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Chapter 2

Western American English

2.1 Introduction

In the spring of 1986, Leanne Hinton led a graduate seminar at the University of California, Berkley to study the pronunciation of English in California at that time. They noted that earlier studies on California English described the variety as relatively unremarkable, lacking distinctive features of its own. For example, Allan Metcalf, in a report on the *Linguistic Atlas of the Pacific Coast* (*LAPC*), says,

> The pronunciation of English in California and Nevada is unobtrusive, a bland blend of patterns found in the north and midlands in the eastern United States. To the linguist as well as to the untrained ear, it most often seems to be an American English 'shorn of all local peculiarities' [(Pei 1967: 192)]—like the dog in the Sherlock Holmes adventure of Silver Blaze, notable for not being noticed (Metcalf ND: 8).

However, in parodied imitations of Californians in the media, Hinton and her students noticed exaggerated phonetic features that were not found in early phonetic descriptions from the area. Had the language of California changed? The goal of the seminar was to compare their findings to the 270 Californians interviewed in the 1950s as part of the *Linguistic Atlas of the Pacific Coast*.

Their results, eventually published as Hinton, Moonwomon, Bremner, Luthin, Van Clay, Lerner, & Corcoran (1987), became a pivotal study in speech in the West because they were perhaps the first to document the lowering and backing of KIT, DRESS, and TRAP in California. They found that younger, white, urban speakers tended to exhibit these patterns the most and proposed that these changes were the beginnings of a new shift in California English: "[i]t is quite possible, then, that these new sound shifts will progress along the lines of many other California phenomena, becoming more extreme and spreading geographically" (Hinton et al. 1987: 126). While other studies have shown that these patterns have indeed spread across the West (cf. Fridland et al. 2016; Fridland et al. 2017 inter alia), in this chapter I will show that they have spread geographically into Cowlitz

knowledge, very few studies ahve looked at the front lax vowels in Washington outside of the prevelar environment.

One exception is Julia Swan's research, which has focused on the direct comparison of English in Seattle, Washington and Vancouver, British Columbia. Though she, too, primarily describes differences in the realization of prevelar vowels, Swan (2016a: 8) finds that retraction of TRAP before fricatives (as opposed to stops) is more advanced for Vancouver speakers than it is for Seattle speakers, a pattern described in Canada by Clarke, Elms & Youssef (1995: 214) and Boberg (2019). Furthermore both groups have nearly identical trajectories for pre-/d/ tokens of TRAP (2016a: 10), and F2 measurements were not statistically significantly different from each other in pre-obstruent environments (Swan 2015). Given that Vancouver is the part of Canada where the Elsewhere Shift is most advanced (Hall 2000, Tamminga & Sadlier-Brown 2008, Roeder, Onosson & D'Arcy 2018), Swan indirectly reports that TRAP retraction may be found in Seattle.

The other exception is a recent presentation at NWAV. Becker & Bahls (2019).

In summary, the Elsewhere Shift can be found in a very large geographic area of North America. It extends across all of Canada, and along the Pacific Coast from Southern California to at least as far north as Portland. It can even be found in areas not traditionally part of Third Dialect regions such as Hawaii (Grama et al. 2012, Kirtley et al. 2016), Alaska (Bowie et al. 2012), Ohio (Durian 2012; E. R. Thomas 2001: 20), Illinois (Bigham 2010), Michigan (Nesbitt & Mason 2016, Mason 2018), and Texas (E. R. Thomas 2001: 20–21), Massachusetts (Stanford et al. 2019), and Georgia (Stanley 2019c). If it is the case that speakers in Washington are clinging to traditional variants, we have a noteworthy case of resistance to such a widespread change, which may be grounded in strong opposition to the ideological personae expressed in these variants. However, as this study reports, many speakers in Cowlitz County *do* have the Elsewhere Shift in their speech, meaning that they are participating in the macro-level changes of the region. In other words, they are distinguishing themselves from Seattleites. These findings provide some evidence against the claim that Washington is resisting the change and suggests that the shift has crossed the border into Washington.

