and living in region, but born outside of province
↓	6	living in region, but born and raised elsewhere in province
interlopers	7	living in region, but born and raised outside of province

(Chambers 2000, p. 181)

His results showed that speakers with the regionality index 1-3 were the most conservative when it came to adopting new variants. He then illustrated that a conservative form is likely to disappear if people in the regionality index 4-5 category begin to use the new variant. Chambers (2000) made some excellent points regarding region. His regionality index is based on facts about where the person is from, other places they lived, and where their parents are from. The regionality index is well suited towards his question of understanding what linguistic features exist in a region; however, this measure does not focus on what is valued in the community and how those values could influence language use. It is not a measure of affective feelings toward a person's space. Thus, Chambers' regionality index is not suited for measuring a person's orientation towards place since it is not a constructivist view of region.

Hazen (2000, 2002) attempted to operationalize what he called 'cultural identity' in order to explain speech patterns in Warren County, North Carolina. He defined cultural identity as, "a sociolinguistic factor that involves how speakers conceive of themselves in relation to their local and larger regional communities" (Hazen 2002, p. 241). His focus was on understanding the individuals in order to understand the speech community as a whole. He claimed that the following items comprise cultural identity in the county: degree of attachment to life outside of the county and educational and career aspirations. Given that Warren county was changing, a major factor in establishing cultural identity was whether people view the changes positively or negatively. People fit into two categories: people who only identify with Warren County and people who also identify with areas outside of the county. Hazen (2000) said that speakers in the expanded view, "identify with cultural characteristics outside Warren County in addition to strong ties to family or other institutions inside the county," and he said that speakers with local view, "do not identify with cultural characteristics outside of Warren County" (p. 127). He

added that the country-centric speakers have chosen such a life due to a distaste for urban life. Hazen (2000) had 21 expanded identity speakers and 24 local centric speakers. More specifically the categorization into one of those categories was based on:

> educational status (college-tracked or non-college-tracked speaker); contact outside the county (including employment); attitudes about Warren County versus other places (most local-identity speakers believe Warren County to be the best possible place to live and dislike the pace of life in urban areas); and identification with social types (a local-identity speaker wanting to be a farmer versus an expanded identity speaker wanting to be an architect)
>
> (Hazen 2000, p. 128)

The linguistic variables of interest were copula absence, leveled *was* and a leveled form of negative past *be* (Hazen 2002). The breakdown according to ethnicity was 6 expanded identity and 9 local identity African American speakers, 11 expanded identity and 4 local identity European American speakers, and 4 expanded identity and 11 local identity Native American speakers. The youngest speaker was 11, and the oldest speaker was 87. Hazen and his team circulated in the community as participant observers and conducted sociolinguistic interviews. He found that speakers who had an expanded identity were more likely to avoid *won't* regularization and copula deletion in a formal setting than local identity speakers. Local identity speakers were unlikely to change their use of copula deletion and *won't* regularization in a formal setting. With this finding, he demonstrated that sociolinguists should examine identity and region. Although Hazen did not use the term rootedness in his writing, his metric is certainly a type of rootedness score tied to attitudes about how a person feels about their community and life goals. While Hazen's research provides strong support for the importance of the role of rootedness in linguistic variation, Hazen conceded that a few aspects of his methods make it difficult to replicate. Firstly, he pointed out that two categories may hide variation within the categories. For example, it is possible that participation in *won't* regularization and copula

deletion can be explained better by examining the importance of education within the groups since in the expanded identity group there were participants who were college bound or already in college. Secondly his results were the result of seven years of participant observations and sociolinguistic interviews. The long observation period is how he knew that expanded identity participants used less *won't* regularization and copula deletion during his interviews. If one only has sociolinguistic interviews and no participant observations, it could potentially make Hazen (2000, 2002) more difficult to replicate. In summary, Hazen (2000, 2002) successfully showed the importance of analyzing regional identity and successfully operationalized it. However, better justification of his binary classification and more information about his methodological choices are warranted. These would facilitate other researchers' replication of his methods.

Miller (2008) was interested in testing the validity of a method for quantifying regional identity in Louisville, Kentucky. The linguistic variable was ay-monopthongization, and he wanted to examine whether ay-monopthongization usage could be explained by respondents' identification with the two closest regions, the South or the Midlands. To operationalize regional identity, he created Scova (Scoring of Complex Variables), where a complex variable is, "a social variable which requires subjective analysis in order to be defined" (p. 662). Although he says that Scova could be used for any complex variable, in this case he chooses to apply it to what he calls regional identity. He defined identity as, "the individual's presentation of self: through conversation, the individual presents opinions and associations and generally draws on shared social meaning in order to establish who he or she is or wishes to be perceived as" (Miller 2008, p. 653). He added that identity is dynamic, and a speaker will highlight different aspects of their identity based on the situation. There are shared cultural tropes and stereotypes associated with different regions that speakers may or may not want to align themselves with. He

viewed identity as a spectrum comprising three meaningful categories: southern, midlands, and neutral. Miller (2008) stated that the southern and midlands categories were chosen from his personal experience in the area. He goes on to say that he affirmed his assumption by asking others who lived in the area. From the interviews, Miller assigned a Scova score to respondents by asking respondents about the two regions. He awarded positive or negative points to the southern or northern categories depending on negative or positive statements made by the speaker. He gave two points to overt statements where a person explicitly identified themselves with a category. Three scores were calculated: south, midlands, and the difference between the two. Negative scores were changed to zero. For example, "if an informant scored -3 Midwest and +2 South, the final score would be 2 – 0 = 2 South, not 2 – (-3) = +5 South" (Miller 2008, p. 662). An example of an interaction which would be given a point value from the paper is shown below.

> Darcy: I don't think I'd be happy living the deep South.
> Danny: How come?
> Darcy: I think they're too conservative. Politically.
>
> (Miller 2008, p. 662)

Miller (2008) gave this statement -1 point in the southern category. Even though it is technically two statements, the second statement is clarifying for the researcher the participant's sentiment. The negative point is related to Darcy expressing, "a negative value judgement, which is defined as the direct condemnation of some aspect of a region's culture" (Miller 2008, p. 662). Through the statements participants say about themselves and about the south and midlands, Miller (2008) arrived at a score meant to represent their identity. There was, "the assumption that negatively identifying with (i.e., not identifying with) a region does not equate to positively identifying with another region, but positively identifying with a region does equate to negatively identifying with

another region" (p. 664). It was possible to receive a neutral score of 0 in Miller's sample, and some participants in Miller's sample in fact did receive a 0. This would happen if one's negative statements overwhelmed the positive statements or if a person did not express opinions about either region. Miller (2008) noted that these categories should be seen as a performance during one interview, on one day of that person's life, rather than the necessarily the absolute category that someone always identifies with. The Scova method worked well for Miller's sample and did show that people who identified more as southern did in fact use more ay-monopthongization, as shown in Table 6.

Table 6 Final Regional Scores

Final regional scores

Region	Distribution of southern feature	Factor weight
South	271/450 (60%)	0.596
Neutral	280/550 (50%)	0.458
Midwest	142/300 (47%)	0.431

(Miller 2008, p. 669)

Although Miller's (2008) approach worked well in Louisville given his research question, his approach might not work well in other communities because it relies on two identities in opposition to each other. In other words, what happens when a researcher is only interested in gradations of a specific identity in a community? Additionally, how should a researcher decide that a category is relevant? Is it enough for one person to identify strongly with the South for the South to exist as a category, or do at least half of the participants have to identify strongly with the South? Should that be the norm for this type of research? As stated previously, Miller (2008) came up with these categories from personal experience. Miller (2008) claimed that in his interviews he does not bring up the categories, but rather the participants organically bring up

statements that indicate preference for a category during the interview. Nevertheless, because the categories are predetermined by the researcher, there is the potential for this to not be a completely constructivist approach even though Miller (2008) promotes it as such. Miller (2008) allows for participants to be from either one of the two regions or have a neutral score. Scova would be able to handle people identifying strongly with one region. However, Scova collapses people who feel strongly about neither region and people who feel strongly about both regions into one number. This zero category might not be as explanatory as looking at how strongly people identify with one region over the other. Additionally, even though Miller (2008) discussed identity as a spectrum, he did not fully exploit the spectrum but rather he divided all 26 participants into three groups. Gender is the only subcategory he discussed; other than this he did not break down the categories. Miller's (2008) operationalization of regional identity was useful when looking at ay-monopthongization in Louisville, Kentucky; however, he did not take full advantage of looking at his regional identity score to explore identity within each category. Unlike Miller (2008), Reed (2016) did plot his participants on a spectrum to study the extremes of each pole.

Reed (2016) was interested in whether rootedness could explain ay-monopthongization and pitch accent usage in Hancock County, Tennessee. Ay-monopthongization is a salient, established feature of the region and pitch accents are a less studied linguistic variable. He defined rootedness as local orientation. His data collection consisted of two parts: a sociolinguistic interview and a rootedness survey. It was from the sociolinguistic interview that Reed determined ay-monopthongization and pitch accent usage for each participant. The rootedness survey was a survey, and from the information on the survey and from the questions asked during the sociolinguistic interview, he assigned each participant a rootedness score. His

goal for the rootedness metric was to have a numerical value for rootedness which he could then use to compare speakers with each other. He believed that rootedness would be relevant in the region because some people may choose to identify strongly with the place they are from, or that they may choose to distance themselves from that place, and that they may show this by whether they use a linguistic feature. He based his metric on work done by Williams and Vaske (2003) and Williams (2004) which focused on feelings towards local nature sites. Reed's questionnaire is Appendix A, and how Reed operationalized rootedness is Appendix B. He found that questions regarding the University of Tennessee and country music were unhelpful. 25 participants completed the two parts of the data collection. The resulting scale of rootedness scores ranged from -3 to 38 while the scores from respondents ranged from 18 to 31. After assigning all his participants a rootedness score, he mapped them all onto a spectrum. He decided to split his participants based on the median rootedness score. Respondents with a score of less than 28 were considered to be less rooted and those with a score of 28 or higher were considered more rooted. He then could show that his more rooted participants were more monopthongal and had earlier pitch peaks. He also made an informative comparison between a younger female and an older male who patterned similarly with ay-monopthongization. Even though their demographics were very different, they had nearly identical rootedness scores. This case study and others are further elaborated on in Reed (2020). This demonstrates the importance of rootedness because it showed a similarity among respondents that traditional sociolinguistic variables were not able to explain. One issue with his spectrum was that it is very dependent on who is included in the survey. He said that there is not much of a difference between the highest scoring member of the less rooted group and the lowest scoring member of the more rooted group. I think another option for the rootedness metric is to establish what

would be the highest rootedness score and the lowest rootedness score possible based on the questions in the survey. Participants could be slotted into the spectrum based on their rootedness scores. This would mean that if the survey was re-administered with the same questions to a different group of people, it would be easier to compare between different populations. In other words, having two fixed poles on the spectrum, which then allows for the researcher to place participants based on their score allows for better replication of methods and could comfortably allow for additional individuals to be added to the survey. This method circumvents the issue of just having extremely rooted people or just extremely unrooted people, an issue which was brought up by Ito (1999). This is a problem because if one only has extremely rooted or extremely unrooted people, the median of the sample is skewed one way if the researcher categorizes participants based only on the median score. Having only extremely rooted or unrooted participants is a sampling issue. If the poles of the spectrum are predetermined, then everyone receives a rootedness score regardless of who else was included in the sample. It could be possible that sampling would dictate that broad claims about rootedness cannot be made because the sample is unbalanced, but at least the researcher would know that was the case, rather than try to find a median of rooted or less rooted depending on who was sampled. In summary, Reed's (2016) approach made a strong argument for studying rootedness and demonstrated that operationalizing rootedness is possible. His method is transparent and can be replicated by other researchers, even though it does, unlike Miller (2008), depend more on who participates in the study.

Carmichael (2017) was interested in seeing if displacement and attitudes could explain speech patterns in the Greater New Orleans area. In particular, she was interested in Chalmette, a suburb of New Orleans that is known for its Cajun roots. The community was known to have a

greater incidence of r-lessness than New Orleans which is why it became the linguistic variable of interest in this study. After Hurricane Katrina hit New Orleans in 2005, many people from the close-knit community of Chalmette moved out at least for a short period of time. Carmichael's (2017) measure of local orientation/rootedness, which she called the Extra-Chalmatian orientation score, is akin to Chambers' (2000) regionality index more so than that of Reed (2016), even though she incorporated aspects of both into her analysis. Scores were determined from information taken from interviews which consisted of a conversation between the researcher and the participant, a reading passage, and a word list. The Extra-Chalmatian orientation score is presented in Appendix C. A negative score means that a person has never left Chalmette. Her score combined attitude measures about whether the participant self identifies as being from Chalmette and their future plans to stay in the area. The other questions are about places lived, schools attended, and the physical location of their workplace. As Carmichael pointed out, there are many factors that could affect r-lessness other than orientation towards place. In the article, she discussed other sociolinguistic variables that are significant such as speech type (interview, reading passage, or word list), and gender (man or woman because those were the only genders who participated in the study). She also discussed linguistic trends regarding r-lessness. She found that orientation scores were significant along with other extralinguistic variables and linguistic variables. The higher the Extra-Chalmatian orientation score, the greater the percentage of r-fulness, or conversely, the lower the Extra-Chalmatian orientation score, the more r-lessness. Carmichael (2017) found that the Extra-Chalmatian orientation score was more relevant if someone moved out of Chalmette after Hurricane Katrina and stated that, "the role of place in this context is still crucial; it is not satisfactorily measured by physical location of the speaker alone" (p. 710). Carmichael suggested that because

Hurricane Katrina forced many people to move out of Chalmette who did not necessarily want to move, the salient r-less feature could be a way of expressing their desire to be associated with Chalmette. This desire still exists even if circumstances led them to not live there anymore, hence supporting the idea that attitude measures have validity and can give linguists a better understanding of how people can use linguistic features to showcase aspects of their identity.

Issue of Needing More Data: Rootedness in other Communities

The research cited above suggests strongly that rootedness can be an important aspect of individual identity that can be demonstrated using linguistic features associated with a region/locale. This leads me to consider the role of rootedness in Southern Oregon where people may try to sound Oregonian by avoiding certain linguistic features if associated with their southern neighbor California. As Hart (1998) said about Wittgenstein's comments on research, there are two types of problems. There are, "problems of ignorance (there are things existing that we do not know enough about and therefore we require more information), and problems of confusion (we have the information but we do not understand what it amounts to)" (Hart 1998, p. 141). As far as operationalizing rootedness is concerned, this is a problem of ignorance. There have been successful studies which have used an operationalization of rootedness to successfully explain linguistic features, and there have been many studies that have discussed the importance of rootedness without performing an operationalization. More studies in different situations are necessary to test out the limitations of such operationalizations. Chapter 5 will discuss how rootedness was operationalized for the purposes of this study along gender, age, and ethnicity, and Chapter 6 will present the statistical results from the present study.

Chapter 5 Methods

Given the information presented in Chapter 2 and 3, it became clear to me that Southern Oregon would make for an interesting research site for studying the relationship between vowel systems and rootedness. Additionally, my lived experience as an Oregonian played a role in finding this research topic. I am an Oregon native with parents from Poland. I grew up in the Portland area but have spent a significant amount of time in Salem and Albany and have travelled extensively throughout the state. My personal experience was that people who did not know much about Oregon often equated Portland with Oregon. I thought that sociolinguistic research should reflect a more nuanced view of Oregon in particular in discussions of identity. With that in mind, I identified Ashland as an interesting basecamp for conducting sociolinguistic research for the reasons listed in Chapters 2 and 3 and while doing so, I formulated two research questions, the first one described as follows.

RQ 1: What are the characteristics of the vowel system of a relatively rural Southern Oregon community?

H1: They are different from urban areas nearby such as Portland, OR and Redding, CA

At the time of conducting fieldwork, my positionality towards Southern Oregon was that that even though I am from Portland and now live in Seattle, I know that there is more to Oregon than Portland and think that other linguists should know that too. This positionality was shared repeatedly while in Southern Oregon and was met with approval by locals. The idea that people

forget about Southern Oregon is a common one, no matter whether the local thinks that is good, bad, or both.

