7. INVESTIGATING THE DEVELOPMENT OF THE CONTEMPORARY OREGONIAN ENGLISH VOWEL SYSTEM

JASON McLARTY, TYLER KENDALL,
and CHARLIE FARRINGTON

As many of the chapters in this volume note, there has been a general lack of research on English in the Western United States and in particular the Pacific Northwest. Recently, we have seen growing interest in expanding our knowledge of the dialects in the Pacific Northwest (Ward 2003; Conn 2006; Labov, Ash, and Boberg 2006; Riebold 2009, 2012; Wassink et al. 2009; Nelson 2011; Becker et al. 2013; Becker, Aden, and Best 2014; Freeman 2014a; Wassink 2015). Recent work examining the sound system of English varieties more generally has also turned attention to investigating the sound systems of speakers available in archival recordings (Hickey, forthcoming). To supplement these growing interests, this chapter focuses on tracking the greater time-course of changes to the vowel space of Oregonians from the end of the nineteenth century to the beginning of the twenty-first century. Becker et al. (2013, 2014, 2016 [this volume]) find that within the Portland metro area, the main urban center in Oregon, speakers exhibit vocalic patterns found in Northern California and in the Seattle, Washington, area. We investigate if other Oregonians, in particular those from the Willamette Valley, the most densely populated part of the state, also display vocalic patterns similar to surrounding regions, namely, Northern California and Washington, and more centrally, when these changes took place. To investigate these questions, our analysis compares contemporary speakers from the Willamette Valley region of Oregon to archival recordings of Oregonians from the *Dictionary of American Regional English* (*DARE* 1985–2013), recorded in 1967, while also examining these findings in light of previous work in surrounding regions.

This chapter is organized into eight parts. In the next section, we provide a description of the settlement history of Oregon. Next we provide background on English in the West in general and Oregonian English in particular. We then describe our project as it relates to previous research

Publication of the American Dialect Society 101 DOI 10.1215/00031283-3772934
Copyright 2016 by the American Dialect Society

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

and also research in this volume. The data, materials, and methodology are described next, followed by the presentation of aggregate vowel plots of the contemporary and archival data, with these plots connected to what we know about English in the West. We then examine several quantitative measures to further investigate trends we see in the vowel spaces of these Oregonians. Finally, we close with some brief concluding thoughts and future directions.

SETTLEMENT HISTORY

To contextualize our study, we present here a brief historical overview of the settlement patterns in Oregon, as well as a brief overview of the history of English in Oregon. Following the expedition of Lewis and Clark and the subsequent publication of their journals in 1807, pioneer groups began traveling to the Pacific Northwest as early as 1811, most of whom were fur trappers for trading companies. The earliest permanent English-speaking settlers were British and arrived in the Puget Sound area of Washington in 1828. After the United States and Great Britain settled their conflict over the Oregon Territory in 1841, American English-speaking settlers arrived in the region from the Ohio Valley states and Tennessee first, followed by Missouri, Illinois, and Iowa (Schwantes 1989; Wolfram and Schilling-Estes 2006). The Oregon Territory set up its first provisional government in 1843, serving as the main body of government until Oregon's statehood in 1859. Geographically, Oregon is divided by the Cascade Mountain Range, which contributes to the distinct climate zones in the state, which also influenced agricultural practices and settlement patterns. Eastern Oregon is quite arid, and parts of far eastern Oregon are classified desert. Much of the agricultural practices center around raising cattle, sheep, wheat, and grains.

The Willamette Valley, where the majority of the contemporary speakers examined in this study reside, was settled in the 1830s, acting as the end of the Oregon Trail. It is today the most populated region in Oregon (Schwantes 1989; U.S. Census Bureau 2010). The Willamette Valley runs north-south between the Oregon Coastal Mountain Range to the west and the Cascades to the east; it is bound to the south by the Calapooya Mountains, which approach the Klamath Mountain Range, and by the Columbia River to the north. The Columbia River and Willamette River, both of which run through the valley, have acted as cultural and economic centers since the initial settlement of the Oregon Territory. Two-thirds of the population of Oregon resides in the Willamette Valley, which also contains the three most populous cities: Portland, Eugene, and Salem (U.S. Census Bureau

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

2010). Interstate 5, the main interstate highway along the West Coast, also runs through the Willamette Valley and these major centers. In addition to large metropolitan centers, the Willamette Valley is home to many small towns, primarily farming communities. The Willamette Valley is a fertile basin and is extremely productive agriculturally, with some of the major crops including berries, hazelnuts, grass seed, and hops.

This settlement history provides a backdrop to the description of the vowel systems of Oregonians over time. In comparison to most of the United States, the recency of Western settlement provides a rich area of study for dialectological research. Early settlers in Oregon came from places in the United States that often already had established dialect communities. As these speakers migrated west, they came in contact with speakers of other dialects, and eventually those who settled in Oregon brought with them dialects from varying places in the United States. Recent work on "new" dialects has illustrated that dialect mixing and leveling can occur over just a few generations (Kerswill 2003; Trudgill 2006). Because of the recency of settlement in the region, we have an opportunity through archival and legacy recordings to examine possibly the earliest stages of dialect mixing and leveling in the West (see, e.g., Fridland and Kendall, forthcoming). In addition, by being aware of migration patterns in Oregon, we may be able to get a better sense of what features we might find at given points in time and locations for various regions within Oregon.

BACKGROUND

The Atlas of North American English (Labov, Ash, and Boberg 2006) sets a baseline for phonological patterns in the United States and can act as a springboard for ongoing sociophonetic research in the West. We begin by situating our work in the description of West Coast English by Labov, Ash, and Boberg, who place Oregon within the Western Dialect Region, exhibiting features associated with California, and more broadly West Coast varieties of English, such as the low back merger and back vowel fronting. However, they describe the West as exhibiting "low homogeneity" throughout the region, which is to say there is a great deal of variability within the vowel systems in the Western United States. Specifically, the high and mid back vowels contribute to this lack of homogeneity, where /u/ is generally fronted, but /o/ shows fronting to varying degrees, if at all. In fact, the only speakers in Labov, Ash, and Boberg (2006) who front /o/ to a centralized position (characteristic of more advanced speakers) are located in Southern California; /o/ becomes less advanced along the F2 dimension as one moves further north and east from Southern California.

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

As noted by several other contributors to this volume, a complicating factor for dialect research in the West is an ongoing tension between viewing the region as one characterized by homogeneity or heterogeneity. Fronting of /u/ and /o/ is described not only as a characteristic feature of English found in Northern California, but also as a pattern of West Coast Englishes, as well as other Englishes, more generally (Luthin 1987; Labov, Ash, and Boberg 2006; Eckert 2008). The fronting of these high and mid back vowels are found in Portland, while in the Seattle metropolitan area, only /u/ is fronted (Becker et al. 2013, 2016 [this volume]; Wassink 2015). The vowel patterns described for Northern California have been referred to in the literature as the California Vowel Shift (CVS) (Eckert 2008; Podesva 2011; Fridland and Kendall 2012). In this chapter, we do not investigate whether or not these described patterns represent a chain shift; rather, we refer to the patterns described for Northern California as the California Vowel Shift for ease of description and to make our work comparable to patterns described in previous work. Other characteristics of West Coast Englishes described as part of the CVS include the low back merger, where the distribution of /ɑ/ and /ɔ/ overlaps along the F1 and F2 dimensions for speakers, as well as the raising and fronting of /æ/ before nasal consonants and /æ/ backing in other environments (Labov, Ash, and Boberg 2006; Eckert 2008). In the CVS, the front lax vowels are generally retracted, such that /ɛ/ lowers toward /æ/ in all consonantal environments, whereas /ɪ/ exhibits a similar pattern as /æ/ in the CVS, with raising before velar nasals and retraction in other environments. In the Seattle area, /æ/ appears to pattern somewhat differently than in Northern California, where research has found that /æ/ raises toward /ɛ/ or /e/ before voiced velar stops (henceforth /æg/-raising), which is not described for the CVS (Eckert 2008; Wassink 2015, 2016 [this volume]). Taken all together, it is not yet clear whether the patterns described for Northern California are indicative of pronunciation patterns of the West Coast more generally or are more subregional.