2.3 A structural description of the Elsewhere Shift

As a consequence of this large amount of research on front lax and low back vowels in North American English, we have learned a great deal about the structure of this shift. However, the degree to which vowels shift varies across regions and from study to study, and many questions remain regarding the structural relationship between the front lax vowels and their connection to other shifting vowels.

2.3.1 The position of the low back vowel(s)

The most defining feature of Western American English is the low back merger (Labov, Ash & Boberg 2006: 277) and has been reported in numerous communities. As far as how the two vowels are merging, there are different reports of this process. In the West, it has been

found that THOUGHT lowers and fronts to merge with LOT (Hall-Lew 2013). In Utah, just the opposite was found: THOUGHT was remarkably stable in real time, and it may have been LOT that backed to merge with THOUGHT to result in a backed merged vowel (Bowie 2017). D'Onofrio et al. (2017) report a similar pattern in California's Central Valley. Most famously, Herold (1990) proposes a merger by expansion in which the distinction between the two is simply lost, and speakers realize tokens anywhere in the combined vowel space of the two historical vowels.

Regarding the relative position of the merged vowel, there is variation across studies. Holland & Brandenburg (2017) find that the F2 of the merged low back vowel is decreasing in apparent time, suggesting that the vowel is getting more backed. Furthermore, D'Onofrio et al. (2017: 23) report that in Redding, California, the two vowels merged first, and then the now-merged vowel raises to a position that is higher than most other regions in the United States, creating a triangular vowel space with BAT as the lowest vowel; in Bakersfield and Merced, this higher merged vowel was achieved by LOT raising to meet the stably high THOUGHT. This raising of the merged vowel, accompanied with BAT-retraction and BET- and BIT-lowering creates an elegant description of a rotated vowel space as a result of the Elsewhere Shift. There are some exceptions (such as the relatively fronted merged vowel in Washington reported by Wassink 2016), but the general tendency is for the merged vowel to be backed and possibly raised.

However, what appears to be a more common finding in studies in the West is that speakers are on their way towards merging the two vowels. For example, Moonwomon (1991) analyzes the two vowels in a variety of environments and shows that the oldest speakers retain the distinction except before nasals and fricatives while the younger speakers all have a merger or a partial merger in all environments. Hall-Lew (2013: 367) reports that Chinese Americans had a more advanced merger, but it was not complete in San Francisco in 2008–2009. In Colorado, the two vowels were close, but LOT was consistently more fronted than THOUGHT, especially for the men, suggesting a near, but so far incomplete, merger (Holland & Brandenburg 2017). In Nevada, THOUGHT is further back in the vowel space, but women are closing the gap (Fridland & Kendall 2017). Most notably, (Di Paolo 1992) finds that LOT and THOUGHT are distinct in Salt Lake City, despite other reports of merger in the region. Close to Cowlitz County, Becker et al. (2016) reports that nearly 40% of their Portland-based sample retain the distinction.

These various studies point out that despite being a widespread feature of the West, there is a fair amount of variation. In some areas, the vowel is reported to be completely merged. However, there are pockets where the data suggests more of a near merger. In some areas, one vowel is stable in apparent time, with the other shifting towards it. The merged vowel is reported to be somewhat fronted, relatively backed, or backed and raised. However, in nearly every case, if the low back merger is not complete, it is on its way towards completion.

County, Washington, providing the first conclusive evidence that the shift can be found in the speech of Washingtonians.

2.1.1 A note on terminology

The vowel shift described by Hinton et al. (1987)—the lowering and retraction of the front lax vowels BIT, DRESS, and BAT—now goes by many names. In this study, I refer to it as the *Elsewhere Shift*[7]. As justification for using this term, this section explains the other names that have been used and why *the Elsewhere Shift* was selected as the most appropriate for this study.