When arriving in Ashland, I did not know anyone and had to find people to talk to. I was able to obtain some leads prior to arriving in Ashland through my contacts in Seattle. I reached out to many local organizations but the English department at Southern Oregon University (SOU) ended up being the most helpful in my endeavor. The Hannon Library at SOU allowed me to reserve rooms for recordings which was incredibly helpful. I gave out many fliers and did a radio interview for the local radio station *Jefferson Public Radio*. Since this was a small project, I decided to only interview people who were 18 or older, monolingual English speakers, born in Southern Oregon and lived most of their lives there. Of course, this significantly limited who could participate in my study because there are many people who live in Southern Oregon who do not fit into those criteria. Notably, the criterion for monolingual speakers of English limits any Spanish speakers of whom there are many in Southern Oregon. Ultimately, I successfully was able to obtain 13 recordings. These recordings were about an hour long and were made using a Zoom h4n Flash Recorder at a sampling rate of WAV 44.1 kHz/16 bit. They began with a consent form, followed by an interview. The interview portion consisted of questions about life in Southern Oregon, attitudes about the area and neighbors, change, identity, language varieties, and forest fires. The full list of questions is located in Appendix D. The interview will be discussed in greater detail in the section Towards a Rootedness Metric. These questions were piloted with two students in the PhD program at UW who were from the southern half of Oregon to test for validity. Inspired by work on pre-velar raising, after this interview, participants did reading tasks including reading a short story *The Cat and the Mice* and a word list (Wassink 2006, 2015, 2016). The word list of words in isolation were read last. This word

list was modeled off of word lists used in previous research conducted in Oregon (T. Kendall, personal communication, December 12, 2016)[6]. The words used in the study are in Appendix E. Participants read the words list three times with the words in a different order in each list, and the order of each of the lists were random. Three distractor words were placed at the beginning and the end of the list to account for list prosody. The interview and the last reading task will be the focus of this dissertation and will be discussed more in the Acoustic Analysis section of the present chapter and Chapter 6. The interview ended with a short free-response demographic questionnaire, located in Appendix F asking for: age, gender, ethnicity, and places lived. I spent as much time as possible in public space in order to meet people and get a better sense for the community. I sat in coffee shops, walked in town and on hiking trails, went to the farmers' market, saw plays, and joined a knitting circle. While in Ashland and after I became more familiar with Reed (2016), I became more interested in rootedness and exploring applications of rootedness in Southern Oregon. I developed the following research question:

RQ 2: If there is variation in the respondents' vowel systems, is there a correlation between rootedness and the vowel systems of the respondents?

H1: There is a correlation between rootedness and the vowel system of the respondents such that the more rooted the participants, the less advanced they will be in the CVS.

In order to explore rootedness, I needed to develop my own rootedness metric which would work for my already collected data. When trying to develop this metric, I learned that rootedness had

[6] Also used in Production and Perception Experiments with V. Fridland.

been infrequently operationalized for sociolinguistic research. Previous research is described in Chapter 4 and the operationalization I created is in the subsequent section.

Towards a Rootedness Metric

The rootedness metric is an attempt to measure respondents' attitudes toward their local environment. As explained in Chapter 4, there are studies that have operationalized the importance of rootedness in the community using a measure related to rootedness (Hazen 2000, 2002, Miller 2008, Reed 2016, Carmichael 2017) and those that have not operationalized it (Ito & Preston 1998, Ito 1999, Gordon 1997). The data I had for understanding rootedness are from the informal interview portion of a sociolinguistic interview from research conducted in Jackson and Josephine Counties in Oregon described earlier in the chapter. In these interviews, participants were asked about their experiences and attitudes regarding growing up in the area. The intention of the interview was to collect labels, learn more about the area (especially since I am an outsider to Southern Oregon but not to Oregon), and some information that would be important for future studies. Inspired by previous work, especially Reed (2016), I decided to collect information that might be related to rootedness alongside other interests. I thought that rootedness could be an important explanatory variable in the area given that it is a borderland region, there are many people moving to the area, and that previous work has successfully investigated rootedness in other communities. The questions Reed (2016) asked in his questionnaire are informed by knowledge that he obtained as a former resident of the area, while I had never lived in Southern Oregon. This means that if I tried to replicate the same depth and detail as the questionnaire in Reed (2016), the questions I could have asked could have been

irrelevant for participants. Additionally, Reed (2016) collected his acoustic data and then went back to the community and administered the rootedness questionnaire (Appendix A). I could have conducted preliminary fieldwork and constructed a questionnaire as detailed as Reed (2016) after spending some time in the community. This is a future possibility. I decided that it would be important to learn as much as possible from participants during the interview section, construct a rootedness metric, apply it, and then see if rootedness is indeed explanatory for these participants or if my methods need revising.

After considering previous operationalizations, a metric that uses a continuum seems important for allowing for different levels of rootedness. What I mean by this is that there should be a fixed number for people at one end of the continuum who are extremely not rooted in the community and a fixed number for those at the other end of the continuum who are extremely rooted in the community. The midpoint of those two numbers would represent people who have neutral feelings about the community. Most likely, most people are going to be closer to the middle than the extremes. In other words, people with extreme views in either direction should be differentiated from those with more moderate views. This is not to say that there is a problem with many participants having extreme views; they should simply be grouped together. As described in great detail in Chapter 4, the continuum feature is different from Hazen's (2000, 2002) binary classification which did not show the nuance within each group. Miller's (2008) Scova had an infinite numerical possibility for identifying with the south or the midlands which is also a binary classification (three-way classification if you include neutral); however, his goals were different in that he was interested in exploring whether people identified more with the south or the midlands. His methodology was focused on showing the importance of place for a person in a certain group rather than exploring the dissimilarity within the groups. However,

exploring the dissimilarity within his groups may have helped him understand the community better and may have led to a fruitful avenue of research. Reed's (2016) analysis involved finding the median score and dividing his participants into two groups: less rooted and more rooted which is a bit arbitrary and dependent on the participants included in the study, although this operationalization was successful for Reed (2016). Unlike Reed (2016), a major goal with the present operationalization was to create a metric where the numerical value of who is 'rooted' or 'not rooted' is not gauged by the rootedness scores of other people in the study.

To test the potential of my rootedness questions to be operationalized, I created a system for assigning points to respondents based on their answers from the informal interview portion at the beginning of the sociolinguistic interview. The system was made after the interviews were completed. Participants were recruited by advertising on a radio interview, flyers, word of mouth, and snowball sampling. I spent approximately a month and a half living in Ashland which is in Jackson County. I stayed in Ashland because my intent was to collect data from residents who live extremely close to the California-Oregon border. I thought that collecting data so close to the California-Oregon border would provide a nice comparison to data collected in Portland, Oregon which is on the Oregon side of the Oregon-Washington border. Additionally, it is the location of Southern Oregon University, which I predicted would be a valuable resource for me. Most interviews took place on campus. Although I stayed in Ashland, and most of my interviews were conducted in Ashland, I accepted participants from Jackson and Josephine Counties. Interestingly, I had many people who contacted me who were originally from California, but for the purposes of this study, I opted not to include them. The most relevant questions that were asked for the rootedness spectrum are shown in Table 7.

Table 7 Questions Asked of Participants during Interview

1. What is it like living in (insert city name)?
2. Was/is it a good place to live
3. What was (insert city name) like when you were growing up as a kid?
4. What do you like about living here?
5. What do you dislike about living here?
6. Would you stay here? Are you planning on moving?
7. When someone asks you where you are from, what do you say?
8. Do you travel to places in Oregon often?
9. Do you travel to places in Washington often?
10. Do you travel to places in California often?

The informal interviews were about half an hour long. There was a list of questions (an excerpt which is shown in Table 7) that were followed as a guide, but topics might be addressed out of order if the participant would bring them up. Follow up questions would also depend on what the participant brought up. Sometimes a question was skipped if the interviewee answered the question during a previous question.

Having spent time in the area, I took advantage of my participant observer status when thinking about this rootedness spectrum. After completing my fieldwork, I evaluated all the data I had collected during my time in Southern Oregon in order to create a rootedness spectrum. As Johnstone (2015) stated, ethnographic research is a cyclic qualitative method: the more time a researcher spends in the community, the further refined the research questions become. I could have awarded points based on the questions presented in Table 7, but I wanted to present a more holistic assessment of what participants said in interviews. Based off my experience in the community and previous operationalizations, such as Reed (2016) and Carmichael (2017), I created the schematic shown in Table 8 of what a less rooted and very rooted person may look like in this community. Whether a participant wants to move away was studied by Labov (1963), Reed, (2016), and Carmichael (2017). Level of community involvement and travel was studied by Reed (2016).

Table 8 Rootedness Schematic

Less Rooted	Very Rooted
Wants to Move	Does not Want to Move
Dislikes Living Here	Likes Living here
Does not Identify Strongly with areas inside of Jackson or Josephine County/	Identifies Strongly with Areas Inside Jackson or Josephine County
Travels Outside of Area Regularly	Travels Outside of Area Rarely
Not Proud of Area	Proud of Area
Does not care about what happens in region	Does Care about what happens in region

After creating the schema in Table 8, I created the set of questions (shown in Table 9) that could serve as a guide for a researcher when evaluating the interview content in a way that would show how a participant fit the 'less rooted' or 'very rooted' schema.

Table 9 Rootedness Questions

1. Is the participant planning on staying in the area?
2. Does the participant like living here?
3. Does the participant identify strongly with the area?
4. How does the participant feel about travelling outside of Southern Oregon?
5. Does the participant care about what happens in the region?

To obtain each participant's rootedness score, first, I examined the conversations from the informal interview described earlier in order to assign answers and points to the Rootedness questions in Table 10. Answers were assigned numeric values from 0-4: 0 being not rooted and 4 extremely rooted. The metric and the description for each value and what it means is described in Table 10.

Table 10 The Operationalization of Rootedness: Scores and Descriptions

Table 10.1 Question: Is the participant planning on staying in the area?

Number Score	Description
Strongly Yes 4	Speaker does not have a plan to move from the area and believes they will stay in the area for the rest of their life.
Yes 3	Speaker does not have a plan to move and wants to stay in area.

Neutral 2	Speaker does not know if they will move out of the area or not.
No 1	Speaker thinks they will probably move in the future but does not have concrete plans and may or may not think they will move back.
Strongly No 0	Speaker has plans to move out of the area in the near future and has no qualms about it. Participant thinks that they will not move back.

Table 10.2 Question: Does the participant like living here?

Number Score	Description
Strongly Yes 4	Speaker describes area as being their paradise.
Yes 3	Speaker dislikes some aspects of living there, but mostly likes the living there.
Neutral 2	Speaker has about the same level of enjoyment and dislike of living in the area
No 1	Speaker likes some aspects of living there, but mostly dislikes the living there.
Strongly No 0	Speaker loathes area.

Table 10.3 Question: Does the participant identify strongly with the area?

Number Score	Description
Strongly Yes 4	Speaker very much enjoys saying that they are from the area and is proud of the region. Speaker identifies many specific characteristics of the region (e.g., industry, geographic features, art) that make it special and which they are tied to.
Yes 3	Speaker enjoys saying that they are from the area and is proud of the region. Speaker identifies a couple specific characteristics of the region (e.g., industry, geographic features, art) that make it special and which they are tied to.
Neutral 2	Speaker is fine with saying that they are from region. Speaker may identify a couple specific characteristics of the region (e.g., industry, geographic features, art), some of which they like and some of which they dislike.
No 1	Speaker dislikes saying that they are from the area and is not proud of the region. Speaker identifies some specific characteristics of the

	region (e.g., industry, geographic features, art) that make it awful.
Strongly No 0	Speaker extremely dislikes saying that they are from the area and is not proud of the region. Speaker identifies many specific characteristics of the region (e.g., industry, geographic features, art) that make it awful.

Table 10.4 Question: How does the participant feel about travelling outside of Southern Oregon?

Number Score	Description
Extremely Not Often 4	Speaker extremely rarely travels and/or is extremely homesick.
Not Often 3	Speaker tends not to travel outside of Southern Oregon and/or when travelling misses Southern Oregon.
Neutral 2	Speaker feels ambivalent about travelling outside of Southern Oregon.
Often 1	Speaker enjoys travelling outside of Southern Oregon and only feels mildly homesick when doing so and/or travels regularly.
Extremely Often 0	Speaker extremely enjoys travelling outside of Southern Oregon and does not feel homesick when doing so and/or travels extremely often.

Table 10.5 Question: Does the participant care about what happens in the region?

Number Score	Description
Strongly Yes 4	Speaker is extremely invested in what happens in the region and cares about local issues. Speaker is involved in community organizations which aim to make the area better and/or build community.
Yes 3	Speaker is invested in what happens in the region and cares about local issues and perhaps is involved in organizations which aim to make the area better and/or build community.
Neutral 2	Speaker is indifferent to what happens in the region and indifferent about local issues.
No 1	Speaker is apathetic to what happens in the region and cares little about local issues.

Strongly No 0	Speaker is extremely apathetic to what happens in the region and does not care about local issues.

The values for each of the Table 10 questions were decided by considering the extremes of each of the questions and establishing the two poles. The neutral value is when a person is not sure or expresses a perfectly balanced view. Then a numeric value is assigned for being between neutral and the extreme. The goal is to represent qualitative data systematically, transparently, and quantitatively. Next, the sum of the Table 10 questions for each participant was determined. The lowest score possible is 0 (less rooted), and the highest score possible is 20 (very rooted). A neutral score is 10.

To assess each participant's rootedness score, I examined the conversations from the informal interview I described above. To test the success of the aforementioned rootedness metric in Table 10, I applied the metric to 4 respondents based on their responses given in the interviews. Later in this section, I report each participant's rootedness score and provide examples of answers to show how it was assigned. Each participant is referred to using anonymous codes assigned to them during the study. Certain details of the interviews are intentionally vague to maintain the anonymity of the participants. Figure 7 shows Jackson and Josephine counties, as well as important towns that are mentioned in the subsequent operationalization. The participants who are discussed in depth here were living in Jackson County at the time of the interview and all the interviews took place in Ashland.

Figure 17 Map of Jackson and Josephine Counties

(https://www.pinterest.com/pin/146437425358885642)

Very Rooted Speaker FSOF1041

This participant described herself as Caucasian and as a woman. She was 41 years old at the time of the interview. Her rootedness score is 19/20 (Very Rooted). Starting with the question, "Are you planning on staying in the area," her score is 4 because she believed she will stay in the area for the rest of her life. During the interview she said when describing working outside of Southern Oregon:

> You know, I've thought about this…and throughout my entire time there I…I really I thought a lot about home. It was good to be away but at the same time when I got out… I was really wanting to go back home and…well I've thought about living other places I…I don't' think I could imagine myself living anywhere else. Um…could I leave Ashland and maybe go to one of the other local communities yeah I think so, but um when I come back to it, Southern Oregon is really my home.

For the question, "do you like living here," her score is 4. She mentioned a lot of what she believes are positive features of the area, such as the natural environment and how that provides a lot of recreational opportunities. She also mentioned that, "the people are just wonderful here."

Additionally, when asked about if the community has changed since she remembers, she said that it is, “changing for the better every year.” Although she mentioned that there are characteristics needing improvement such as a need for improving communication within the community to build a cohesive sense of togetherness. She also said that sometimes it can get too “political” which she later spun into a positive point by saying that people feel comfortable expressing their opinions. For the question, “do you identify strongly with the area,” she received a 4. FSOF1041 discussed how proud she is of the area, mentioning the food companies Harry and David and the Rogue Creamery. She described that when she was living away from Southern Oregon, she asked her mom to buy her a T-Shirt with the Rogue Creamery logo so that she could represent an entity that she had a positive view of outside of Southern Oregon. She mentioned the proximity of the ocean and how beautiful the area is. For the question, “how do you feel about travelling outside of Southern Oregon,” she received a 4. Although she has travelled and lived outside of the area for work, she only travels with her mom to visit family in Northern California. Additionally, she described being happy when she returns to the Rogue Valley and further highlighted this point by saying that she vividly remembers performing a sigh of relief when she returned to the Rogue Valley after her last trip. For the question, “do you care about what happens in the region, the speaker received a 3. She mentioned that it is wonderful how active people are in the community, and that the community is getting better, but does not mention her own involvement in local organizations to help the community become a better place.

Less Rooted Speaker FSOM818

This speaker was 18 years old at the time of the recording. He described himself as biracial and a man. His rootedness score is 6/20 (Less Rooted). For the question, "are you planning on staying in the area," he received a 0. He was planning on moving out to pursue a career that is unavailable to him in the Rogue Valley and predicts that he will not return to live in the area. For the question, "do you like living here," he received a 1. Although he mentioned how beautiful the area is and specific areas that he adores, he mentioned how much he does not like the prevalence of drugs and homelessness in the area. He also mentioned that he does not like the people in the area too much. In general, he discussed the problems with the area more than the positives of the area. For the question, "do you identify strongly with the area," he received a 2. Although he did not mind calling himself an Oregonian, he laments that he has to describe where Oregon is in relation to California and Seattle. For the question, "how do you feel about travelling outside of Southern Oregon," he received a 0. He reported travelling often to visit relatives all around Oregon and to California every three months or so. He additionally discussed travel to Asia. He did not bring up during the interview feeling homesick. For the question, "Do you care about what happens in the region," he received a 3. He discussed in great detail the problems in the region which shows some care for the region. He did not mention actively being involved in working to make the community better, which contributed to his score.