Very little work has examined the greater time-course of the changes affecting the vowel space of Western speakers. Hinton et al. (1987) found that the fronting of /o/ and /u/ in California seems to have begun for speakers born roughly between 1920 and 1950, with the youngest speakers (born around 1965) being the most advanced in their data, suggesting that this advancement was still progressing at the time of their study. In a recent study examining archival recordings of Californians (from the San Francisco Bay Area) and Nevadans, Fridland and Kendall (forthcoming) found that many features of the CVS, including low back merger, were not yet attested in the speech of the individuals they examined who were born in the late nineteenth century.

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

OUR PROJECT

As stated previously, our project aims to look backward in time to better understand the current status of the vowel system in Oregonian English. Other chapters in this volume present vocalic patterns for California, Portland, Oregon, and Washington and consider the status of ongoing developments in Western speech. Our aim is to compare our findings for contemporary speakers from the Willamette Valley with the vocalic features of archival recordings of Oregonians born in the late nineteenth and early twentieth century, contextualizing these findings in terms of the vocalic patterns found elsewhere on the West Coast. Through this approach, we hope to shed light on the current status of dialects in the West more generally and in Oregon more specifically. Thus, in this work, we present descriptive views of the vowel spaces of Oregonians born between 1890 and 1993 and utilize a series of quantitative measures for these speakers. We employ these quantitative measures to understand better whether or not Oregonians participate in vowel configurations described for Northern California and Washington.

DATA AND METHODOLOGY

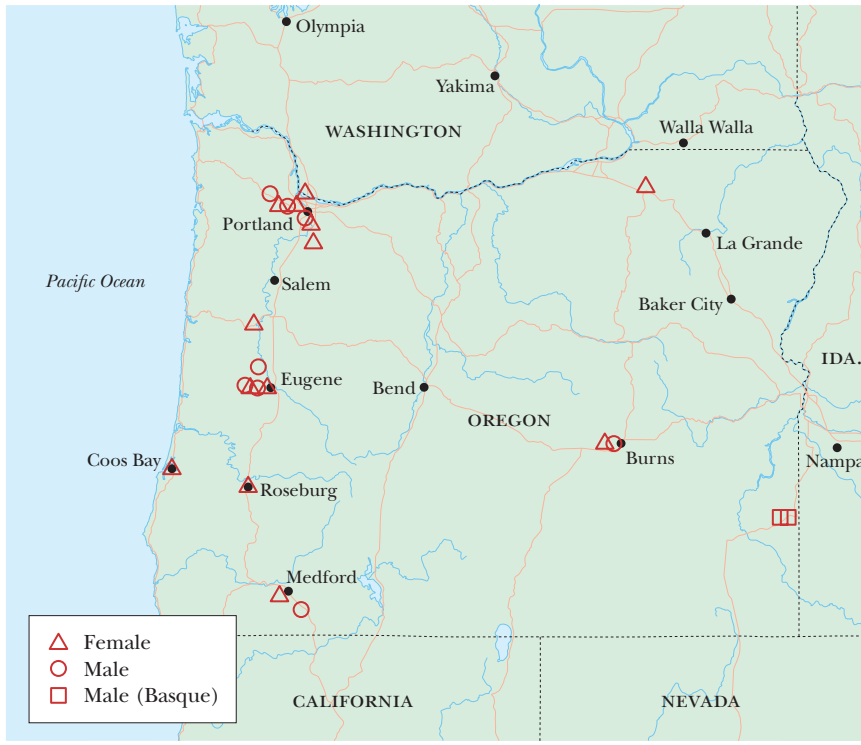
Since our main questions are related to the time-course of the development of the modern vowel system in Oregonian English, we examine recent recordings of contemporary speakers, primarily from the Willamette Valley, and compare them to archival recordings of Oregonians born in the late nineteenth and early twentieth centuries, recorded in 1967 as a part of the *DARE* project (1985–2013). All speakers in these data are European American. Our recordings of contemporary speakers from the Willamette Valley come from several sources. A number of recordings are from a perception/production study conducted by Fridland and Kendall (2012), in which a subset of participants in a panregional vowel identification study were recorded reading a passage and a word list. Here we focus on a subset of the speakers from Oregon: college students born within a few years of 1991. Additional recordings from the Willamette Valley were made in 2012–14 through a combination of student projects in an upper-level sociolinguistics course at the University of Oregon and preliminary fieldwork by the authors in Junction City, a small community in the Willamette Valley (McLarty, Farrington, and Kendall 2014; McLarty and Kendall 2014). As few older contemporary speakers were available in these data, we also include one speaker—a man recorded in 2001—from the Sociolinguistic Archive and Analysis Project (SLAAP) archive (Ocumpaugh, unpublished

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

data; Kendall 2007). Finally, recordings from the *DARE* project were used to obtain data for speakers born around the turn of the twentieth century. The map in figure 7.1 shows where our speakers come from, broken down by sex. The vast majority of our speakers come from the Willamette Valley region of Oregon. In fact, all the speakers in the map who are east of the Cascade Mountain Range are from the archival data. It should be noted that two of the archival speakers are of Basque heritage. One of the *DARE* speakers (#OR18) was heavily accented and was removed from the analysis because Basque clearly influenced the configuration of his vowel space. The other Basque heritage speaker (#OR11) was more assimilated in his accent, illustrated by a similar vowel space to the rest of the archival speakers, and is included in the analyses that follow.

The data examined in this chapter come primarily from reading passages and word lists for all speakers. Because the data come from several different studies, different reading passages and word lists were used. Most

FIGURE 7.1
Map of Oregon Showing the Hometown Location of Speakers



Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

of the contemporary Oregonians read the reading passage used by Fridland and Kendall (2012; available in Kendall 2013, 56–57), while most of the *DARE* speakers read "Arthur the Rat" (http://dare.wisc.edu/audio/arthur-the-rat). It should be noted that since the reading passages between contemporary speakers and archive speakers differ, tokens across groups are not identical. Due to the nature of the archival recordings and difficulty achieving sufficient token counts based on the reading passage alone, measurements for the archival data were also taken from the conversational portions of the *DARE* interviews, in addition to the "Arthur the Rat" passage. We attempted to gather 5–10 tokens for each vowel category for each speaker, though occasionally, especially in the archival data, we were unable to obtain this many. Altogether, our analysis examines 2,487 vowel tokens. The speakers and materials examined are outlined in table 7.1.

All acoustic measurements were taken in Praat (Boersma and Weenink 2014). Following Fridland and Kendall (2012), F1 and F2 measurements were taken at two points within each vowel's temporal duration, one-third and two-thirds, representing the nucleus and glide of the vowel. In the analysis that follows, we primarily use the one-third point in each vowel's duration as the comparative reference point. All of the data were Lobanov normalized (Lobanov 1971) and plotted using the Vowels package (Kendall and Thomas 2014) in R (R Development Core Team 2012).