The most common terms for this vowel pattern describe where in North America it can be heard. One of the most popular names is the *(Northern) California Vowel Shift*, coined by Eckert (2008b) because the shift has primarily been documented in the speech of Californians (cf. Hall-Lew et al. 2015, Janoff 2018, Podesva 2011, Podesva et al. 2015, Villarreal 2016, 2018 and many others). However, in light of recent research showing the presence of these changes in Nevada (Fridland & Kendall 2017), Oregon (Conn 2000, Nelson 2011, Becker et al. 2016, McLarty, Kendall & Farrington 2016), Colorado (Holland & Brandenburg 2017, Holland 2019), Arizona (Hall-Lew et al. 2017), and New Mexico (Brumbaugh & Koops 2017), the editors of the *Speech in the Western States* volumes (Fridland et al. 2016, 2017) propose that the label *Western Vowel Pattern*[8] be used. Meanwhile, because of its presence across most of Canada, the term *Canadian Shift* has been used as well (Clarke, Elms & Youssef 1995, Boberg 2005, Sadlier-Brown & Tamminga 2008, Roeder & Jarmasz 2010, Kettig 2014 and many others) because they are "talking about Canadians" (Li, Rosen & Tran 2018). These differences in terminology also reflect the trend that research in California and Canada has progressed more or less independently. Furthermore, when Californians and Canadians are compared directly, there are slight differences (Kennedy & Grama 2012, Hagiwara 2006) leading some to argue for the need to differentiate the two patterns.[9]

A few of the other proposed labels for this vowel pattern are more descriptive of the vowels themselves, rather than the geographic regions involved. For example, Hickey (2018) uses the term *Short Front Vowel Lowering*. And Boberg (2019) uses a similar term, the *North American Short Front Vowel Shift*, as opposed to the *New Zealand Short Front Vowel Shift*, in which the vowels move in the opposite direction from what is described here.

Finally, there are labels in circulation that make no direct reference to geographic regions or vowels. Labov (1991) may have been the first to assign a name to parts of to this pattern, the Third Dialect[10]. This is useful for researchers who study both the Pacific Coast and Canada (Swan 2018a) or neither region (Durian 2012). The term *Elsewhere Shift* has also been proposed to serve this purpose, with *elsewhere* presumably refering to varieties that do not participate in the Southern Vowel Shift or the Northern Cities Shift, though this is relaxed somewhat due to the possible influence of both the Northern Cities Shift and the Elsewhere Shift in the same region (Mason 2018). The term has not gained very much popularity, but Kara Becker, who led a panel on the Canadian/California Vowel Shifts the 2018 meeting of the American Dialect Society, advocates for its usage.

[7] Strelluf (2019: 20) points out that the term was used "somewhat jokingly" at NWAV in 2016. I was not present at that conference, so I missed that connotation. Nevertheless, I will continue to use this term.

[8] Actually, as early as 2004, the term *Western Vowel Shift* was used to describe this pattern in Arizona (Hall-Lew 2004).

[9] For example, Kennedy & Grama (2012: 49) use the benchmarks provided in the *Atlas of North American English* to define whether a speaker's vowels are shifted. Most of their sample lowers KIT, DRESS, and TRAP past the threshold that defines the Canadian Shift, but their tokens of LOT cluster around the threshold. They conclude that because the front vowels were lowering while LOT was not sufficiently backed, "it suggests that the California Shift is a different phenomenon from the Canadian Shift." However, based on the Short Front Vowel Shift Index (see §4.7), which does not consider the low vowel(s), Boberg (2019: 21) states that the shifts in California and Canada are, "for all intents and purposes, the same thing."

[10] *Third Dialect* more formally refers varieties that have the low back merger and /æ/ being realized as a low front vowel, except before nasals where it is raised (Labov 1991: 30). Given that bulk of that paper was written in 1980 (p. 34) and that the shifting in the front lax vowels in Third Dialect regions has only been documented since then, it is unclear whether the label should be applied to the lowering and retraction of front vowels, even if they are a consequence of the low back merger.