Mildly Rooted Speaker FSOF620

This participant described herself as White/Caucasian and as a woman. She was 20 years old at the time of the interview. She has spent all her life in Jackson County. Her rootedness score is 11/20 (mildly rooted). For the question, "Are you planning on staying in the area," she received a 1. She reported that she is planning on moving away for graduate school, but that she would like to return to the area for retirement at some point. The paramount reasons for wanting to move back include the natural beauty and the many family members who live in the valley. For the question, "do you like living here," she received a 3. The speaker discussed the nature and the family members, but also mentioned that the valley can seem like a "fishbowl" and that people tend to get stuck there because of the culture of the region. She also discussed that she dislikes how the city is urbanizing and has a fear that one day she will not be able to see the mountains because the buildings are so high. She also discussed that farms are being sold to cannabis farmers changing local dynamics making some services that those farms used to provide more expensive. Lastly, she said that traffic in the area is getting worse. For the question, "do you identify strongly with the area," she received a 2. She labeled herself as being an Oregonian. She said that people seem to think that it is cool to be from Oregon due to, for example, the craft beer scene. In addition to feeling Oregonian, she expressed a feeling of comradery with Californians that she met while traveling in Europe. This indicates that she might have a sense of connection with the West Coast more generally. However, she did not go as far as to say that she is proud (or not proud) of the region. For the question, "how do you feel about travelling outside of Southern Oregon," she received a 1. At first, she stated that since she is too busy to travel, but as the conversation continued, she stated that she has family members

outside of Southern Oregon, whom she visits, and discussed family vacations to Bend and California that happened quite regularly. She did not express any homesickness related to these trips. For the question, "do you care about what happens in the region," she received a 4. She discussed that she is fearful that her community will become extremely urban making outdoor pursuits more challenging and expensive. As said before, she described in vivid detail a fear that one day she won't be able to see the mountains because of the tall buildings one day when she comes home. She also described a concern that it will become more and more difficult to pursue more agricultural pursuits if the region becomes more urban. She also mentioned that she volunteers with an organization that works with migrant workers therefore showing involvement in a community organization.

Mildly Rooted Speaker FSOF1146

This participant described herself as a woman and biracial. She was 46 years old at the time of the interview. She was born and raised in Jackson and Josephine Counties, but spent some time living in other parts of the West. Her rootedness score is 11/20 (mildly rooted). For the question, "are you planning on staying in the area," her answer was a resounding yes giving her a score of 4. She has a lot of family in the area and enjoys strong personal connections she has towards the place. Additionally, she has a unique, stable job which she enjoys and is unlikely to be able to perform in another place. For the question, "do you like living here," her answer was mixed, landing her at a 2. She explained that she will be bitter about the changes that are happening and a long list of issues she has with the area such as environmental policy, homelessness, the increase of drugs, and all the Californians moving to the Rogue Valley. She

even mentioned how legally they cannot be stopped from moving to Oregon. However, she loves the natural features of the area such as the river and mentions that she likes the connections she has to the place just by being there and by having family members who have lived there for a long time. These opinions earned her a neutral score. For the question, "do you identify strongly with the area, she received a 2 because she has no problem labeling herself as being from the valley but does not express an opinion of pride or shame about being from the area. For the question, "how do you feel about travelling outside of Oregon," she received a 0. She reported leaving Southern Oregon often to visit family in Eastern Oregon and that she used to travel quite often for work to Portland. She does not express having feelings of homesickness while being away. For the question, "do you care about what happens in the region," the speaker received a 3. The speaker cared about how the community could be changing for the worse regarding crime and development and spoke at great length about those issues.

Rootedness Metric Discussion

The questions that are addressed in this rootedness metric are ones that have been asked by other linguists. The goal was to create a principled, nuanced, and easily replicable metric that would improve on previous work done while using already collected data. Sociolinguists know that well established extralinguistic variables can be explanatory when considering certain linguistic variables. The rootedness metric seeks to help answer the question of whether rootedness is an explanatory extralinguistic variable in fairly, rural Southwestern Oregon. The main goal of this metric is to identify groups who would otherwise not be grouped together using traditional extralinguistic variables. In other words, does it differentiate people who would

otherwise be grouped together? I believe that it does this successfully. For example, FSOF1146 and FSOF1041 were both in their 40s during the time of the interview. In addition, they were both women and from the region. Based off their region, gender, and age, they would be grouped together. However, FSOF1146 has a rootedness score of 11/20 (mildly rooted) while F1041 as a score of 19/20 (very rooted). Based on their rootedness score, they have very different attitudes regarding their home, thus the rootedness score differentiates them. One thing they do not share is ethnicity as one of them described herself as White and the other described herself as Biracial. It is possible that ethnicity might also be an important factor in this case. The Principle of Multiple causes states that, "it is unlikely that any single contextual factor alone can explain the variability in the data," meaning that, "the question for the researcher is thus not which single factor is associated with variation but what the relative weight of the different factors associated with variation is" (Bayley and Young 1996, p. 254). The difference in respondents' rootedness scores will still provide us with some information about the intersection of ethnicity and rootedness. Other groupings that the rootedness score reveals include FSOF1146 and FSOF620 who both have a score of 11/20 (mildly rooted) in spite of the fact that FSOF620 is 20 years younger. We also find respondents FSOF620 and FSOM818, who are similar in age, but FSOF620 has a rootedness score of 11/20 (mildly rooted), and FSOM818 has a rootedness score of 6/20 (less rooted). After applying the metric to the participants, I came to the conclusion that when I apply this metric to the rest of my interviews, it will help me group the respondents in a socially meaningful manner. I then I applied it to the rest of my participants. Their scores are in the following section Sociolinguistic Variables.

Sociolinguistic Variables

As discussed in Chapter 4, rootedness, gender, age, and ethnicity were the extralinguistic factors of interest. This information was obtained using a free response questionnaire provided on a piece of paper after the recording was over. The participants filled the questionnaire out themselves. This questionnaire is located in Appendix F.

Table 11 Participant Demographics

Participant Code	Age	Ethnicity	Gender	Rootedness Score	Move	Like	Identiy	Travel	Care
FSOF123	23	White	Woman	16	3	3	4	3	3
FSOF421	21	White	Woman	15	3	3	4	1	4
FSOM533	33	White	Man	12	1	3	4	1	3
FSOF620	20	White	Woman	11	1	3	2	1	4
FSOM726	26	White	Man	11	0	3	2	3	3
FSOM818	18	White-Asian	Man	6	0	1	2	0	3
FSOM967	67	White	Man	15	4	2	4	1	4
FSOF1041	41	White	Woman	19	4	4	4	4	3
FSOF1146	46	White/Nat. American	Woman	11	4	2	2	0	3
FSOM1260	60	White	Man	18	4	4	4	3	3
FSOM1326	26	White	Man	17	4	3	3	4	3
FSOF1427	27	White	Woman	11	2	2	2	4	1
FSOF1559	59	White	Woman	10	0	3	3	1	3

For the purposes of this study, White and Caucasian were grouped into White, while the other labels were left as provided by the participants. In Table 11, move corresponds to the question in Table 10.1, like to the question in Table 10.2, identity to the question in Table 10.3, travel to the question in Table 10.4, and care to the question in Table 10.5.

Acoustic Analysis

For the purposes of this study, only the word list portion of the recording was acoustically analyzed. A preliminary transcription was obtained using CLOx (Version 1.0, Wassink, Squizzero, Fellin & Nichols 2018), which was then corrected using ELAN (Version 5.9, 2020).

The corrected transcript and recording were imported into Praat (Version 6.0.22, 2016). Afterwards FAVE (Rosenfelder, Fruehwald, Evanini, Seyfarth, Gorman, Prichard, & Yuan 2014 2014) was run over the data, and the alignment was manually corrected. Then, a modified Praat script shared by (B. Tucker, personal communication, April 25, 2018) was run over the data to obtain measurements at the 20, 50, and 80 percent mark. Then, the midpoint of the vowel was plotted using NORM (Thomas & Kendall 2007). This data was not normalized yet. At this point, I looked at the plots to try to understand if there were any outliers. Outlier vowels were measured manually as much as possible, but some outlier tokens were deleted at this point due to issues such as coughing, laughter, and creaky voice which made it challenging to conduct acoustic analysis. After completing the first round of this process, I plotted the raw values again, and checked again for outliers, double checking tokens when relevant. I then, in R, filtered out which tokens were 3, 2, and 1 standard deviations from the mean and double checked those tokens for the 20, 50, and 80 percent mark in Praat. For the acoustic analysis discussed further in Chapter 6, I decided to use a subset from the word list data because my word list was unbalanced per vowel. There were 177 unique tokens that participants read in each word list, and as stated earlier in the chapter, participants read the word list three times, with words in a randomized order. From the 177 tokens, 39 tokens were chosen for acoustic analysis and the first usable token was used. In total, 507 tokens were used for the analysis presented in Chapter 6. The tokens chosen for analysis are discussed in Chapter 6 and are presented in Appendix E. For the subset, only monosyllabic words were used, and an effort was made to avoid aspirated stops and liquids. There were only three disyllabic words on the word list, and they were not included in the subset. They were: MERRY, MARY, and MARRY. For the monosyllabic words, there were 16 /ɪ/ tokens, 14 /o/ tokens, 14 /u/ tokens, 19 /ɛ/ tokens, 12 /ɑ/ tokens, 19 /e/ tokens, 5 /ʊ/

tokens, 10 /ʌ/ tokens, 17 /i/ tokens, 26 /æ/ tokens, and 8 /ɔ/ tokens. For each of these vowels, 3 tokens were chosen to be included in the subset, along with 6 additional tokens that included environments of particular interest. The diphthongs /aɪ/ and /aʊ/ were not included in the subset as they were not focused on in the previous literature on the West Coast as described in Chapter 3. There were 10 /aɪ/ tokens and 4 /aʊ/ tokens. For the vowels in the subset was ascertained that the vowels were monophthongs, and therefore only the midpoint was used in the acoustic analysis. The data was normalized in R using the Lobanov method (Lobanov 1971) by speaker, and the statistical results are presented in Chapter 6.

Chapter 6 Acoustic Analysis

This chapter presents the analysis of the vowel data from 13 speakers. Generally speaking, it appears that locals in Southern Oregon are exhibiting some features of what is known as the California Vowels Shift (CVS) and pre-velar raising. These features were of particular interest because they are features found in speakers from the West, as illustrated in Chapters 2 and 3. This chapter will first present data discussed in Chapter 5 to answer the following research question:

RQ 1: What are the characteristics of the vowel system of a relatively rural Southern OR community?

After answering RQ1, this chapter will then present data to answer the following question by discussing particular linguistic features:

RQ 2: If there is variation in the respondents' vowel systems, is there a correlation between rootedness and the vowel systems of the respondents?

Vowel System Description

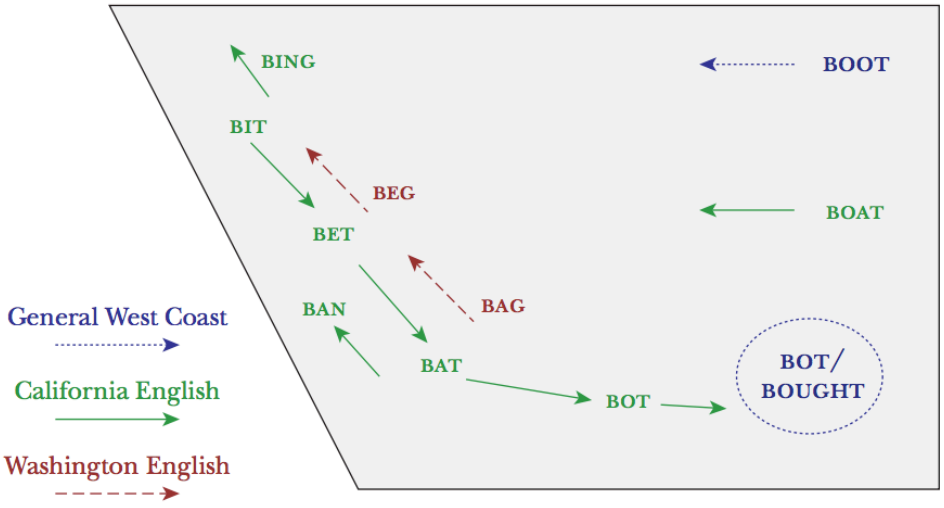
When examining the data for the 13 participants in the present study, the following linguistic features are present:

- Fronted /u/ especially in the word DUDE
- /o/ not fronted but younger speakers slightly more fronted

- Merger or near merger of /ɑ/ and /ɔ/
- Prevelar tokens before /æ/ not raised
- Prevelar tokens before /ɛ/ are raised for some speakers, the token BEG raised more for people who do not identify as strongly with the area
- Backed /æ/ with Women more backed than Men

Although all of these features are notable, some of them are of particular interest due to their associations with California and the Pacific Northwest as shown Figure 18. The comparison between the vowel system of the participants and its implications for research in the West will be discussed in Chapter 7.

Figure 18 Summary Plot of Linguistic Features of Interest on the West Coast



(Becker et. al. 2016, p. 108)

Understanding Variation

The following section will establish whether there is difference among speakers for several linguistic features, and if so, examine whether age, gender, and/or rootedness help us understand the variation. Ethnicity was included in the study design, but due to the number of

respondents and the lack of diversity of those who responded, ethnicity will not be used as an independent variable in the statistical models. However, a discussion of ethnicity and how it could potentially play a role is included in Chapter 7, Future Work. Table 12 shows the words that were used for analysis and Table 13 shows the special tokens that were included in the analysis.

Table 12 Tokens included in Analysis

/ɔ/	/ɑ/	/i/	/u/	/ɪ/	/ʊ/	/e/	/o/	/ʌ/	/ɛ/	/æ/
BOUGHT	BOT	BEAT	DUDE	BIT	FOOT	BADE	BOAT	BUT	BET	DAD
DOG	DOCK	BEAD	BOOT	BID	PUT	BAIT	OAT	DOES	DEAD	BAD
DAWN	DON	DEED	BOOED	DID	TOOK	DATE	ODE	UP	BED	BAT

Table 13 Special Tokens Included in Analysis

/e/	/ɛ/	/æ/	/ɪ/
BAKE	BEG	BAG	BING
	EGG	BAN	

For the present study, the midpoint of the vowel was used, unless the word in question began with an aspirated stop. For tokens that contained an aspirated stop, the measure was moved by 20% in order to avoid the effects of aspiration. Plots were made using NORM (Thomas & Kendall 2007), and the data was manipulated in R (R Core Team 2013). Important packages included vowels (v1.2-2; Thomas & Kendall 2018), lrtest (0.9-38; Hothorn, Zeileis, Farebrother, Cummins, Millo, & Mitchell 2020), lmertest (v3.1.3; Kuznetsova, Brockhoff, Christensen 2020) lme4 (v1.1-25; Bates, Mächler, Bolker, & Walker 2020) lmtest (v0.9-38; Hothorn 2020), ggplot2 (v3.3.2 Wickham 2020), and dplyr (v1.0.2; Wickham 2020). Figure 19 is a summary plot of all tokens for all thirteen speakers, while Figure 20 is a plot showing the mean of each token for all speakers.

Figure 19 Plot of all Vowel Tokens in Table 12 and Table 13 for All Speakers (n=507)