VOWEL CONFIGURATIONS OVER TIME

The following vowel plots show the nucleus (one-third measurement point) of all vowels listed, with ellipses indicating one standard deviation from the mean for certain categories of interest. Glides for /u/ and /o/ (two-thirds measurement point) are also included. Following work that has demonstrated that postcoronal /u/ tokens advance more than other phonetic contexts (Labov, Ash, and Boberg 2006; Baranowski 2014), these are presented and examined in two separate classes (/Tu/ and /Ku/, respectively). Several

TABLE 7.1
Speakers and Material

Speakers	*YOB*	*Data Materials*	*Male*	*Female*	TOTAL
DARE	1890–1914	Reading passage ("Arthur the Rat") & conversational interviews	4	1	5
Older	1955–77	Word list & reading passage	3	3	6
Younger	1988–93	Word list & reading passage	7	5	12
TOTAL			14	9	23

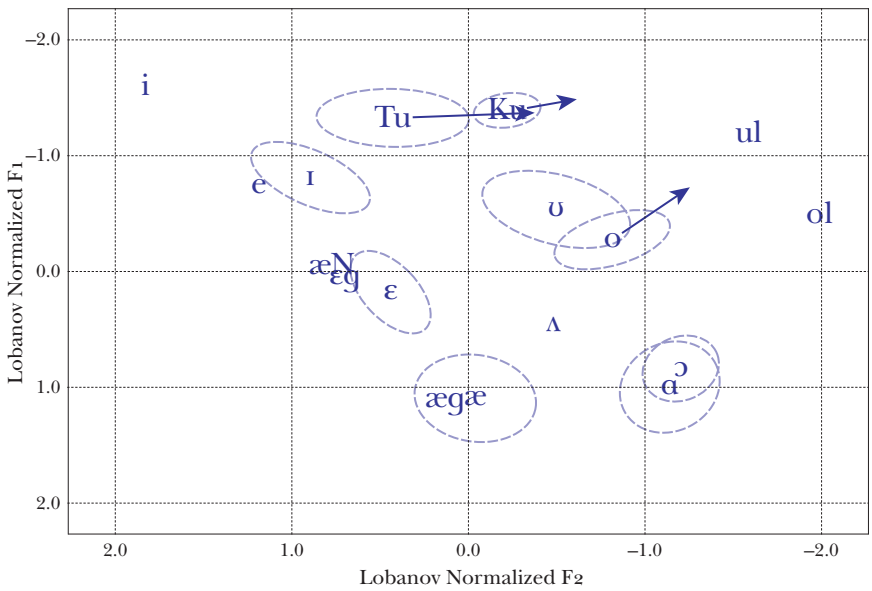
Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

vowel classes were excluded for clarity, as they were not of interest for this study. With the exception of prenasal /æ/ (/æN/) and prelateral /u/ and /o/ (/ul/ and /ol/), which are treated separately from the main classes, measurements in prenasal, prelateral, and pre-/r/ positions are not included in the data presented here. /ɛ/ and /æ/ in prevoiced velar stop positions (/ɛg/ and /æg/) are also treated separately from the main classes when available. /ul/ and /ol/ are included as reference points for the back vowels in the contemporary data. For the archival data, both of these pre-/l/ vowel classes are excluded, as tokens were quite limited.

YOUNGER CONTEMPORARY SPEAKERS. The younger speakers in our data, born between 1988 and 1993, show patterns similar to the speakers in the Portland metropolitan area examined by Becker et al. (2016 [this volume]), including characteristics of the CVS. Figure 7.2 presents an aggregate vowel plot for the 12 younger speakers.

The front lax vowels exhibit patterns described in the CVS, such that /ɪ/ is lowered and shares some overlap with /e/. /ɛ/ also exhibits some lowering and backing. Both /u/ and /o/ show degrees of fronting, with /u/ (depicted as /Tu/ and /Ku/), as expected, more advanced than /o/. Visual inspection of the plot indicates that coronal tokens are more advanced than noncoronals,

FIGURE 7.2
Lobanov Normalized Aggregate Vowel Space for Younger Speakers



Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

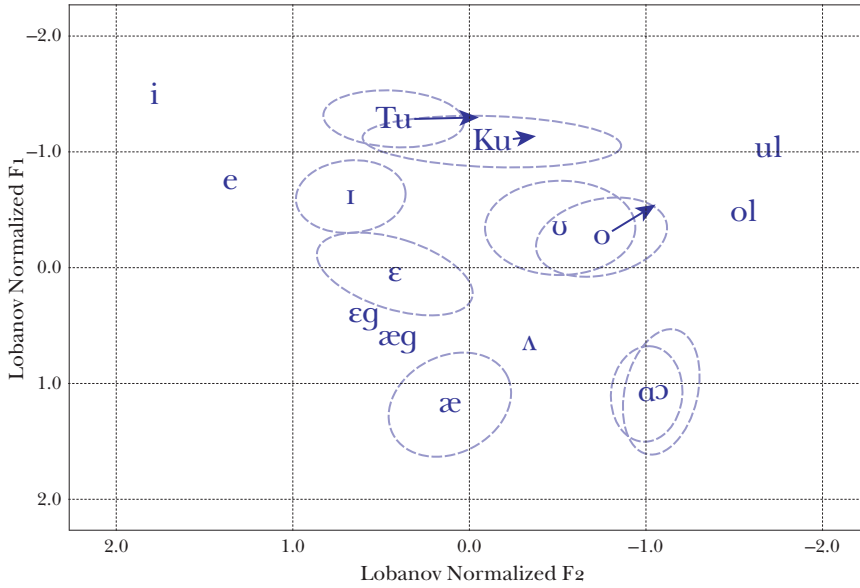
although noncoronals are still quite advanced in these data. We find that /o/ is fronted and falls in line with the description of West Coast Englishes in the CVS (Labov, Ash, and Boberg 2006; Eckert 2008). All of these speakers show a fronting and lowering of /ʊ/ where the vowel is moving toward /ʌ/ as described by the CVS. In fact, the figure shows that the distributions of /ʊ/ and /o/ overlap for these speakers.

With respect to the low back merger, we can see that there is almost complete overlap of F1 and F2 for /ɑ/ and /ɔ/. This is in line with Labov, Ash, and Boberg's (2006) description of the low back merger being widespread in the Western United States; more specifically, we see /ɑ/ and /ɔ/ overlapping in spectral space, similar to previous descriptions of the CVS (Eckert 2008; for more about relative positioning in the Western English low back vowels, see D'Onofrio et al. 2016 [this volume]). Another feature of the CVS relevant to this discussion is the behavior of /æ/, which raises and fronts before nasals, while lowering and backing in other contexts (Eckert 2008). The data here align with what we would expect to see from prior descriptions of West Coast Englishes (Labov, Ash, and Boberg 2006; Eckert 2008) and match up well with what Becker et al. (2016 [this volume]) found in the Portland area. These younger speakers exhibit no /æg/ raising and little-to-no /ɛg/ raising, features that have been found for speakers in the Seattle area (Wassink 2015). Similarly, Becker et al. (2016 [this volume]) found little evidence for /æg/ raising for the younger speakers in their data.