as well. Geenberg (2014) finds that speakers who had spent more time outside of their rural community in California used backer variants of BAT than those who did not leave the county. However, nearby in Redding, BAT was one of the few linguistic features that was *not* associated with orientation towards the town verses the country (Podesva et al. 2015). Among Chicano English speakers in Culver City, California, retracted BAT was used more by non-gang members than gang-members (and this distinction was more important than social class or language background), suggesting that these non-gang members are conforming more with the majority community as a part of their linguistic expression (Fought 2003). Van Hofwegen (2017: 150) provides several examples of how a lowered BAT is used when a speaker expresses "righteous indignation" and calls for additional study on such extreme tokens to get a more complete picture of what these tokens mean. I believe Pratt et al.'s (2018) description of BAT describes it perfectly: there is a great deal of "wiggle room," and speakers have been shown to exploit those different variants to serve a variety of multifaceted purposes.

For non-Californians, it appears that while a retracted variant of BAT carries less social meaning than it does in California, it is often associated with California itself. For example, in Oregon, Adcock & Becker (2016) find that listeners link a backed variant of BAT with California personae. And based on the perceptions of listeners from the Bay Area, Portland, and Seattle, Becker & Swan (2019) find the backed BAT was perceived as young and frivolous, which is possibly related to the Valley Girl stereotype that came out of California. Given the Californian stereotypes that are perpetuated with the Elsewhere Shift, these associations come as no surprise. In fact, based on the work of Labov (1963), Eckert (2000), and Zhang (2005), Eckert (2008a: 462) shows that "variables that historically come to distinguish geographic dialects can take on interactional meanings based in local ideolo dgy…Local identity is never an association with a generic locale but with a particular construction of that locale as distinct from some other." In other words, we would not expect the full indexical field of retracted BAT to be the same across all areas of the West. Specifically, the "business professional" persona that is documented in California does not appear to transfer to other areas. However, its associations with California do.[13]

Like any other variable, BAT has an indexical field that includes a variety of meanings, some of which are contradictory. Specifically, Becker & Swan (2019) also found that when listeners tried to guess where the speakers were from, retracted BAT was most correlated with being not from the West Coast, not from California, and possibly from Canada. In other words, the California-ness that some listeners assign to that variable is not universal. Instead, Becker & Swan argue that, to these listeners, BAT retraction may just be a generic, supra-local, and unspecified feature. Additional work is needed on listener perception of the Elsewhere Shift to fully understand these social meanings.

In addition to BAT retraction, BAN-raising has been found to vary sociolinguistically in California. Eckert (2008b) focused on the nasal split in two schools that separated by only a ten minute drive. In Fields Elementary, BAN is raised and in Steps Elementary, BAN is not. The majority of students at Fields are middle-class Anglos while students at Steps come

[13] That the shift occurs in California or indexes California may be reason enough to continue calling it the *California Vowel Shift*. This association may be lost (or perhaps never existed) in areas far from the Pacific Coast though, so I will continue using the term *the Elsewhere Shift*.