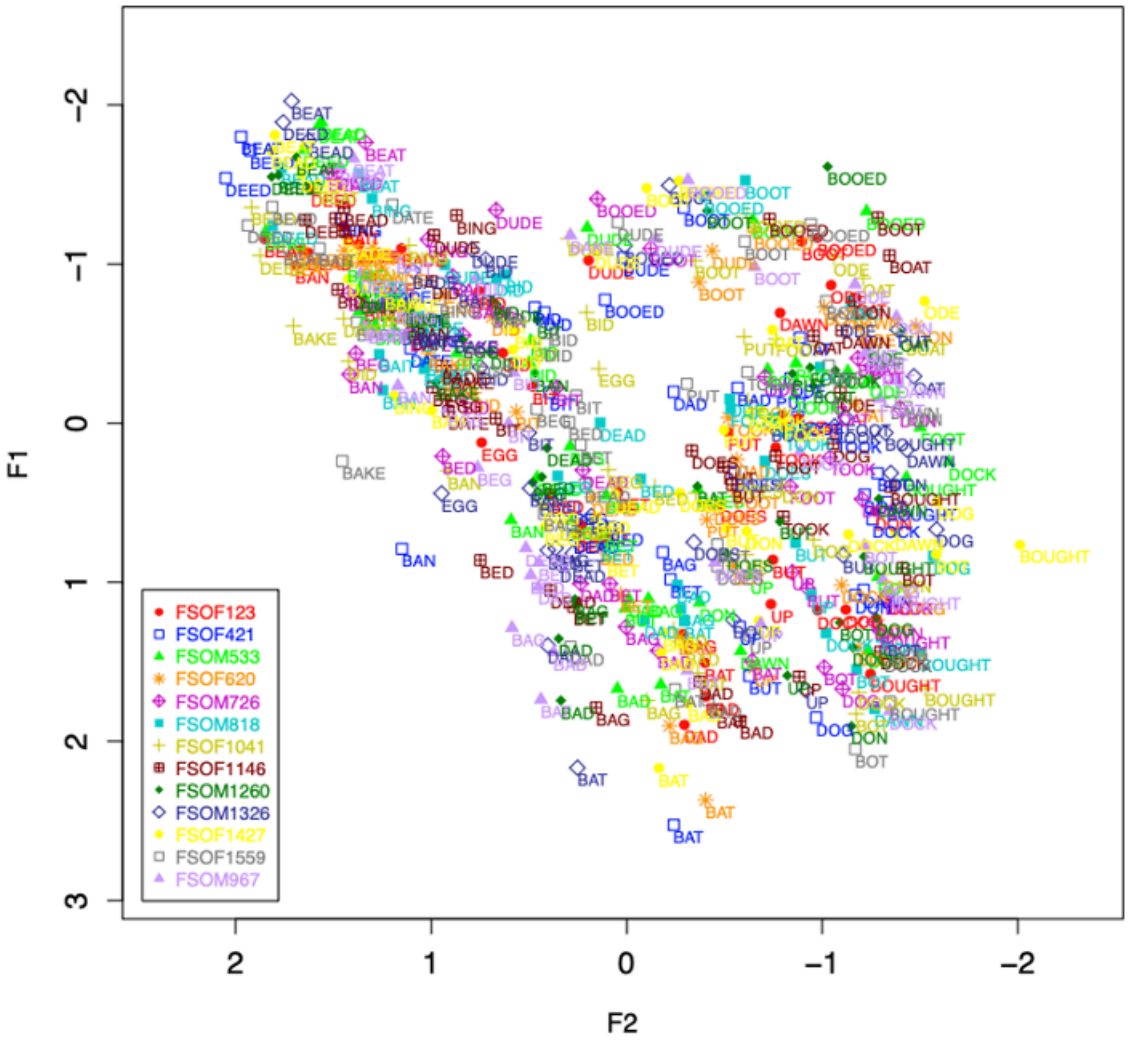
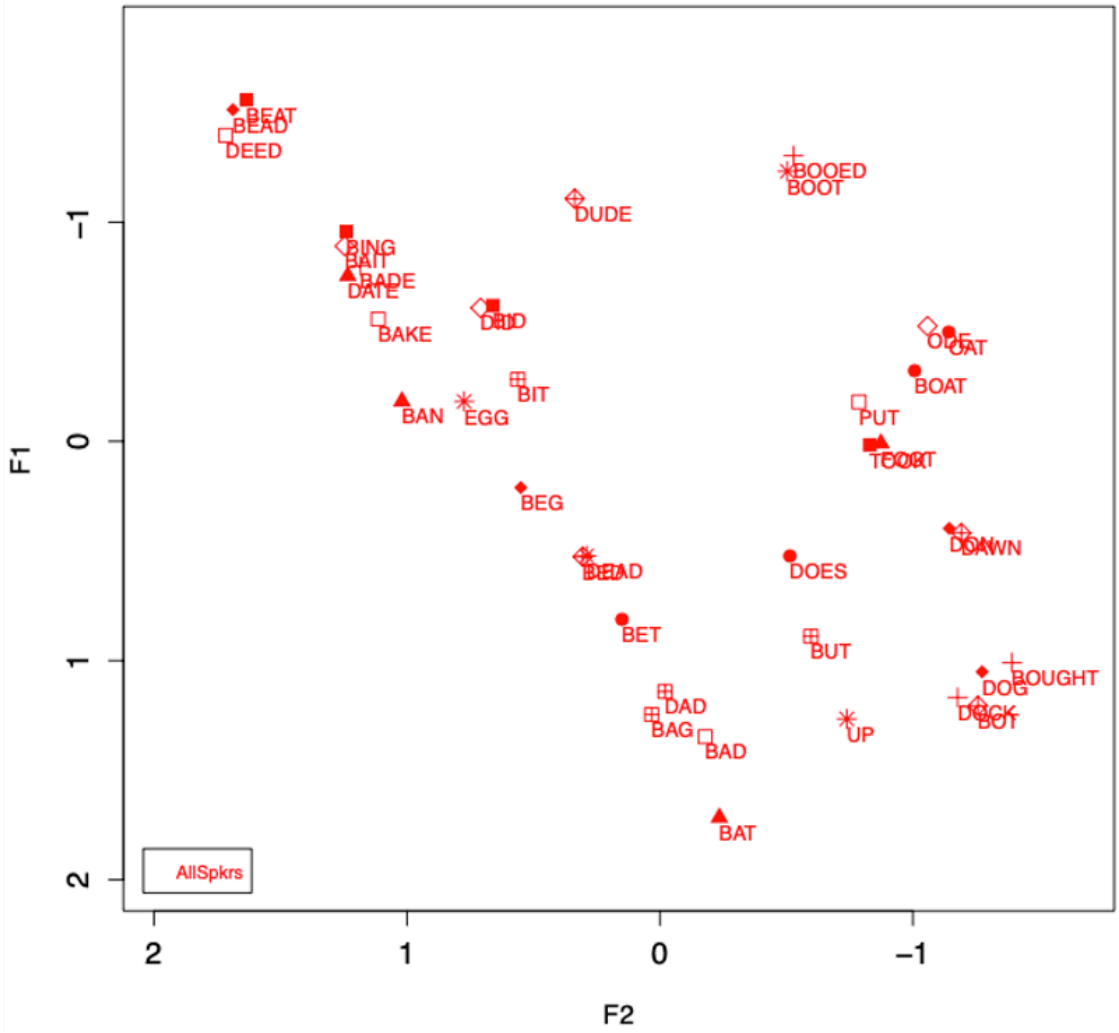


Figure 20 Plot of Mean Normalized Vowel Tokens by Word



Statistical Measures

For the statistical measures the independent variables were age (discrete), gender (categorical), and rootedness score (discrete). Eleven speakers described their ethnicity as White, one participant wrote White and Native American, and one participant wrote White and Asian. Given this information, ethnicity will be discussed qualitatively in Chapter 7, Future Work. The dependent variables are vowel measurements for F1 and F2 at the 50% mark, normalized by speaker using the Lobanov method (Lobanov 1971) for the first usable rendition

of the word. The low back merger was analyzed using Pillai Scores (Hay, Warren & Drager 2006), and Euclidean Distance (Nycz & Hall-Lew 2013). These measures are discussed as valuable measures to use in Nycz & Hall-Lew (2013,) and using a combination of these measures can provide a better idea of the status of the merger than using only one measure. In order to understand the status of /u/ and /o/ fronting, an ANOVA was used to measure the variation in the sample along with a linear mixed effects model. In order to understand the status of pre-velar raising, /æ/ movement before nasals, /æ/ backing, and /ɪ/ movement before nasals, t-tests were performed. Linear mixed effects models were performed in cases where there was more than one token per speaker, and linear models were performed in cases where there was one token per speaker. The random effects were speaker and word, and these were crossed rather than nested. The fixed effects were age (discrete), gender (categorical), and rootedness score (discrete).

Low Back Merger

For the low back merger analysis, the tokens in Table 14 were used. The total number of tokens for all speakers used to analyze the low back merger was 78.

Table 14 Low back vowel merger tokens

/ɔ/	/ɑ/
BOUGHT	BOT
DOG	DOCK
DAWN	DON

The first measures calculated were Pillai scores, which is related to the output of a multivariate analysis of variance measure (MANOVA) model. One advantage of the Pillai score is that it is possible to have two dependent variables, in this case F1 and F2. The score helps

researchers understand how different the distributions are for the two vowels of interest, which presently is /ɔ/ and /ɑ/. In Table 15 the Pillai scores for each speaker are shown along with demographic data. The order of the speakers is from lowest score to highest score. A score of 0 means there is no difference between the two distributions, a score of 1 means that there is no overlap. A low score indicates more overlap while a higher score indicates less overlap.

Table 15 Pillai Scores

speaker	pillai	age	ethnicity	gender	rootedness.score
FSOF620	0.009517792	20	White	Female	11
FSOF1559	0.097597366	59	White	Female	10
FSOM967	0.102915252	67	White	Male	15
FSOF123	0.158316343	23	White	Female	16
FSOM533	0.159876878	33	White	Male	12
FSOF1146	0.221149752	46	White/Nat. American	Female	11
FSOM726	0.432979486	26	White	Male	11
FSOM1326	0.503615576	26	White	Male	17
FSOF421	0.523016135	21	White	Female	15
FSOM818	0.657642932	18	White-Asian	Male	6
FSOF1427	0.661836814	27	White	Female	11
FSOF1041	0.677628166	41	White	Female	19
FSOM1260	0.870073159	60	White	Male	18

With these scores, it can be seen that there is some overlap for all speakers between the two vowels but that there is a lot of variation. Just by looking at the Pillai score extremes, the person with the lowest score is a 20-year-old White female who is moderately rooted, while the person with the highest score is a 60-year-old White male with a very high rootedness score. Overall, these Pillai scores suggest that these speakers do have the back vowel merger or at least a near merger. In order to make more sense of these numbers, an ANOVA was performed. The output is in Table 16.

Table 16 Pillai Score ANOVA Output

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
rootedness.score	1	0.0639	0.06388	0.731	0.415
gender	1	0.0475	0.04752	0.544	0.480
age	1	0.0414	0.04139	0.474	0.509
Residuals	9	0.7862	0.08736		

In this case the p-value, located in the right most column for the demographic factors is well above 0.05, and therefore with the current data set it cannot be determined with just Pillai scores that rootedness, gender, and/or age are associated with low back vowel merger progression. The variation in the Pillai scores is likely due to the small data set for each speaker and more generally. It is also potentially due to this being a change in progress where for some speakers this is a near merger while for others this is a complete merger. Analyzing more data from the participants could potentially help researchers understand the status of the low back merger in Southern Oregon, and larger number of participants could also help researchers understand the status of the low back merger in Southern Oregon.

Euclidean distance is another measure by which to measure the status of the low back merger. The Euclidean distance measure is the distance between the two vowels. In this case the mean F1 and F2 measurement for each vowel was used. Table 17 has the Euclidean distance measure from order of low to high.

Table 17 Euclidean Distance Measure

speaker	euclid_distance	age	ethnicity	gender	rootedness.score
FSOF620	0.05831428	20	White	Female	11
FSOM967	0.05840186	67	White	Male	15
FSOF1559	0.14021016	59	White	Female	10
FSOF1041	0.27992717	41	White	Female	19
FSOM818	0.28254714	18	White-Asian	Male	6
FSOM533	0.28754323	33	White	Male	12
FSOF123	0.29251591	23	White	Female	16
FSOF421	0.46622002	21	White	Female	15
FSOF1427	0.55077652	27	White	Female	11
FSOF1146	0.55523579	46	White/Nat. American	Female	11
FSOM726	0.55975282	26	White	Male	11
FSOM1260	0.68383364	60	White	Male	18
FSOM1326	0.75857439	26	White	Male	17

In order to make sense of the distance measures, it is important to conduct additional tests. Table 18 includes the output of an ANOVA.

Table 18 Euclidean Distance ANOVA Output

```
                Df Sum Sq Mean Sq F value Pr(>F)
rootedness.score  1 0.0458 0.04585   0.815  0.390
gender            1 0.0361 0.03608   0.642  0.444
age               1 0.0473 0.04727   0.841  0.383
Residuals         9 0.5061 0.05623
```

In this case the p-value, located in the right most column for the demographic factors is well above 0.05, and therefore with the current data set it cannot be determined with just Euclidean Distance scores that rootedness, gender, and/or age are associated with low back vowel merger progression. Similar to the Pillai score results, the variation in the Euclidean Distance scores is likely due to the small data set for each speaker. As discussed with the Pillai scores, this variation could be the result of this being a change in progress where some speakers have the

merger and others are close to being merged. In the future, including more participants and analyzing more data could potentially help researchers understand the status of the low back merger in Southern Oregon.

The Pillai scores and the Euclidean Distance scores show a great deal of variation among the speakers; however, all speakers show some overlap between /ɔ/ and /ɑ/. Vowel duration for these vowels is discussed in the Vowel Duration section of the present chapter. Given the present data set, it appears the speakers in Southern Oregon do exhibit the low-back merger to some degree. Figure 21 and Figure 22 illustrate the extent of near merger or merger of the low back vowel system. Future work including a perception test would help clarify the status of a merger of these vowels.

Figure 21 Plot of Low Back Merger Words by Speaker Normalized (n=78)

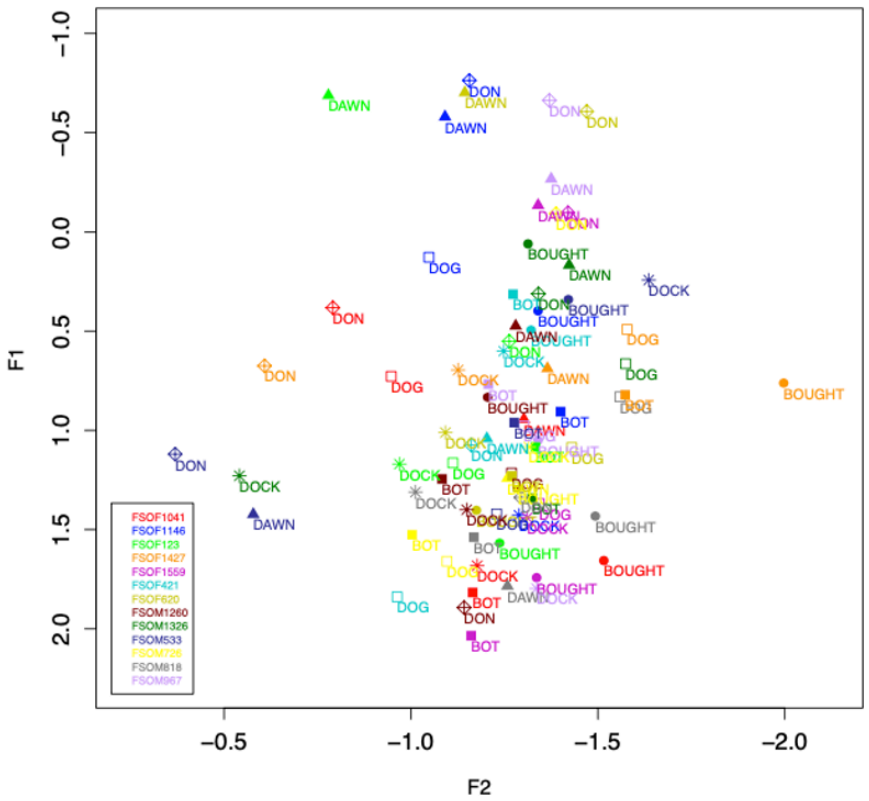
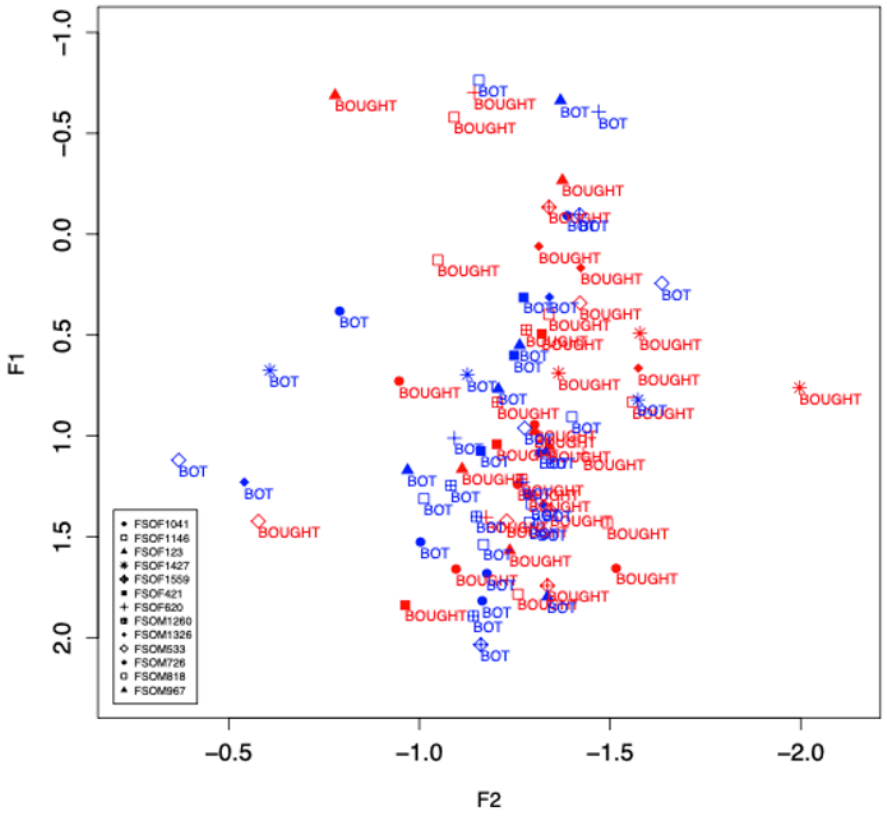


Figure 22 uses the key words BOUGHT and BOT to represent the vowels in Table 14. It is clear looking at the Figures 21 and 22 that there is a substantial overlap between /ɔ/ and /ɑ/ tokens.

Figure 22 Plot of Low Back Merger Words by Speaker Normalized, BOUGHT is /ɔ/ and BOT is /a/ (n=78)



/u/ Fronting

For the /u/ fronting analysis, the following tokens in Table 19 were used. The total number of tokens for all speakers used to analyze /u/ fronting was 39.

Table 19 /u/ Tokens

/u/
DUDE
BOOT
BOOED

An ANOVA was performed on the data to ascertain if there are statistically significant differences among all the speakers for F2. In the output shown in Table 20, there is a p-value greater than 0.05 which indicates that there is not a significant difference in /u/ production among the speakers.