OLDER CONTEMPORARY SPEAKERS. Turning to the older speakers in the contemporary data (born between 1955–77), we see some interesting trends with respect to the patterns described above for the younger speakers. An aggregate vowel plot for these speakers is shown in figure 7.3. First, it is clear that there is similarity between the older and younger contemporary speakers. Both /u/ and /o/ are fronted in these speakers as well, such that /o/ occupies a similar space in the older speakers as it does in the younger speakers. Similarly to the younger speakers, /ʊ/ is fronted and lowered toward /ʌ/, showing overlap with /o/. As with the younger speakers, /u/ is fronted, with the same pattern of postcoronal tokens being more fronted than noncoronals. However, noncoronals show a wider range of variation for the older contemporary speakers than they did for the younger speakers, indicating that some of the older speakers are as front as the younger speakers, while some remain relatively backed. The spread of the data could be, to some degree, a function of simply having fewer tokens for /Ku/ and fewer speakers for the older cohort. Further, similar to the younger speakers, the older speakers also show participation in the low back merger, indicating stability across these two generations.

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

FIGURE 7.3
Lobanov Normalized Aggregate Vowel Space for Older Speakers

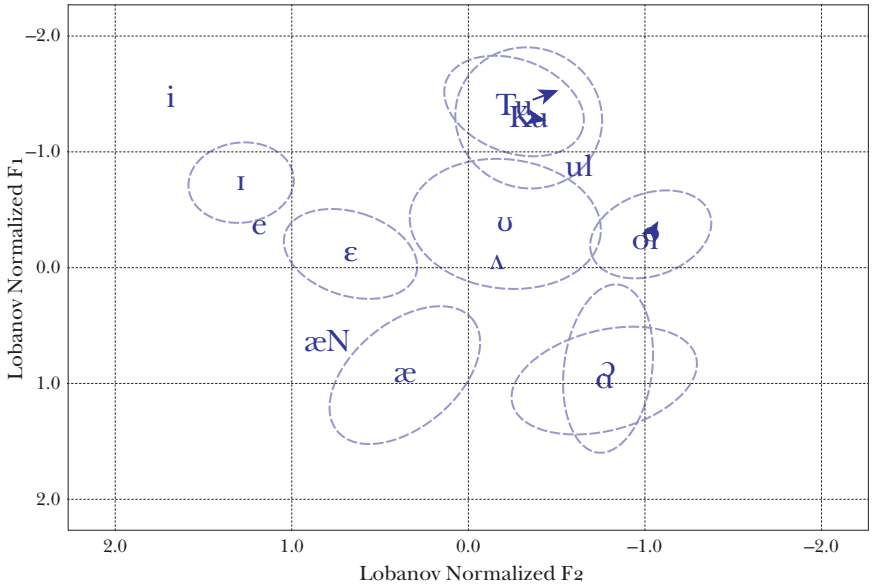


Despite the similarities between these two generations, there are also some noticeable differences. For /æ/, the older speakers' pattern is different from that of the younger speakers. Although there appears to be /æ/ backing for both generations of contemporary speakers, we also see /æ/ fronting and raising before /g/ for these older speakers, which is not evident in our data for the younger speakers. This suggests that /æg/-raising is receding for younger speakers in Oregon, which follows the trends found in both Portland (Becker et al. 2016 [this volume]) and Seattle (Freeman 2014b; Wassink 2015). We cannot say anything about the nasal split with regard to this vowel class, as we did not have enough tokens for these older speakers to examine it fully. Another difference is some /ɪ/ and /ɛ/ retraction among the older speakers, but /ɛ/ does not appear as low as it does for the younger speakers. Finally, there appears to be a shorter glide for /Tu/ in the older speaker data than was seen for the younger speakers, which could be indicative of a current change in progress for Oregonian English.

ARCHIVAL SPEAKERS. We now continue our look backward by turning to the Oregonians born between 1893–1914. Figure 7.4 displays an aggregate vowel space for these speakers, in which we can see vowel configurations that are both similar to and different from those for the contemporary speakers. For /u/ we can make a couple of observations. First, postcoronals

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

FIGURE 7.4
Lobanov Normalized Aggregate Vowel Space for Archival Speakers



and noncoronals occur in the same space, which we did not see in the contemporary data (where coronals were more advanced than noncoronals). Further, we also see that the /u/ vowel class remains relatively backed. /o/ is also realized in a more backed location. With respect to /ʊ/, we see lowering in these data, with /ʊ/ appearing in front of /o/ but without any overlap in nucleus position between these two classes, in contrast to what we saw for both sets of contemporary speakers. We can also see that, although /ɪ/ appears to be in roughly the same location as it is for the contemporary speakers, /ɛ/ does not appear as low or far back in the vowel space as it is for the contemporary speaker data.

These speakers also show overlap in F1 and F2 for /ɑ/ and /ɔ/, indicating the low back merger was present in the speech of Oregonians at this point in time. The classes distribute slightly differently than they did for the contemporary speakers, but this could be due to noisier data available for this group. We can see that /æ/ is not retracted for the archival speakers as it is for the two contemporary groups. There is some evidence of the nasal split for these speakers, but it appears to be nascent in comparison to the widely split system evidenced by the younger contemporary speakers. Overall, these data from the archival speakers suggest that /æ/-backing was not very advanced at this point in time. While this is necessarily speculative, the slight nasal split could be an immediate precursor to /æ/-backing.

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

ANALYSIS AND DISCUSSION

These data help us to better understand the development of the current vowel system in English in the Pacific Northwest in general and Oregon in particular. First, we see that, by and large, both generations of contemporary speakers exhibit the Western English patterns described by Labov, Ash, and Boberg (2006). Additionally, the younger contemporary speakers in these data participate almost categorically in the features described as the California Vowel Shift, especially the general retraction of the front lax vowels. For the older contemporary speakers, we see a good bit of the CVS (fronting of the back vowels, /æ/-backing and lowering, the low back merger), but we also see /æg/-raising. As mentioned earlier, this is a feature primarily reported for the Portland and Seattle metropolitan areas among older speakers. In terms of geography, Oregon is situated between Northern California and Washington, so it is reasonable to assume that Oregon would share vocalic features with both of these areas (Becker et al. 2014, 2016 [this volume]). What is of particular interest here is the relationship these contemporary speakers have to the archival speakers. In the archival data, we see almost no evidence of the CVS. Those speakers participate in the low back merger, but realize /u/ and /o/ in fairly back positions and do not show retracted /æ/ or retraction for the other front lax vowels. There is quite a bit of variation in the data for the archival speakers, and we readily admit this could be due to the noisier nature of the archival recordings (both audio quality and the more conversational nature of those recordings) in comparison to the modern recordings. However, taken all together, the contrasts between the archival and contemporary speakers yield insight into the development of speech patterns in the region.

Ultimately, we see some change over time in some vowel categories, but not in others. Archival speaker vowel configurations appear to predate many of the features described for English in the West and the CVS (e.g., front lax vowel retraction), with the primary exception of the low back merger. This suggests that major components of the modern CVS system likely developed in Oregon in speakers born in the early twentieth century, the period between our archival group (born before 1914) and the older contemporary speakers (born after 1955). With such a gap in time in these data, the timing of the instantiation of this system cannot be pinned down further. This finding is in line with other recent work examining the development of the Western dialect region (Fridland and Kendall, forthcoming). At the same time, we also see evidence of some changes still in progress, where the youngest speakers show different patterns than the older and archival speakers.