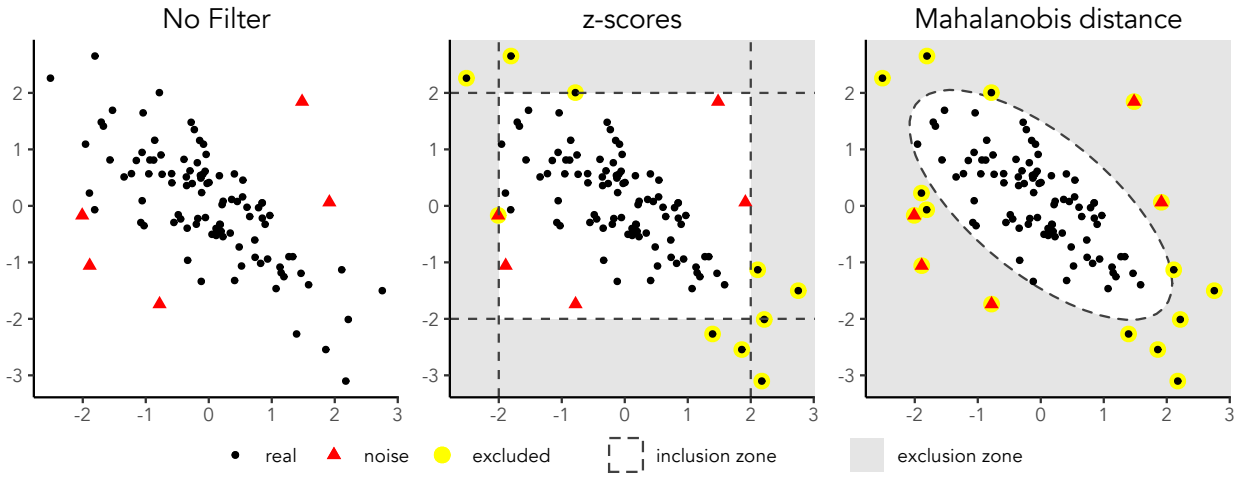


Figure 4.2: A comparison of filtering methods on simulated data.

are high frequency (including discourse markers like *yeah* and *y'know*), many of which were members of a closed class lexical category in English like pronouns and conjunctions.

Automatic methods in forced alignment and formant extraction save time, make it easier to process larger corpora, and are more objective than manual work; however, they come at the expense of data cleanliness. Manual checking and correcting of outliers was not done in this study, largely due to the size of the corpus. Tens of thousands of vowel tokens, each of which contributing 22 formant measurements (two formants at 11 time points), was judged to be too large to check by hand. As such, a method for filtering the data was necessary to exclude out the inevitable outliers in the data that are present because of software errors.

One of the most common methods for automatic detection and exclusion of outliers is to remove observations that have F1 or F2 measurements more than two standard deviations from the mean (a *z*-score method). I argue that this method is inherently flawed because of the unnaturally rectangular distribution it produces. F1 and F2 represent height and backness axes, respectively, but tokens of the same vowel phoneme often fall along distributions that are diagonal to these dimensions. When F1 and F2 are correlated like this, bad tokens may fall within the normal range of formant values but they are still considered good data. Meanwhile, good data on the extremities of the distribution may be excluded.

Another method for detecting outliers is to calculate the Mahalanobis distance from each token to that vowel's mean in a multivariate space (Mahalanobis 1936). This method considers the distribution and correlation between the F1 and F2 measurements such that observations that a human would spot as outliers are often detected as such. Visually, this can be thought of as fitting an ellipse of some size to the data, centered around the mean, and anything outside of that ellipse is considered an outlier.

ments at five points along the duration of the vowel. While this is sufficient to analyze the trajectory of the vowel (Renwick & Stanley 2020), a more detailed view of these dynamic properties is possible when more data is extracted per vowel token. It is possible to modify FAVE to extract any number of tokens per vowel (cf. Warburton 2018), but I have found that this results in duplicate measurements across multiple time points, which is an undesirable result.

The script that I used for formant extraction was one that I wrote in Praat. Similar to the Montreal Forced Aligner, the software had difficulty processing the entire interviews at once, so the script first split the file into more manageable chunks that were approximately five-minutes long, ensuring that the split did not interrupt the informants' speech. For each vowel, measurements were taken at 11 equidistant points along its duration (onset, 10%, 20%, …, 90%, offset). I processed the audio four times, each using a different combination of settings in Praat. I altered the number of formants Praat should look for and the maximum Hz to consider when looking for those formants. The four combinations of settings were 5 formants with a maximum of 4500Hz, 5000Hz, and 5500Hz and 6 formants with a maximum of 5500Hz. This resulted in four versions of the data for each speaker, each produced slightly different settings and resulting in slightly different formant measurements.