Table 20 ANOVA Output for F2 of /o/ Tokens for Speakers

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
speaker	12	2.605	0.2171	0.588	0.832
Residuals	26	9.605	0.3694		

Although there was not a significant difference among the speakers according to the ANOVA, a linear mixed effects model was run to understand better whether the nonlinguistic factors can help us understand the amount of variation in spite of the ANOVA results indicating that there was not significant variation among the speakers in the sample.

Table 21 Linear Mixed Effects Model Output /o/

```
Linear mixed model fit by REML. t-tests use Satterthwaite's method ['lmerModLmerTest']
Formula: F.2 ~ (1 | speaker) + (1 | Context) + age + gender + rootedness.score
   Data: goose_all

REML criterion at convergence: 61.3

Scaled residuals:
     Min       1Q   Median       3Q      Max
-1.87028 -0.40337 -0.02841  0.53456  2.23518

Random effects:
 Groups   Name        Variance Std.Dev.
 speaker  (Intercept) 0.01958  0.1399
 Context  (Intercept) 0.22883  0.4784
 Residual             0.14061  0.3750
Number of obs: 39, groups:  speaker, 13; Context, 3

Fixed effects:
                  Estimate Std. Error        df t value Pr(>|t|)
(Intercept)      -0.193924   0.401947  6.526686  -0.482    0.645
age              -0.007111   0.004618  8.999990  -1.540    0.158
genderMale        0.219653   0.145023  8.999990   1.515    0.164
rootedness.score  0.008901   0.020730  8.999990   0.429    0.678

Correlation of Fixed Effects:
            (Intr) age    gndrMl
age         -0.194
genderMale  -0.145 -0.147
rotdnss.scr -0.574 -0.285  0.058
```

Age, gender, and rootedness are not significant for /u/ fronting due to the p-values being greater than 0.05. A further discussion of /u/ fronting is located in the /o/ Fronting section of the present chapter.

/o/ Fronting

Table 22 includes the tokens used for the /o/ fronting analysis. The total number of tokens for all speakers used to analyze /o/ fronting was 39.

Table 22 /o/ Tokens

/o/
BOAT
OAT
ODE

An ANOVA was performed on the data to ascertain if there are statistically significant differences among all the speakers for F2. In the output shown in Table 23, there is a p-value greater than 0.05 which indicates that there is not a significant difference in /o/ production among the speakers.

Table 23 ANOVA for /o/

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
speaker	12	0.494	0.04117	0.657	0.775
Residuals	26	1.629	0.06266		

There was not a significant difference among the speakers according to the ANOVA, however, a linear mixed effects model was run to understand better whether the nonlinguistic factors can help us understand the amount of variation as shown in Table 24.

Table 24 Linear Mixed Effects Model for /o/

```
Linear mixed model fit by REML. t-tests use Satterthwaite's method ['lmerModLmerTest']
Formula: F.2 ~ (1 | speaker) + (1 | Context) + age + gender + rootedness.score
   Data: goat_all

REML criterion at convergence: 15.6

Scaled residuals:
     Min       1Q   Median       3Q      Max
-2.27900 -0.74983 -0.05247  0.74891  1.71218

Random effects:
 Groups   Name        Variance  Std.Dev.
 speaker  (Intercept) 0.0000000 0.00000
 Context  (Intercept) 0.0008308 0.02882
 Residual             0.0491300 0.22165
Number of obs: 39, groups:  speaker, 13; Context, 3

Fixed effects:
                  Estimate Std. Error        df t value Pr(>|t|)
(Intercept)      -0.724042   0.145926 34.854061  -4.962 1.82e-05 ***
age              -0.003953   0.002293 32.999989  -1.724    0.094 .
genderMale        0.041592   0.071993 32.999989   0.578    0.567
rootedness.score -0.016267   0.010291 32.999989  -1.581    0.123
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Correlation of Fixed Effects:
            (Intr) age    gndrMl
age         -0.265
genderMale  -0.198 -0.147
rotdnss.scr -0.786 -0.285  0.058
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see ?isSingular
```

Age, gender, and rootedness are not significant for /o/ fronting due to the p-values being greater than 0.05. R provided information that the model could be overfitted. Therefore, it appears that there is not enough data to test whether age, gender, and rootedness score are significant predictors of /o/ fronting and given the ANOVA result, it appears that the speakers do not show

much variability in their /o/ production. Age, gender, and rootedness are not significant for /o/ fronting due to the p-values being greater than 0.05.

When looking at Figure 23 and Figure 24 it appears that /o/ is not fronting. /u/ is fronted more for DUDE than other tokens. This finding is interesting because some of the participants in the study associated this term with extreme fronting with California. It is possible that fronting DUDE is due to lexical effects. In general, /u/ fronting in Southern Oregon is not surprising as it is a feature in many areas in the West and other parts of the United States.

Figure 23 Plot of /u/ and /o/ by Speaker Normalized (n=78)

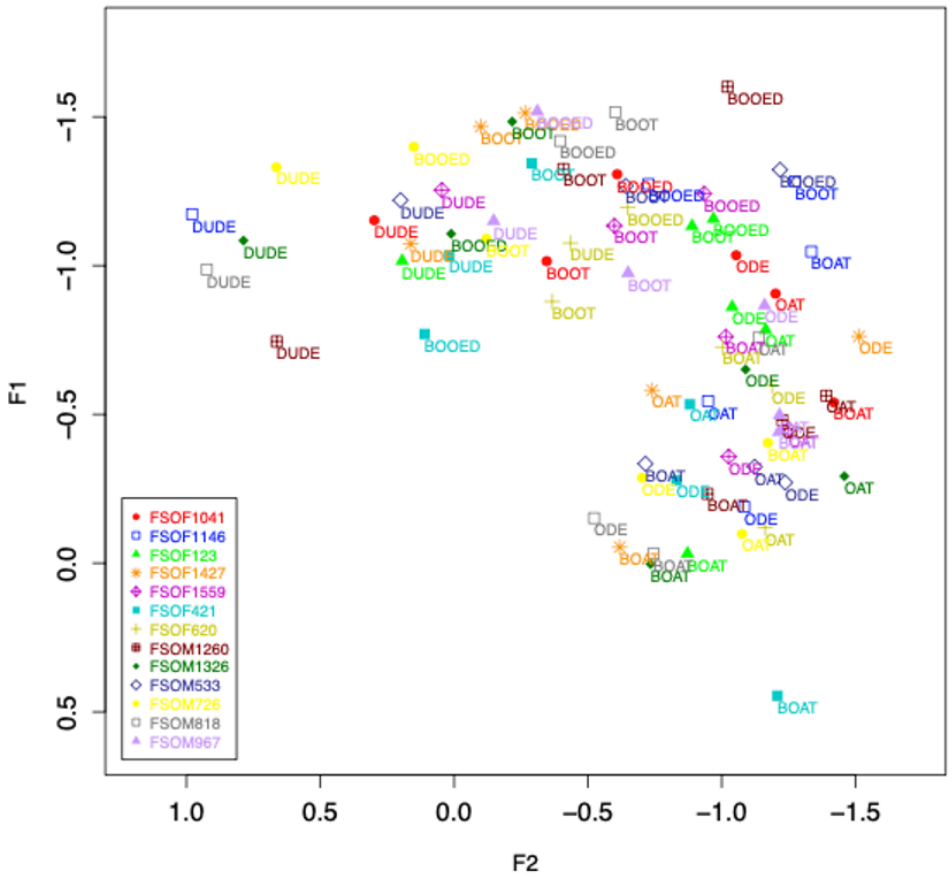
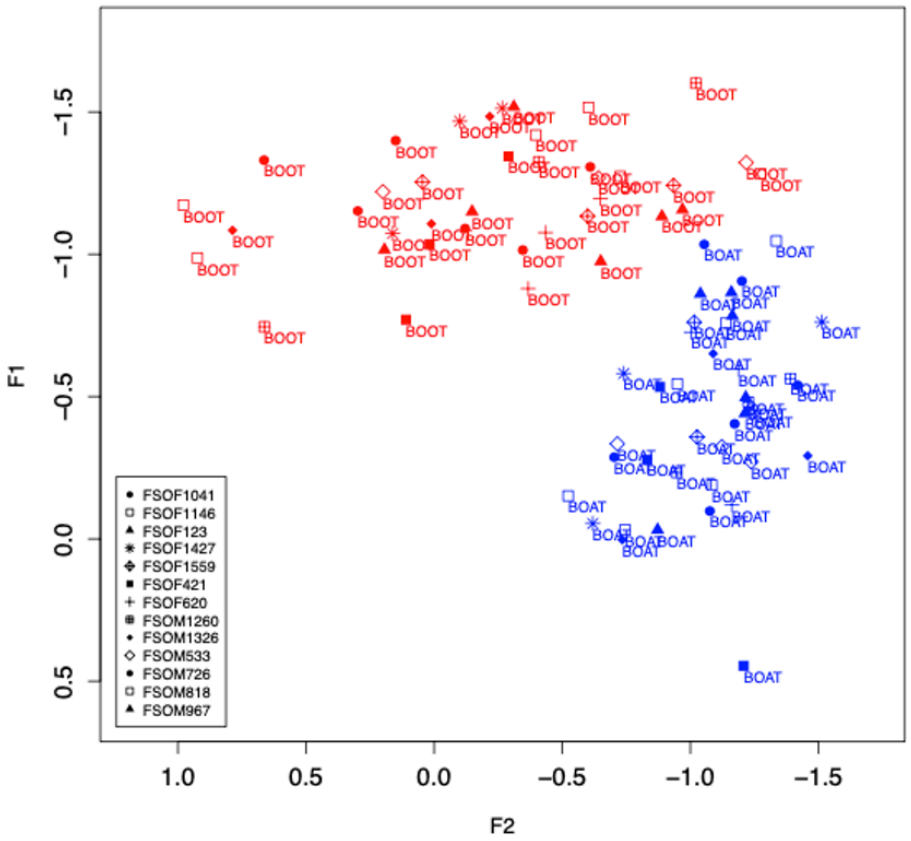


Figure 24 Plot of /u/ and /o/ Vowels by Speaker Normalized, BOAT is /o/ and BOOT is /u/ (n=78)



Prevelar Raising

The first condition for prevelar raising which will be discussed is /æ/ before velars. The tokens of interest are in Table 25. The total number of tokens for all speakers used to analyze /æ/ before velars was 52.

Table 25: /æ/ Tokens for Prevelar Raising Analysis

/æ/
DAD
BAD
BAT
BAG

A T-Test was performed to explore whether the vowel in BAG is different from the other tokens on the F1 dimension. The output is in Table 26.

Table 26 T-Test Comparing BAG to /æ/ Tokens DAD, BAD, and BAT

```
        Welch Two Sample t-test

data:  ae1_f1 and ae1g_f1
t = 1.0651, df = 31.573, p-value = 0.2949
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.1412718  0.4506052
sample estimates:
mean of x mean of y
 1.392359  1.237692
```

The p-value indicates that there is not a significant difference between the BAG and the other /æ/ tokens described above. The mean values are fairly similar but not completely identical. A linear model, shown in Table 27, was performed on the F1 dimension of BAG to understand better whether non-linguistic factors contribute to the variation.

Table 27 Linear Model for BAG Output

```
Call:
lm(formula = F.1 ~ age + gender + rootedness.score, data = bag_all)

Residuals:
     Min       1Q   Median       3Q      Max
-0.72143 -0.05076  0.01721  0.21252  0.52660

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)       1.380231   0.490059   2.816   0.0202 *
age              -0.001896   0.007750  -0.245   0.8122
genderMale       -0.218819   0.243358  -0.899   0.3920
rootedness.score  0.002009   0.034787   0.058   0.9552
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.4326 on 9 degrees of freedom
Multiple R-squared:  0.09584,   Adjusted R-squared:  -0.2055
F-statistic: 0.318 on 3 and 9 DF,  p-value: 0.8123
```

None of the non-linguistic factors are significant as indicated by the p-value over 0.05. A discussion of the vowel plot is included at the end of the present section.

The condition for prevelar raising which will be presently discussed is /ɛ/ before velars. The tokens of interest are in Table 28. The total number of tokens for all speakers used to analyze /ɛ/ before velars was 65.

Table 28 /ɛ/ Tokens

/ɛ/
BET
DEAD
BED
BEG
EGG

A T-Test was performed to explore whether the vowel in BEG and EGG are different from the other /ɛ/ tokens on the F1 dimension. The output is in Table 29.

Table 29 T-Test Comparing BEG and EGG to /ɛ/ Tokens

```
        Welch Two Sample t-test

data:  eh1_f1 and eh1g_f1
t = 5.8298, df = 40.128, p-value = 8.113e-07
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 0.3928429 0.8096956
sample estimates:
mean of x mean of y
0.6157692 0.0145000
```

Given that the p-value is less than 0.05, the p-value indicates that there is a significant difference between the prevelar tokens and the non-prevelar tokens on the F1 dimension. A linear mixed effects model was performed on the F1 dimension the tokens of BEG and EGG together understand better whether non-linguistic factors contribute to the variation.

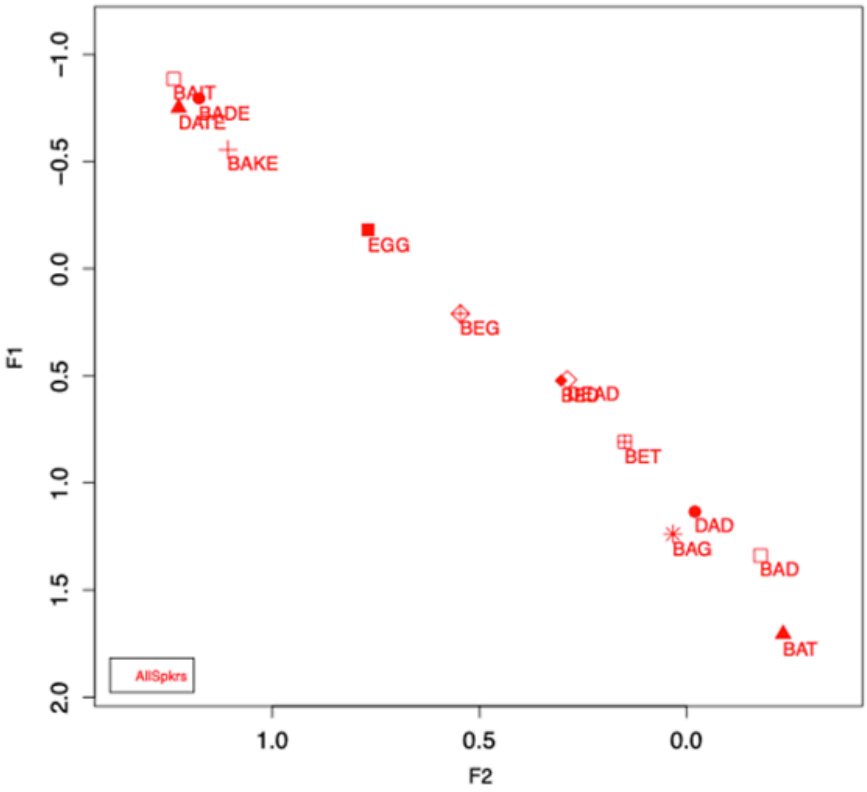
Table 30 Linear Mixed Effects Model for EGG and BEG

```
Linear mixed model fit by REML. t-tests use Satterthwaite's method ['lmerModLmerTest']
Formula: F.1 ~ (1 | speaker) + (1 | Context) + age + gender + rootedness.score
   Data: beg_all

REML criterion at convergence: 44.4

Scaled residuals:
    Min      1Q  Median      3Q     Max
-1.7926 -0.5459  0.0176  0.5535  1.6066

Random effects:
 Groups   Name        Variance Std.Dev.
 speaker  (Intercept) 0.09518  0.3085
 Context  (Intercept) 0.06786  0.2605
 Residual             0.10693  0.3270
Number of obs: 26, groups:  speaker, 13; Context, 2

Fixed effects:
                   Estimate Std. Error        df t value Pr(>|t|)
(Intercept)      -0.270015   0.474028  9.192847  -0.570    0.583
age              -0.004257   0.006907  8.999998  -0.616    0.553
genderMale        0.104270   0.216899  8.999998   0.481    0.642
rootedness.score  0.029424   0.031005  8.999998   0.949    0.367

Correlation of Fixed Effects:
            (Intr) age    gndrMl
age         -0.246
genderMale  -0.184 -0.147
rotdnss.scr -0.729 -0.285  0.058
```

None of the non-linguistic factors are significant as indicated by the p-value over 0.05 for the F1 dimension of this data set. A discussion of the vowel plot is included at the end of the section. Some post hoc statistical tests were performed on EGG and BEG which are included in the Post Hoc Analysis with Rootedness section in the present chapter.

Figure 25 has a vowel plot of the mean prevelar tokens and their counterparts. In this summary plot, it can be seen that the tokens EGG and BEG are raised compared to their counterparts.

Figure 25 Plot of Mean Prevelar Tokens and their Counterparts



Raising in BAN

The tokens of interest are in Table 31. The total number of tokens for all speakers used to analyze BAN raising was 52.

Table 31 Tokens of Interest for BAN Raising Analysis

/æ/
DAD
BAD
BAT
BAN

A T-Test was performed to explore whether the vowel in BAN is different from the other tokens on the F1 dimension. The output is in Table 32.