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

To further track the time-course of these changes, we generated a series of quantitative measures for each speaker for the vowel classes of interest based on the aggregate vowel plots (all data continue to be assessed in terms of normalized values). These measures include the Euclidean distance between F1 and F2 nuclei positions for /i/ and /ɪ/, /e/ and /ɛ/, /o/ and /ʊ/, and /ʌ/ and /ʊ/ (see Kendall and Fridland 2012, 295, for more on the use of Euclidean distance in this way) and the F2 positions of /o/ and coronal and noncoronal /u/ nuclei (/Tu/ and /Ku/). Additionally, we also looked at the Euclidean distance between /Tu/ and /Ku/, as well as glide lengths and targets for both of these subclasses. Lastly, we also examined /æ/ F1 and F2 and /ɑ/-/ɔ/ Pillai, a measure of distributional overlap useful for characterizing the degree of merger between two vowel categories (see Hay, Warren, and Drager 2006; Nycz and Hall-Lew 2014). We then ran a series of ANOVA tests to assess differences between the groups. In table 7.2, we present the output of these statistical comparisons. We include both the F-value and *p*-value for each ANOVA, as well as *p*-values from Tukey HSD post-hoc tests for ANOVAs that obtain significance. We use a *p*-value level $<.05$ as a cutoff for Tukey post hoc testing. Since we are running multiple ANOVA tests, we could be stricter by using a Bonferroni corrected, lower *p*-value, but our main focus is uncovering trends over time and not making strict claims about statistical significance, so we proceed with a less strict measure of significance.

TABLE 7.2
Results from ANOVA and Tukey's HSD Tests

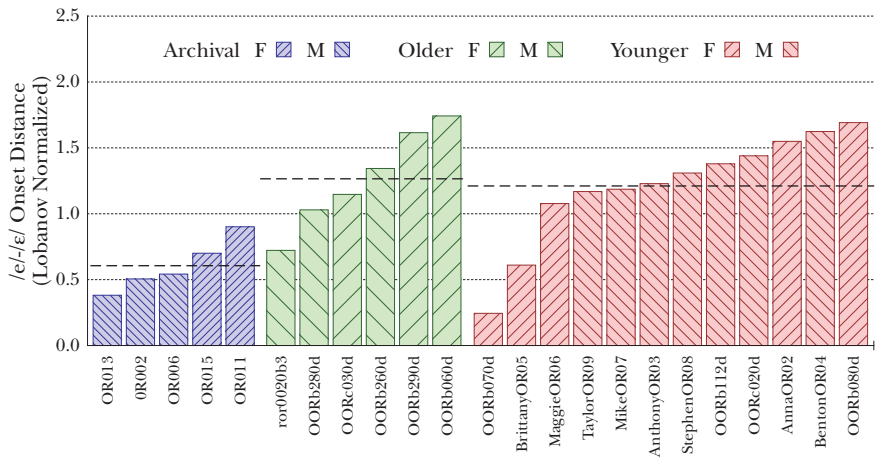
Measures	*F-Value*	*p-Value*	*Older-Archival*	*Younger-Archival*	*Younger-Older*
/i/ and /ɪ/ ED	3.930	.054	—	—	—
/e/ and /ɛ/ ED	5.448	.013*	$p = .022$*	$p = .018$*	$p = .950$
/æ/ F1	1.328	.288	—	—	—
/æ/ F2	6.214	.008*	$p = .118$	$p = .006$*	$p = .454$
/ʌ/ and /ʊ/ ED	2.388	.117	—	—	—
/o/ F2	2.520	.131	—	—	—
/ɑ/~/ɔ/ Pillai	0.707	.505	—	—	—
/o/ and /ʊ/ ED	3.761	.044*	$p = .056$	$p = .063$	$p = .909$
/Tu/ and /Ku/ ED	0.792	.467	—	—	—
/Tu/ F2	7.971	.003*	$p = .011$*	$p = .003$*	$p = .986$
/Ku/ F2	0.901	.422	—	—	—
/Tu/ F2 glide target	2.420	.132	—	—	—
/Ku/ F2 glide target	0.861	.438	—	—	—
/Tu/ glide length	10.080	.001*	$p = .560$	$p = .002$*	$p = .016$*
/Ku/ glide length	0.071	.931	—	—	—

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

Table 7.2 shows interesting trends in the data. We utilize Euclidean distance between /i/ and /ɪ/ and between /e/ and /ɛ/ as a measure to quantify the degree of /ɪ/ and /ɛ/ retraction. This measure has been used by Fridland and Kendall (e.g., 2012) as a way to compare across and within U.S. regional dialects. As indicated by the ANOVA and pairwise comparisons, we see no significant differences for the distance between /i/ and /ɪ/, but a significant difference for /e/ and /ɛ/ for both the older-archival comparison and the younger-archival comparison. Figure 7.5 shows this difference between archival and contemporary speakers rather strikingly. In the figure, and those that follow, we depict each group (archival, older contemporary, and younger contemporary) sorted by the relevant metric. The dashed lines indicate the group mean for the metric. Here, we see that /e/ and /ɛ/ are much more proximate for the archival speakers than for the contemporary groups, and we do not see any substantial difference between the younger and older contemporary speakers.

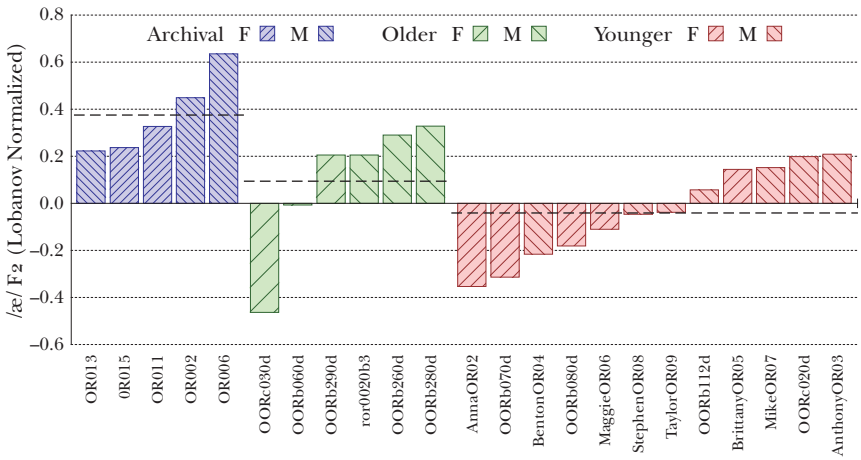
As shown in table 7.2, we do not see significant differences across groups for /æ/ height (F1), but the difference for /æ/ F2 does reach significance, supporting the notion that /æ/ in Oregonian English has retracted over time. This is illustrated in figure 7.6. The significant difference arises in the younger-archival comparison, but not in the younger-older or older-archival comparison. Figure 7.6 shows that although comparisons with the older contemporary group are not significant, the data overall show a meaningful trend where the older contemporary speakers reflect an inter-

FIGURE 7.5
/e/-/ɛ/ Euclidean Distances



Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

FIGURE 7.6
/æ/ F2



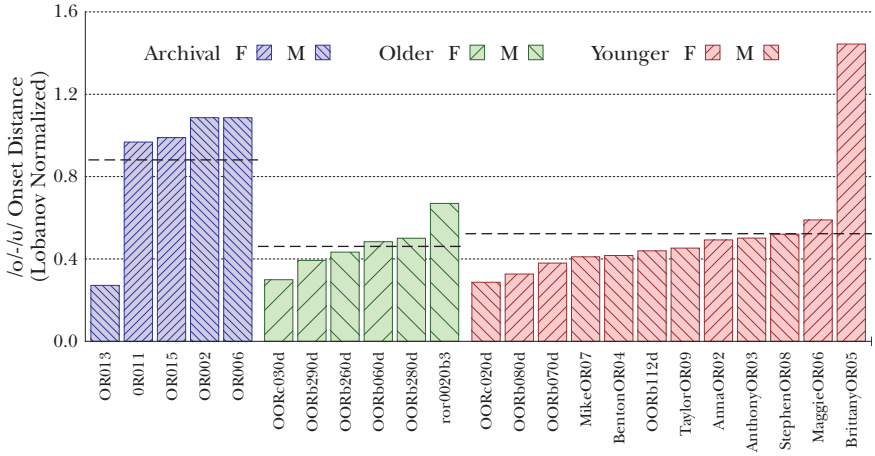
mediate stage between the retracted /æ/ position of the younger speakers and the unretracted position for the archival speakers. We also note that both contemporary groups exhibit a fairly wide range of /æ/ positions, with some speakers being quite retracted while others show /æ/ positions similar to the values for some archival speakers.