The reason for this apparent redundancy was because a single combination of settings usually does not produce the cleanest results from the entire audio corpus. I had men and women in this sample with relatively high and low voices, so even different settings based on the sex of the speaker was not adequate. FAVE handles this issue by extracting four sets of measurements per token and selects the best based on distances from hand-checked measurements (Labov, Rosenfelder & Fruehwald 2013: 34–36). My initial goal was to extract data using many more settings and use what I call the "mistplot" technique (Stanley 2018c; see also Kendall & Vaughn 2015) to determine the best measurements, but constraints on time and computational power prohibited me from using this method in this project. Instead, to determine the best measurements, I simply plotted all data in the F1-F2 space and selected the set that appeared the cleanest per speaker, meaning I chose the setting that produced the fewest obvious gross outliers. For women, the most common setting was using five formants and 5000Hz, with the exception of six women (they all had relatively higher voices) whose best setting was 6000Hz. For the men, the most common setting was five formants and 5000Hz except for the three men whose voices were relatively higher voices and 5500Hz yielded cleaner results. There is admittedly some subjectivity in this selection technique, but I feel that the results were cleaner than applying the same settings for all speakers of the same sex.

4.3.4 Filtering

It is out of the scope of this dissertation to analyze all tokens of all vowels. I filtered out vowels that did not have primary lexical stress. I also removed diphthongs (PRICE, MOUTH, and CHOICE) and syllabic /ɚ/ (NURSE). Finally, I excluded words if they were part of a 181-item list of stop words (see Appendix **??**). Here, stop words were defined as words that

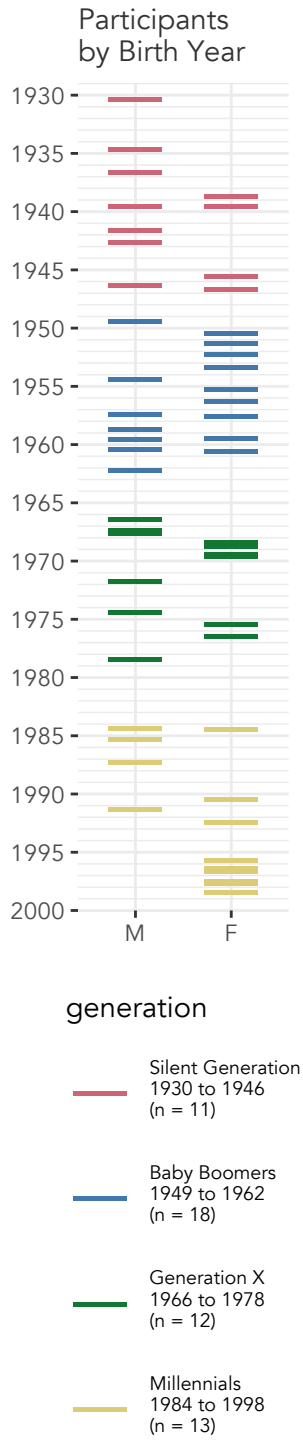


Figure 1.1: Age distribution by sex of the participants in this study. Some jitter has been added to view overlapping speakers.

born in that year, Earl and Elizabeth, fit in culturally more with the Silent Generation than with the rest of the Boomers. Also, the Pew Research Center (Dimock 2018) has recently defined 1996 as the last year of the Millennial generation, and all those born in 1997 or later will be part of the next generation (which has not received an official name, though *Generation Z* and *Post-Millennial* are in circulation). In this sample, the three youngest speakers would fall into this cohort. However, it made little sense to classify those three as a separate generation, so they will be grouped with the Millennials. With these small changes in mind, these nationally recognized generational cohorts will be used as a placeholder for age in the analysis for this study.

For other demographic information, I grouped participants into broad categories. I assigned speakers binary sex based on their outward appearance. Only two participants brought up their ethnicity (one woman was half-Hispanic and another had Native American heritage); I judged all others to be Caucasian American, which is mostly what would be expected for Cowlitz County[33]. For the purposes of this dissertation, sexual orientation is not considered for analysis as it was rarely brought up by any of the participants, the exception being one person who self-identified as a homosexual man. Incidentally, nearly every participant who I judged to be male mentioned a wife or girlfriend and those who I judged to be female mentioned husband or boyfriend. This subjective and oversimplified classification of sex, gender, ethnicity, and sexual orientation admittedly glosses over the nuances in these features of a person's identity; future work in Cowlitz County is needed to see the effects that these factors have on language.