Table 32 T-test for Tokens in Table 31

```
        Welch Two Sample t-test

data:  ae1_f1 and ae1n_f1
t = 8.4622, df = 21.299, p-value = 2.961e-08
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 1.187785 1.960933
sample estimates:
mean of x mean of y
 1.392359 -0.182000
```

Given that the p-value is less than 0.05, the p-value indicates that there is a significant difference between the BAN tokens and the /æ/ tokens on the F1 dimension. A linear model was performed on the F1 dimension of the tokens of BAN to understand better whether non-linguistic factors contribute to the variation.

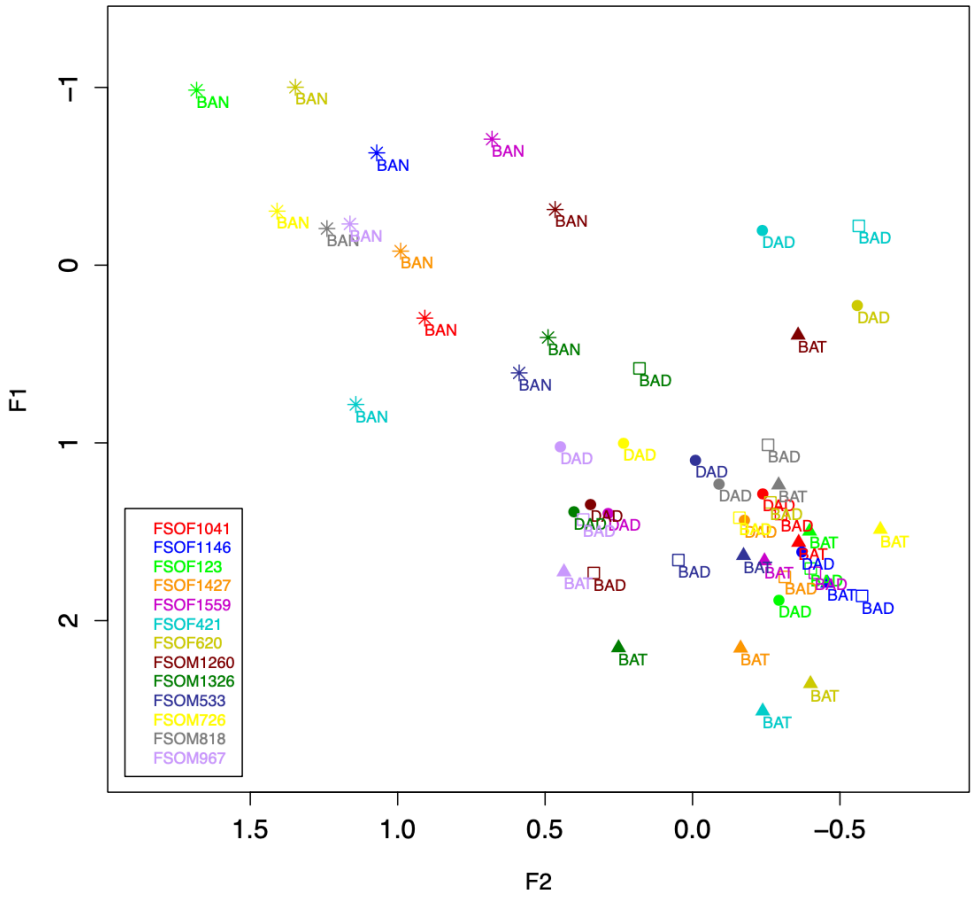
Table 33 Linear Mixed Effects Model for BAN

```
Call:
lm(formula = F.1 ~ age + gender + rootedness.score, data = ban_all)

Residuals:
     Min       1Q   Median       3Q      Max
-0.92326 -0.29618  0.01312  0.31684  0.88391

Coefficients:
                 Estimate Std. Error t value Pr(>|t|)
(Intercept)      -0.76450    0.64926  -1.177    0.269
age              -0.01023    0.01027  -0.997    0.345
genderMale        0.37779    0.32242   1.172    0.271
rootedness.score  0.05863    0.04609   1.272    0.235

Residual standard error: 0.5731 on 9 degrees of freedom
Multiple R-squared:  0.2559,    Adjusted R-squared:  0.00791
F-statistic: 1.032 on 3 and 9 DF,  p-value: 0.4238
```

None of the non-linguistic factors are significant as indicated by the p-value over 0.05 for the F1 dimension of this data set.

Figure 26 shows the distribution of the tokens by speaker. Although BAN has a lower F1 for all speakers, for some speakers the distance between BAN and non-prevelar /æ/ tokens is greater than for others. BAN raising is not surprising as we would expect a nasal to affect the vowel to some extent (e.g., Mielke, Carignan, & Thomas 2017). Future work is needed to explore whether BAN raising in Southern Oregon is due to acoustics or social reasons.

Figure 26 Plot of BAN and /æ/ Tokens by Speaker Normalized (n=52)



/æ/ Backing

The tokens of interest for /æ/ backing are in Table 34. The total number of tokens for all speakers used to analyze /æ/ was 39.

Table 34 /æ/ *Tokens*

/æ/
DAD
BAD
BAT

An ANOVA was performed on the data to ascertain if there are statistically significant differences among all the speakers for F2. In the output shown in Table 35, there is a p-value less than 0.05 which indicates that there is a significant difference in /æ/ production among the speakers.

Table 35 ANOVA for /æ/ *Tokens*

```
            Df Sum Sq Mean Sq F value  Pr(>F)
speaker     12  2.602 0.21683   4.636 0.00052 ***
Residuals   26  1.216 0.04677
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

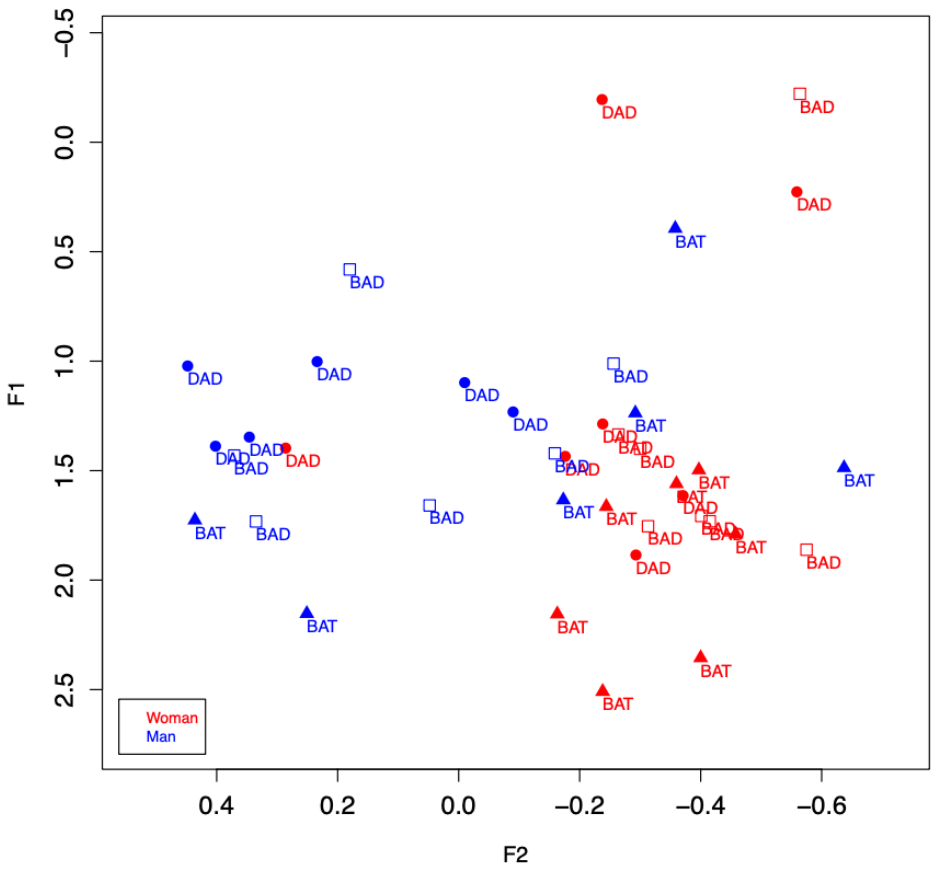
A linear mixed effects model was performed on the F1 dimension of the /æ/ tokens to understand better whether non-linguistic factors contribute to the variation.

Table 36 Linear Mixed Effects Model for /æ/ Tokens

```
Linear mixed model fit by REML. t-tests use Satterthwaite's method ['lmerModLmerTest']
Formula: F.2 ~ (1 | speaker) + (1 | Context) + age + gender + rootedness.score
   Data: trap_all

REML criterion at convergence: 14.4

Scaled residuals:
     Min       1Q   Median       3Q      Max
-2.45927 -0.36092  0.03156  0.46400  1.92000

Random effects:
 Groups   Name        Variance Std.Dev.
 speaker  (Intercept) 0.011651 0.10794
 Context  (Intercept) 0.009395 0.09693
 Residual             0.037375 0.19333
Number of obs: 39, groups:  speaker, 13; Context, 3

Fixed effects:
                  Estimate Std. Error        df t value Pr(>|t|)
(Intercept)      -0.723842   0.184590 10.115073  -3.921  0.00280 **
age               0.005560   0.002782  9.000000   1.999  0.07671 .
genderMale        0.354934   0.087351  9.000000   4.063  0.00283 **
rootedness.score  0.016371   0.012487  9.000000   1.311  0.22229
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Correlation of Fixed Effects:
            (Intr) age    gndrMl
age         -0.254
genderMale  -0.190 -0.147
rotdnss.scr -0.753 -0.285  0.058
```

The linear mixed effects model shows that gender is a relevant nonlinguistic factor for /æ/ backing in Table 36. This point is further illustrated by Figure 27 where women are overall more backed than men.

Figure 27 Plot of All /æ/ Tokens by Gender (n=39)



BING Raising

The tokens of interest for BING raising are in Table 37. The total number of tokens for all speakers used to analyze BING raising was 52.

Table 37 Tokens of Interest for BING Raising

/ɪ/
BIT
BID
DID
BING

A T-Test was performed to explore whether the vowel in BING is different from the other tokens on the F1 dimension. The output is in Table 38.

Table 38 T-Test Comparing BING to /ɪ/ Tokens

```
        Welch Two Sample t-test

data:  ih1_f1 and ih1ng_f1
t = 4.2172, df = 17.753, p-value = 0.0005321
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 0.2259841 0.6755544
sample estimates:
 mean of x  mean of y
-0.5003077 -0.9510769
```

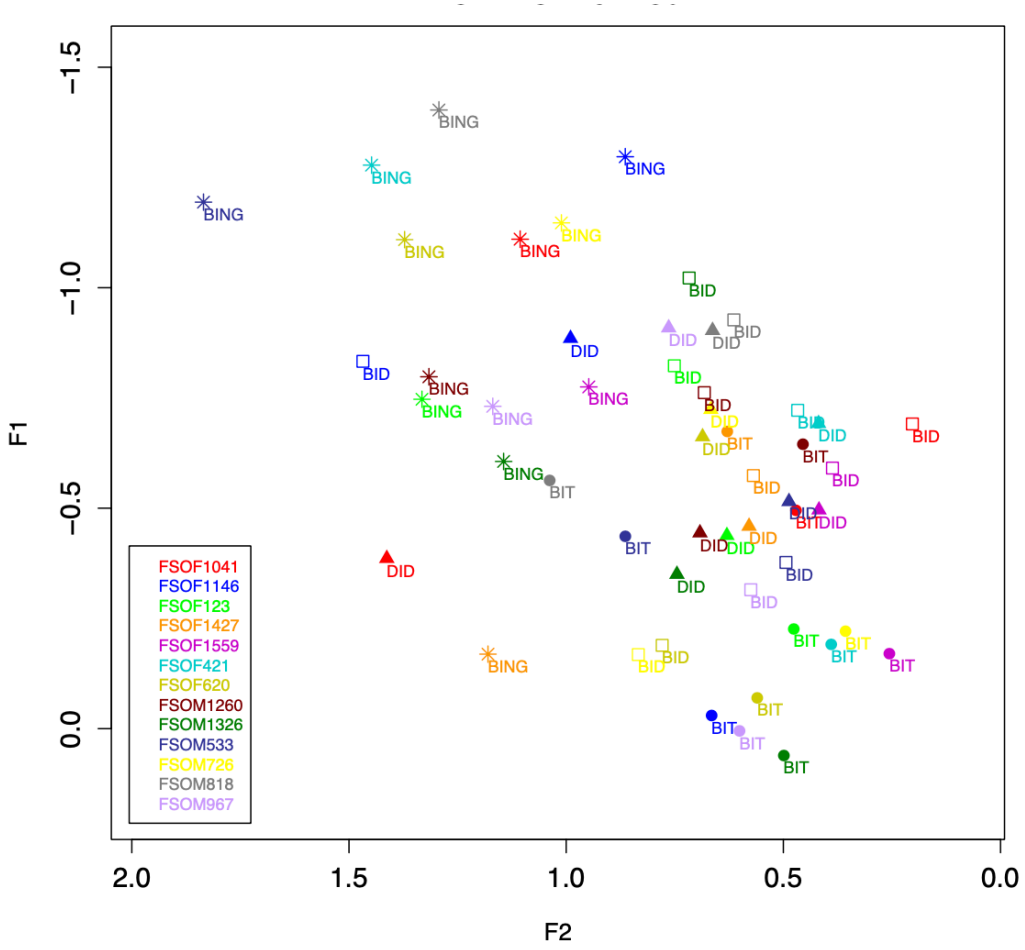
Given that the p-value is less than 0.05, the p-value indicates that there is a significant difference between the BING tokens and the /ɪ/ tokens on the F1 dimension. BING has a lower F1 in this group, However, this is not surprising because a nasal is expected to have this sort of effect on the vowel (e.g., Mielke, Carignan, & Thomas 2017). A linear model was performed on the F1 dimension of the tokens of BING to understand better whether non-linguistic factors contribute to the variation.

Table 39 Linear Model for F1 of BING

```
Call:
lm(formula = F.1 ~ age + gender + rootedness.score, data = bing_all)

Residuals:
     Min       1Q   Median       3Q      Max
-0.36413 -0.20231 -0.07915  0.13429  0.82914