Statistical tests on the back vowels yield several outcomes. In table 7.2, we see significant patterns for /o/ and /ʊ/ Euclidean distance, /Tu/ glide length, /Tu/ F2 nucleus, but not for the /Tu/ and /Ku/ Euclidean distance, /Ku/ glide length, /Tu/ and /Ku/ glide targets, or /o/ F2 nucleus. Visual inspection of the vowel plots suggests that the nuclei of /o/ and /ʊ/ do not overlap for the archival data, but do for the contemporary speakers. This suggestion of change over time is supported by the ANOVA ($p < .05$) although the Tukey post-hoc tests indicate the comparisons between groups are not quite significantly different. Figure 7.7 shows the patterns of /o/ and /ʊ/ Euclidean distance. Despite the ambiguous statistics, the figure demonstrates a general trend where both sets of contemporary speakers have less distant /o/ and /ʊ/ classes than the archival speakers. One young contemporary speaker (BrittanyOR05) stands out with an exceptional /o/ and /ʊ/ distance, due to an unusually fronted and raised /ʊ/ and relatively backed /o/ (and /u/), according to our data.

/Tu/ F2 nucleus position shows a similar pattern, as illustrated in figure 7.8. Both the older-archival and younger-archival pairwise comparisons show significance, while the older and younger contemporary speakers are not different. Thus, while /æ/ F2 showed some evidence of incremental

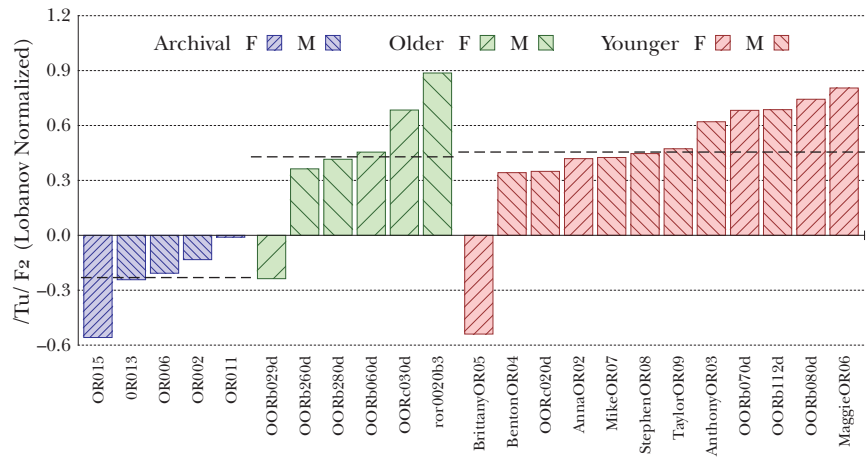
Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

FIGURE 7.7
/o/-/ʊ/ Euclidean Distance



retraction over time, for each of the other comparisons we have examined closely—/e/ and /ɛ/, /o/ and /ʊ/, and /Tu/ F2—the archival speakers are different from the contemporary speakers, but we do not see differences between the two contemporary groups. This supports the observation made earlier that these changes likely began in the generation between the older contemporary speakers and the archival speakers.

FIGURE 7.8
/Tu/ F2

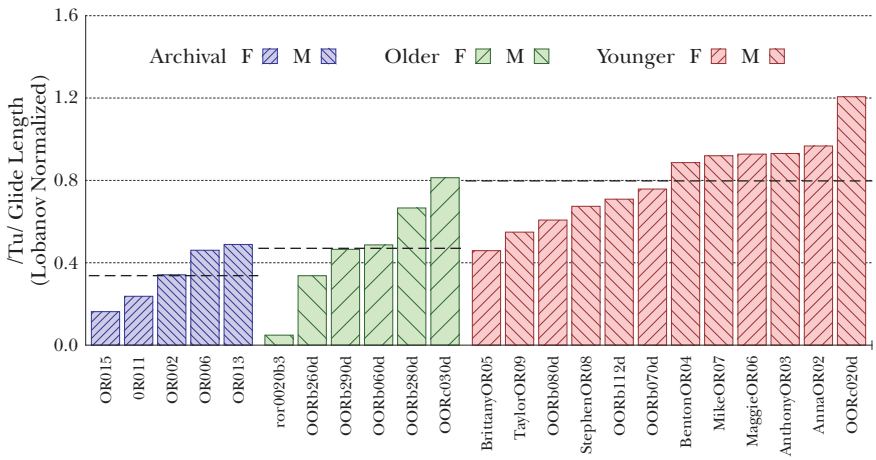


Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

Finally, /Tu/ glide length also shows significant differences in the statistical tests. The primary difference here is in the comparisons between the younger contemporary speakers and each of the older groups. This is shown in figure 7.9. For this metric, we see that there is no significant difference in the older-archival comparison but that there are significant differences between both the younger-archival and younger-older comparisons. Much like with /æ/ F2, /Tu/ glide length appears to follow an incremental change over time, with glides becoming longer over time. Since the younger speakers pattern differently than the older contemporary speakers, we might also posit that this feature remains a current change in progress, although to our knowledge it has not been subject to scrutiny in more general English back vowel fronting studies.

There were several metrics that did not show differences across the three groups' data, but still have implications for this study. /o/ F2, for instance, did not show significant differences. This was somewhat surprising given the evidence that back vowels are fronting over time in other varieties of Oregonian English (Becker et al. 2014, 2016 [this volume]). One possible explanation is due to how noisy the archival data are, both in terms of audio quality and in terms of our relying on conversational tokens more than reading passage or word list elicitations; more speakers and more tokens would allow us to see whether this lack of significant difference is a function of stylistic and data quality differences, or, as the data seem to show, whether there has not in fact been much movement for /o/

FIGURE 7.9
/Tu/ Glide Length



Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

over time for Oregonians. Another set of metrics we examined that did not show any differences over time are for /Ku/. /Tu/ nucleus position (F2 value) does change over time in these data, as well as /Tu/ glide length, but we do not see analogous evidence for /Ku/. We also did not see meaningful differences in the Euclidean distance between the nuclei of /Tu/ and /Ku/, despite an assumption that /Ku/ fronting is generally a later phenomena in English, where /Ku/ targets approach an earlier fronted /Tu/ distribution (e.g., Baranowski 2014). Once again we cannot discount the possibility that this is a function of our data. In our dataset, we have fewer /Ku/ tokens than /Tu/ tokens, especially for the older contemporary speakers as well as the archival speakers. It could be the case that with an increased token count and more speakers we would find significant differences between the generations for these measures. On the other hand, it could also be the case that what we find in Oregon with respect to the relationship between /Tu/ and /Ku/ is different than what, for instance, Baranowski (2014) found for Manchester in the United Kingdom.