Each participant was assigned a pseudonym. Following Tagliamonte (2006: 51, cf. Schilling 2013: 253–254), I refer to speakers in this dissertation by alternative names rather than numbers because they are easier to remember and give more life to their excepts. I selected names based on the person's age and chose a name that was common during their year of birth as their pseudonym.[34]

4.3 Processing

After the interviews were completed, there are several steps of processing required to produce data in a format ready for quantitative analysis. In this section I describe the methods for transcription, forced alignment, formant extraction, and filtering, normalization, and Bark-transformation that I used in this study.

4.3.1 Transcription

The first step in data processing was to transcribe the audio. There exists software and hardware designed to facilitate transcription, but I found it easiest to simply do it manually in Praat (Boersma & Weenink 1992–2018) for several reasons. First, after doing some preliminary tests with automatic speech-to-text software, such as the one as part of the DARLA suite (Reddy & Stanford 2015), I found that it took longer to correct these transcriptions than it would have to just transcribe it myself. Second, I was most comfortable in Praat than

them is F2. As a male from the Silent Generation, Dale represents what is usually the most linguistically conservative group of speakers in a given community. His speech exhibits characteristics of other more conservative features such as GOOSE and GOAT being relatively back and monophthongal, and little shifting and lowering of the front lax vowels. His low vowels are different, but are admittedly closer together than any other pair of vowels.

Conversely, Jessica, a female Millennial[97] exhibits many innovative Washington features, such as a more monophthongal FACE, fronted and diphthongal back vowels, and retracted front lax vowels, including a remarkably low and diphthongal BAT. Nevertheless, Jessica lacks what is perhaps the most characteristic feature of Western American English: the low back merger. Of her two low back vowels, Jessica's THOUGHT has a more dynamic trajectory, starting further back than LOT, passing it near the midpoint, and ending up more centralized. The two have nearly identical midpoint measurements, but are kept distinct by their trajectories. Her low back vowels are closer than her grandfather's, but are not merged.

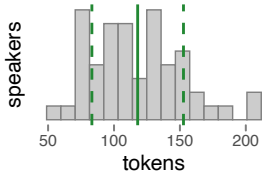
[97] Actually, Jessica is technically in Generation Z because she was born after 1997!

To summarize this section, it appears that the low back merger is *not* widespread in Cowlitz County. By itself, this not an unusual finding for a community in the West. But because the front lax vowels are indeed shifting in this community, the claim that BAT retracts as a result of the low back merger is not supported by this data. In the following sections, I provide a more complete account of each of the low back vowels in Cowlitz County, akin to what was done in the previous two chapters, and then conclude this chapter with some implications given the patterns in this data.

7.4 LOT

In this corpus, there were 6,370 tokens of LOT coming from 604 unique words. The most common of these words were *got*, *lot(s)*, *mom*, *probably*, *job*, *rock*, *gotta*, *top*, *stop*, and *gosh*. There was an average of 118 tokens per speaker[98] and 796 per generation per sex.

[98] Speakers ranged from 58 to 210 tokens with a standard deviation of 34.8:



Though these trajectories have been shown already in Figure 7.1, Figure 7.4 groups them by sex to facilitate change in apparent time (as well as incorporating spectral rate of change via line thickness). In other western communities, the merged low back vowel is raising and retracting in the vowel space, so I expected to find that pattern here. This Figure suggests no such raising or retraction; in fact, the difference between generations was small and somewhat haphazard.

Difference smooths suggest only a few minor shifts from one generation to the next. The Silent women were significantly higher and backer for some of the duration of the vowel than the Baby Boomers (F.17A–B), which is actually opposite of the expected direction of change. There is even less change among the men, the largest difference being between the Silent generation and Generation X at the onset (F.17D–H). For both sexes, the difference between Generation X and the Millennials was not significant (F.17U–X), suggesting that whatever change there may have been in Cowlitz County with LOT, if there even was one, is no longer in progress.

The main takeaway from Figure 7.4 is that there is very little shift in the LOT vowel in this community. These speakers shifted most of the other vowels, either by small degrees

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