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)      -1.322666   0.430318  -3.074   0.0133 *
age               0.003435   0.006805   0.505   0.6258
genderMale       -0.066273   0.213691  -0.310   0.7635
rootedness.score  0.021070   0.030546   0.690   0.5077
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.3798 on 9 degrees of freedom
Multiple R-squared:  0.1067,    Adjusted R-squared:  -0.1911
F-statistic: 0.3582 on 3 and 9 DF,  p-value: 0.7847
```

None of the non-linguistic factors are significant as indicated by the p-value over 0.05 for the F1 dimension of this data set. As can be seen in Figure 28, BING for most speakers has a lower F1 than the other /ɪ/ tokens. Cardoso et. al. (2016) speculated that BING raising is a phonetically conditioned split with the vowel in BIT.

Figure 28 Plot of BING and /ɪ/ Tokens by Speaker Normalized (n=52)

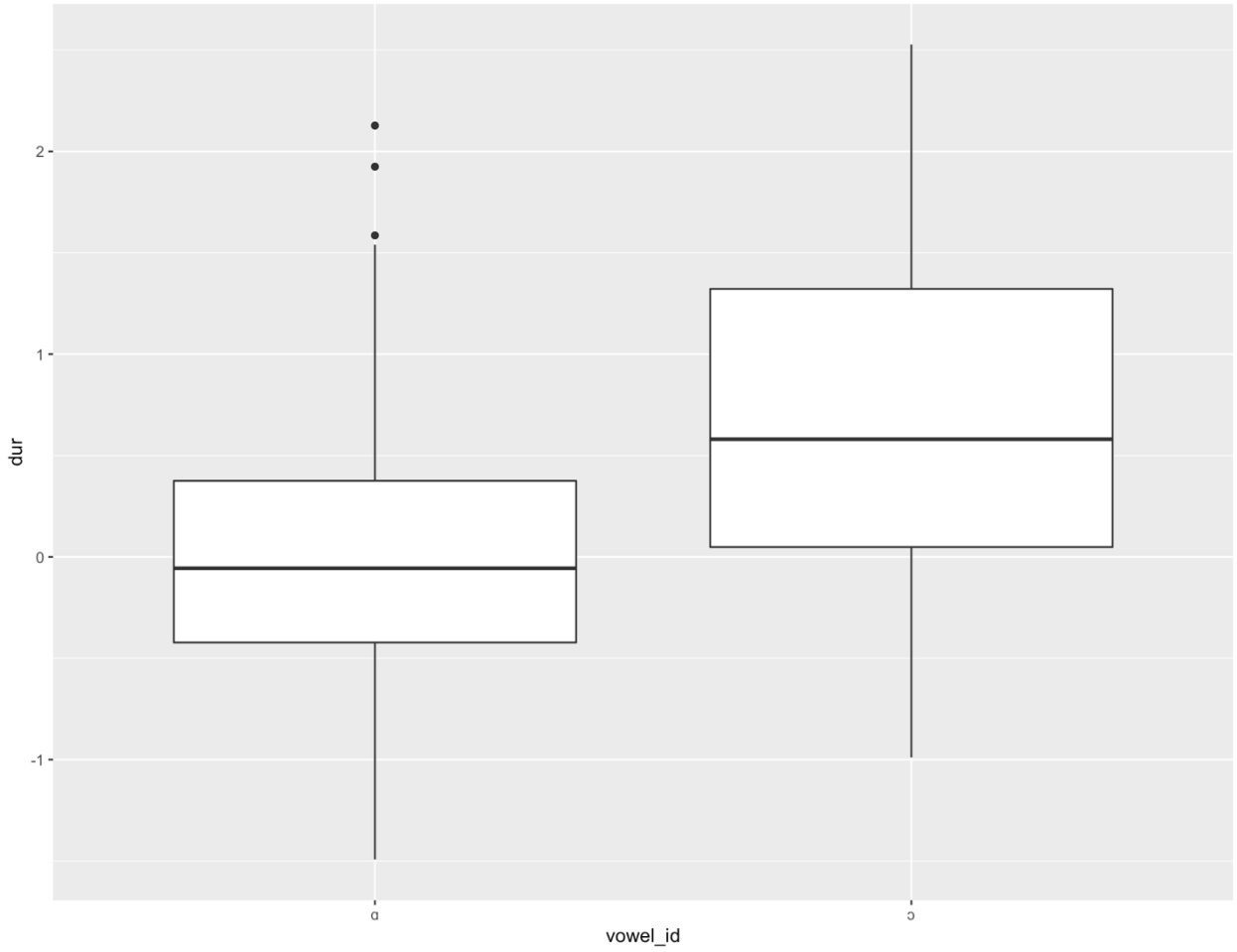


Vowel Duration

Vowel duration can be affected by many factors such as the surrounding consonants and location in a phrase (e.g., Luce & Charles-Luce 1985). Additionally, vowel duration can be used as a cue in vowel perception (e.g., Hillenbrand & Clark 2000). For this study, of particular interest is whether there is a difference in the vowel duration for the low back vowels as vowel duration can be used to distinguish vowel classes (e.g., Wade 2017). As shown in Figure 29, there is a difference in normalized vowel duration for the low back vowels. A linear mixed effects model did not find a statistically significant extralinguistic factor for the present study.

Perhaps the shorter vowels for /ɑ/ can be attributed to the voiceless consonant in at the end of DOCK, or perhaps these two vowels are distinguished by duration.

Figure 29 Normalized Vowel Duration Measures Low Back Merger Vowels (n=78)



Effect of Rootedness Score on Models

In order to further explore applications of rootedness in sociolinguistic research a Likelihood Ratio Test of Nested Models was run on every vowel of interest to explore if the rootedness score was helping or hindering analysis. It was found that all the models performed

better without rootedness except for BAN. In the case of BAN, the inclusion of the rootedness score helped the model perform better. This is interesting given that BAN raising is associated with California English as explained in Chapter 3. The finding suggests that BAN and rootedness would be a valuable research focus to further pursue in Southern Oregon.

When the data were reanalyzed without rootedness, age was significant for /o/ fronting; however, this was accompanied with an error indicating there is not much variation in the model. When visually examining the data, it appeared that some of the younger speakers were more fronted than others, but without more variation in the sample and/or a larger data set, robust claims about age and /o/ fronting cannot be made. For /æ/ backing, when rootedness was taken out of the model age also became significant alongside gender, but given the sample, it is challenging to make a claim regarding age and /æ/ backing. In other words, even in this small sample size, gender differences are clear; however, the data sample is too small and/or there are too many ages represented for age related differences be clear.

Post Hoc Analysis with Rootedness

After learning that that rootedness was not statistically significant for any of the vowels of interest, a post hoc analysis of rootedness was conducted in order to further explore applications of rootedness in sociolinguistic research. Instead of using the full rootedness score shown in Table 40 in the rootedness score column, it was replaced with scores for move, like, identity, travel, and care (these rootedness score components were explained in Chapter 5, Towards a Rootedness Metric) shown in Table 40. In other words, instead of the combined rootedness score, the linear mixed effects models and linear models were run with all 5

components of the rootedness score separately. This tactic is meant to be exploratory especially since adding additional random effects results in less statistical power.

Table 40 Participant Demographics

Participant Code	Age	Ethnicity	Gender	Rootedness Score	Move	Like	Identiy	Travel	Care
FSOF123	23	White	Woman	16	3	3	4	3	3
FSOF421	21	White	Woman	15	3	3	4	1	4
FSOM533	33	White	Man	12	1	3	4	1	3
FSOF620	20	White	Woman	11	1	3	2	1	4
FSOM726	26	White	Man	11	0	3	2	3	3
FSOM818	18	White-Asian	Man	6	0	1	2	0	3
FSOM967	67	White	Man	15	4	2	4	1	4
FSOF1041	41	White	Woman	19	4	4	4	4	3
FSOF1146	46	White/Nat. American	Woman	11	4	2	2	0	3
FSOM1260	60	White	Man	18	4	4	4	3	3
FSOM1326	26	White	Man	17	4	3	3	4	3
FSOF1427	27	White	Woman	11	2	2	2	4	1
FSOF1559	59	White	Woman	10	0	3	3	1	3

Rerunning the models by including the component parts of the rootedness score, rather than the complex rootedness score measure, resulted in an interesting finding for prevelar raising for /ɛ/. In particular, the categories of identity and care were significant. As discussed in Chapter 5, the explanation for those two categories is located in Table 41 for Identity and Table 42 for care.

Table 41 Question: Does the participant identify strongly with the area?

Number Score	Description
Strongly Yes 4	Speaker very much enjoys saying that they are from the area and is proud of the region. Speaker identifies many specific characteristics of the region (e.g., industry, geographic features, art) that make it special and which they are tied to.
Yes 3	Speaker enjoys saying that they are from the area and is proud of the region. Speaker identifies a couple specific characteristics of the region (e.g., industry, geographic features, art) that make it special and which they are tied to.
Neutral 2	Speaker is fine with saying that they are from region. Speaker may identify a couple specific characteristics of the region (e.g., industry, geographic features, art), some of

	which they like and some of which they dislike.
No 1	Speaker dislikes saying that they are from the area and is not proud of the region. Speaker identifies some specific characteristics of the region (e.g., industry, geographic features, art) that make it awful.
Strongly No 0	Speaker extremely dislikes saying that they are from the area and is not proud of the region. Speaker identifies many specific characteristics of the region (e.g., industry, geographic features, art) that makes it awful.

Table 42 Question: Does the participant care about what happens in the region?

Number Score	Description
Strongly Yes 4	Speaker is extremely invested in what happens in the region and cares about local issues. Speaker is involved in community organizations which aim to make the area better and/or build community.
Yes 3	Speaker is invested in what happens in the region and cares about local issues and perhaps is involved in organizations which aim to make the area better and/or build community.
Neutral 2	Speaker is indifferent to what happens in the region and indifferent about local issues.
No 1	Speaker is apathetic to what happens in the region and cares little about local issues.
Strongly No 0	Speaker is extremely apathetic to what happens in the region and does not care about local issues.

Table 43 Linear Mixed Effects Model for F1 of BEG and EGG

```
Linear mixed model fit by REML. t-tests use Satterthwaite's method ['lmerModLmerTest']
Formula: F.1 ~ (1 | speaker) + (1 | Context) + age + gender + care + move +
    like + travel + identity
   Data: beg_all

REML criterion at convergence: 40.3

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0591 -0.5968  0.1073  0.4651  1.7567

Random effects:
 Groups   Name        Variance  Std.Dev.
 speaker  (Intercept) 1.397e-11 3.737e-06
 Context  (Intercept) 6.832e-02 2.614e-01
 Residual             1.009e-01 3.177e-01
Number of obs: 26, groups:  speaker, 13; Context, 2

Fixed effects:
             Estimate Std. Error        df t value Pr(>|t|)
(Intercept)  0.793606   0.495178 15.137989   1.603  0.12966
age         -0.006043   0.004808 17.000032  -1.257  0.22583
genderWoman -0.080103   0.143074 17.000032  -0.560  0.58287
care        -0.311396   0.143119 17.000032  -2.176  0.04397 *
move         0.046537   0.053456 17.000032   0.871  0.39612
like        -0.229229   0.141072 17.000032  -1.625  0.12258
travel       0.030226   0.089071 17.000032   0.339  0.73850
identity     0.294511   0.097987 17.000032   3.006  0.00796 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Correlation of Fixed Effects:
            (Intr) age    gndrWm care   move   like   travel
age         -0.435
genderWoman -0.418  0.304
care        -0.745  0.364  0.351
move         0.382 -0.413 -0.337 -0.371
like         0.306 -0.352 -0.417 -0.564  0.390
travel      -0.612  0.467  0.398  0.771 -0.521 -0.738
identity    -0.134 -0.118  0.188 -0.107 -0.368 -0.390  0.087
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see ?isSingular
```

As can be seen in Table 43 care and identity are significant with p-values less than 0.05. The picture is more complicated when analyzing the tokens BEG and EGG individually. For EGG, none of the social factors are significant as shown in Table 44.

Table 44 Linear Model for F1 of EGG

```
Call:
lm(formula = F.1 ~ age + gender + identity + care + move + travel +
    like, data = egg_all)

Residuals:
      33       73      112      151      191      228      269      306      342      382      423
-0.11657  0.12393  0.12248 -0.04978  0.12190 -0.39650  0.19454 -0.46355  0.41468  0.48344 -0.15864
     463      500
-0.37835  0.10242

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  1.260016   0.939794   1.341    0.238
age         -0.004788   0.009836  -0.487    0.647
genderWoman -0.239543   0.292692  -0.818    0.450
identity     0.231188   0.200457   1.153    0.301
care        -0.476428   0.292785  -1.627    0.165
move         0.050227   0.109358   0.459    0.665
travel      -0.018417   0.182216  -0.101    0.923
like        -0.167574   0.288596  -0.581    0.587

Residual standard error: 0.4595 on 5 degrees of freedom
Multiple R-squared:  0.6149,    Adjusted R-squared:  0.07575
F-statistic: 1.141 on 7 and 5 DF,  p-value: 0.4583
```

For BEG, identity is significant as shown in Table 45.

Table 45 Linear Model for F1 of BEG

```
Call:
lm(formula = F.1 ~ age + gender + identity + care + move + travel +
    like, data = just_beg_all)

Residuals:
      11       47       87      126      165      204      243      282      323      360      401
-0.13091 -0.16005 -0.03343  0.05079  0.09738  0.09008  0.08614  0.24394  0.07792 -0.18269 -0.21300
     440      479
 0.14847 -0.07464