Finally, our evidence points to the low back merger being a long-standing feature of Oregonian English, which may predate the archival speakers in these data. We also do not see any meaningful differences in the distance between /i/ and /ɪ/ over time, indicating that /ɪ/ retraction, a feature described as a part of the CVS, may not be a component of Oregonian English. For /æ/, there are significant differences for F2 but not F1, confirming that /æ/ movement has primarily consisted of backing, but not necessarily lowering, over time.

CONCLUSION

The results from our analysis provide important insights into the development of Oregonian English over the course of the late nineteenth and twentieth centuries. For the youngest speakers, we see patterns associated with the California Vowel Shift and no /æg/ raising. As we look backward, we see quite a bit of similarity between the older contemporary speakers and the youngest speakers, save for the length of the glide for /Tu/ and the fact that these older contemporary speakers participate in /æg/ raising. Older contemporary speakers exhibit many aspects of the CVS, including /æ/ and /ɛ/ retraction, /u/ and /o/ fronting, and so on, although they are not as extreme in some respects as the younger speakers. We also note that in both contemporary groups /o/ and /ʊ/ have similar nucleus positions. To our knowledge, this overlapping position of /o/ and /ʊ/ has not been described as part of the

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

CVS and could perhaps be a vocalic pattern that is unique to Oregon. The archival speakers, born around the turn of the twentieth century, represent a point in time where some of the patterns seen in the contemporary data are not yet in place or appear to be in their inception, with the notable exception of the low back merger, which according to our data may be a long-standing feature of Oregonian English. At the very least, the low back merger is clearly attested in the limited archival speakers available to us at this time. This contrasts with archival recordings for Bay Area Californians and Nevadans examined by Fridland and Kendall (forthcoming), born just a couple of decades before our archival speakers, all of whom show strongly unmerged low back vowel classes.

Perhaps the most important outcome of this investigation is the observation that many relevant changes to the Oregon vowel system must have occurred in speakers born in the time period not represented in our data, the period roughly between the two world wars. In the future, by looking at speakers born in the first half of the twentieth century, we may be able to track the emergence and development of the vocalic patterns seen in present-day Oregon. As discussed above, Oregon has cultural and settlement subregions—in particular differences between eastern and western Oregon—as well as ethnic diversity, all of which have been largely ignored here in our attempt to understand changes over time in the data currently available to us. Future work is needed to add contemporary speakers from more diverse parts of the state and ethnic and cultural groups, as well as to attempt to locate more archival speakers from throughout the state. Despite some limitations in the data examined here, we hope to have shed new light on the state of Oregonian English and its development.

NOTE

We are immensely grateful to the *DARE* project and especially Joan Houston Hall for making the archival tapes available for researchers; without them this project would not have been possible. We would also like to thank Craig Fickle at the University of Oregon for helping with analysis, as well as students in the University of Oregon sociolinguistics course in Winter 2013 and 2014 for help with data collection. Finally, we would like to the thank the National Science Foundation for grants that funded a large portion of the data collection and analysis (BCS-1122950, PI Tyler Kendall, and BCS-1123460, PI Valerie Fridland), as well as a University of Oregon Faculty Research Award for the project Dialect Diversity in Oregon.

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

REFERENCES

Baranowski, Maciej. 2014. "The Sociolinguistics of Back Vowel Fronting in Manchester English." Paper presented at Methods in Dialectology 15, Groningen, Netherlands, Aug. 11–15.

Becker, Kara, Anna Aden, and Katelyn Best. 2014. "Ideologies of Non-Accent: Linking Perception and Production in Oregon English." Paper presented at the Cascadia Workshop in Sociolinguistics (CWSL), Victoria, B.C., Mar. 1–2.

Becker, Kara, Anna Aden, Katelyn Best, Rena Dimes, Juan Flores, and Haley Jacobson. 2013. "Keep Portland Weird: Vowels in Oregon English." Paper presented at the 42nd annual meeting on New Ways of Analyzing Language Variation (NWAV 42), Pittsburgh, Pa., Oct. 17–20.

Becker, Kara, Anna Aden, Katelyn Best, and Haley Jacobson. 2016. "Variation in West Coast English: The Case of Oregon." In Fridland et al. 2016, 107–34. doi:10.1215/00031283-3772923.

Boersma, Paul, and David Weenink. 2014. Praat: Doing Phonetics by Computer. Version 5.4.04. http://www.praat.org.

Conn, Jeff. 2006. "Dialects in the Mist (Portland, OR)." In *American Voices: How Dialects Differ from Coast to Coast*, edited by Walt Wolfram and Ben Ward, 149–55. Malden, Mass.: Blackwell.

DARE. Dictionary of American Regional English. 1985–2013. Edited by Frederic G. Cassidy and Joan Houston Hall. Cambridge, Mass.: Belknap Press of Harvard University Press.

D'Onofrio, Annette, Penelope Eckert, Robert J. Podesva, Teresa Pratt, and Janneke Van Hofwegen. 2016. "The Low Vowels in California's Central Valley." In Fridland et al. 2016, 11–32. doi:10.1215/00031283-3772879.

Eckert, Penelope. 2008. "Where Do Ethnolects Stop?" *International Journal of Bilingualism* 12.1–2: 25–42. doi:10.1177/13670069080120010301.

Freeman, Valerie. 2014a. "Bag, Beg, Bagel: Prevelar Raising and Merger in Pacific Northwest English." University of Washington Working Papers in Linguistics, 32. http://depts.washington.edu/uwwpl/vol32/freeman_2014.pdf.

———. 2014b. "Social Differentiation of *bag*-Raising in Seattle Caucasians." Paper presented at the Cascadia Workshop in Sociolinguistics (CWSL), Victoria, B.C., Mar. 1–2.

Fridland, Valerie, and Tyler Kendall. 2012. "Exploring the Relationship between Production and Perception in the Mid Front Vowels of U.S. English." *Lingua* 122.7: 779–93. doi:10.1016/j.lingua.2011.12.007.

———. Forthcoming. "English in the Western United States." In Hickey, forthcoming.

Fridland, Valerie, Tyler Kendall, Betsy Evans, and Alicia Beckford Wassink, eds. 2016. *Speech of the Western States*. Vol. 1, *The Coastal States*. Publication of the American Dialect Society 101. Durham, N.C.: Duke University Press.

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

Hay, Jennifer, Paul Warren, and Katie Drager. 2006. "Factors Influencing Speech Perception in the Context of a Merger-in-Progress." *Journal of Phonetics* 34: 458–84.

Hickey, Raymond, ed. Forthcoming. *Listening to the Past: Audio Records of Accents of English*. Cambridge: Cambridge University Press.

Hinton, Leanne, Birch Moonwomon, Sue Bremner, Herb Luthin, Mary Van Clay, Jean Lerner, and Hazel Corcoran. 1987. "It's Not Just the Valley Girls: A Study of California English." In *Berkeley Linguistics Society: Proceedings of the Thirteenth Annual Meeting, February 14–16, 1987*, edited by Jon Aske, Natasha Beery, Laura Michaelis, and Hana Filip, 117–28. Berkeley, Calif.: Berkeley Linguistics Society. doi:10.3765/bls.v13i0.1811.

Kendall, Tyler. 2007. "Enhancing Sociolinguistic Data Collections: The North Carolina Sociolinguistic Archive and Analysis Project." In "Selected Papers from NWAV 35," edited by Toni Cook and Keelan Evanini. *University of Pennsylvania Working Papers in Linguistics* 13.2: 15–26. http://repository.upenn.edu/pwpl/vol13/iss2/2.

———. 2013. *Speech Rate, Pause, and Sociolinguistic Variation: Studies in Corpus Sociophonetics*. Houndmills, U.K.: Palgrave Macmillan.

Kendall, Tyler, and Valerie Fridland. 2012. "Variation in Perception and Production of Mid Front Vowels in the U.S. Southern Vowel Shift." *Journal of Phonetics* 40.2: 289–306. doi:10.1016/j.wocn.2011.12.002.

Kendall, Tyler, and Erik R. Thomas. 2014. Vowels: Vowel Manipulation, Normalization, and Plotting in R. R Package. Version 1.2. http://cran.r-project.org/web/packages/vowels/.

Kerswill, Paul. 2003. "Dialect Levelling and Geographical Diffusion in British English." In *Social Dialectology: In Honour of Peter Trudgill*, edited by David Britain and Jenny Cheshire, 223–43. Amsterdam: Benjamins.

Labov, William, Sharon Ash, and Charles Boberg. 2006. *The Atlas of North American English: Phonetics, Phonology, and Sound Change*. Berlin: Mouton de Gruyter.

Lobanov, Boris M. 1971. "Classification of Russian Vowels Spoken by Different Speakers." *Journal of the Acoustical Society of America* 49.2B: 606–8. doi:10.1121/1.1912396.

Luthin, Herbert. 1987. "The Story of California (ow): The Coming-of-Age of English in California." In *Variation in Language: NWAV-XV at Stanford; Proceedings of the Fifteenth Annual Conference on New Ways of Analyzing Variation*, edited by Keith M. Denning, Sharon Inkelas, Faye C. McNair-Knox, and John R. Rickford, 312–24. Stanford, Calif.: Dept. of Linguistics, Stanford University.

McLarty, Jason, Charlie Farrington, and Tyler Kendall. 2014. "Perhaps We Used To, but We Don't Anymore: The Habitual Past in Oregonian English." In "Selected Papers from NWAV 42," edited by Duna Gylfadottir. *University of Pennsylvania Working Papers in Linguistics* 20.2. http://repository.upenn.edu/pwpl/vol20/iss2/13.

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

McLarty, Jason, and Tyler Kendall. 2014. "The Relationship between the High and Mid Back Vowels in Oregonian English." Paper presented at the 43rd annual meeting on New Ways of Analyzing Variation (NWAV 43), Chicago, Ill., Oct. 23–26.

Nelson, Katherine. 2011. "A Cross-Generational Acoustic Study of the Front Vowels of Native Oregonians." Paper presented at the 40th annual conference on New Ways of Analyzing Variation (NWAV 40), Washington, D.C., Oct. 27–30.

Nycz, Jennifer, and Lauren Hall-Lew. 2014. "Best Practices in Measuring Vowel Merger." *Proceedings of Meetings on Acoustics* 20. doi:10.1121/1.4894063.

Podesva, Robert J. 2011. "The California Vowel Shift and Gay Identity." *American Speech* 86.1: 32–51. doi:10.1215/00031283-1277501.

R Development Core Team. 2012. *R: A Language and Environment for Statistical Computing*. Vienna: R Foundation for Statistical Computing. http://r-project.org.

Riebold, John. 2009. "Creak in the Rain: Phonation in Oregon English." Master's thesis, York University.

———. 2012. "There Ain't No Stopping Us Now: Spirantization in the Pacific Northwest." Poster presented at the annual meeting of the Linguistic Society of America, Portland, Ore., Jan. 5–8.

Schwantes, Carlos A. 1989. *The Pacific Northwest: An Interpretive History*. Lincoln: University of Nebraska Press.

Trudgill, Peter. 2006. *New Dialect Formation: The Inevitably of Colonial Englishes*. Edinburgh, U.K.: Edinburgh University Press.

U.S. Census Bureau. 2010. "Census Demographic Profiles." Washington, D.C.: Government. Printing Office. http://www.census.gov.

Ward, Michael. 2003. "Portland Dialect Study: The Fronting of /ow, u, uw/ in Portland, Oregon." Master's thesis, Portland State University. http://www.pds.pdx.edu/Publications/Ward.pdf.

Wassink, Alicia Beckford. 2015. "Sociolinguistic Patterns in Seattle English." *Language Variation and Change* 27.1: 31–58. doi:10.1017/S0954394514000234.

———. 2016. "The Vowels of Washington State." In Fridland et al. 2016, 77–106. doi:10.1215/00031283-3772912.

Wassink, Alicia, Robert Squizzero, Mike Scanlon, Rachel Schirra, and Jeffrey Conn. 2009. "Effects of Gender and Style on Fronting and Raising of /æ/, /e:/ and /ɛ/ before /g/ in Seattle English." Paper presented at the 38th annual meeting of New Ways of Analyzing Variation (NWAV 38), Ottawa, Oct. 22–25.

Wolfram, Walt, and Natalie Schilling-Estes. 2006. *American English: Dialects and Variation*. 2nd ed. Malden, Mass.: Blackwell.

JASON MCLARTY is a Ph.D. student in the Linguistics Department at the University of Oregon. His interests are in sociolinguistics, particularly sociophonetics, with a focus on the historical development of different dialects. His primary research involves suprasegmental features of African American English, as well as vowel variation in Oregonian English. With respect to AAE, he looks at intonational differences over time by comparing modern

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

recordings of Southern American English varieties with archival recordings of ex-slaves and ex-Confederates. Currently, McLarty is working with Tyler Kendall and Charlie Farrington in developing the first public corpus of African American English. E-mail: jmclarty@uoregon.edu.

TYLER KENDALL is an associate professor of linguistics at the University of Oregon. Several of his research projects examine language variation and change in Oregon and elsewhere in the United States. In collaboration with Valerie Fridland, he is engaged in a large-scale project investigating the relationship between vowel production and vowel perception in regional varieties of U.S. English. Much of his wider work focuses on corpora in and computational approaches to sociolinguistics. Along these lines, he is the developer of several sociolinguistic software projects, including the Sociolinguistic Archive and Analysis Project (SLAAP) and the Vowels.R package for the R programming language. He is author of the book *Speech Rate, Pause, and Sociolinguistic Variation: Studies in Corpus Sociophonetics* (Palgrave Macmillan, 2013). E-mail: tsk@uoregon.edu.

CHARLIE FARRINGTON is a graduate student in the Department of Linguistics at the University of Oregon. He conducts research on language variation and change, African American English, and vowel variation in American English. The primary focus of his research utilizes a landmark longitudinal study of African American English at the Frank Porter Graham Institute in Chapel Hill, North Carolina, which he helped in archiving and making accessible to researchers with varied interests. Within this corpus, he has looked at word-final neutralization of word final obstruents, and in collaboration with Mary Kohn, analyzed vowel trajectories over the lifespan as they relate to numerous social factors. He is currently working on the development of the first public corpus of African American English with Tyler Kendall and Jason McLarty. E-mail: crf@uoregon.edu.

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user

Downloaded from https://read.dukeupress.edu/pads/article-pdf/101/1/135/450421/PADS101E.07.chap7.pdf
by UNIV OF OREGON LIBRARIES user