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.327197   0.451259   0.725   0.5009
age         -0.007297   0.004723  -1.545   0.1830
genderWoman  0.079337   0.140541   0.565   0.5968
identity     0.357833   0.096253   3.718   0.0137 *
care        -0.146365   0.140586  -1.041   0.3455
move         0.042847   0.052510   0.816   0.4516
travel       0.078869   0.087494   0.901   0.4087
like        -0.290884   0.138575  -2.099   0.0899 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.2206 on 5 degrees of freedom
Multiple R-squared:  0.8447,    Adjusted R-squared:  0.6273
F-statistic: 3.885 on 7 and 5 DF,  p-value: 0.07718
```

It appears that individual components the rootedness metric have captured information that can help explain the different patterning of EGG and BEG raising although the rootedness metric itself was not significant. The raw numbers suggest that people who identify less with Southern Oregon raise BEG more. The pattern is less clear for EGG. The fact that these tokens pattern differently for speakers could be due to lexical effects with EGG raising before BEG. Given the small sample size, more information in future research is needed to understand whether BEG and EGG raising can be correlated with rootedness.

Summary

The present section will discuss how the statistical results can answer the following research questions:

RQ 1: What are the characteristics of the vowel system of a relatively rural Southern OR community?

RQ 2: If there is variation in the respondents' vowel systems, is there a correlation between rootedness and the vowel systems of the respondents?

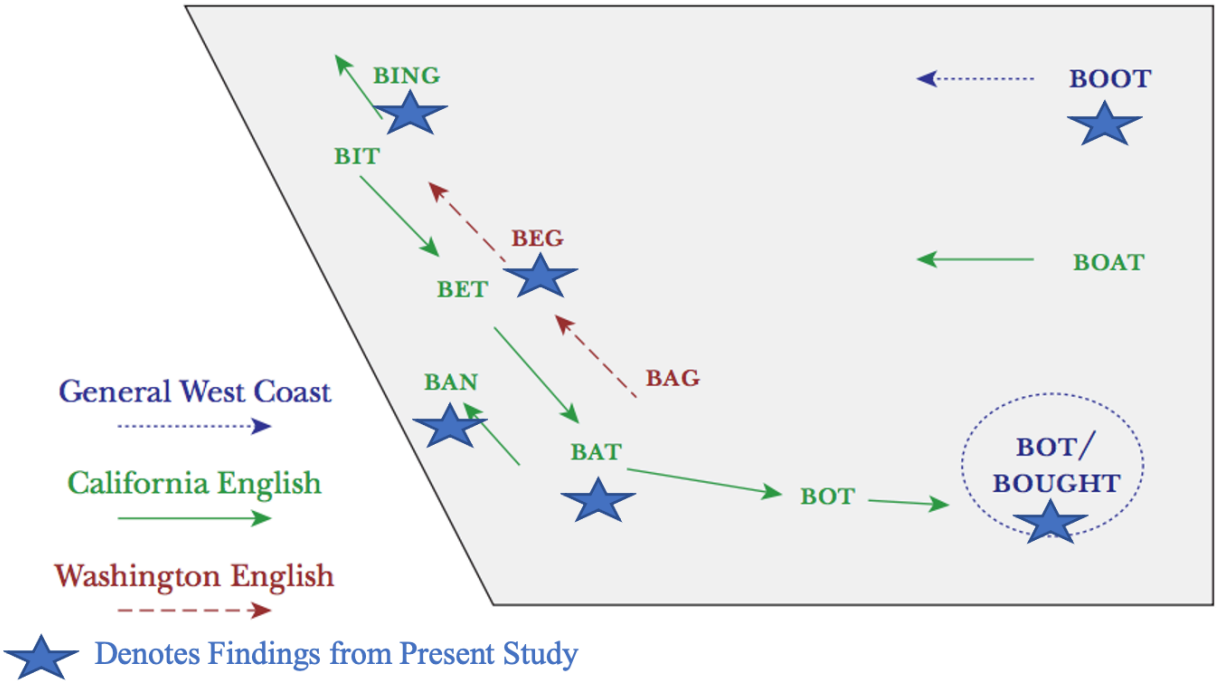
The answer to RQ 1 is that overall, the participants exhibit:

- Fronted /u/ especially in the word DUDE
- /o/ not fronted
- Merger or near merger of /ɑ/ and /ɔ/
- Prevelar tokens before /æ/ not raised
- Prevelar tokens before /ɛ/ are raised for some speakers, the token BEG raised more for people who do not identify as strongly with the area
- Pre-nasal token /æ/ is raised

- Backed /æ/ with Women more backed than Men

These results are summarized in Figure 30. The blue stars indicate linguistic feature the participants in Southern Oregon demonstrated. They have the low back merger or near low back merger and BOOT fronting which are labeled as general West Coast features. They have BEG raising which is labeled as a Washington feature. Lastly, they have BING and BAN raising and BAT backing which are labeled as California features.

Figure 30 Summary Plot of Linguistic Features of Interest on the West Coast



(Adapted from Becker et. al. 2016 p. 108)

The answer for RQ 2, is that rootedness did not emerge as an explanatory variable given the present data set; however, a post hoc analysis shows that rootedness could potentially be useful in understanding BAN raising and BEG raising. Further commentary on the statistical results is located in Chapter 7.

Chapter 7 Findings

As stated in Chapter 1, the focus of this dissertation is participants' locally bound conceptualizations of place and those conceptualizations' contributions to language change in variationist sociolinguistic studies. The geographic focus of this research was on Southern Oregon due to the cultural changes occurring in that location as described in Chapter 2 and language change phenomena occurring in the West as described in Chapter 3. Of particular interest was whether rootedness could be an explanatory variable in the community, and more generally whether more sociolinguists should pursue rootedness as an explanatory social variable in their research. A discussion of previous research on rootedness was included in Chapter 4 along with a brief explanation of why age, gender, and ethnicity were also included in the demographic questionnaire. Chapter 5 focused on the methodology used in the present study, focusing on the construction of a rootedness metric which would be representative of the community and how age, gender, and ethnicity were operationalized for the present study. Chapter 6 focused on providing the results and statistical analysis of the data for answering the following research questions:

RQ 1: What are the characteristics of the vowel system of a relatively rural Southern Oregon community?

RQ 2: If there is variation in the respondents' vowel systems, is there a correlation between rootedness and the vowel systems of the respondents?

The present chapter will evaluate the effectiveness of the rootedness metric and tie in the implications the results have on future research on English in the West.

Research Question Answers

The answer to RQ 1 is that the Southern Oregonians in this study are exhibiting general West Coast features with the low back merger or near merger and fronted /u/. Some speakers are exhibiting a linguistic feature associated with Washington, /ɛ/ raised before velars in words like BEG. Regarding linguistic features associated with California, they back /æ/ with women more backed than men. Additionally, they raise BAN and BING.

RQ 2 is more complicated to answer. It appears that scores from the rootedness metric created for this study were not significant when it came to analyzing the acoustic data. However, aspects of the rootedness metric did appear to be useful in order to analyze the variation of BEG. One strength of the rootedness metric is that it groups people that would not otherwise be grouped, by reflecting a different type of social identity than those such as gender, age, etc. Rootedness was particularly useful for understanding participants who are raising BEG the most. The three people who raised BEG the most all had a total rootedness score of 11/20, reflecting a moderately neutral attachment to Southern Oregon. In addition, when considering sub-groupings of the rootedness measure, identity[7], they have a score of 2 on a scale of 0-4, also reflecting a neutral position with regard to this category. 2 was also the lowest score any participant received for this category. In this group was one person who identified as a man and two people who identified as women. The man was 26 and identified as White. One of the women was 20 and

[7] Speaker is fine with saying that they are from region. Speaker may identify a couple specific characteristics of the region (e.g., industry, geographic features, art), some of which they like and some of which they dislike.

identified as White, and the other was 46 and identified as Native American and White. Rather than age, gender, or ethnicity that united these participants, it was their orientation towards place. Although with the present data it is challenging to claim that there is a correlation between rootedness and the participant's vowel system, the present study does show some evidence that rootedness may be an explanatory variable in future studies in Southern Oregon, given the results for BAN and BEG presented in Chapter 6.

Comparison to Other Parts of the West

One of the most interesting aspects of the present study is how speakers in Southern Oregon are participating in changes associated with California English, General West Coast English, and Washington English. It appears that the Southern Oregonians pattern more like the speakers in Redding, California (Podesva et. al. 2015, D'Onofrio et. al. 2016) than Portland, Oregon (Becker et. al. 2016), Southern Willamette Valley (Nelson 2011, McLarty et. al. 2016), San Francisco (Cardoso et. al. 2016), and people in Washington State (Stanley 2020, Wassink 2016, Swan 2016). Of course, these comparisons are limited by which linguistic features were analyzed in the various studies.

Regarding prevelar raising, the participants in this study do not participate in BAG raising, but some of them do raise BEG, which is associated with Washington. Participants do participate in BING raising the production of which is associated with California. BAT is retracting, which is associated with California, for women more than for men in Southern Oregon just like in Redding (D'Onofrio 2016). A linear mixed effects model for BOUGHT and BOT tokens did not find that gender, age, or rootedness scores were significant, but the presence

of the low back merger or near merger is not surprising in Southern Oregon because it is found in many areas in the West. D'Onofrio et. al (2016), in reference to anecdotal BEG raising in Redding, speculate that perhaps BEG raising may be a sign that Redding is, "orienting linguistically to the north" (p. 27). The idea that participants in the present study who do not identify as strongly with Southern Oregon raise BEG more may indicate that locally raising BEG might be a linguistic feature used to indicate alignment with areas outside of Southern Oregon. Fridland, Kendall, Wassink, & Evans (2017), suggested in recent research from the West Coast states and mountain West that prevelar raising is in more areas than previously known. It is clear that prevelar raising is present in Southern Oregon, but only for BEG. More research is needed on the status of BEG in the West.

Participants in Southern Oregon are not participating in BAG raising, and perhaps BAG raising is spreading to urban areas first as theorized by the gravity model (Trudgill 1974). While conducting fieldwork, participants reported to me that some people in Jackson County do raise BAG; however, I did not hear BAG raising myself while spending time in the region. It is also possible that BAG raising will not come or come back to Southern Oregon as it is a linguistic feature receding in much of the West as demonstrated in Oregon (Becker et. al. 2016) and Nevada (Fridland & Kendall 2017). Much like Washington, the Southern Willamette Valley, and Redding, participants have BOOT fronting but not BOAT fronting. Given that it has a presence in Portland Oregon and California, perhaps BOAT fronting is also disseminating to urban areas first in a manner proposed by the gravity model (Trudgill 1974).

As discussed in Podesva et. al. (2015), using CVS features does not indicate alignment with urban California in Redding due to the attitudes espoused by participants in the study. The authors speculated that in Redding the low-back merger could locally be used to signal an

alignment towards town or perhaps the merger is occurring faster in town due to the participants' social networks. BAN raising and back vowel fronting may be used locally by participants to align themselves more in opposition to California and urban California. Younger speakers backed BAT more in Redding. There are some shared attitudes regarding urban California and California among people who live in Southern Oregon and Northern California (where Redding is located). Given those shared attitudes, it makes sense that CVS linguistic features may not indicate alignment with urban California or California. The results show that the hypothesis presented in Chapter 5, that the speakers will be different from urban areas nearby such as Portland, OR and Redding, CA, is partially true, as it appears that the speakers in Southern Oregon pattern like speakers in Redding. In general, it seems that there needs to be more work on the linguistic features in the West, their meaning locally, and their manifestations. Although only measurements at the 50% mark were used in this study, in general more measurements should be used in future work. Taking measurements at the midpoint for vowels overlooks valuable information regarding the trajectory of the vowel, which could shine a light on linguistic patterning across the West.

Evaluation of Rootedness Metric

Other than describing the vowel system of more Oregonians, the most important contribution of this dissertation is the development and use of a rootedness metric. In Chapter 4 and Chapter 5, a case was made that more linguists should include rootedness in their research. Recommendations were made for how to study rootedness in sociolinguistic research, and why previous methods would not be appropriate in the present study. The questions that are

addressed by this rootedness metric are ones that have been asked by other linguists. In the present study, the goal was to create a principled, nuanced, and easily replicable metric that would improve upon previous work on rootedness while using already collected data. Sociolinguists know that well established extralinguistic variables can be explanatory when considering certain linguistic variables. The main goal of this metric is to identify groups who would otherwise not be grouped together using traditional extralinguistic variables, and the metric was successful in that respect. Although correlations between the linguistic variables and the rootedness scores provided by the metric were not significant in this study, neither were gender and age when discussing the most interesting finding, BEG raising. Upon closer inspection, it was the case that aspects of the rootedness measure, that is, how a person identified with the region and cared for the region, were helpful in understanding BEG raising. Identity and care turned out to be more significant than liking the area, plans to move, and travel as discussed in Chapter 6. Potentially, identity and care were the most relevant because people's actions do not always reflect their attitudes (see Ajzen 1991 for the theory on planned behavior) One could dislike a place but still choose to live there for a variety of reasons. One could very much like a place but need to move and/or travel for a variety of reasons. A focus on attitudes more than actions could be productive in Southern Oregon and in future rootedness metrics in other locales.

Future studies in Southern Oregon should ask participants questions about how strongly they identify with the region they live in when analyzing BEG raising. More broadly speaking, more studies should include at least one question asking participants about their rootedness as it can be helpful in understanding language variation. As discussed earlier in the dissertation, rootedness is challenging to operationalize; however, as shown in Chapter 6, rootedness can play

a role in understanding language variation. The Principle of Multiple Causes states that, "it is unlikely that any single contextual factor alone can explain the variability in the data" meaning that "the question for the researcher is thus not which single factor is associated with variation but what the relative weight of the different factors associated with variation is" (Bayley and Young 1996, p. 254). Even though in this particular study, rootedness as it was constructed was not significant, given the description of the community in Chapter 2, the previous research on rootedness described in Chapter 4, the post hoc work described in Chapter 6, and the Principle of Multiple Causes, Rootedness could still help linguists in future studies in Southern Oregon and other locales.

Future Work

Future work should include more participants and include areas outside of Southern Oregon, which could help linguists gain further knowledge of language changes occurring in the West. Additionally, there should be more acoustic measurements such as measuring more than the midpoint and including additional tokens. For the low back merger, using the Spectral Overlap Assessment Metric (SOAM) (see Wassink 2006) and conducting a perception test could be additional methods to understand the low-back merger, which would be helpful in the understanding its status in the community.

Future research in Southern Oregon should also include a measure of socioeconomic status that is based in local practice, as at least one participant mentioned that there are social class differences in how people speak. Different methods to collect rootedness information should be explored in Southern Oregon, such as asking participants to rate their own rootedness.

A question I had going into this project is whether people in Southern Oregon have an affinity for Cascadia and the State of Jefferson and whether a Cascadian or Jeffersonian identity would be more relevant than a Southern Oregonian or Oregonian identity. My experience hints at the importance of localizing research methods when exploring communities. In the West, given the separatist movements in the area, it is especially important to understand how geographic labels are viewed in the community of interest. In particular, participants were unfamiliar with the term Cascadia. When I explained what it was, participants often said that it makes sense that people in Portland and Seattle would be culturally tied together. The theme that Southern Oregon is overlooked was more common than the theme of unity within Oregon or across the West Coast. The State of Jefferson has different connotations depending on who is asked, even though there was a sense that Southern Oregon and Northern California share many similarities. The people included in the present study used the term Rogue Valley to describe where they are from more so than a pan Southern-Oregon-northern-California identity (State of Jefferson) and/or a pan Oregon-Washington-Idaho identity (Cascadia). Participants most often defined themselves using terms such as Ashland and the Rogue Valley. One participant said that they live in a small town in the mountains because they believe that captures the character of their hometown better than any other label. Oregonian was another commonly mentioned term. As Johnstone (2004) wrote, "popular labels for places often reflect the ways in which places are constituted through shared experiences and shared orientations" (p. 69). Researchers must be mindful of the labels associated with place in the community of interest and carefully explore the relevance of terms used locally and by outsiders such as Cascadia and the State of Jefferson.

A motivation of this research project was to understand whether attitudes towards California, as described in Chapter 2, would help linguists understand variation in Southern

Oregon. With the participants in this study, there was not enough information collected to differentiate participants regarding attitudes towards California. There was not a single participant who expressed a deep love for California (as a place and/or culture). Participants rarely expressed that they liked an aspect of California, and participants mentioned many dislikes such as high taxes. In order to study variation and the spread of California English, a potentially fruitful line of research would be to have speakers in Oregon demonstrate how they think Californians sound and see if the Oregonians have those linguistic features in their speech. This information could be used to make predictions regarding future language change. Additionally, such work would help linguists understand which linguistic features are salient to Oregonians. In the present study, participants, when asked about how they thought Californians sound, often performed the word DUDE with fronting and an extra-long vowel, which is interesting because they pronounced DUDE with a fronted vowel during the word list task. However, people often mentioned that Californian speech is best characterized with the topics that are discussed among Californians rather than specific linguistic features.

Additionally, effort should be made to include more social and ethnic diversity in research in Southern Oregon. Most participants in this study described their identity as White. The person with the lowest rootedness score in the study identified as White and Asian and a woman with a relatively low Rootedness score in the study identified as Native American and White. It is possible that being a person of color in Southern Oregon can result in a lived experience that makes people less rooted within the community. I think that more research in general on orientation towards place and being a person of color could be informative in understanding the lived experience of minorities in Southern Oregon and how that might affect their views.

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Appendix

Appendix A Questionnaire from Reed (2016)

Name _____ Age_____ Sex: Male Female

1. **Are there any circumstances in which you might see yourself moving away from Hancock Co.** ..... Yes No
   If yes, what kinds of circumstances might lead you to that decision? _____
   _____
   If you would be willing to live somewhere else, could you see yourself living in Knoxville or the Tri-Cities? ..... Yes No
   Why or why not? _____
   _____
   How often would you want to visit if you left? _____
2. **How often do you visit nearby towns (Morristown, Rogersville, Tazewell, etc.)?** _____
   Which one do you visit most often? _____
3. **When you go to Morristown or Rogersville or other nearby places, where do you say you're from?** _____
4. **If you traveled far away to some other place in the U.S. and met someone who asked where you were from, what would you tell them?** _____
5. **How many family members do you have living in Hancock Co.** _____
6. **How many generations of your family have lived in Hancock Co.** _____
7. **Rank the following (1-7) in the order that you most identify with:**
   Hancock Co.|My local community|Tennessee|NE Tennessee|East TN|The South|The Mountains
   ___ ___ ___ ___ ___ ___ ___
8. **Are you a University of Tennessee fan?** ..... Yes No
   Do you watch or listen to the games? ..... Yes No
9. **Do you follow country music?** ..... Yes No
   Other kinds of music? ..... Yes No
   If yes, what kind? _____
10. **Do you usually attend local events, like the Fall Festival?** ..... Yes No
11. **Please indicate on the following scale to what degree you would say your identity is tied to Hancock county.**

My identity is not at all tied		My identity is some-what tied		My identity is closely tied
☐	☐	☐	☐	☐
1	2	3	4	5

(Reed 2016, p. 206)

Appendix B Point Values for Rootedness Metric (Reed 2016)

1. Willingness to Relocate
    a) Yes 0
    b) No +2
2. Travel Habits
    a) Frequent 0
    b) Rare +1
3. Where a participant says they're from
    a) Locally
        i. 'Overhome' +3
        ii. Local Area within Hancock County +2
        iii. Hancock County +1
        iv. Other response 0
    b) When traveling
        i. Local Area within Hancock County +4
        ii. Hancock County +3
        iii. Upper/North East TN +2
        iv. East Tennessee +1
        v. Other 0
4. Family History
    a) Family Living in Hancock County
        i. 5 or more members +2
        ii. 2-4 members +1
        iii. Less than 2 members 0
    b) Generations in Hancock County
        i. 5 or more +2
        ii. 2-4 +1
        iii. Less than 2 0
5. Areal Identification
    a) Local area within Hancock County +5
    b) Hancock County +4
    c) Upper/Northeast Tennessee +3
    d) East Tennessee +2
    e) Tennessee +1
    f) The South +1
    g) The Mountains +1
6. Participation in Local Events
    a) Participation +1
    b) No participation 0
7. Identification to Hancock County
    a) Closely Tied +3
    b) Somewhat Tied +1
    c) Not Tied 0

(Reed 2016, p. 76)

Appendix C Extra-Chalmatian Orientation Point Values

Category		Measure
a. Identification as Chalmatian	−2	Identifies enthusiastically as Chalmatian
	−1	Qualified identification (e.g. 'I guess')
	0	No data[1]
	+1	Qualified non-identification (e.g. 'I guess')
	+2	Identifies enthusiastically as non-Chalmatian
b. Desire to leave Chalmette	−1	Never wanted to leave
	0	No explicit statement about desire to leave[2]
	+1	Wanted to leave
c. Residential history[3]	+5	Left Chalmette before Katrina
	+1	Lived in GNO outside of Chalmette for <5 years
	+2	" " for >5 years
	+5	" " for >10 years
	+5	Lived outside of GNO <5 years
	+7	" " >5 years
	+10	" " >10 years
	+1	Evacuated and spent >1 year outside of GNO[4]
d. Schooling	−1	Attended HS in Chalmette
	+1	" " outside of Chalmette
	+1	Attended college outside of Chalmette, but in Louisiana
	+2	" " outside of Louisiana
e. Workplace	−1	Currently works in Chalmette
	+1	" " outside of Chalmette

(Carmichael 2017, p. 705)

Appendix D Interview Questions

Local Color:

-What is it like living in (insert city name)?
-Was/is it a good place to live
-What was (insert city name) like when you were growing up as a kid?
-What do you like about living here?
-What do you dislike about living here?
-Would you stay here? Are you planning on moving?
-When someone asks you where you are from, what do you say?
-Are there a couple of places where people get jobs around here? How do most people around here earn a living? What do they do?
-There were a lot of forest fires in the area this summer. What was that like?
-Are there any symbols that are associated with (city name)? For example: Statue of Liberty, a lot of people associate oranges with Florida
-Do you know anything about the State of Jefferson? Could you tell me anything about it?
-Are we in the state of Jefferson?
-Where are the borders of the state of Jefferson?
-Do you know anything about Cascadia? Could you tell me anything about it?
-Do you consider yourself to be an Oregonian, (Cascadian) or more a Jeffersonian?
-What does it mean to be an Oregonian to you?
-What does it mean to be a Jeffersonian to you?
-What does it mean to be a Cascadian to you?
-California is close by, do you go often?
    Where in California?
-How do you tell if someone is from California?
-How do you tell if someone is from Portland or Seattle?
-What do you think of California?
-Do a lot of Californians come here?
-Do you go to Washington?
-Do you go to other parts of Oregon often?

Language:

-Are there words that only people around here use?
-Do people here sound different from other parts of Oregon?
-Do people here sound different from California?

Appendix E Words Used in Analysis from Word List

/ɔ/	/ɑ/	/i/	/u/	/ɪ/	/ʊ/	/e/	/o/	/ʌ/	/ɛ/	/æ/
BOUGHT	BOT	BEAT	DUDE	BIT	FOOT	BADE	BOAT	BUT	BET	DAD
DOG	DOCK	BEAD	BOOT	BID	PUT	BAIT	OAT	DOES	DEAD	BAD
DAWN	DON	DEED	BOOED	DID	TOOK	DATE	ODE	UP	BED	BAT
				BING		BAKE			BEG	BAG
									EGG	BAN

Appendix F Demographic Questionnaire

Age:

Ethnicity:

Gender:

Places Lived: