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A Dialect Study of Oregon NORMs

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THESIS APPROVAL

The abstract and thesis of Lisa Wittenberg Hillyard for the Master of Arts in Teaching English to Speakers of Other Languages were presented October 22, 2004, and accepted by the thesis committee and the department.

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ABSTRACT

An abstract of the thesis of Lisa Wittenberg Hillyard for the Masters in Arts in Teaching English to Speakers of Other Languages presented October 22, 2004.

Title: A Dialect Study of Oregon NORMs

The pioneers and settlers of the Oregon Territory were not of one ilk. They came from various places and brought their separate speech patterns with them. This study sought to identify which major North American English dialect was present in the first half of the 20th century in Oregon. Analysis relied on the descriptions for the Southern, Northern, Midlands, and Western dialects. Some dialect features have acoustic measurements attached to their descriptions, and others do not. The analytical process was based on acoustic measurements for vowel classes and individual tokens, as well as global observations about the place of a particular class means within the larger vowel system. Findings indicate weak presence of Southern and Western speech patterns. The Northern and Midlands dialects were present, but they were not advanced. No single dialect predominated. Part of the process attempted to find a dialect diagnosis to help determine a one-step indicator as to which dialect may be present. Observations implied that the front/back relation of /e/ and /o/ is a reliable dialect indicator.

A DIALECT STUDY OF OREGON NORMS

by

LISA WITTENBERG HILLYARD

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

MASTER OF ARTS
in
TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES

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2004

DEDICATION

To my husband, Gerry Hillyard: whose two-year degree earns him enough money to finance my graduate degree; whose willingness to participate in the data collection process strengthened the design by giving this work much greater access to a closed-community of speakers; whose confidence in my abilities sustained me through apparent insurmountable obstacles; whose ability to take on primary child care activities allowed me the luxury of time to develop the final product; and finally, whose shoulders are the giant ones I have stood upon; this project was made possible only by him. Love Boo.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

The Christian story of the Tower of Babel offers an early explanation for why there are so many different languages around the world. This story, however, does not account for differences within a particular language. These differences are the mostly unconscious acts of speakers, and, of course, the subject matter of dialectologists and other linguists. No one would deny that languages change over time, and dialectal variation is the stuff out of which language change arises. Language change is also studied by linguists and confronted by high school sophomores encountering the writings of Chaucer, Shakespeare, or even Mark Twain. Both synchronic and diachronic variations are facts of life.

Ample evidence of language variation can be found in all areas of language – discourse, syntax, the lexicon, and morphology. Less overt yet still discernible are differences in the sounds of language. The central issue about how languages change has altered substantially from the 19th century theories. Theorists posited that the entity of language had an autonomous mechanism that motivated sound change, and there were no exceptions to the sound change process. Something within language, itself, was responsible for variation, which was outside the awareness or control of the speaker. The theories disconnected the speaker from the spoken. Language change is now seen as embedded in synchronic variation (Weinrich, Labov & Herzog; 1968, cf. McMahon, 1994, and Keller, 1994).

Fridland (1998) states, "For the Neogrammarian, the phoneme is the fundamental unit of change. For the lexical diffusionist, the word is the fundamental unit of change" (p. 7). My work is aligned with the Neogrammarian position that change begins with the phoneme.

Vowels are much more susceptible to variation than consonants, and one way to interpret the systematic shifts of vowels is through "chain shifts" (Labov, 1994). A chain shift sees the movement of two vowels as causally inter-related. If one vowel leaves a position, that position is open or available for another, usually adjacent vowel. This type of chain shift is called a "pull chain." The exiting vowel "pulls" the entering vowel into the open space. The other type of chain shift is a "push chain." Here one vowel encroaches on another vowel's space, thus pushing the second vowel out of its original place. An example of this vowel shifting may be seen in Figure 1 which depicts the Great Vowel Shift of English first reported on by Jesperson (1949). As can be seen in Figure 1, every vowel movement is responsible for a subsequent movement of other vowels.

Step 1: i and u drop and become əɪ and əʊ
Step 2: e and o move up, becoming i and u
Step 3: a moves forward to æ
Step 4: ɛ becomes e, ɔ becomes o
Step 5: æ moves up to ɛ
Step 6: e moves up to i
A new e was created in Step 4; that e moves up to i
Step 7: ɛ moves up to e
The new ɛ created in Step 5 now moves up
Step 8: əɪ and əʊ drop to aɪ and aʊ

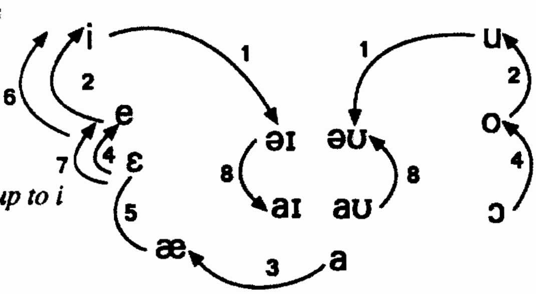


Figure 1. The great vowel shift. (Menzer, 2000).

Before the advent of recording devices, the study of sound change relied on texts containing homophones and words that rhymed. Later studies depended on the good ear of the observer and the ability of that observer to document what was heard in real time. Modern studies have the advantage of high-quality recordings and digital analysis. Using such means, this project documents the dialect of non-mobile, older, rural males (NORMs) from rural communities outside of Portland, Oregon.

Before I moved here to the Pacific Northwest, I lived in Miami, Florida, for 30 years. I traveled extensively through the South and was exposed to a lot of varieties of Southern speech in the United States. I began my training with dialects while an undergraduate. Within the subject of Theatre Arts, I was trained in the field of vocal coaching. I performed in this post for several plays. I helped actors "lose" their native accent and/or obtain a dialect of English representative of the speech of their specific character. The training in this field was supplemented by undergraduate course work in linguistics with classes such as the History of English and Phonetics. At the post-baccalaureate stage of my education, I enrolled in a pre-requisite program for a graduate degree in Speech and Language Pathology. This specialized training gave me a more advanced knowledge of the anatomical structure used in speech production and the interplay between cognitive processes of speech and motor skills necessary for the production of speech.

When I moved to Portland, Oregon, I knew better than to believe that the speech community was devoid of a regional accent. As I became introduced to community members in the rural locale where I lived, I kept hearing what I thought was a southern accent. The pronunciation of the words caught and cot were different. Perceptually, one of these low-back vowels was being elongated, and, to me, the sound seemed to approach a pronunciation similar to a southern drawl. Another distinct feature I heard was rounding of the vowel in such words as log and dog, especially among older speakers. Similarly, in words with [o] before [r] as in forty, the [r] completely disappears and with the rounding of [o], the vowel approaches a diphthongal quality similar to the vowel in boat.

Because of these striking features, I thought I would like to investigate the Oregon dialect more systematically. I began to investigate the dialect spoken in Oregon and found that not much linguistic work has been done in the Pacific Northwest. Before 1965, Carroll Reed attempted to document regional speech features in Oregon, Montana, Washington, and Idaho (Reed, 1952, 1956, 1957, 1958, 1961). Between 1965 and 1983, only five articles were published on Northwest dialects, and between 1984 and 1992 no articles were published on the topic (Schneider, 1984, 1993). Since then, six speakers from Oregon have been included in the Telephone Survey (TELSUR) project (Labov, 2002). The Portland Dialect Survey (PDS, 2003) has looked at what is happening in Portland, Oregon.

This study constitutes a step toward documenting a much understudied area. The express purpose of this project is to analyze speech representative of that spoken in the first half of the 20th century. The central question is whether any of the speech features present in the data indicate a southern pattern of speech. The central claim of this project is that the vowel system of Oregon NORMs is undergoing changes similar to those of the Southern Shift (Labov, 2002) and other observed dialect features of South (Feagin, 1986; Fridland, 1998, 2000; Labov, 2002). The specific research questions for this project are:

1. What are the vowel systems of Oregon NORMs?
2. Do those vowel systems conform to a southern pattern?
3. If so, how advanced (in terms of the Southern Shift) are the vowel systems?
4. If not, what can be said about the Oregon NORMs' vowel systems?

To answer Question 1, I analyze the vowels of Oregon speakers against the reported vowels of southern speakers. To answer the next three questions, I compare the data to reported findings elsewhere. The second thrust of diagnosing the direction in which the dialect may be heading has not been attempted by any other study.

CHAPTER 2: LITERATURE REVIEW

The historical discussion in this chapter reviews census records identifying the origins of the earliest Oregon settlers. Questions arise as to the discrepancies observed within the 19th century census records. Justifications for the reasonableness of considering the presence of a Southern dialect and for the appropriateness of subject demographic also occur in this chapter.

Linguistic data are reviewed for the regions of origins of the settlers. These data center on the historical studies of the lexicon and the current dialect work based on phonological variation. Also considered are studies that have included speech data collected from Oregon. The details of the national dialects observed elsewhere in the United States are provided as well.

2.1 SETTLEMENT HISTORY

Puget Sound was the first northwest area to be settled by English speakers from Britain in 1828, and British speech patterns have persisted. Likewise, dialect features of the early trappers and traders from New England can be found along Oregon's coast (Wolfram & Schilling-Estes, 1998). The significance of these dialect patterns is outside the focus of the thesis. Nonetheless, these patterns are important in illustrating the persistence of eastern dialect features in the Northwest.

The first successful American settlement in Oregon was in 1843. The dialect(s) of the descendants of the English-speaking settlers who arrived after that date can be considered as the source for dialect features present in my subjects. The area that I focused on is the mid and northern Willamette Valley.

It is hypothesized here that the vowels of speakers native to Oregon can be identified as part of the Southern Shift (SS) (Labov, 1994). Speech features present in the dialect of the U.S. American South, which are not represented in the SS model, are also useful for comparison (Labov, 1994, 2002). The discussion is expanded to include non-southern features if the speakers do not adhere to southern features.

One reason for adopting the "southern hypothesis" begins with a consideration of settlement patterns (i.e., where the Oregon settlers came from): Where was the population who migrated to and settled in the Oregon Territory originally from? "If pronunciation remains so variegated in older, longer established colonial areas [New England], what are the linguistic results of their proliferation in areas of eventual resettlement?" (Reed, 1971, p. 116). In other words, are the regional dialects in the western states those of people from "back east"?

The resounding answer is, No! Current data reported in the Atlas of North American English (ANAE) describe the West as distinct from other dialect regions (Labov, 2002). "The West" is its own dialect (see Figure 2.)

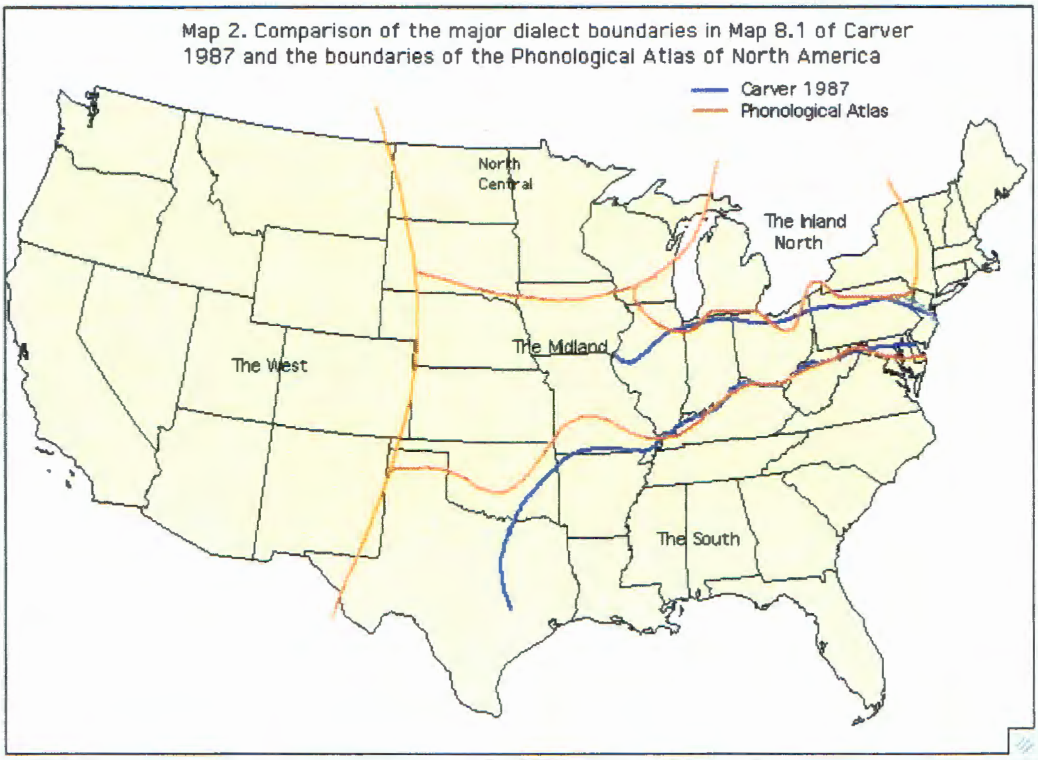


Figure 2. The West. (Labov, Ashe, & Boberg, 1997).

Perhaps Reed's query about "proliferation" was the product of the historical period he was working in, but the basic thrust of his question is appropriate. What is the linguistic result of having such a variegated miscellany of speakers?

Following Conn (2002), a parallelism can be made about the current emerging West dialect and the process of koineization (Kerswill & Williams, 2000).

Siegel (1985) describes four stages in the developmental continuum of a koine: Pre-koine, stabilization, expanded, and nativized. My discussion is limited to the pre-koine and stabilization terms. In the pre-koine stage, several varieties of speech are in contact with one another. This mixing of varieties is the linguistic reality of the pioneers and settlers of the Oregon Territory.

Stabilization occurs with a distillation of new forms. The West as a dialect region is a type of hybrid from multiple and various dialects. The current dialect of the West is a newly forming one (Labov, 2002). What are the linguistic features of the input? To answer this question, we must consider where the pioneers and later settlers originated.

According to Reed (1956) a majority of the Oregon Trail settlers were from Missouri, while Dodds (1977) maintains that a significant number of early Oregon settlers were from the Ohio Valley region. Carver (1989) states: "In 1843 the first large group of settlers... were from the Ohio Valley states and Tennessee" (p. 242). Dicken and Dicken (1979) provide data from the 1850 Census that support Carver's claim that a number of the first group of settlers came from Tennessee. A view of 19th and 20th century census records reveals some curious inconsistencies.

A review of the earliest Census Records for Oregon indicates that the overwhelming majority of the earliest settlers where white (see Table 1). Reported figures also indicate that there is a consistent presence of foreign-born people throughout Oregon's early development. Future dialect studies of Oregon may want to consider "traces of Finnish around Astoria, Russian in Woodburn, German in Mt. Angel, Aurora and Silverton, or Basque in the southeastern part of the state, Jordan Valley in particular" (Juengling, 1998, p. 127.) However, the foreign-born influence is not limited to Europeans. There is a steady presence of a Chinese-born population as well. For the present discussion, I will trace the origins of the native-born (i.e., born in the USA) population of Oregon in order to evaluate the dialects of Oregon.

Table 1: *U.S. Census data for Oregon: 1860-1900*

Census Year	Total Population	Total Number of Native-Born White Persons	Total Number of Foreign-Born White Persons
1860	52,294	47,219 (90%)	5,118 (9.7%)
		Total Number of Native-Born Persons	Total Number of Foreign-Born Persons
1870	90,923	79,323 (87%)	11,600 (13%)
1880	174,768	144,265 (83%)	30,503 (17%)
1890	313,767	256,450* (82%)	57,317* (18%)
1900	413,536	347,788* (84%)	65,748* (16%)

*Aggregate figures for data based on sum of male and female categories.
(Geospatial and Statistical Data Center, 2004.)

The 1860 census data do not provide place-of-birth records. The 1870 and 1880 census records do. In the 1870 Oregon data, there are six places of birth within the United States that people living in Oregon reported: Oregon, Illinois, Indiana, Iowa, Missouri, and Ohio. Those same six places of births were also present in the 1880 Census (see Table 2).

Table 2: *Place of birth population figures for native-born people in Oregon*

	Born in State or Territory	Born in Illinois	Born in Indiana	Born in Iowa	Born in Missouri	Born in Ohio
1870 population	37,155	4,722	3,451	3,695	7,061	4,031
1880 population	67,942	6,969	5,055	7,804	10, 754	6,201

(Geospatial and Statistical Data Center, 2004.)

In the 1880 census, three other eastern states appear as places of birth for the Oregon population: Kentucky, New York, and Pennsylvania. Note that there is no evidence in these census records that show a Tennessean presence. Also, documentation of a northern migration from California into Oregon adds to the western-born population (see Table 3).

Table 3: *Other places of birth in 1880 Census records*

	Born in California	Born in Kentucky	Born in New York	Born in Pennsylvania
1880 population	6,011	2,814	5,443	3,342

(Geospatial and Statistical Data Center, 2004.)

On closer inspection, however, there are discrepancies in the census records. The numbers reported for Places of Birth do not equal the number for Total Number of Native-Born Persons (see Table 4). This observation is pertinent because one cannot simply assume that all residents came from the states reported in the census. Other points of origin may not be accounted for in the available data.

Table 4: *Comparison of percentages of places of birth for native-born Oregon residents*

	Born in State or Territory	Born in IA, ID, IL, MO, or OH	Unaccounted for Native-Born Place of Birth
1870 % of total Native-Born Population (*N* = 79,323)	46.84	28.94	25.25
	Born in State or Territory or California	Born in IA, ID, IL, KY, MO, NY, OH, or PA	
1880 % of total Native-Born Population (*N* = 144,265)	51.26	33.53	15.20

(Geospatial and Statistical Data Center, 2004.)

In the 1870 record, one-quarter of the native-born population is unaccounted for. There is an improvement in the 1880 record: only 15% of the native-born Oregon residents are unaccounted for. Could the early Tennesseans be unaccounted for? Although a finer level of analysis may find that some of the missing numbers are Native Americans or African-Americans, the census data show no state of origin has a clear *majority*, although the states of Illinois, Indiana, Iowa, Missouri, and Ohio are predominant. The question arises as to where some of the settlers came from and what linguistic features were crucial.

2.2 EARLIER OREGON DIALECT STUDIES: THE LEXICON

Although variation may characterize all parts of the grammar, the discussion in this chapter is limited to examining lexical and phonological evidence. Lexical evidence comes from the dialect(s) of the early Oregon settlers.

Word lists for the Pacific Northwest appear as early as 1917. Lehman (1966) notes not all of the items were used generally, but are samples of "college students and teachers, of miners and lumbermen and farmers and 'sodysquirts,' as well as the idiom of Mrs. Grundy, her preacher and her tradesmen" (p. 22). The identification of sources includes locations from Idaho to coastal Washington. Oregon is explicitly listed twice in the list. Sometimes the author lists an item as general, and the author's intent of listing an item as general is unclear as to whether or not it includes Oregonian speech.

The collection source for Garrett's (1966) word list, also from 1917, is not stated, but samples came from newspapers and specialty publications (e.g., *Oregon Hop Industry* and *Some Oregon Wild Flowers*) as well as direct observations by the author in Washington and Oregon. Logging terms appear, identified as such.

At the turn of the 20th century, the American Dialect Society sought to map all dialects of United States. Oregon data, however, were not included in the early atlas projects. Kurath (1949) first identified three separate dialect regions for the United States on the basis of materials gathered for the American Dialect Society's project to create linguistic atlases. He named the dialect areas "Northern," "Southern," and "Midland." The states from which the Oregon Trail settlers originated have items from all three dialect regions. In order to consider which lexical features are prominent in Oregon, we must first consider what lexical features are relevant.

Reed's (1957) first observation about Oregon lexical features was that Oregon "favors distinctly midland variants" (p. 86). The Midland dialect region cuts across Ohio, Illinois, Indiana, and part of Missouri. Given the discussion of the census records above, it is not surprising that Reed identified Midland forms because a significant number, if not a majority, of early Oregon settlers were from the Midland dialect region.

Reed's observation was repeated throughout his career without alteration (1958, 1961, 1967, 1971). According to Reed (1957) Oregon "favors distinctly midland variants" (p. 86), "Oregon, with its decided preference for midland terms… " (p. 87), and "Oregon shows clearly its midland origins in almost all areas" (p. 88). Therefore, when secondary sources report on the status of the Pacific Northwest dialect, Oregon is said to have a preference for Midland forms.

For example, Carver (1989) echoes Reed: "…Oregon has a decided preference for 'Midland' forms…" (p. 242). Similarly, Metcalf (1984) reports that the Pacific Coast states contain a blend of characteristics "of the Northern and Midlands regions back east, a blend that shows up more Midlands in Oregon" (pp. 150-151). Metcalf offers three lexical items that can be traced to Oregon: "dragonflies are known as snake feeders or snake doctors, andirons as dog irons, barnyards as barn lots, all Midland terms" (p. 151). Metcalf's examples are, in fact, from Reed's original data (see Figure 3).

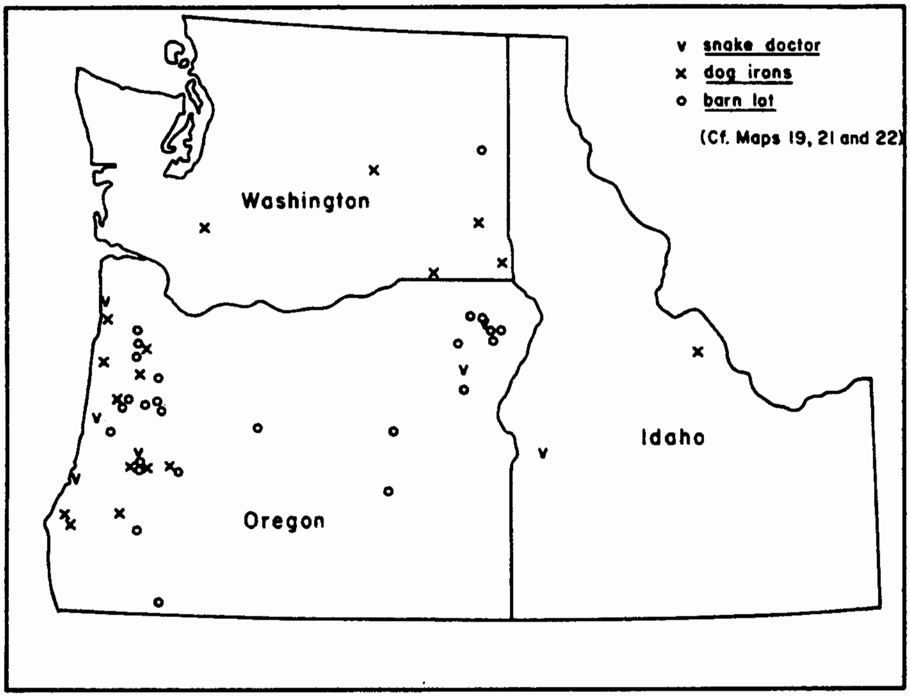


Figure 3. Examples of Midland terms in the West. (Reed, 1967, p. 127).

Figure 3 shows 41 informants across Oregon. Unfortunately, the surviving Reed data do not contain any further information on these speakers other than that represented in the map above. Reed's data for Oregon is apparently lost (D. Carlson, personal communication, 1998). Reed was mapping the dialect, and his sample gathering came from Linguistic Atlas work sheets (Metcalf, 1984).

From this review of available information on the Oregon lexicon, most scholars have relied on the limited and rather sparse investigations of Reed to forward the conclusion that Oregon is simply an extension of the Midland dialect.

2.3 THE COMPLEXITY OF THE MIDLAND DIALECT

The problem with the claim that Oregon features Midland variants is that the Midland dialect is anything but a clearly demarcated set of isoglosses. Davis and Houck (1992) offer an alternative analysis of the Midland region, positing that the area Kurath named Midland cannot be labeled "anything other than a transition area" (p. 68) located between the north and south.

Carver (1989), who created his materials from Kurath's original data, provides a map (see Figure 4) based on the secondary boundaries of three major dialect layers: The North, South I, and Midlands. This map serves to highlight the complexity of the dialect of origin of the Oregon settlers. The conglomeration of layers represents a highly mixed dialect region.

Carver (1989) offers a brief acknowledgement of the overlapping "layers". In describing the "Lower North" layer, Carver speaks of the complexity of the region.

> On the one hand, the Lower North is strongly unified, and on the other, the edges and boundaries of several dialect layers overlap here, cutting it into a patchwork of apparent disorder. ...This relatively unusual jumble of boundaries and isoglosses indicates that the Lower North is a broad and complex transitional zone. Caught between the strong opposing pulls of the cultures to the north and south, the transition takes some two hundred miles to complete. It is through the heart of the region that the linguistic divide cuts, though it is by no means a sharply defined line. (Carver, 1989, p. 193)

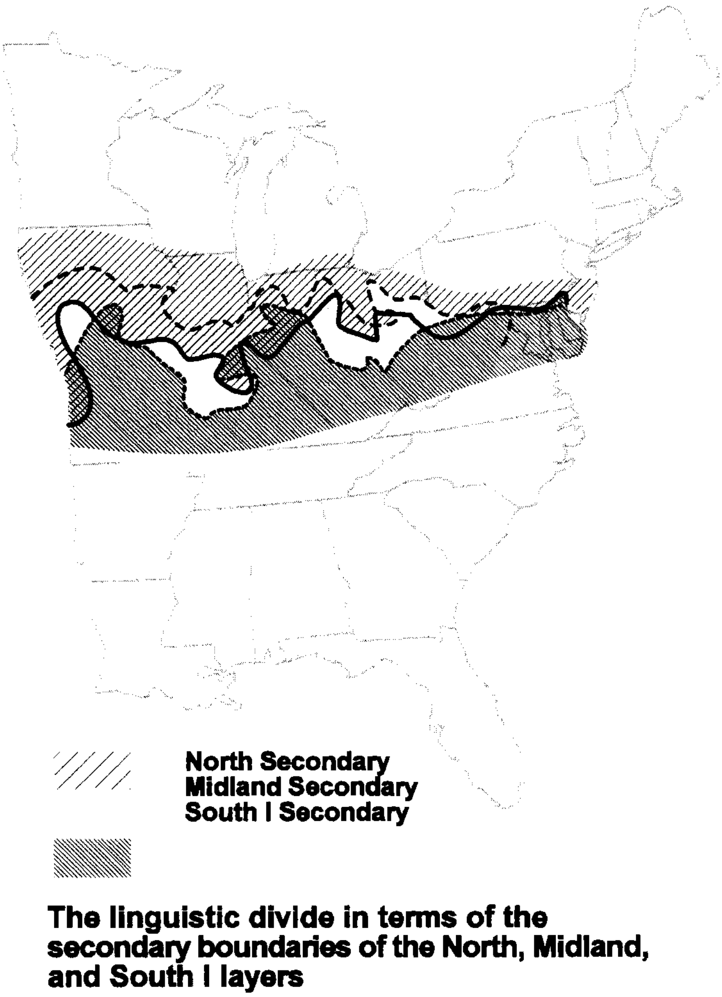


Figure 4. The complexity of the Midlands lexicon (Carver, 1989).

Thus, the Midland dialect as a source for Oregon speech offers no clear lexicon for comparison and evaluation. The dialect situation of Oregon is similar to that in another western state, Colorado, and perhaps others. The Colorado dialects "can be best explained by the emigrations of settlers from areas in which there was already a considerable dialect mixture" (Hankey, 1960, p. 3 based on Jackson, 1956). Indeed, Wolfram and Schilling-Estes (1998) concur:

> ...the sharp [dialect] boundaries which were established in the seventeenth and eighteenth centuries and documented in the early twentieth become increasingly blurred as we move farther from the original centers of settlement in both space and time (p. 113).

Since no clear lexical evidence can document the Midland origins of the Oregon settlers, lexical data is not relied upon for the current project. The next step is to consider phonological Southern dialect features in Oregon.

2.4 THE SOUTHERNNESS OF OREGON

The focal point of this section is the origins of the Oregon settlers. The discussion below will explain my reasoning for believing that the older state of the Oregon dialect follows Southern rather than other patterns.

The pronunciation of "log" and "logging" samples from a 1997 pilot study support a position that Oregon NORMs participate in the Southern Shift. The pilot study samples are very rounded perceptually. Hartman (cited in Frazer, 1993, p. 11) documents the same sound change in Hocking County, Ohio. The sample "fog" is produced with a low back rounded vowel and is said to be an example of the Southern Shift.

Other evidence suggesting that there might be features of the South Shift in Oregon comes from Murray (1993). Murray performed a dialect and sociolinguistic study of St. Louis. His comparison of St. Louis with the known dialectal patterns of the eastern United States shows that the dialect of St. Louis "strongly favors the North and North Midlands dialect areas rather than the South or South Midlands" (p. 133). However, Murray discusses the imbalance of variation among his informants: “members of the upper class, females, and young informants tend to use Northern and North Midland forms; members of the lower class, males, and elderly informants…tend to use Southern and South Midland forms” (p. 135). This observation about older speakers is relevant to my inquiry about the older dialects of Oregon since some Oregon Trail settlers emigrated from the St. Louis region.

Frazer (1993) questions the northern boundaries of the southern-labeled isoglosses offered in the Linguistic Atlas of the North Central States (LANCS), and Carver’s (1989) isogloss of secondary boundaries entitled the South II layer (pp. 100-103). Both of these northern boundaries occur at the northern point of the Ohio River. Frazer reports that, “A common experience for residents of central Illinois is to be told they have a ‘southern accent’” (p. 6).

The TELSUR project reportedly collected data on six speakers for Oregon. However, data from all six Oregon speakers are not present on the various maps published in most recent TELSUR report. (Labov, 2002) What are the features of the two TELSUR speakers that do not align with the larger pattern emerging for the West?

Based on the above-cited evidence for southern features in Ohio, Missouri, and Illinois, I believe there is a reasonable case to be made for a possible southern influence, since the eventual settlers of Oregon originated from those areas. This study will evaluate whether any southern traces are present in the speech of Oregon NORMs.

In the next section, phonological data are reviewed for their relevance to the creation of a diagnostic tool to define the speech patterns present in Oregon NORMs and the results of which are used to evaluate the "Southern hypothesis".

2.5 PHONOLOGICAL EVIDENCE

The discussion of phonological evidence has two similar, yet distinct foci. The first is the analytical frameworks of Labov, and the second topic concerns observations about the Atlas of North American English (ANAE), not features discussed by Labov. First, the theoretical models are discussed, followed by the discrete features.

2.5.1 Theoretical Models of Phonological Transitions

Before the discussion continues, a note must be made about the representation for the vowels used in this project. I have adopted the system of vowel notation created by Labov referring to historical vowel classes. The system of Labov's Vowel Classes is also useful due to its reliance on ASCII script which is universally available on standard keyboards (see Table 5).

Table 5: *Vowel notational systems*

IPA symbol	Sample word	Labov's vowel classes	Plotnik generated subsets	Description: Plotnik designations
ɪ	bit	/i/		
			/iy/C	Checked syllable
i	beet	/iy/	/iy/F	Free syllable and finally
			/iy/R	Before /r/
ɛ	bet	/e/	/ey/R	/e/ Before /r/
ej	bait	/ey/	/ey/C	Checked syllable
			/ey/F	Free syllable and finally
æ	bat	/ae/		
ʌ	but	/^/		
aj	bye	/ay/	/ay/V	Before voiced sounds and finally
			/ay/O	Before voiceless sounds
aw	cow	/aw/		
ʊ	book	/u/		
			K/uw/	Preceded by non-coronal
u	boot	/uw/	T/uw/	Preceded by coronal
			/uw/R	Before /r/
ju	few	/iw/		
			/ow/C	Checked syllable
ow	boat	/ow/	/ow/F	Free syllable and finally
			/ow/R	Before /r/
ɒ	father	/ah/	/ah/R	Before /r/
ɑ	cot	/o/		
ɔ	caught	/oh/	/oh/R	Before /r/
oj	join	/oy/		
ɚ	bird	/*h/R		

In the 1990s, Labov proposed three dialects of modern English observed in North America which are characterized by certain ongoing developments: the

Southern Shift (SS); the Northern Cities Shift (NCS); and the Third Dialect (TD) (Labov, 1991, 1994). The SS is signaled by the deletion of the /ay/ glide where the vowel nucleus is slightly lengthened and the vowel is fronted. The second stage is the reversal of the peripheral and non-peripheral front vowels. The vowels, represented by the notational system offered on Table 5 above, /e/ and /i/ swap places with /ey/ and /iy/, respectively. The process is shown in Figure 5.

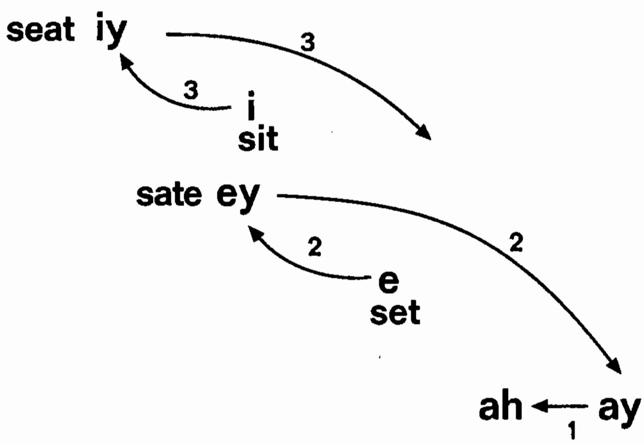


Figure 5. Southern shift (Labov, 2002).

The NCS is initiated with the merger of /o/ (as in hot) and /ah/ (as in spa). Also, the low-front /ae/ class raises and fronts into peripheral position. The low-back vowel, /o/, is then fronted, allowing /oh/ to lower. The /e/ becomes back occupying the phonetic space of the /^/ (wedge) class which follows a back trajectory to finally occupy the former /oh/ place (see Figure 6).

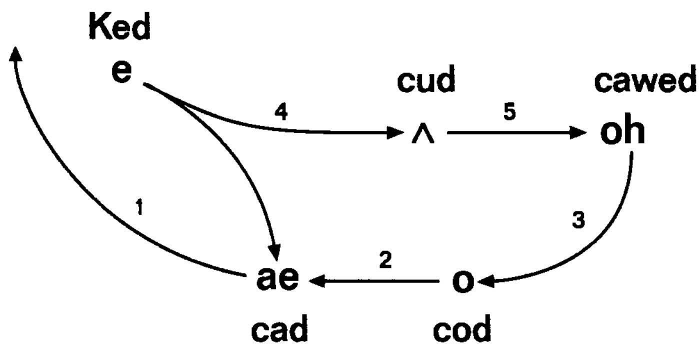


Figure 6. The Northern cities shift (Labov, 2002).

Quantitative measurement of the progress of the NCS is listed below.

- /ae/ is raised with an F1 of less than 700 Hz.
- /o/ (which has already merged with /ah/) is fronted with an F2 greater than 1550 Hz.

To determine the degree of advancement of the NCS, the front-back places of /e/ and /o/ are considered. The NCS is in a non-advanced stage if:

- /e/ is fronted with an F2 of 1825 Hz, and
- /o/ is backed with an F2 of less than 1300.
- The NCS is advanced if:
- /e/ and /o/ differentiation of F2 (F2 /e/ - F2 /o/) is less than 375 Hz (Labov, 2002).

The Third Dialect (TD) originally proposed by Labov (1991) appears to have been more finely characterized as the definition of the West (described in the next section), the Canadian Shift, and the Californian Shift (both described immediately below).

The Canadian Shift was first described by Clarke, Elms, and Youssef (1996) Labov (2002) represents the Canadian Shift (see Figure 7) in the same terms as the SS and NCS above by identifying the chain shifts.

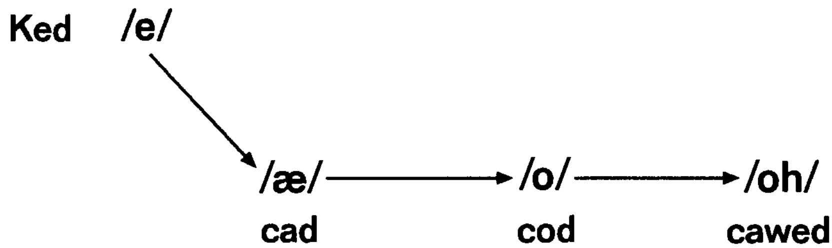


Figure 7: The Canadian shift (Labov, 2002).

The merger of the low-back vowels is present. The vowel /o/ transitions back to the /oh/ place. The low-front /ae/ class becomes back, followed by the lowering and backing of /e/.

A fourth description of a chain-shift is reported for the dialect of the west – the California Shift (Luthin, 1987). The overall lowering of the front vowels and the general backing of the low-front vowel are similar to the description of the Canadian Shift. The California Shift also includes a fronting of the back vowels (see Figure 8).

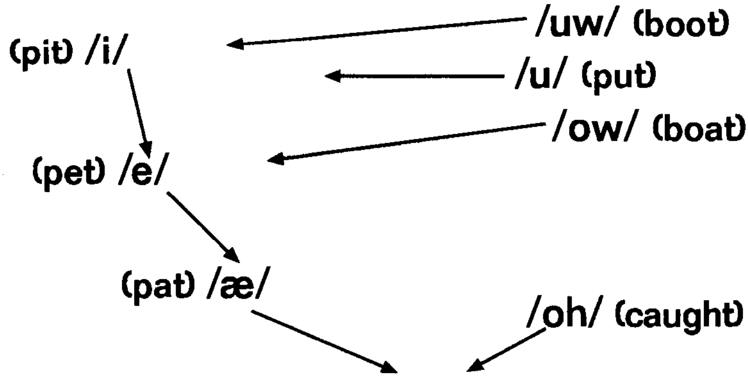


Figure 8: The California shift (Luthin, 1987, as in Conn, 2002).

Due to the similarity to the front vowel movements in the California and Canadian Shifts and to the distinction of reported data in the back sector, I have combined the two models into one for my study (see Figure 9).

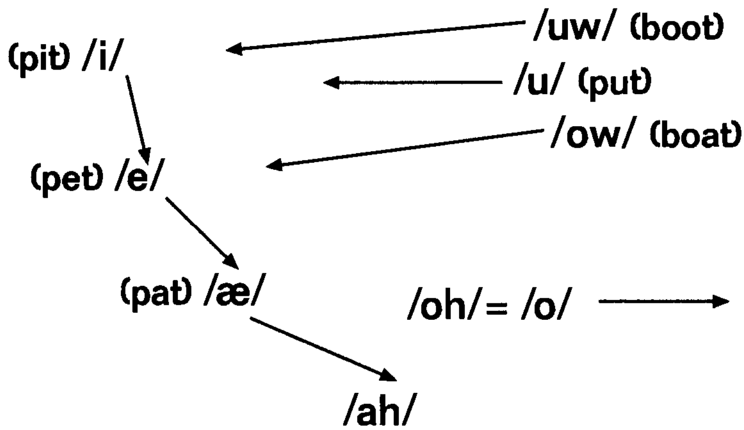


Figure 9: Combined Canadian/Californian shift (Labov, 2002; Luthin, 1987; Conn, 2002).

The quantitative features follow:

- /o/ backing is indicated by an F2 of less than 1275 Hz (Labov, 2002).
- /ae/ backing is indicated by an F2 of less than 1825 Hz (Labov, 2002).
- /e/ is considered lowered with an F1 of greater than 650 Hz (Labov, 2002).
- /u/ and K/uw/ fronting are greater than 1400 Hz (Conn, 2002).

For /ow/ fronting, the data fron the ANAE are used.

- /ow/ is fronted by degree based on F2 (see Figure 10).

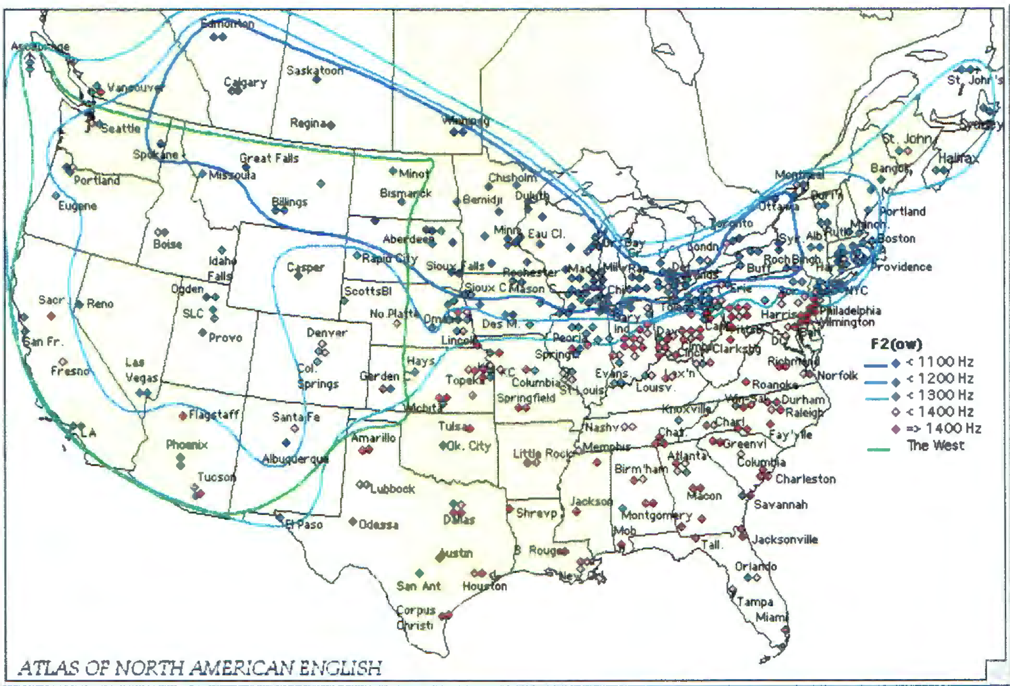


Figure 10. Front/back place of /ow/ (Labov, 2002).

The measurements above can be used to determine where a speech pattern falls. The Southern Shift has no available quantitative measurements and must therefore be considered holistically and relatively to a specific speech pattern. Although the consideration of the Southern Shift may be expressed in less precise terms than the quantitative data available for the other shift models, I maintain that the reliance on the Southern Shift as a basis for determining the presence of southern patterns is dependable. The vowel system pattern(s) present in the Southern Shift are unique to southern speech and are not similar to other patterns discussed. The general observation and description of patterns observed in subject vowel systems will exhibit pattern(s) similar to the ones expressed in the Southern Shift or not.

The patterns in vowel systems discussed above offer very clear features about the shifts they represent. However, they are not exhaustive. There are other features that fall outside of the above patterns and are used to determine dialect boundaries as well.

2.5.2 Definitions of Regional Dialect Features

Interestingly, the above shift patterns do not overtly address the dialect present in the Midlands region —the place of origin for many Oregon settlers. But, are there other data that define a Midlands region not represented by the models above?

Analysis of more recent data gathered for the Telephone Survey (TELSUR) project has refined the dialect descriptions of North America. These findings are detailed with the Atlas of North American English (ANAE) (Labov, 2002). Features of the Midland region are listed below.

- /ow/ is fronted by an F2 of greater than 1200 Hz.
- /e/ and /o/ are not equally high. F2/e/ - F2/o/ = >375 Hz.
- /o/ and /oh/ merger is not complete. The merger is in transition.
- /ae/ is not split.
- /ay/ maintains its diphthong before obstruents. Glide deletion occurs before resonants.
- /aw/ is generally fronted (Labov, 2002)

Now that we have some sort of definition of a dialect from the Midlands, it must be noted that the dialect in Oregon, and the west generally, is simply not an expression of the Midland features.

In the ANAE, a western dialect, where Oregon is included, is defined by the following features:

- Complete or nearly complete low back merger: /o/ and /oh/ are identical either in production or perception.
- 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/.

- No Canadian raising of /ay/ before voiceless segments. The difference between the F1 of /ay/ before voiced and voiceless segments is not more than 25 Hz.
- No Canadian shift. This applies most strictly to /i/ and /ae/. Western /o/, being merged with /oh/, is often not differentiated from Canadian /o ~ oh/ (Labov, 2002).

Features for the North not captured in the NCS model include the following:

- /ae/ splits.
- /oh/ raises with an F1 value of less than 700 Hz (Labov, 2002).

One feature present in the dialect of the South that is noteworthy is the merger of /i/ and /e/ before nasals (see Figure 11). The pre-nasal merger is clearly evident by the red dots which are predominately located in the southern U.S. Note there is one red dot placed in Oregon as well.

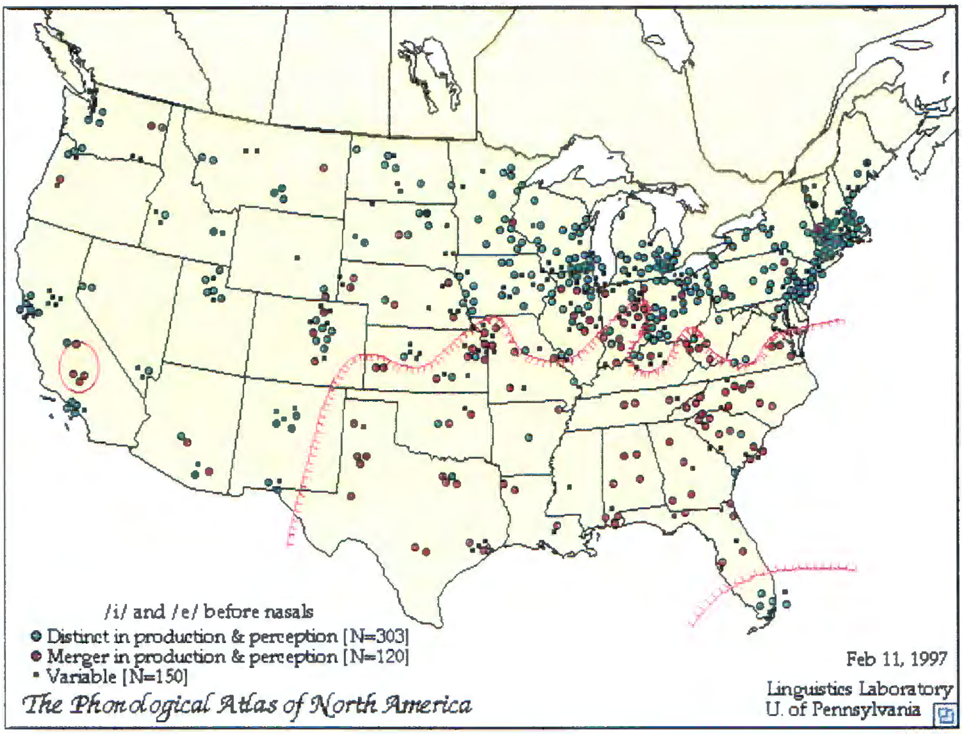


Figure 11. The merger of /i/ and /e/ before nasals: Invariant responses (Labov, 1996).

The /i/ and /e/ merger before nasals is thus included as a characteristic of the Southern dialect in this study.

The fronting of the back vowels of /ow/ and /aw/ is the most salient phonological feature that separates the North from both the Midland and South. If this fronting is absent, then the dialect is North. The TELSUR data for Oregon indicate that /ow/ is not fronted (see Figure 10 above). Therefore, Oregon gets aligned with the North dialect in the ANAE and thus appears to exhibit at least one Northern feature (see Figure 7).

Ward (2003) found relatively advanced fronting of /ow/ among his young working class women residing in Portland, Oregon. His findings suggest a potential participation in the Canadian/Californian Shift. However an advanced fronting of /ow/ is problematic for maintaining Labov's (2002) placement of Oregon on the North's dialect branch since it allows for only slight fronting of /ow/ and /aw/.

Labov's (2002) classification of Oregonians using a Northern dialect may be justifiable for urban speakers, but not so for rural speakers. Speaking of the overall view of the North American dialect that the above model presents; Labov states, "It does not include many rural and local dialects that are a distinctive and important part of the linguistic ecology of North America" (Labov, 2002, Figure 11.9, p. 5). See Figure 12.

I posit that my subjects will exhibit fronting of both /ow/ and /aw/, which would initially place them off the Northern branch and into the Midland and/or South branch of the ANAE's dialect tree.

I also anticipate that the low-back merger is not present in my subjects, which would mean that their speech does not align with descriptions for the West or CC Shift.

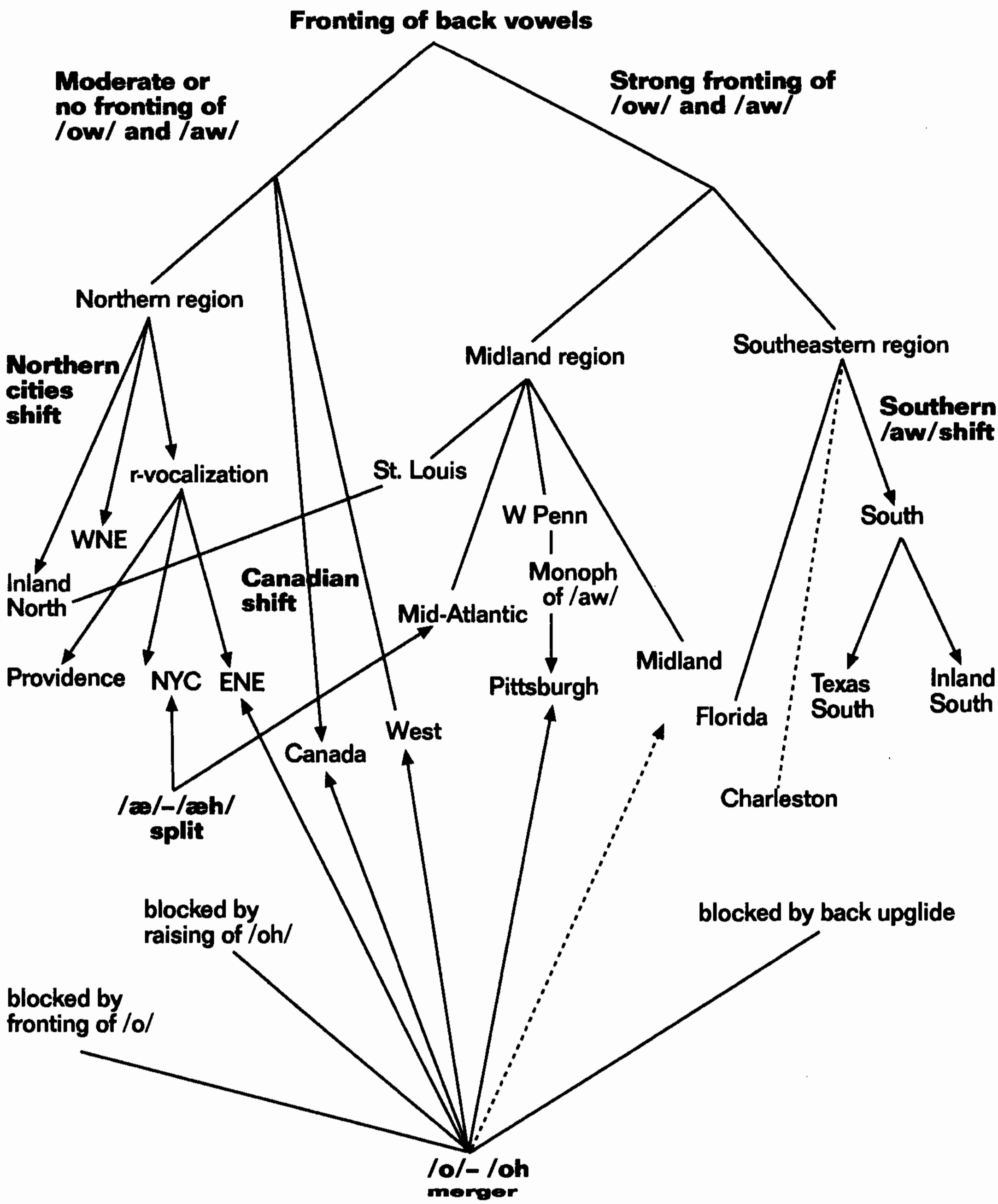


Figure 12. Atlas of North American English (ANAE) dialect tree (Labov, 2002).

Plot charts of other older male speakers are considered. Thomas (2001) and Fridland (1998) provide plot charts of their NORM informants, Appendices A and B, respectively. Formant data are not available for these speakers, but the visual comparison to my data plots provides for further discussion of a description nature.

Appendix A has three charts from speakers in southern Ohio and one plot from a speaker from Tennessee documented by Thomas (2001). Although Ohio is generally listed as participating in Northern Features, the southern most part of Ohio exhibits speech features similar to Midlands or Southern patterns. Therefore, I have chosen to include these speech plots in this study. Appendix B is Fridland's (1998) data on four older, male speakers from Memphis, Tennessee. My intent, once again, is to test the hypothesis that Oregon NORMs exhibit Southern features. The diagnostic instrument is presented in the next chapter.

2.6 JUSTIFICATION FOR NORMS AS SUBJECTS

Historically, dialect studies have been restricted to informants who were non-mobile, older, rural, and male (NORM).

The motivation for so consistent a choice of informants throughout the history of dialect geography seems clear. The informants should be nonmobile simply to guarantee that their speech is characteristic of the region in which they live. They should be older in order to reflect the speech of a bygone era... They should be rural presumably because urban communities involve too much mobility and flux. And they should be male because in western nations women's speech tends to be more self-conscious and class-conscious than men's. (Chambers & Trudgill, 1980, p. 35)

They note further that the NORM population has been "rapidly dwindling for several generations now... [and] the future of dialect studies will have to be directed toward other, less rarefied populations" (p. 35).

My decision to use NORMs as informants is based on two factors. First, the Dictionary of American Regional English (DARE) project uses data collected from the 1930s to the 1970s. The earliest data reflects speech from before 1900. The more recent samples would reflect speech from before 1950. NORMs interviewed for the thesis project could offer some representation of speech from the mid-twentieth century era. I also think that documenting NORM speech will aid in creating a baseline of Oregon dialect data by which future studies may use to compare diachronic sound change.

Secondly, the "less rarefied populations" referred to are widespread in Oregon. There are dialect islands that can be found, for example, Native American Indian speech or particular coastal communities as mentioned above; however, Oregon is in large part homogeneously Euro-American. I believe any attempt to document the historical dialect of Oregon requires using NORMs as informants. In the 1940 US Census records, the total state population was reported at 1,089,684. The total number of "native white persons" was 988,092 (Geospatial and Statistical Data Center, 2004). Clearly, these numbers reflect a highly homogenous population.

Furthermore, all of the other major, regional dialect collections were historically limited to NORMs. This thesis provides useful comparative data for future variation studies, which looks at the speech of younger and/or urban speakers.

CHAPTER 3: METHODOLOGY

The discussion in chapter three describes the design and approach to the interview process. The interviewer is a long-time East County (local term for community 'east' of Portland city proper) resident. The rationalization for employing an indigenous interviewer is discussed. A description of a sociolinguistic interview is made, as are the procedures of the interviews. The selection process of my subjects and their demographics are provided. Explanations of how data were collected and analyzed also appear in this chapter. Specific information about the speech features of any given dialect is listed, and the flow chart directing the analysis is presented at the end of this chapter.

3.1 INTERVIEWER

My interviewer, Gerry Hillyard, is from an original pioneer family who settled in the Gresham/Sandy area in 1853. He is a member of the "first order zone" or the "second order zone" for the informants identified for study in this thesis (Milroy, 1980, p. 46). Everyone is embedded within social relationships. Person X knows people directly, such as neighbors or coworkers. These people are examples of the first order zone for person X's social network. A second order zone is described as contacts that know the first order zone members but do not know person X. Second order zone members may have access, that is to say, have the chance to meet and interact with person X. Their meeting is not dependent on first order zone members. Person X and the second order zone members will perceive one another as community members —not outsiders— fairly quickly. My interviewer's lineage puts him in the first order zone for almost all of the informants.

I, personally, would be considered outside the network because (a) I am a woman, (b) I am not perceived as a native of Oregon, (c) I am several generations younger than my informants, and (d) my education is more extensive than my informants. These factors are significant enough to justify the interview design to use a local interviewer. "Other things being equal, however, indigenous interviewers certainly possess the highest potential for tapping the natural use of vernacular forms…" (Wolfram & Schilling-Estes, 1998, p. 244). And it is the goal of the interview to capture as true a vernacular form as possible. Therefore, my indigenous interviewer had the best chance to engage the informant in the "natural use of vernacular forms" of speech.

3.2 INTERVIEW PROCEDURES

After establishing eligibility via the screening interview (Appendix C) of an informant, my interviewer, Gerry, scheduled interviews to be held at a place of convenience to the informant. In all cases, interviews were conducted in informants' residences.

Gerry arrived at the informant's home as scheduled. Ideally, informants would be in the most comfortable place, such as the living room, in their homes.

Some informants directed Gerry to sit at the dining room table. After clipping a microphone to the speaker's shirt front, Gerry tested the recording equipment, detailed below, and adjusted the levels. Usually, small talk was occurring during the equipment set up. Most of the time, the topic of conversation was something that the speaker and interviewer had in common. For example, some speakers used to work for the same company Gerry does, and they would be talking about people or events related to the company. In other examples, conversation was about mutual acquaintances or older members of Gerry's family.

The transition from small talk to interview proper was fairly obvious and formal. Gerry would usually say, "Okay now, let me go over some paperwork with you." He reviewed the informed consent form (Appendix D), and the informant signed it. Gerry relied on the interview questionnaire (Appendix E) to guide the ensuing interview. Not all topics on the questionnaire were equally of interest to the informants. Gerry encouraged longer responses to topics that emerged as higher interest ones for individual informants.

After proceeding through the questionnaire, Gerry had the informants read words and phrases that were printed on 3x5 cards. Once the reading task was completed, Gerry concluded the interview by expressing appreciation for the individual's participation. He asked the informants if they would be interested in knowing the final results of my study and contact information was confirmed. The tape recorder was then turned off.

3.3 INSTRUMENT

The interview instrument used in this study was a sociolinguistic interview which was designed to garner three types of speech data. Two styles are formal: word list and interview response; and the third style is casual (Labov, 1972).

The interview guideline asked informants to describe or tell about historical events, their occupations, favorite topics, and, of course, seek demographic information (Appendix D). Their responses to these queries are considered one type of formal speech.

For a more formal style, words and phrases were printed on 3x5 cards and informants were asked to simply read the cards. The cards were employed as to avoid the effects of reading a list. A list of the words and phrases appears in Appendix E. This task produced a response that was not anticipated. The interviewees were instructed to read the word or short phrase that appeared on each card. All of the informants made comments about the words or phrases. The subjects did not simply read the words. They were responding to the words as prompts for comments. For example, the phrase 'fog horn' elicited stories about being aboard various seafaring vessels. The speech sample gathered from this recitation task is the second formal style.

Casual style was attempted by the recording session being held in the informants' homes with other family members present. Speech captured outside of the formal interview, such as side discussions with family members or perhaps a phone call, is considered casual speech. Likewise, conservation with the interviewer that occurs separate from the interview itself can be considered casual.

3.4 SUBJECT SELECTION

I selected older, white males who are native English speakers born to native English speakers. My interviewer, Gerry, solicited potential participants via his personal network. All informants knew older members of my interviewer's family and most knew Gerry directly. My husband and interviewer, Gerry Hillyard, had much greater and easier access to my community of informants than I might have enjoyed as an unknown college student. The informants were born and raised in Oregon or moved here by six years of age with as little out-of-state living experience as possible. All of my informants are considered rural residents living outside the city of Portland. All informants signed an informed consent form (Appendix D). Table 6 provides specific demographic information for the ten speakers included in this study.

Eight speakers are native Oregonians. Speakers 7 and 9 moved to Oregon before the age of six. Fathers of five speakers, #s 1-4 and 8, were born in Oregon. Fathers of two speakers, #s 7 and 10, are confirmed to be born in the United States. The places of birth of two fathers, for speakers 5 and 9, are unknown. Speaker 6's father arrived in the United States at the age of 15 from the Isle of Mann. Four mothers are confirmed to be native to the United States, with one being confirmed as native to Oregon (speaker #s 1, 6, 7, and 10). Speaker 4 observed that both of his grandfathers were Civil War veterans, and I believe there is a reasonable degree of certainty that his mother was also born in the United States. Speakers 2, 8, and 9 provide general heritage data, which indicate their mothers' European heritage. Speakers 3 and 5 provided to demographic information about their mothers.

None of the subjects grew up bilingually. All households were English speaking environments.

In design terms, I controlled for residency, native language, gender, and age. These design requirements were necessary for the study to offer a descriptive sample of speech occurring in the early half of the 20th century.

Table 6: *Subject demographics*

<table>
<tr><th rowspan="2">Speaker</th><th rowspan="2">Age at Interview</th><th rowspan="2"></th><th rowspan="2">Place of Birth</th><th colspan="2">Family Demographic</th></tr>
<tr><th>Father</th><th>Mother</th></tr>
<tr><td>1</td><td>92</td><td>1908</td><td>Gresham, OR</td><td>Born in Gresham, OR Family migrated in 1850s from West Virginia</td><td>Born in Gresham, OR</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">92</td><td rowspan="2">1908</td><td rowspan="2">Near Champoeg Park, OR</td><td>Born (1863) near Champoeg Park, OR. Family migrated in 1853</td><td>No information</td></tr>
<tr><td colspan="2">General response: A duke's mixture: Scottish</td></tr>
<tr><td>3</td><td>79</td><td>1922</td><td>Bull Run, OR</td><td>Born in Oregon. Grandparents migrated from Missouri</td><td>No information</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">79</td><td rowspan="2">1922</td><td rowspan="2">Boring, OR</td><td>Born at Park Place, O.</td><td>No information</td></tr>
<tr><td colspan="2">Both grand fathers fought in Civil War</td></tr>
<tr><td>5</td><td>79</td><td>1922</td><td>Gresham, OR</td><td>Unknown place of birth. Heritage is French Canadian.</td><td>No information</td></tr>
<tr><td>6</td><td>74</td><td>1927</td><td>Boring, OR</td><td>Born on Isle of Mann, Scotland (Cameron Clan)</td><td>Born in Butte, Montana</td></tr>
<tr><td>7</td><td>70</td><td>1931</td><td>Nebraska, moved to Gresham, OR in 1936</td><td>Born in U.S. Grandparents migrated from Germany</td><td>Born in U.S. French and Irish heritage.</td></tr>
<tr><td>8</td><td>69</td><td>1932</td><td>Vernonia, OR</td><td>Father born in Portland. Raised in Ranier, WA.</td><td>Heritage French and English</td></tr>
<tr><td>9</td><td>69</td><td>1932</td><td>Oklahoma, moved to Estacada, OR in 1938</td><td colspan="2">General response: Irish, Scotch, Welsh, and German</td></tr>
<tr><td>10</td><td>62</td><td>1939</td><td>Hubbard, OR</td><td>Father and Grandfather born in North Dakota. Czech heritage.</td><td>Born in South Dakota. Swedish heritage.</td></tr>
</table>

3.5 ACOUSTIC PHONETICS

The study of language can center on any linguistic feature; here it is on its sounds. The field of phonetics is largely about observation rather than theory building (Olive, Greenwood, & Coleman, 1993), but its techniques have been put to use in many other areas.

The dialect study of this sort is reliant on the ability to describe phonetic data. The quantifiable data that is used for analysis is the frequency (hertz) values of formants:

A formant is a concentration of acoustic energy, reflecting the way air from the lungs vibrates in the vocal tract, as it changes its shape. For any vowel, the air vibrates at many different frequencies all at once, and the most dominant frequencies combine to produce the distinctive vowel qualities. Each dominant band of frequencies constitutes a formant, which shows up clearly on a sound spectrograph as a thick black line (Crystal, 1985, p. 125).

Formants are what give vowels their characteristic quality or timbre. Four formants are usually easily identifiable for vowels. The first two formants, F1 and F2, are related to a vowel's place of articulation or tongue position, roughly speaking. F1 can be associated with the high-low distinction, and F2 is akin to the front-back difference, i.e., where the tongue is with reference to some central or neutral position. The values of F1 and F2 are therefore indicative of the relative place of any vowel. My analysis relied on only the first formant (F1) which has the lowest hertz values, and the next highest or second formant (F2).

3.6 THE COLLECTION OF VOWELS

Informants were recorded on a Sony Digital Audio Tape (DAT) TCD-8 stereo recorder on 124 minute stereo DAT micro cassettes, using Long Play (LP) sampling. The microphone was an Audio-Technica 831b lavaliere microphone. After recording the interview, the signal was transferred to compact discs for storage and computer accessibility via commercially available software. Files were saved at a sampling rate of 16 bit at 22,000 Hz into WAVE file format.

Speech segments were extracted from the interview using PRAAT —an acoustic analysis set of programs (Boersma & Weenink, 2001). PRAAT represents the sound in two types of forms: the waveform and the spectrogram. The waveform provides information about the relative amplitude or loudness of the sound. The spectrogram depicts a sound's representative frequencies or formants.

Stressed vowels were selected, and measurements of F1 and F2 were taken at single points for vowel nucleus and glide targets. The process of determining which point should be measured is something of an art. Ideally, monophthongs will exhibit steady states in both F1 and F2 realizations. These steady states should be co-occurring. Steady states of the formant indicate the stable segment that any vowel is produced. As with all human subject data, data do not conform to the ideal state. The vowel realizations are dynamic. The stress indicated in a wave may not be at the same point where the steady state of the vowel occurs. Similarly, the steady state of F1 and F2 may not co-occur.

In addition, the effects of co-articulation —the transitional state between two sounds— need to be considered when selecting a measurement point. Analyzing the formants, evaluating the pre- and post-environments for co-articulatory effects, and a consideration of the stress present in the waveform were weighed simultaneously to make any judgment about the relative place of a measurement.

Glides, present in diphthongs, differed from the vowels in the way they were measured. The criterion for measurement was based on the highest or lowest formant value achieved thereby maintaining the namesake and capturing the *target* of the glide. The evaluation of the stress and co-articulatory effects remained the same.

Over 2500 vowel measurements were used for this study. The total number of tokens reported in Table 7 was separated into vowel nucleus and glide categories because means for vowel nuclei measurements were used as a basis for discussion. The grand means for each speaker's vowel system is provided in Appendix G. Means for glides are not calculated by Plotnik 07 nor are they typically reported. The purpose of the glide measurements is to provide the trajectory of the utterance, and in this study, the place of the glide allowed for an observation as to the quality of the production of the glide. I needed to consider if some diphthongs exhibited fully realized glides or not.

Table 7: *Total number of tokens measured*

Speaker	Number of Vowel Nucleus Measurements	Number of Glide Measurements	Combined Number of Measurements
1	235	37	272
2	257	36	293
3	229	41	270
4	279	58	337
5	164	31	195
6	293	45	338
7	175	32	207
8	230	31	261
9	174	24	198
10	247	43	290
Totals	2283	378	2661

3.7 PLOTTING THE VOWELS

Plotting the vowels provides a visual aid that corresponds to the historical descriptions of front, mid, low, and high, central, back places of articulation. An inventory of the measured vowels was taken and a text file was created to meet the formatting needs of PLOTNIK 07 (Labov, 2004), a vowel plotting program.

The data input file was loaded into PLOTNIK and the data were normalized against the data of the TELSUR speakers (provided by J. Conn, 2004, personal communication). The data were normalized using the Nearey log mean normalization procedure as outlined in Labov, 2001 (pp. 159-162). Voice characteristics vary due to the differences in anatomy of men and women, adults and children. This situation results in the inability to compare raw vowel measurements across speakers. The normalization of the data, therefore, allows for comparable normalized measurements for all the speakers in this study, as well as for other data external to this study.

Collected vowels were coded based on historical vowel classes used by Plotnik 07. When the vowel class was not apparent to me, I relied on Kenyon and Knott's pronunciation dictionary for reference. One specific token was not classified as directed by Kenyon and Knott. The token *fog* occurs in nine of my speakers' data sets. The first listing —the preferred pronunciation— indicates *fog* is a member of the /o/ vowel class. This vowel class listing, at first, appeared odd to me because the vowel class for *log* and *smog* is /oh/. The token *fog* occurred within the /oh/ vowel class place in all speakers where it was present. I recoded *fog* to the /o/ vowel class throughout this study.

3.8 ANALYSIS

The description of speakers' vowel systems is presented in two forms: as a plot and formant mean values as provided in a table. The plot chart is considered against the other plot charts available from three speakers from southern Ohio and five speakers from Tennessee found in Appendices D and E (Thomas, 2001; Fridland, 1998, respectively). This visual comparison is rather imprecise and not based on acoustic measurements. Including this step is justified because the comparison is to similar speakers, older males. The basis for acoustic descriptions discussed in chapter 2 is younger speakers living in the later half of the 20th century. The comparison is not exact because the subjects are different but will prove useful.

Analysis of each speaker's vowel system was based on the hierarchical flow chart defined in Figure 13. The basis for this flow chart was discussed in Chapter 2.

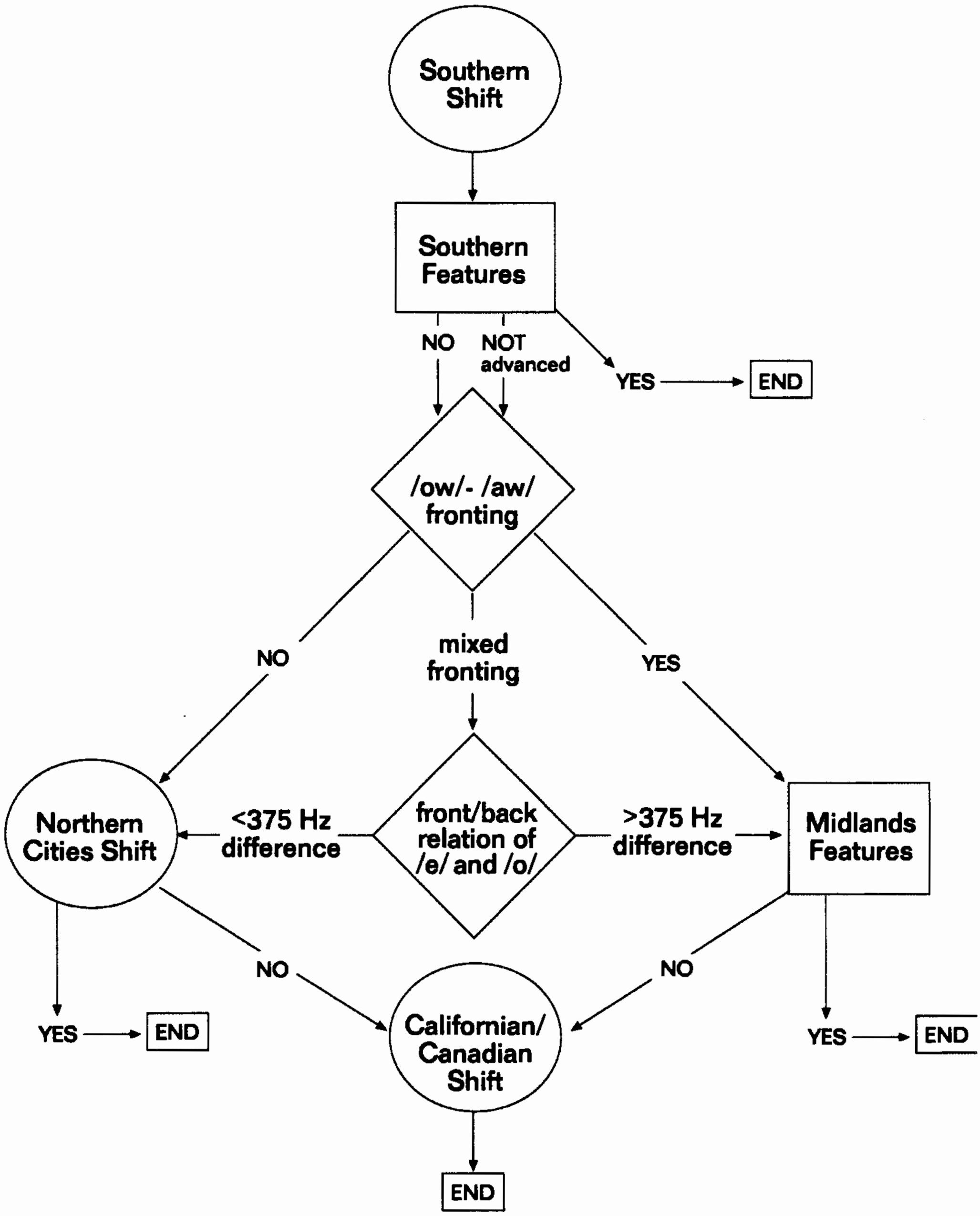


Figure 13. Hierarchical flow chart for dialect diagnostic process.

At the top of Figure 13, the Southern Shift is encircled with an arrow directed to a quadrangle named Southern Features. All subjects' vowel systems were considered for the presence of the chain shift reportedly present in the southern dialect and the southern dialect feature of the pre-nasal /i/ and /e/ merger. If results indicated the presence of these features, then no further analysis occured.

On the other hand, if the results indicated that a southern dialect is not present among the subjects' data, then the analysis proceeded further.

Two diamonds below the Southern dialect shapes refer to the diagnostic features considered. In the uppermost diamond, the front/back place for /ow/ and /aw/ were considered based on the initial dialect split observed from the Atlas of North American English (ANAE) dialect tree discussed previously. As indicated by the arrows on the lower portion of the first diamond, if fronting was evident analysis proceeded to the Midlands dialect. If the /ow/ and /aw/ data were back, then analysis proceeded to the Northern dialect. Most results were mixed and a second diagnostic examination was used for further direction.

The lower of the two diamonds considers the front/back relation of /e/ and /o/. This linguistic feature was relevant as the results indicated a Northern or Midland affiliation. The results therefore reflected the initial dialect split identified on the ANAE as to either a Northern/Western or Southern/Midlands variety. As can be observed on Figure 13, if the results were less than 375 Hz difference between the two vowel classes, the Northern dialect was indicated. If the results were greater than 375 Hz, the Midlands dialect was indicated.

If a vowel system followed the pattern for the Northern dialect as described by the chain shift in the Northern Cities Shift (NCS), no further analysis occured. However, if the NCS was not present, the western dialect was considered, relying on features described in the Californian/Canadian Shift (CCS).

If a subject's vowel system indicated the Midlands dialect by either of the diagnostic measures, his vowel system was considered for the presence of the Midlands features. If the Midlands dialect was prevalent, no further analysis occured for that speaker. However, if the Midlands dialect was not present among the data set considered, analysis moved to the examination for the Western dialect.

The Western dialect was the last step in the analysis and regardless of the findings, no further attempt was made to identify the dialect present.

3.9 SPECIFIC PHONOLOGICAL FEATURES USED FOR ANALYSIS

Each of the dialects discussed above has separate features involved with their descriptions. The specific features are listed below. Table 8 lists the vowel classes present in Stages 1-3 of the Southern Shift (SS), seen in the top circle on the flow chart in Figure 13 above.

The other Southern feature identified is the pre-nasal merger of /e/ and /i/, as represented in the quadrangle below the Southern Shift on Figure 13. For the Midlands dialect, Table 9 provides the basic data considered.

Table 8: *Features characteristic of the Southern dialect*

Phonological Feature	What feature is examined	Reason for consideration
/ay/	Glide Deletion	Stage 1 of Southern Shift
	Front place	
/e/	Place in relation to /ey/ class	Stage 2 of Southern Shift
/ey/	Place in relation to /e/ class	
/i/	Place in relation to /iy/ class	Stage 3 of Southern Shift
/iy/	Place in relation to /i/ class	
/e/ Pre-Nasal	Means of pre-nasal subset	Merger of /e/ and /i/ pre-nasally
/i/ Pre-Nasal	Means of pre-nasal subset	

(Labov, 1994, 1996, 2002)

The Midlands dialect features two acoustic measurements. The F2 value for /ow/ and the result of the difference between the F2s for /e/ and /o/ means. The observations about the other four vowel classes, the front place of /aw/, the presence of the glide for /ay/, and the presence of the low-back vowel merger for /o/ and /oh/ classes are somewhat less reliable.

Table 9: *Phonological features considered for Midland dialect*

Phonological Feature	What feature is examined	Reason for consideration
/ow/	F2 value	F2 greater than 1200 Hz is described
/aw/	Front place	Fronting is observed
/e/ and /o/	Results of F2/e/ - F2/o/	Difference greater than 375 Hz is observed
/ay/	Glide is maintained before obstruents.	Realization of /ay /glide is observed
	Glide deletion occurs pre-resonant.	
/o/ class	Grand means and class tokens	Transitional merger is present
/oh/ class		

(Labov, 2002)

The features for the northern dialect are a mixture of acoustic analysis and subjective judgment. The relevant data considered for the northern dialect appear in Table 10.

The analysis for the /ae/, /o/, and the front/back relation between /e/ and /o/ are all acoustic in nature. The lowering of /oh/ and the backing of /^/ are considered against the relation to other vowel classes within each speaker's vowel system separately. This reliance on the holistic view of the vowel system makes the final judgment a bit more informed, yet still subjective.

Table 10: *Features of the Northern dialect*

Phonological Feature	What feature is examined	Reason for consideration
/ae/	F1 value	Considered raised with less than 700 Hz F1 measurement in NCS
/o/	F2 value	Considered front with greater than 1550 Hz F2 measurement in NCS
/oh/	High/low place	Lowering is observed in NCS
/^/	Front/back place	Backing is observed in NCS
/e/	Results of F2/e/ -F2 /o/	Difference less than 375 Hz is observed in NCS
/o/		

(Labov, 1994, 2002)

The last dialect to be considered in this study is the western dialect described by two chain shifts as discussed above. The pertinent vowels are listed in Table 11.

With the exception of the low-back vowel merger, the six vowels considered for the western dialect have acoustic values attached to them. The analysis for acoustic values is fairly straightforward and formant data appear in tables with adequate discussion of the results for each feature considered.

After all dialect analyses have been performed, summative comments about each speaker appear at the end of chapter 4.

Table 11: *Phonological features of the Western dialect*

Phonological Feature	What feature is examined	Reason for consideration
/o/	Grand Means And Class Tokens	Low-back merger is complete or nearly complete
/oh/		
/o/	F2	Back with F2 less than 1275 Hz
/ae/	F2	Back with F2 less than 1825 Hz
/e/	F1	Lowered with F1 greater than 650 Hz
/u/	F2	Front with F2 greater than 1400 Hz
K/uw/	F2	Front with F2 greater than 1400 Hz
/ow/	F2	Front with F2 near 1400 Hz

(Labov, 2002; Luthin, 1987; Conn, 2002)

CHAPTER 4: DATA ANALYSIS

The data of Oregon Non-mobile Older Rural Males (NORMs) included in this project are reported in this chapter and evaluated against patterns of dialects described elsewhere.

The research questions are listed again for convenience.

1. What are the vowel systems of Oregon NORMs?
2. Do those vowel systems conform to a southern pattern?
3. If so, how advanced (in terms of the Southern Shift) are the vowel systems?
4. If not, what can be said about the Oregon NORMs' vowel systems?

In order to answer the questions of this project, several steps were taken. The data, first, needed to be measured and processed to create an overview of the vowel systems of the Oregon NORMs. All vowel systems were subject to analysis for the Southern speech features. The results indicated that Southern forms of speech are not widespread nor in an advanced stage of development. A dialect diagnostic process was attempted to discern whether a speaker's vowel system was patterning similar to Northern or Midlands speech. The results of the diagnostic analysis indicated that few speakers had a clearly defined dialect present. Therefore, data for several speakers were examined for two or all three of the remaining dialects reported elsewhere for North American English. Northern and Midland dialect features were considered against speakers' data that indicated some preference for one of those dialects. The Western dialect was considered for any speaker who did not apparently meet any of the other three (Southern, Northern, and Midland) dialect features. Summaries of the analysis process for each speaker appear at the end of this chapter.

4.1 GRAND MEANS DATA

Different styles of speech were collected as described in 3.3 above. The data were coded for style, but in some cases, data were limited for a particular style. The word list is mainly composed for sample selection of low-back vowels. Thus, there are few, if any, word-list style tokens for other vowel classes. Even though every effort was made to capture casual speech, the sample collected was insufficient to obtain adequate numbers of tokens across all vowel classes. The formal style is predominant in my data set. A pilot analysis of the separate speech styles did not present any remarkable differences. In the interest of time and ability to use the data broadly, the three styles were collapsed into a single data set, which provide the basis for the observations below.

Tables of normalized Hz means values were created for each speaker. Plotnik 07 plot charts were also generated from these data (See Appendix G, charts G-1 to G-10). All totals reported in the tables do not include measurements for the glide targets. The table for each speaker includes total number of vowel nucleus tokens measured for each vowel class, total number of tokens anticipated to be used for means calculation, and number of tokens Plotnik 07 reports as its basis for means calculation.

The discussion that follows relies solely on the normalized means provided by Plotnik 07 means calculations.

In addition to answering the first question, the plot charts and the data tables with two sets of means expressed are intended to provide usable and transferable data for future dialect studies.

4.2 SOUTHERN SHIFT ANALYSIS

To answer question 2, the vowel systems of all speakers are considered as to the chain shift described in the Southern Shift in the Southern United States. Later, consideration is provided for another southern feature, also described in Chapter 3. Both sets of analyses indicate the Southern dialect is not strongly present in the speech of the ten Oregon NORMs observed in this study.

The Southern Shift does not have acoustic measurements associated with it but offers a sequential chain of events relating to the glide deletion and fronting of /ay/, Stage 1 of the SS. Stage 2 expects the reversal of peripheral /ey/ class and non-peripheral /e/ class; and likewise, Stage 3 describes a similar reversal between /iy/ and /i/ classes (as previously shown in Figure 5). Stage 1 is considered first.

4.2.1 Southern Shift: Stage 1 /ay/ → /ah/ Monophthongization and Fronting

As indicated in the SS diagram in Figure 5, glide deletion and fronting of /ay/ co-occur as Stage 1. Two steps occur for the analysis. First, identification of monophthongal utterances is performed; then, the consideration of the place —the fronting— of those utterances is discussed.

The analysis and discussion of the results appear in Appendix H. The basis for determining /ay/ glide deletion includes four types of data in this study. Complete monophthongs are the first. The glides are not present in these data. They are completely lost. The second and third types of glide-deleted data exhibit glide transitions that are not raised. The difference between these glide-deleted data is that one set of glides transitions to a front place with no raising, and the other set transitions to a front and lowered place. The final type of partial glide includes data that exhibit glides that are both fronted and raised, but the place for the glide occurs within the vowel nucleus space for the speaker.

Table 12 lists the observations of glide-deleted data for all speakers. Speakers 2, 3, and 6 exhibited complete monophthongs. Speakers 1, 3, 8, 9, and 10 produced tokens with glides in a front place with no raising. Speakers 1, 4, 5, 6, 9, and 10 pronounced fronted and lowered /ay/ glides. Two speakers, numbers 6 and 10, uttered /ay/ glides embedded within the vowel nucleus space of their /ay/ vowel class. Speaker 7 had no /ay/ glide deletion present in this speech.

The next step is to consider the second part of Stage 1 of the Southern Shift (SS) by determining the front place of any of the above glide deleted data. Appendix H provides the full analysis and discussion. Table 13 lists the observations of /ay/ fronting for the nine speakers who showed evidence for /ay/ glide deleted tokens.

Table 12. *Types and numbers of glide deleted /ay/ tokens present in data*

Speaker	Monophthongs	Front Only Glides	Lowered Glides	Glides embedded in vowel nucleus
1		3	1	1
2	3			
3	3	2		
4			1	
5			3	
6	3		2	1
7				
8		1		
9		1	3	
10		2	1	1

Speakers 4, 6, and 8 do not meet the description for Stage 1 of the SS because none of the glide-deleted data are fronted. Speakers 1, 2, 3, 5, 9, and 10 apparently meet the Stage 1 description for some of tokens. These six speakers might be in an initial stage or an earlier point of development for Stage 1 of the SS.

Table 13. *Front places of /ay/ glide deleted tokens*

Speaker	Monophthongs	Front Only Glides	Lowered Glides	Glides embedded in vowel nucleus
1		Mixed	No	
2	Yes			
3	Mixed	Mixed		
4			No	
5			Mixed	
6	No		No	No
8		No		
9		Yes	No	
10		No	No	Yes

The data reported in this section were limited to tokens that potentially met the Stage 1 criteria. These data are considered in context to the /ay/ vowel class in its entirety in the next section.

4.2.2 Southern Shift Stage 1 Summary

Generally, the data concerning /ay/ in 4.2.1 are limited among the speakers. Some utterances match southern features (see Table 14). Table 14 provides the total number of tokens each speaker has in the environments described for /ay/ monophthongization for Stage 1 of the Southern Shift. Four speakers, #s 4, 6, 7, and 8 indicate none of their tokens produced similarly to southern dialect descriptions. Five speakers, #s 1, 2, 5, 9, and 10, vary from 5% to 16% of their /ay/ diphthongs produced along a southern pattern. Speaker 3 with 30% of his tokens similar to descriptions for southern features found in Stage 1 of the Southern Shift is the strongest candidate present among the subjects in this study.

Reviewing the percentages above provides a fairly quick picture of the weakness of /ay/ glide deletion present among the subjects. None of the subjects exhibit categorical /ay/ glide deletion nor /ay/ vowel nuclei fronting. These observations in themselves do not support the claim to be made that Stage 1 of the Southern Shift is present.

The /ay/ evidence provides a basis for a claim that southern features are weakly present, but the data in no way supports the view that southern features are advanced or widespread.

Table 14: *Percentages of /ay/ utterances that meet Stage 1 descriptions for the SS*

Speaker	/ay/ Environments		# Tokens Per Environment	% Glide deleted and Fronted per Environment	Total % Glide deleted and Fronted
1	Voiced Consonants	Resonants	4	0	11%
		Obstruents	4	25%	
	Elsewhere	Final	2	50%	
		Voiceless Consonants	8	0	
2	Voiced Consonants	Resonants	7	0	16%
		Obstruents	3	0	
	Elsewhere	Final	5	60%	
		Voiceless Consonants	3	0	
3	Voiced Consonants	Resonants	3	33%	30%
		Obstruents	6	16%	
	Elsewhere	Final	2	100%	
		Voiceless Consonants	2	0	
4	Voiced Consonants	Resonants	0	na	0%
		Obstruents	4	0	
	Elsewhere	Final	9	0	
		Voiceless Consonants	7	0	
5	Voiced Consonants	Resonants	3	0	9%
		Obstruents	1	0	
	Elsewhere	Final	4	25%	
		Voiceless Consonants	3	0	
6	Voiced Consonants	Resonants	8	0	0
		Obstruents	6	0	
	Elsewhere	Final	6	0	
		Voiceless Consonants	8	0	
7	Voiced Consonants	Resonants	4	0	0
		Obstruents	2	0	
	Elsewhere	Final	6	0	
		Voiceless Consonants	4	0	
8	Voiced Consonants	Resonants	2	0	0
		Obstruents	2	0	
	Elsewhere	Final	6	0	
		Voiceless Consonants	7	0	
9	Voiced Consonants	Resonants	1	0	8%
		Obstruents	2	0	
	Elsewhere	Final	4	25%	
		Voiceless Consonants	5	0	
10	Voiced Consonants	Resonants	6	16%	6%
		Obstruents	2	0	
	Elsewhere	Final	2	0	
		Voiceless Consonants	6	0	

Analysis continues with consideration of the second and third stages of the Southern Shift (SS).

4.3 SOUTHERN SHIFT: STAGES 2 AND 3: REVERSAL OF /ey/ AND /e/ AND /iy/ AND /i/

Stage 2 of the SS anticipates /ey/ class transitioning back and lowering along a non-peripheral track toward the phonological space occupied by /ay/ after glide deletion. /e/ becomes front and raised occupying the space formerly taken by the /ey/ class (Labov, 2002). A similar reversal is also detailed for /iy/ and /i/ classes and represents the description for Stage 3 in the SS.

Two steps are necessary to determine the presence of Stages 2 and 3 of SS First, a review of the place of the four vowels, /e/, /ey/, /i/, and /iy/: if the means appear to follow Stages 2 and 3, the second step of the analysis is to examine the individual tokens of the vowel classes to determine the extent of the feature.

Plotnik 07 splits the /ey/ and /iy/ classes into two subsets a piece. One subset occurs in final position, either /ey/F or /iy/F, and the other occurs in checked position, /ey/C or /iy/C. Each subset is only a part of the entire class of /ey/ or /iy/.

A review of the means finds that one speaker's vowel system is similar to Stage 2 of the Southern Shift. Speaker 4's SS data appear on Figure 14 below. /ey/ class means appears slightly back of /e/. The /ey/C subset means appears to slightly overlap with /e/ class means. The /ey/F subset means is practically identical to the /i/ vowel class means.

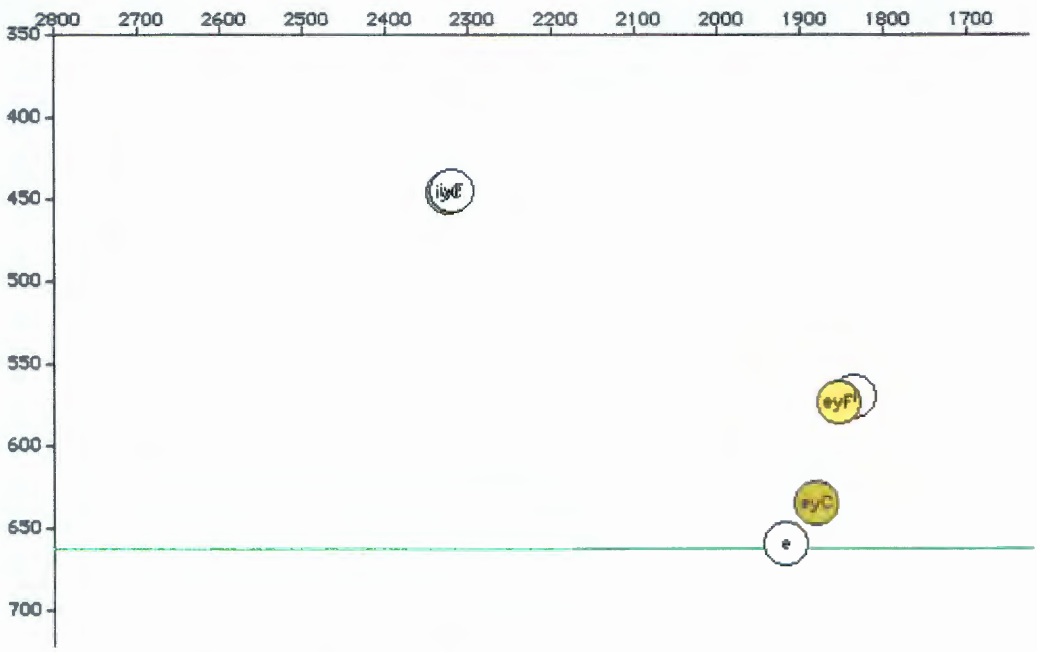
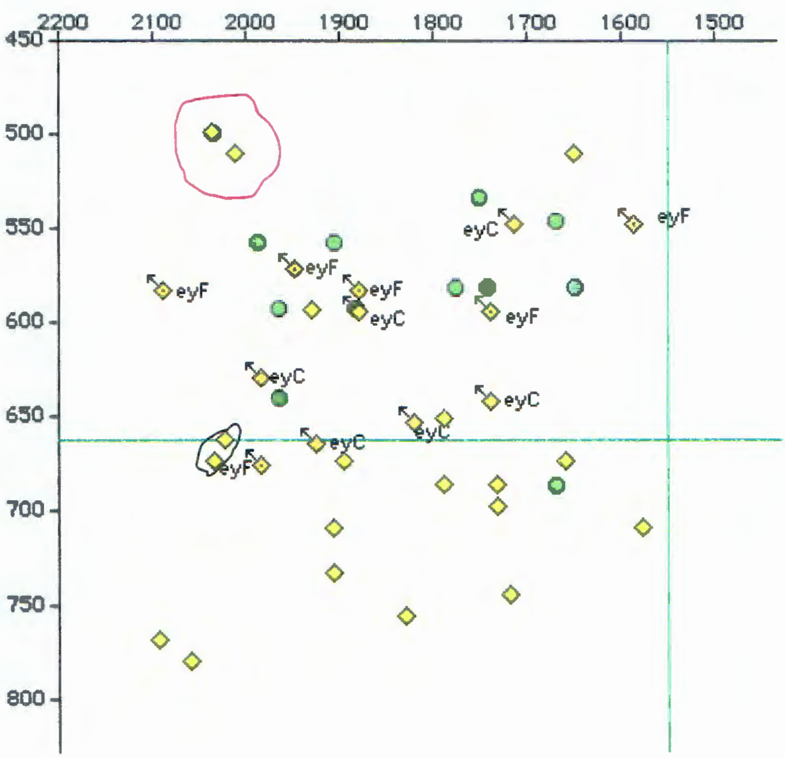


Figure 14. Speaker 4: /e/ and /i/ means.

The overlap tokens for the present vowel class discussion provide a visual aid for this discussion (see Figure 15). The green lines that appear on the plot charts relate to the mid-central place along the x-y axis. The crossing of axes is the place for schwa in the speakers' vowel systems. The horizontal x-axis relates to the mid place for the vowel system and is referred to in this project as mid axis.

On Figure 15, the occurrence of several /e/ tokens lower than mid axis reflects the general lowering observed above in the overall /e/ class means. Two /e/ tokens appear within a red circle. They occur high and front of anticipated place for non-transitioned /e/ utterances. One of these tokens shares the same place as an /i/ token. The two red encircled tokens' place is higher than any /ey/ class tokens. Two other tokens, encircled in black, share a similar front place with the two in the red circle. There is only one /ey/F token that appears front of these four front /e/ tokens. The height of the two tokens in the red circle and the frontness of the four tokens in the red and black circles indicate a transition to a peripheral track.

The /ey/ class glides have been omitted for clarity of the vowel nuclei places. They have also been labeled. The checked subset, /ey/C has labels to the left and the free subset, /ey/F, to the right of the symbols. The /ey/ class appears generally throughout the /i/ class. The /i/ tokens appear, more or less, in anticipated place.



/i/ = green circles; /e/ = yellow diamonds; /ey/ = gold diamonds with arrows

Figure 15. Speaker 4: /i/, /e/, and /ey/ overlap tokens.

A transition toward a reversal with /ey/ and /e/ classes is expected in the description for Stage 2 of the SS. An initial phase for Stage 2 appears to be present in this vowel system as /ey/ class means occur back of /e/ class, which is generally supported by a few /e/ tokens appearing along the peripheral track.

For Stage 3, the /iy/F and /iy/C subsets appear in high-front place, and /i/ class appears in a non-transitioned place, as well. These places can be observed on the plot chart in Figure 14 above. Stage 3 is not apparent in the data for Speaker 4.

Four speakers exhibit /e/ in a transitional place. Three of them, Speakers 1, 2, and 8, have /e/ class slightly back of /i/ class. Figures 16-18 below provide the plot charts of the vowels' means. The clear means circles for /i/ and /e/ are almost vertically parallel in each of the three figures for Speakers 1, 2, and 8, which indicates a nearly equal front/back place for the /e/ and /i/ vowel classes. Table 12 provides the pertinent data for this discussion.

Table 15: *Speakers 1, 2, and 8: F2 /e/ and F2 /i/ values*

Speaker	F2 /e/	F2 /i/
1	2016	2043
2	1735	1752
8	1801	1798

The normalized Hz values for the /e/ and /i/ class F2s listed in Table 15 provide the quantitative data to support the observation that /e/ and /i/ share a front/back place in the listed speakers' vowel systems. The implication from the nearly identical front/back place of /e/ and /i/ is that /e/ may be in an initial phase of transitioning toward a peripheral track within the vowel system.

As can be observed in Figure 16 for Speaker 1, the /ey/C is back of /i/ class —a definite indication of a transition toward a non-peripheral track.

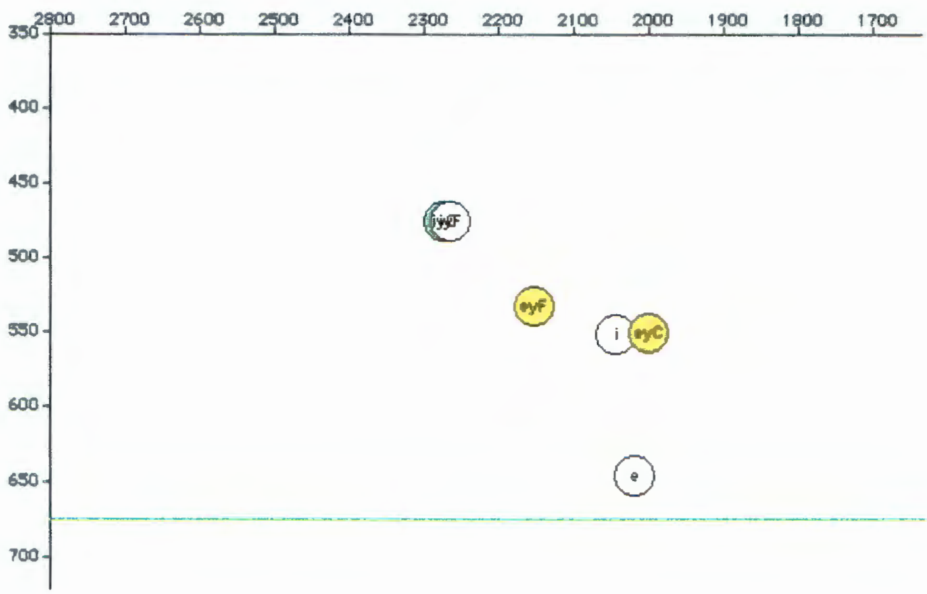


Figure 16. Speaker 1: /e/ and /i/ means.

Speakers 2 and 8's /ey/ vowel classes overlap more prominently with /i/ class than Speaker 1's data do and apparently are also transitioning toward the non-peripheral track (see Figures 17 and 18).

Based on the observation that /e/ vowel class is nearly equally front as /i/ class, and /ey/ class is apparently transitioning back onto a non-peripheral track, the evidence supports an observation that Stage 2 of the Southern Shift is in an initial stage for Speakers 1, 2, and 8. Stage 3 is not present for Speakers 1, 2, and 8.

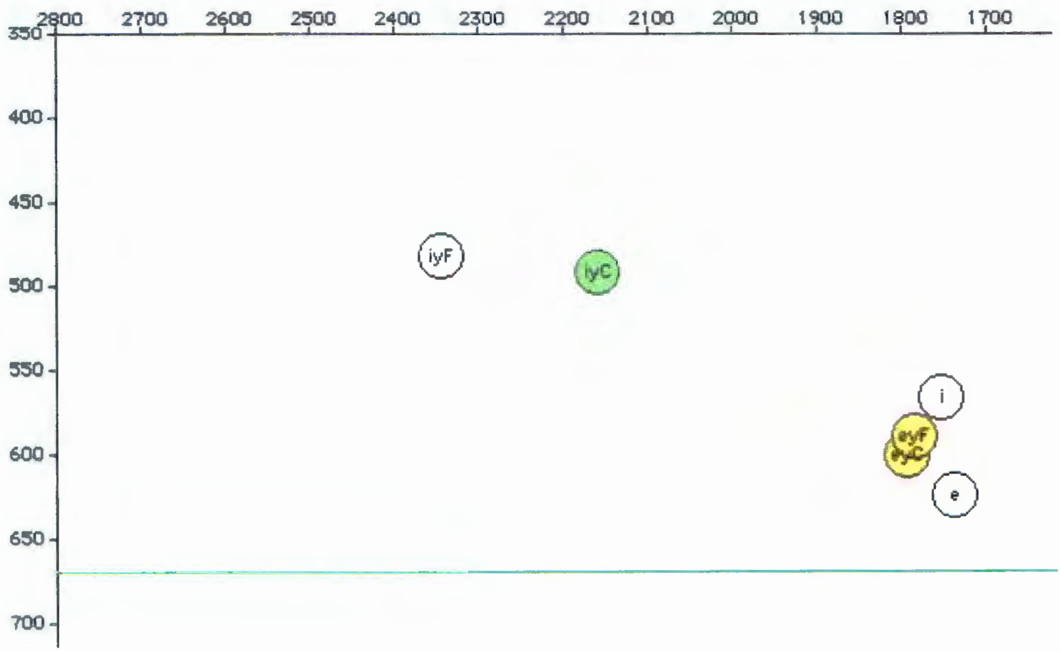


Figure 17. Speaker 2: /e/ and /i/ means.

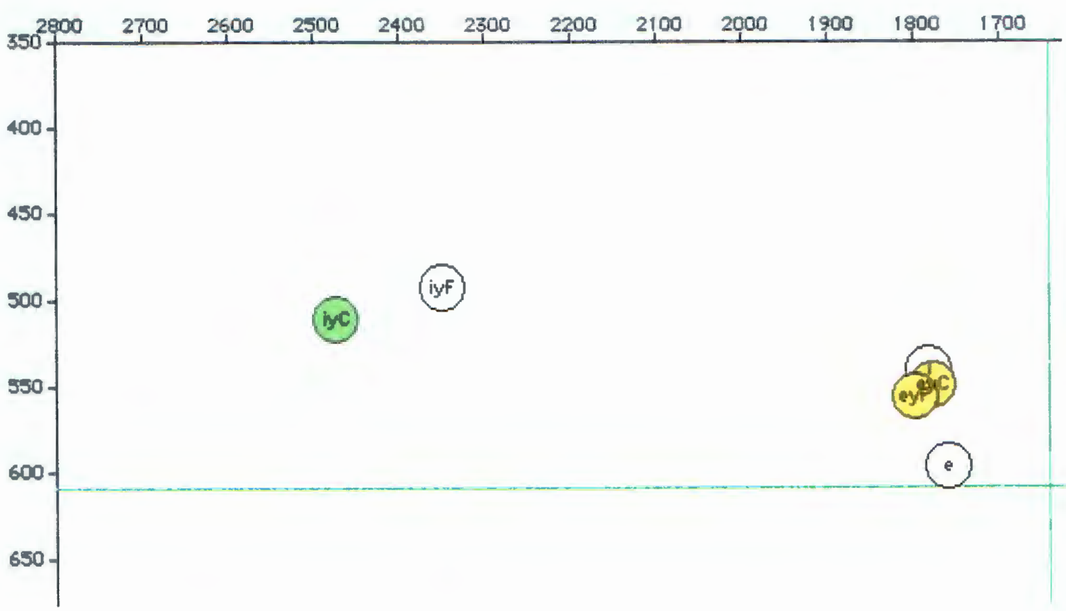


Figure 18. Speaker 8: /e/ and /i/ means.

Speaker 7 exhibits only part of Stage 2 of the Southern Shift (see Figure 19). As can be seen on the plot chart of the vowels' means in Figure 19, Speaker 7's /e/ class is front of /i/ class. This observation meets with one part of the /e/ and /ey/ reversal described for Stage 2 of the Southern Shift.

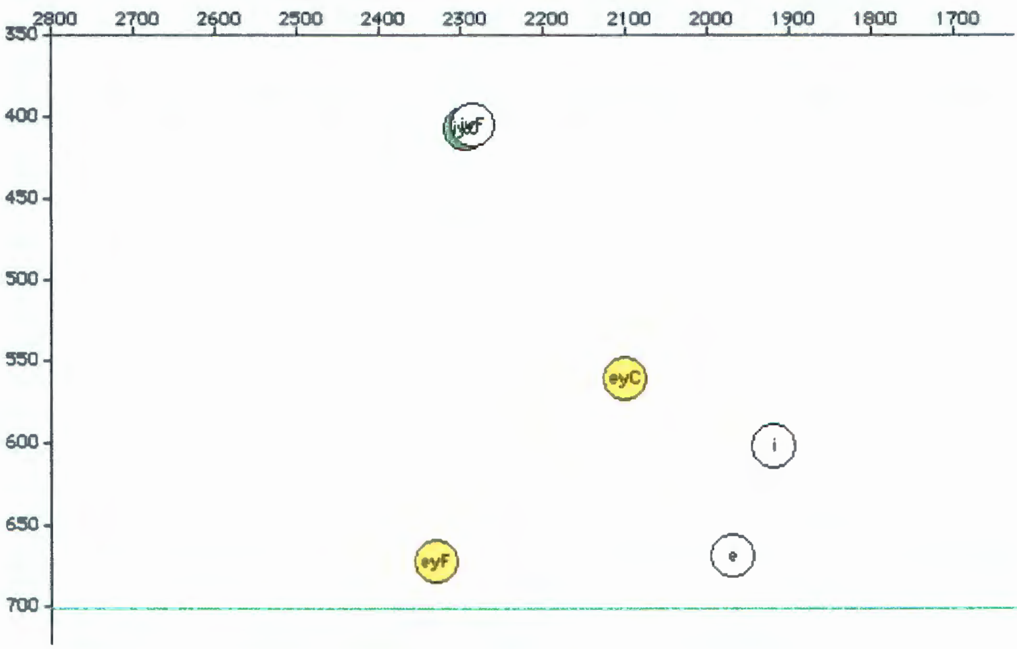


Figure 19. Speaker 7: /e/ and /i/ means.

Although the /ey/ class subsets exhibit distinctiveness from one another, both /ey/C and /ey/F means appear along the peripheral track.

This evidence shows that /e/ class may exhibit an early transition toward a peripheral track. Without the co-occurrence of /ey/ class transitioning lower and back, Stage 2 cannot be said to be present in Speaker 7. Stage 3 of the SS is not evident in Speaker 7's data.

Speakers 3, 6, and 9 show no indication of /e/ transitioning into a front and raised place, but they do present /ey/ data that may reflect a transition in that vowel class.

Speaker 3 and 6's /ey/C subsets appear in a non-transitioned place, but /ey/F subset is backed. See Figures 20 and 21 below. Figures 20 and 21 indicate that /e/ and /ey/C occur, more or less, in an anticipated place for a non-transitioned vowel system for Speakers 3 and 6. Speaker 3's /ey/F means is almost as back and just slightly front /i/ class. Speaker 6's /ey/F subset appears equally back of /i/ class and slightly lower than it. The apparent transition of /ey/F subset is a lone transition occurring separately from the /ey/C subset and /e/ class. Without these other two features, Stage 2 cannot be observed as present in Speakers 3 and 6's vowel systems.

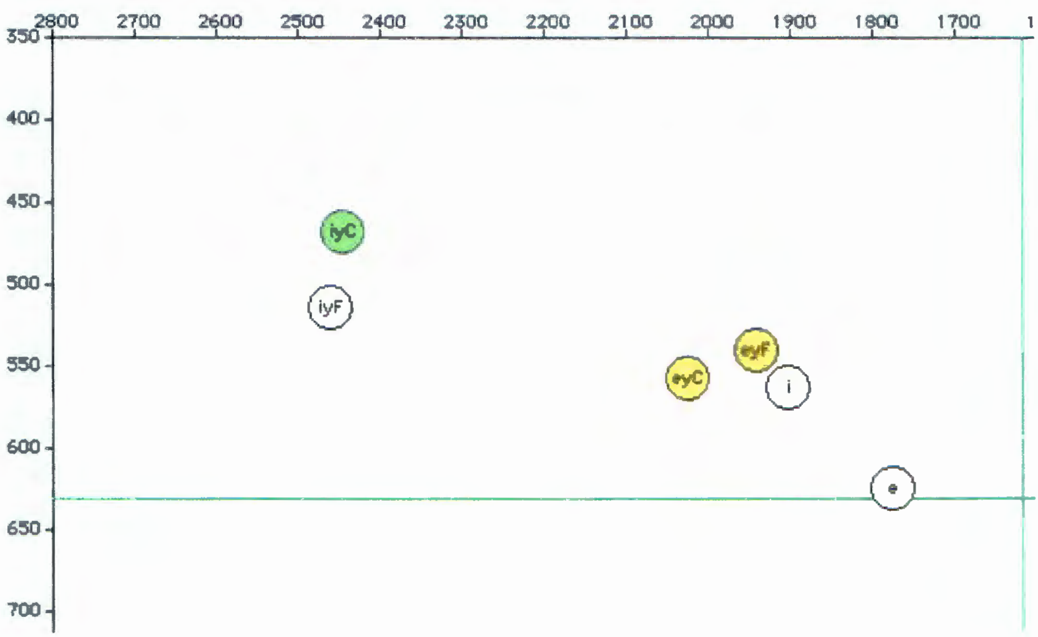


Figure 20. Speaker 3: /e/ and /i/ means.

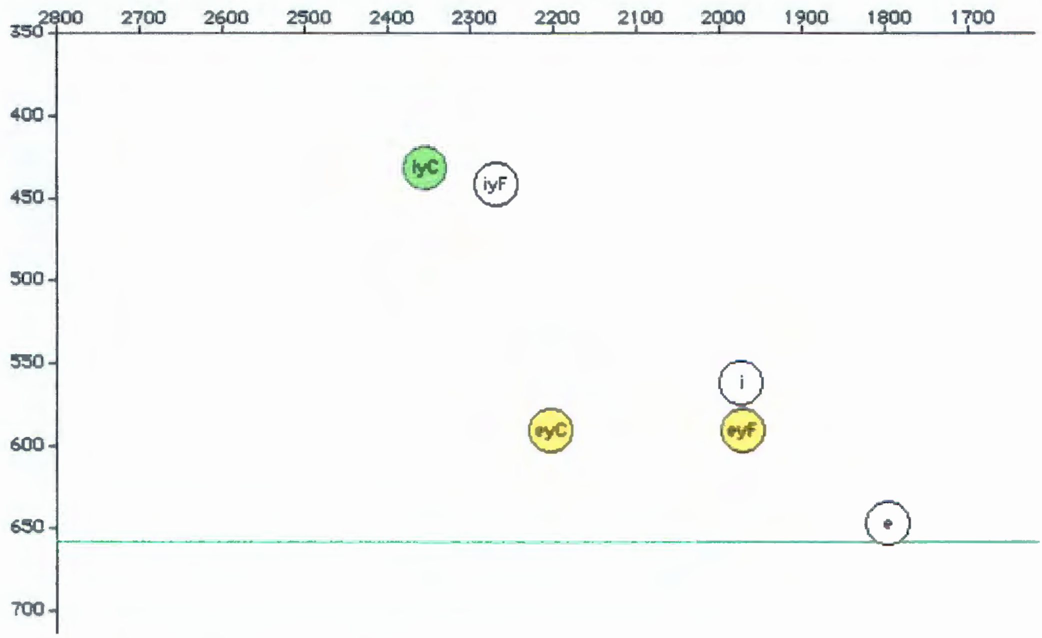


Figure 21. Speaker 6: /e/ and /i/ means.

The vowels for Stage 3 of SS appear in anticipated place for Speakers 3 and 6, which provides evidence for the absence of Stage 3 in their vowel systems.

Speaker 9's /ey/ vowel subsets are also distinct (see Figure 22). As indicated in Figure 22, Speaker 9's /e/ class occurs in anticipated place for a non-transitioned system. The /ey/ class' subsets appear distinct from one another. /ey/C occurs front, but higher than anticipated. /ey/F subset actually places back of /i/ class. Although the /ey/F place may indicate a transition with /ey/ class, similar to Speakers 3 and 6 immediately above, without the transition toward a non-peripheral track for the entire /ey/ class and without the fronting and raising of /e/ class, Stage 2 of the Southern Shift cannot be said to be present in Speaker 9's speech patterns.

Similarly, Stage 3 is not present with /iy/ and /i/ means appearing non-transitioned places.

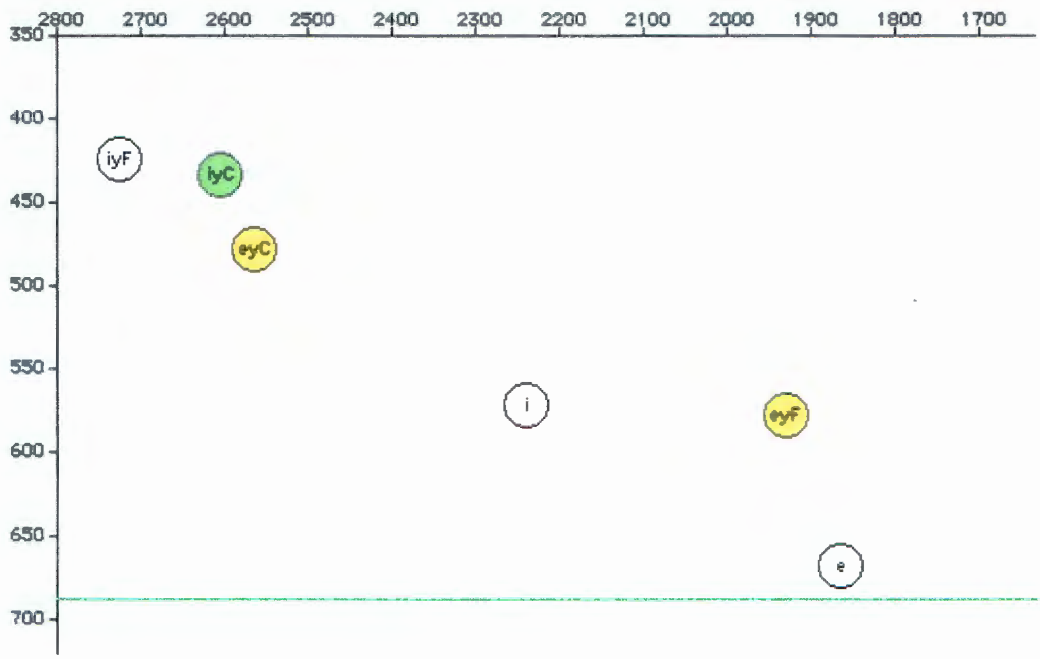


Figure 22. Speaker 9: /e/ and /i/ means.

Two subjects, Speakers 5 and 10, exhibit no apparent similarity to patterns described for Stages 2 and 3 of the Southern Shift. The plot charts appear in Figures 23and 24 below. The place of the vowel classes, as can be seen in Figures 23 and 24 for Speakers 5 and 10, respectively, are practically text book in appearance. The peripheral vowels, /iy/ and /ey/ both appear fronter and higher than the non-peripheral counterparts of /i/ and /e/. Stages 2 and 3 are absent in both Speakers 5 and 10.

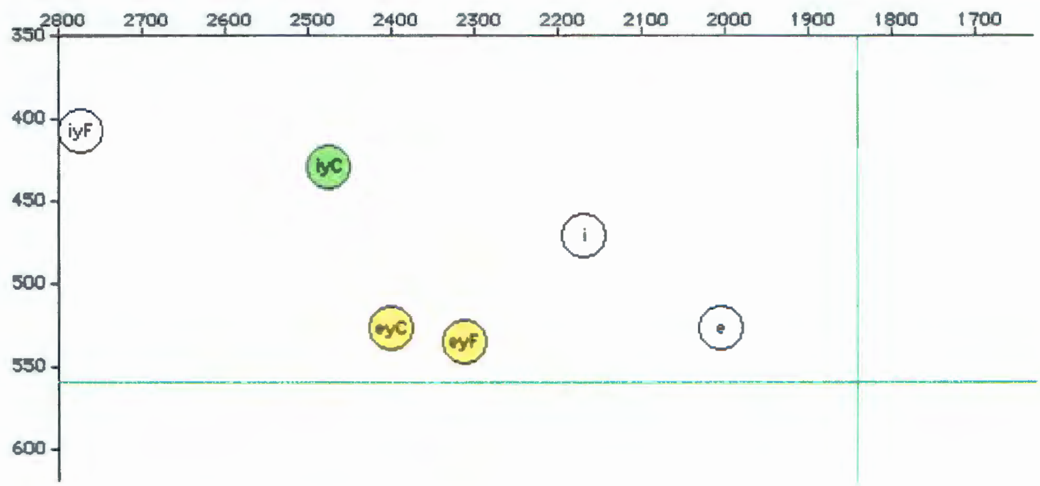


Figure 23. Speaker 5: /e/ and /i/ means.

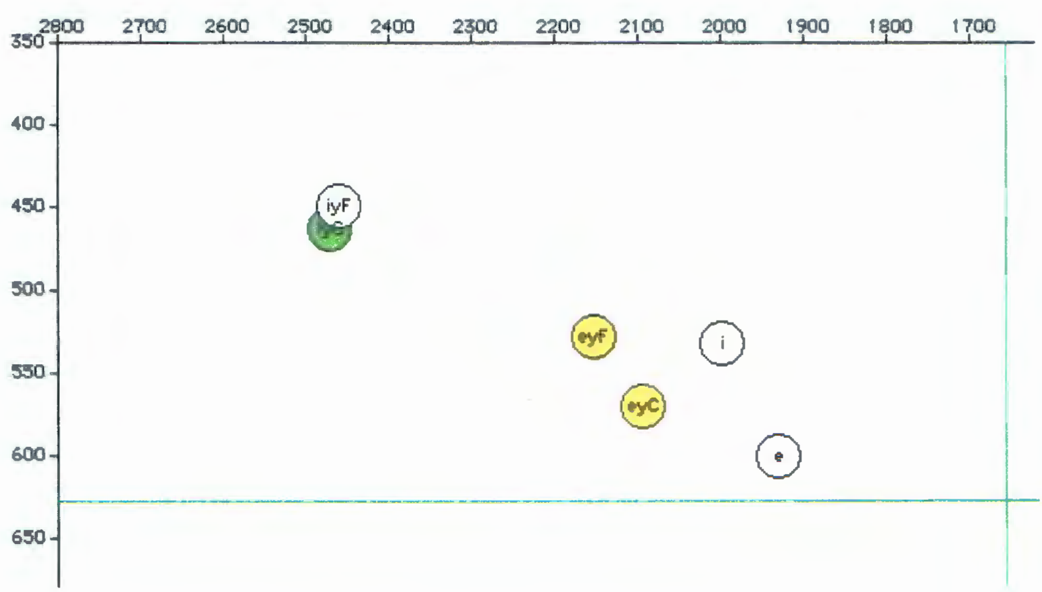


Figure 24. Speaker 10: /e/ and /i/ means.

A review of one other southern feature occurs before the summary comments are made.

4.4 OTHER SOUTHERN FEATURES: /i/ AND /e/ PRE-NASAL MERGER

The above discussion has been limited to descriptions involving the theoretical pattern for chain shifts evident in the Southern Shift. Other features are present within the southern dialect not captured within the SS pattern, as discussed in chapter 3.

In the southern United States, there is a general merger occurring with /i/ and /e/ before nasals. Evidence is considered among the speakers included in this study. Generally, the available data are very limited for this analysis. Two speakers, numbers 5 and 10, do not have any tokens in /i/ or /e/ class in pre-nasal environments. Appendices offer the relevant plot charts for the other speakers (see Appendix I, figures I-1 to I-8).

Table 16 provides the formant data used for discussion here. Table 16 lists the pre-nasal subset means for the available tokens of /i/ and /e/ offered in eight speakers data. The expectation for the /i/ and /e/ pre-nasal merger is for the Hz values to be identical. As indicated by the means in Table 13, no speaker has identical Hz values for either F1 or F2 normalized measurements. Speaker 2 has one set of tokens that are identically produced and can be observed in Appendix I, chart I-2.

Generally, the data sets for the /i/ and /e/ pre-nasal merger are limited. Two speakers could not be evaluated because no data were available. Nonetheless, the means of the /i/ and /e/ pre-nasal subset data available do not support the observation for identically produced tokens, which would mean the merger is not present in any of the subjects' vowel systems.

Table 16: */i/ and /e/ pre-nasal means*

Speaker	F1 Subset Means		F2 Subset Means	
	/i/N	/e/N	/i/N	/e/N
1	592	622	2186	2102
2	592	630	1868	1818
3	583	652	1902	1890
4	581	590	1648	1964
6	603	646	1812	1989
7	684	724	1672	1968
8	539	579	1780	1796
9	667	675	2013	1849

4.5 SUMMARY OF SOUTHERN FEATURES

The various observations and discussion of the existence of Southern Features of the Oregon NORMs included in this study can be summarized in Table 14. Many of the judgments offered on Table 17 about any given speaker's participation with the various items described for a southern dialect are based on limited data as discussed in the observations above. Even though some of the judgments may be overly optimistic the overwhelming evidence implies that southern features are not wide spread among the subjects, although Stage 2, the reversal of /ey/ and /e/, is present among five speakers, #s 1, 2, 4, 6, and 8.

Table 17: *Southern features summary for all speakers*

Speaker	Southern Shift			/i/N & /e/N Merger
	Stage 1	Stage 2	Stage 3	
1	No	Initial	No	No
2	No	Initial	No	No
3	Initial	No	No	No
4	No	Yes	No	No
5	No	No	No	No Data
6	No	Initial	No	No
7	No	No	No	No
8	No	Initial	No	No
9	No	No	No	No
10	No	No	No	No Data

Research questions 2 and 3 are listed again for convenience.

2. Do Oregon NORM vowel systems conform to a southern pattern?
3. If so, how advanced (in terms of the Southern Shift) are the vowel systems?

The answer to question 2 is somewhat based on the evidence discussed above. There are isolated southern tokens present among my speakers. No single speaker exhibits the entire southern pattern as described elsewhere.

The answer to question 3 is the isolated features exhibited among the study's subjects are not very advanced. In fact, many observations concluded that the feature was in a transitional or initial stage of realization.

Without the presence of widespread and advanced southern features in the speech data considered in this study, the analysis must move forward with question

4 of the study: If southern features are not present, what can be said about the Oregon NORMs' vowel systems?

4.6 NON-SOUTHERN DIALECT FEATURES

In the discussion below, further dialect features are identified. This process will split subjects into groups dependent on the fronting of /ow/ and /aw/. Further diagnostic judgments are based on the front/back relationship of /e/ and /o/.

4.6.1 Non-Southern Dialect Diagnostic: Fronting of /ow/ and /aw/

On the Atlas of North American English (ANAE) dialect tree (Figure 12 in chapter 2), the first dialect split comes from a consideration of the co-occurrence of fronting of the /ow/ and /aw/ classes. The North, West, and Canada dialects exhibit moderate or no fronting of these two vowel classes. The Midlands and Southern dialects have strong fronting.

For /ow/, there is a defining acoustic measurement to indicate a front place judgment. /ow/ is considered front with an F2 value greater than 1200 Hz (Labov, 2002).

In a non-transitioned vowel system, /aw/ appears back of the central-axis and lower than the mid-axis. For /aw/ fronting, the judgment is a relative one specific to each speaker. The F2 values range from 1324 to 1810 among my speakers (see Table 18) and do not readily correspond to place within each speaker. For example, Speaker 1 has an /aw/ F2 means value of 1582, and the means places front of central axis. However, Speaker 5 has a greater F2 means value at 1733, but places back of his central-axis. The observation of these places can be observed in the Vowel System Grand Means plot charts provided for each speaker in Appendices F-1to F-10.

Table 18 lists normalized means F2 data for all speakers for /ow/ and /aw/ vowel classes. The F2 measurement is indicative of the front-center-back place for any vowel. Also in Table 22, /aw/'s front/back position related to each speaker's central axis is provided.

Table 18: */ow/ and /aw/ F2 Hz Values and /aw/ place related to central axis*

Speaker	/ow/ F2 Normalized Hz Value	/aw/ F2 Normalized Hz Value	Front/Back Place /aw/ of Central Axis
1	1023	1581	Front
2	1411	1437	Back
3	1084	1324	Back
4	1226	1679	Front
5	1351	1733	Back
6	1008	1659	Front
7	1071	1828	Front
8	1411	1588	Back
9	1007	1453	Slightly back
10	1072	1810	Front

Four speakers (2, 4, 5, and 8) meet a front /ow/ description with F2 values greater than 1200 Hz. The conformity to the pattern initially places these four speakers off of the Northern branch for ANAE dialect tree. The remaining six speakers exhibit F2 values lower than 1100 Hz. These speakers could potentially be placed along the dialect branch for northern, western, or Canadian dialects on the ANAE's dialect tree.

With no acoustic measurement attached to the fronting of /aw/, the evaluation relies upon /aw/'s place in relation to the speaker's central axis. Table 18 indicates that half of the informants (#s 1, 4, 6, 7, and 10) have /aw/s front of their individual central axis. Speakers 2, 3, 5, and 8 exhibit /aw/s back of their central axes, and speaker 9's /aw/ is slightly back of his central axis.

The Atlas of North American English's (ANAE's) dialect tree first splits the North American dialect onto two branches based on the co-occurrence or lack thereof on /ow/ and /aw/ fronting (see Table 19). In Table 19, the speaker numbers appear in the quadrant that represents the realization for the /ow/ and /aw/ fronting. The ANAE's dialect tree can only account for speakers that exhibit fronting or do not exhibit fronting. Only three speakers among my subjects meet this description. Two speakers (#s 3 and 9) exhibit back places for the vowel classes, which places them on the Northern/West branch of the ANAE dialect tree.

Speaker 4 exhibits fronting of both /ow/ and/ /aw/. Analysis for the SS and southern features occurred above, and the observation from Speaker 4's data indicates a weak presence for southern features. Further analysis for Speaker 4 will continue with consideration of Midlands dialect patterns. The other three subjects (#s 2, 5, and 8) with front /ow/s exhibit back /aw/s. Alternatively, the remaining four speakers (#s 1, 6, 7, and 10) exhibit back /ow/s with F2s lesser than 1100 mean Hz values and /aw/s front of their central axis.

Table 19: *Speakers' /ow/ and /aw/ fronting*

	/ow/ + Front	/ow/ - Front
/aw/ + Front	4	1, 6, 7, 10
/aw/ - Front	2, 5, 8	3, 9

The purpose of the diagnostic is to try to determine which initial branch of the ANAE's dialect tree subjects vowel systems may pattern after. The primary split, as mentioned above, is between the dialects of the north, west, and Canada with the dialects of the Midlands and South.

4.6.2 Non-Southern Diagnostic: Front/Back Relation of /e/ and /o/

The front-back relation of /e/ and /o/ may provide another opportunity for an early diagnostic measurement to determine the presence of a particular dialect. The results of this analysis provide data indicative of northern or Midlands patterns. With the intent of finding a dialect pattern similar to the initial split observed on the ANAE, the results of the /e/ and /o/ front-back relation provide usable data.

The description for the Midlands region dialect reports that /e/ and /o/ are not equally back and the difference between the F2 formant values is greater than 375 Hz (F2/e/ - F2/o/ = > 375 Hz). The description for the northern feature states that in advanced speakers, /e/ and /o/ are central vowels with the same mean F2 (Labov, 2002).

The analysis is a quantitative measure, and Table 20 provides the relevant data for the project's speakers under consideration. Table 20 provides the F2 values for /e/ and /o/ for the speakers under consideration. The difference between the formants has been calculated and the determination for Midlands or Northern descriptions appears, as well in Table 20.

Eight speakers, 1-4, 6, 7, 9, and 10, meet the Midlands Features description for unequal front/back place for /e/ and /o/ classes with differences found in the vowels' F2s to be greater than 375 Hz. Two speakers, 5 and 8, do not meet the description with differences lower than 375 Hz.

Table 20: *F2 /e/ - F2 /o/ results and dialect diagnostic*

Speaker	F2 /e/	F2 /o/	Difference Between F2/e/ and F2/o/	Meets Midlands or Northern Measurement
1	2016	1340	676	Midlands
2	1735	1207	528	Midlands
3	1775	1370	405	Midlands
4	1915	1313	602	Midlands
5	1984	1613	371	Northern
6	1794	1318	476	Midlands
7	1967	1233	734	Midlands
8	1801	1449	352	Northern
9	1863	1305	558	Midlands
10	1929	1262	667	Midlands

The two diagnostic considerations of the speakers indicate some confounding results. The data in Table 21 summarizes the observations.

Seven speakers, 1, 2, 5, 6, 7, 8, and 10, have either /ow/ or /aw/ front, but not both. No dialect can be ascertained from these data. Five of these speakers, #s 1, 2, 6, 7, and 10, indicate the presence for the Midlands dialect based on their front/back relation of /e/ and /o/. Further analysis for these speakers considers the Midlands dialect pattern.

Speakers 5 and 8 indicate a northern dialect from the analysis of their front/back relation of /e/ and /o/. Analysis for the NCS continues for these two speakers.

Speaker 4's /ow/ and /aw/ data accord with a southern/Midland dialect and the /e/ and /o/ front/back data indicate a Midlands pattern. Analysis for the Midlands follows for Speaker 4.

The two remaining speakers, #s 3 and 9, indicate /ow/ and /aw/ fronting along a northern/western pattern, yet, their /e/ and /o/ front/back relation indicates a Midlands pattern. Consideration for both the NCS and Midlands is planned for these two speakers.

Table 21: *Dialect determination for all speakers*

Speaker	Dialect for Fronting of /ow/ and /aw/	Dialect for /e/ and /o/ Front/Back Relation	Further Analysis
1	Undetermined	Midlands	Midlands
2	Undetermined	Midlands	Midlands
3	Northern/Western	Midlands	Midlands and Northern
4	Southern/Midlands	Midlands	Midlands
5	Undetermined	Northern	Northern
6	Undetermined	Midlands	Midlands
7	Undetermined	Midlands	Midlands
8	Undetermined	Northern	Northern
9	Northern/Western	Midlands	Midlands and Northern
10	Undetermined	Midlands	Midlands

4.6.3 Non-Southern Dialects Summary

The analysis and ensuing discussion consider the speech features present in the speakers to available dialect descriptions. Analysis for a specific dialect organizes the following discussion. All speakers will be grouped as to their vowel systems comparison to a specific dialect. For example, four speakers are compared to the Northern Cities Shift (NCS) and are grouped together for analysis and discussion. Six speakers are compared to the Midlands Features, and they are grouped as well. The subjects will also be grouped together for consideration for the western dialect.

Summative comments about individual speakers are provided following the analysis. Consideration is given first to the NCS.

4.7 NORTHERN CITIES SHIFT

Four of the subjects, #s 3, 5, 8, and 9, in this project exhibit some initial diagnostic feature for a northern dialect. Five dialect features are considered for the NCS pattern. The NCS pattern was shown in Figure 6.

- /ae/ is raised with an F1 Hz value less than 700 Hz
- /o/ is front with an F2 Hz value greater than 1550 Hz
- /oh/ is lowered
- /^/ is back
- F2/e/ - F2/o/ = < 375 Hz

Plots charts for the speakers under consideration are offered below. (See Figures 25-28).

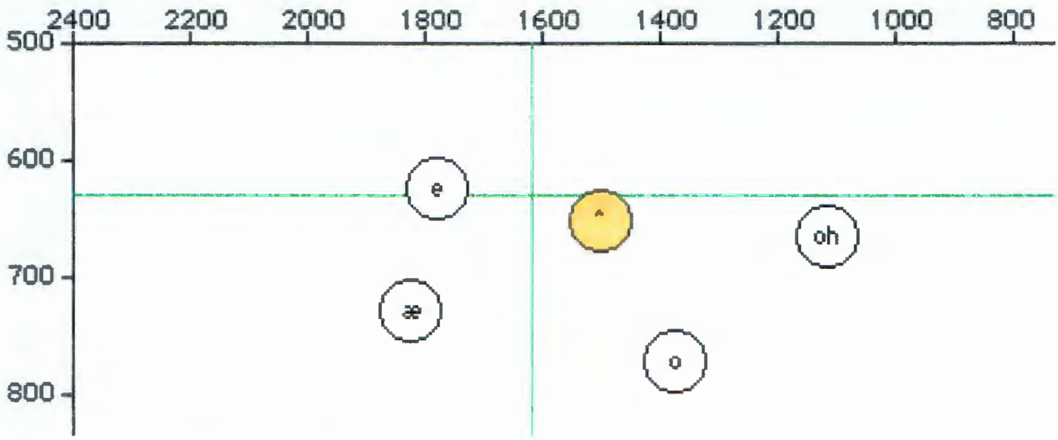


Figure 25. Speaker 3: Northern vowels.

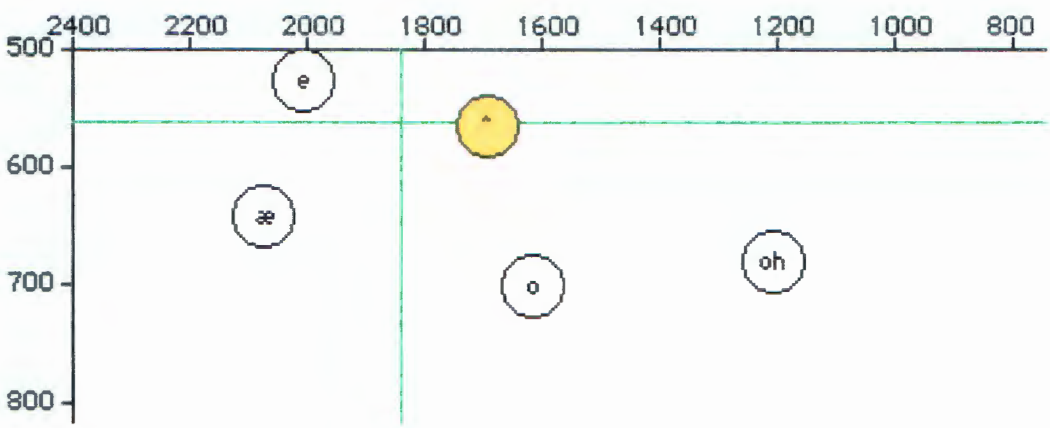


Figure 26. Speaker 5: Northern vowels.

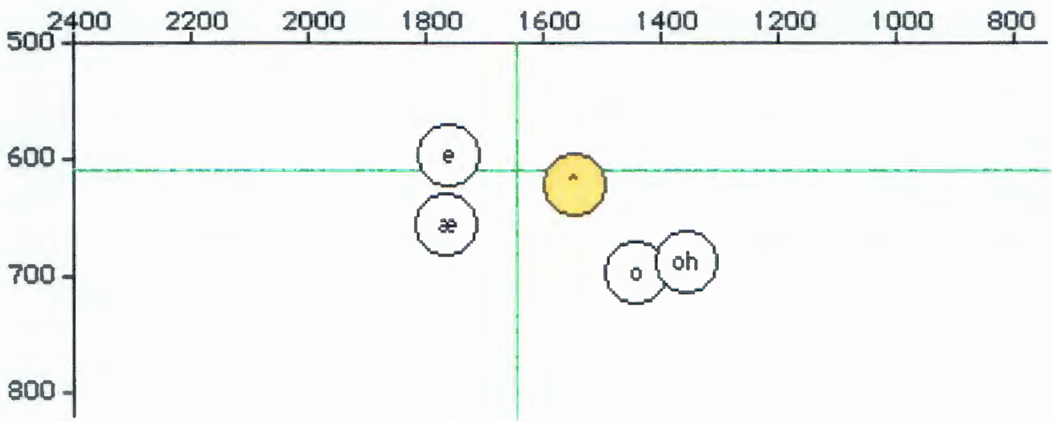


Figure 27. Speaker 8: Northern vowels.

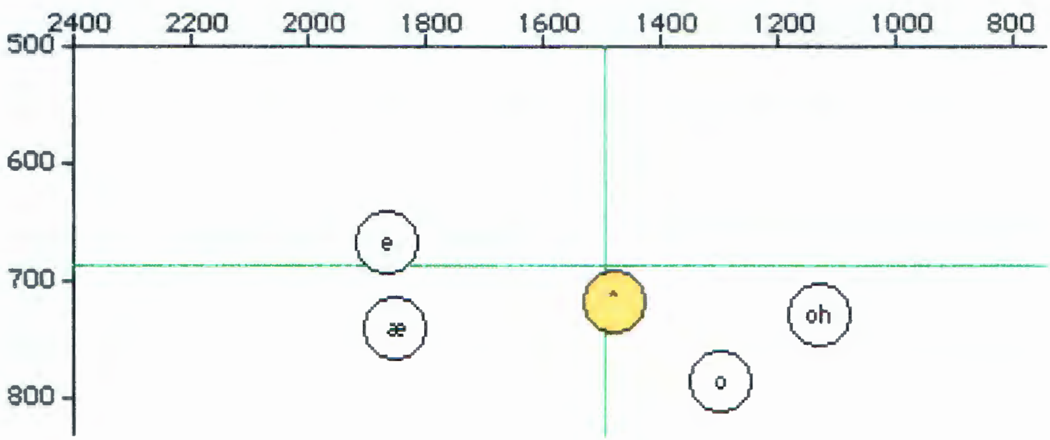


Figure 28. Speaker 9: Northern vowels.

Evaluation of the first two items relies on the formant data for /ae/ and /o/. The data are listed for each speaker in Table 22.

Table 22: *Speakers 3, 5, 8 , and 9: F2 /ae/ and F2 /o/ Hz values*

Speaker	/ae/ F1	NCS Description for /ae/ < 700 Hz Met?	/o/ F2	NCS Description for /o/ > 1550 Hz Met?
3	730	No	1370	No
5	684	Yes	1613	Yes
8	692	Yes	1449	No
9	742	No	1305	No

Two speakers meet the first criteria of the NCS for /ae/ F1 less than 700 Hz. They are speakers 5 and 8. Only one speaker meets the second feature expected in the NCS, speaker 5.

The third feature present in the NCS is the lowering of /oh/. To determine any lowering of /oh/, the F1 Hz values for /o/ and /oh/ were compared. Table 20 provides the data for each speaker, as well as, an initial determination about the lowering status of /oh/ for the individual speakers.

Table 23: *Speakers 3, 5, 8, and 9: Consideration for /oh/ lowering*

Speaker	F1 /o/	F1 /oh/	Difference in F1s	/oh/ Lowered?
3	773	666	107	No
5	698	690	8	Yes
8	703	688	15	Yes
9	792	727	65	No

The height differences /o/ and /oh/ classes for Speakers 5 and 8 are negligible. Their differences are less than 16 Hz. The apparent similarity in height between these two classes indicates an initial transition in the lowering of /oh/class. It appears that the third feature for the NCS has been met for these speakers' vowel systems.

The fourth dialect feature, the backing of /^/, is a subjective determination based on relative place. As indicated in the overall Vowel Class Grand Means plot chart for Speakers found in Appendix G, charts G-1 to G-10, Table 24 provides a summary of the place of /^/ and a determination of its relative backing.

Table 24: *Speakers, 3, 5, 8, and 9: Consideration for /^/ backing*

Speaker	Place of /^/	/^/ Backed?
3	Back of central axis	Possibly
5	Back of Central axis; back of /ay/V, /ay/0, and /aw/ classes	Yes
8	Back of central axis; back of /ay/V and /aw/ classes	Yes
9	On central axis	No

The values for /^/ provided in Table 24 indicate that Speakers 5 and 8 exhibit /^/ back of central axis. Determination for the backed status of /^/ is strengthened given the relationship to the low-central vowel classes. /^/ is back of central axis and back of /aw/ class and parts of /ay/ class for both Speakers 5 and 8. The observation that /^/ could be backed in Speaker 3's vowel system is based on the observation that /^/ class means is, indeed, back of central axis, but front of the /ay/ and /aw/ classes.

The final consideration of the NCS, the front/back relation of /e/ and /o/ was reported earlier in Table 20. The dividing line between the Midlands dialect and the NCS for the /e/ and /o/ front/back relation is 375 Hz. Greater than 375 indicates a Midlands feature and Hz values differences less than 375 is an indication for the NCS. Two speakers meet the NCS feature for the front/back relation of /e/ and /o/.

Speakers 5 and 8 are the only speakers present with Hz value differences less than 375 Hz.

The summary of observations made while considering the likelihood of the NCS appears in Table 25. There were five northern dialect features considered. Speaker 5 apparently exhibits all five features. Speaker 8 exhibits four NCS features. No further analysis occurs for these two speakers. Summative comments will be made at the end of this chapter for each speaker.

Table 25: *Speakers 3, 5, 8, and 9: Northern dialect features summary*

Speaker	/ae/ Raising	/o/ Fronting	/oh/ Lowering	/^/ Backing	F2/e/ - F2/o/ =< 375 Hz	Total Met
3	No	No	No	Possibly	No	1:5
5	Yes	Yes	Yes	Yes	Yes	5:5
8	Yes	No	Yes	Yes	Yes	4:5
9	No	No	No	No	No	0:5

Speaker 3 might meet one feature of the NCS. Speaker 9 does not exhibit any NCS feature.

Recall that Speakers 3 and 9 exhibited no fronting of either /ow/ and /aw/ which indicates the presence of a northern/western dialect as described by the Atlas of North American English dialect tree. Since the NCS does not seem to be present in either speakers' vowel system, analysis for the Western dialect as described by the California/Canadian Shift (CCS) will occur after analysis for the Midlands Features.

The possibility of Midlands dialect features are considered next.

4.8 MIDLANDS DIALECT ANALYSIS

The initial diagnostic results for the front/back relation of /e/ and /o/ indicated that Speakers 1, 2, 3, 4, 6, 7, 9, and 10 may have the Midlands dialect in their vowel systems. The features for the Midlands dialect were reported on in Chapter 3 and are included here again for convenience.

- /ow/ is fronted by an F2 greater than 1200 Hz
- /aw/ is generally fronted
- /e/ and /o/ are not equally back (F2/e/ - F2/o/ = >375 Hz)
- /ay/ maintains its diphthongs before obstruents. Glide deletion occurs pre-resonant.
- /o/ and /oh/ merger is not complete. The merger is in transition (Labov, 2002).

Data relevant to the first three points were examined as initial diagnostic characteristics. Table 26 provides a summary of the relevant data for the speakers under consideration.

Table 26: *Speakers 1, 2, 3, 4, 6, 7, 9, and 10: Results for three Midlands features*

Speaker	/ow/ F2 > 1200 Hz	/aw/ Fronting?	Difference Between F2/e/ and F2/o/ >375 Hz
1	No	Yes	Yes
2	Yes	No	Yes
3	No	No	Yes
4	Yes	Yes	Yes
6	No	Yes	Yes
7	No	Yes	Yes
9	No	No	Yes
10	No	Yes	Yes

Speaker 4 meets all three descriptions for the first three Midlands dialect features. Four speakers, #s 1, 6, 7, and 10, display the second and third features. Speaker 2 exhibits the first and third features, as observed in the diagnostic effort made above. Speakers 3 and 9 meet only the 3rd descriptive item.

The fourth feature for the Midlands dialect pattern relates to the realization of the /ay/ in two different environments. Thus there are two different steps that occur for examination for this feature. The first portion of the analysis considers the /ay/ glide in pre-obstruent position. Obstruents refer to stops, fricatives, and affricates (Pullman & Ladusaw, 1996).

Examination of the data already occurred while considering the /ay/ glide for the Southern Shift. Reference to the plot charts accompanies a summary of the relevant observations below.

Speaker 1 has two tokens, *like* and *drive*, which are produced as inglides and appear in Appendix H, Figure H-7. Speaker 3 has *outside* produced as an inglide. It appears in Appendix H, Figure H-2. Speaker 4 produces one token, *quite2*, that appears to be an inglide, and it appears in Figure H-4. Speaker 9's data provide two tokens, *nice* and *right*, in Figure H-6 that are both lowered realizations of the glide. Speaker 10 produces two tokens, *five* and *five2*, in pre-obstruent position as inglides, and they appear in Figure H-9. Speakers 2, 6, and 7 exhibit fully realized /ay/ diphthongs in pre-obstruent position. Their /ay/ data are provided in the Appendix H, Figures H-1 and H-8.

Table 27 provides the total tokens available in pre-obstruent position for each speaker and the percentage of those tokens uttered as fully realized /ay/ diphthongs.

Table 27: *Speakers 1, 2, 3, 4, 6, 7, 9, and 10: Percentage of /ay/ tokens meeting Midlands features*

Speaker	Total Number of /ay/ Tokens in Pre-Obstruent Environment	Percentage of Pre-Obstruent /ay/ Tokens that Meet Midlands Description for Full Realization
1	12	83%
2	6	100%
3	8	75%
4	11	91%
6	13	100%
7	6	100%
9	7	71%
10	8	75%

Speakers 2, 6, and 7 follow the Midlands dialect pattern description with 100% of fully realized /ay/ glides in pre-obstruent position. Speakers 1, 3, 4, 9, and 10 exhibit limited data that are counter to the Midlands dialect description.

The second portion of the Midlands dialect description relating to the /ay/ glide observes that the glide is deleted in pre-resonant position. Resonants include glides, nasals, laterals, and rhotics (Pullman & Ladusaw, 1996). Plot charts are provided for aid in the following discussion.

Dissimilar to descriptions for the southern dialect, /ay/ glide deletion is not reported in tandem with a front place for the Midlands description. The vowel nuclei do not reportedly transition to a front place with any sort of relationship to the loss of the glide.

Similar to the analysis for the Southern Shift above, the evaluation for /ay/ glide deletion is based on the presence of a full monophthongal utterances and utterances whose glides have lost the "upness" of their upglides. Two speakers exhibit one token each of /ay/ glide deletion in pre-resonant position. Speaker 1's data is on Figure 28.

The plot chart in Figure 28 for Speaker 1 indicates the places for the vowel nuclei and glide targets for four pre-resonant tokens. A green line connects the only token, *fine,* which is considered monophthongal. Clearly, the *binder* token is a weakened glide, but it is raised by 50 Hz. It does not meet the criterion for this study as there is still some raising exhibited. The discussion of the *binder* token and similar data will occur in chapter 5.

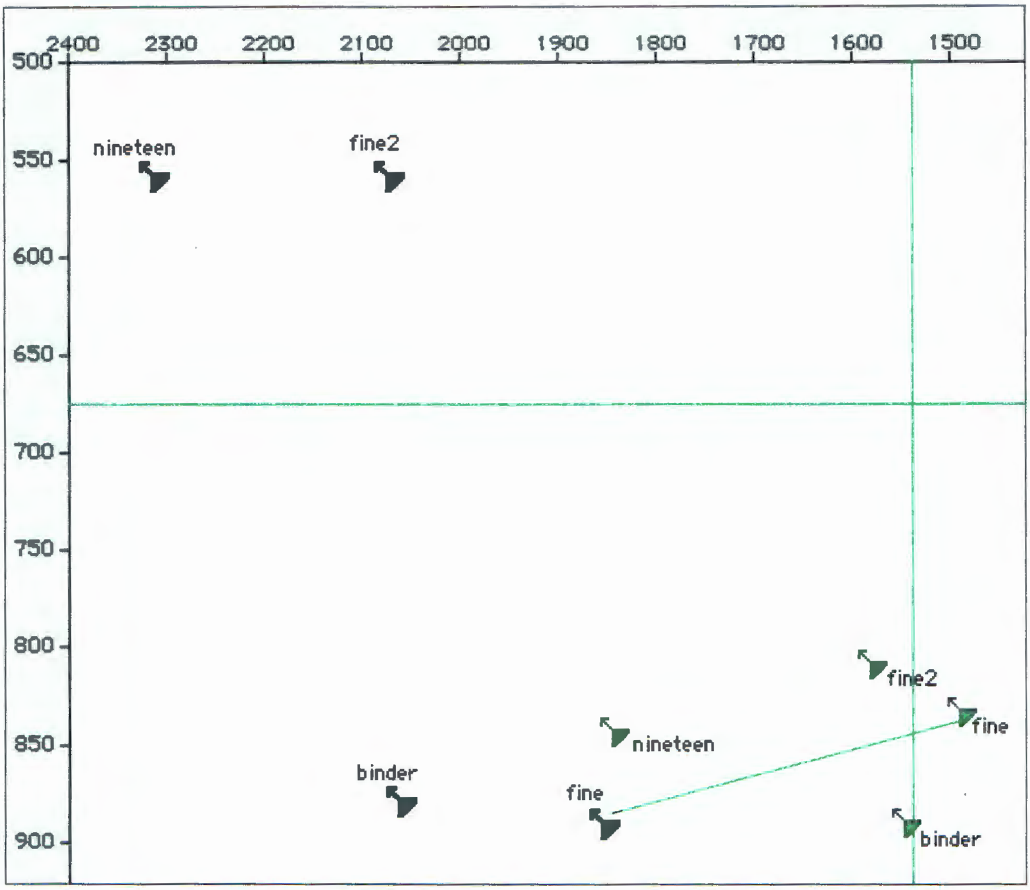


Figure 28. Speaker 1: /ay/ pre-resonant tokens.

Speaker 10's data follows in Figure 29. The plot chart in Figure 29 for Speaker 10 provides place data for the six pre-resonant /ay/ tokens present in the speaker's data set. As reported above, *I'll* is considered monophthongal due in large part to the glide occurrence within the vowel space. The other five tokens have glides that appear more diphthongal than not.

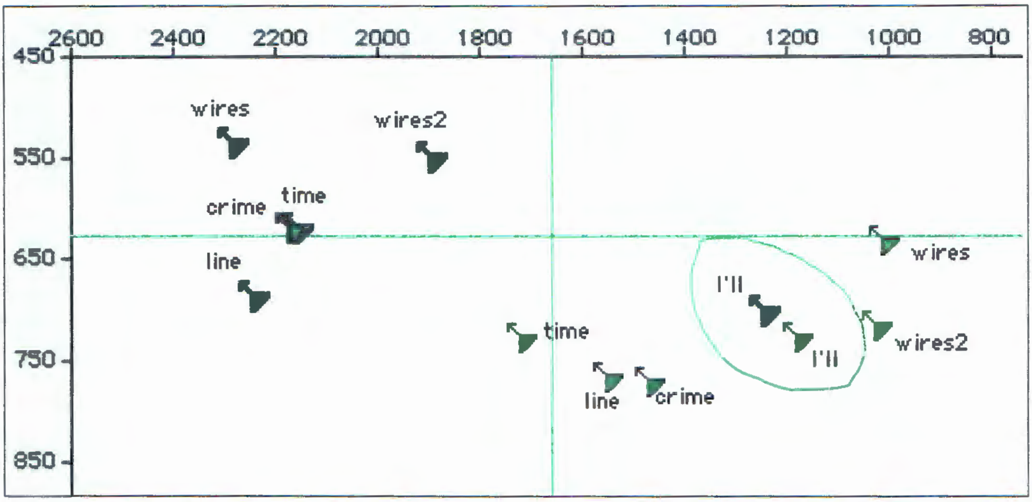


Figure 29. Speaker 10: /ay/ pre-resonant tokens.

Two speakers exhibit monophthongized tokens in pre-resonant position. Speaker 3 and 6's data appear below. First, Speaker 3 (see Figure 30).

Speaker 3 has three pre-resonant /ay/ tokens, two of which are considered monophthongized. *Wires* and *slime* were discussed above as features of the Southern dialect. *Slime* has a front, but not raised glide production. *Wires* is a complete monophthong, although it may be an outlier due to its rather high place above mid axis. Speaker 6 also exhibits complete monophthongization in his /ay/ production.

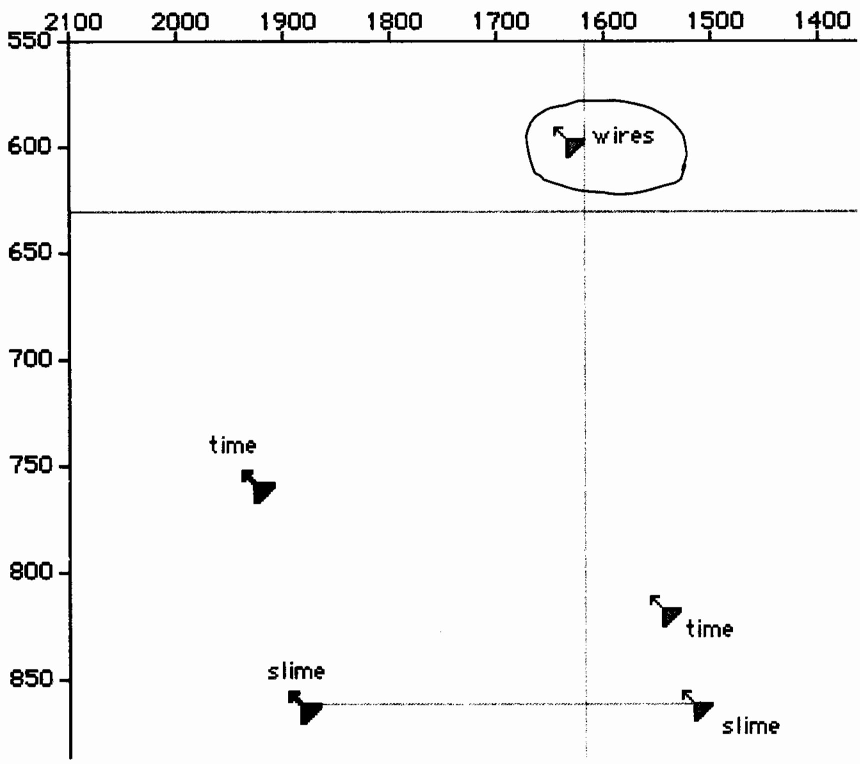


Figure 30. Speaker 3 /ay/ pre-resonant data.

Nine tokens are available for examination for the /ay/ in pre-resonant for speaker 6 environment. Figure 31 provides the visual data for place. The plot chart in Figure 31 indicates the place of the vowel nucleus and glide targets for six tokens with glides. The three monophthongized tokens have a single symbol and are contained in the green circle. The words for their symbols have been highlighted.

As reported in Appendix H, four tokens are considered to be monophthongized. They are *time, retired, while,* and *wire2*. The evidence of monophthongization suggests that occasionally the glide for /ay/ is being deleted in this environment for Speaker 6. Although glide deletion is not universally present in every pre-resonant token, data indicate a patterning similar to descriptions for the Midlands Features for /ay/ glide deletion before resonants.

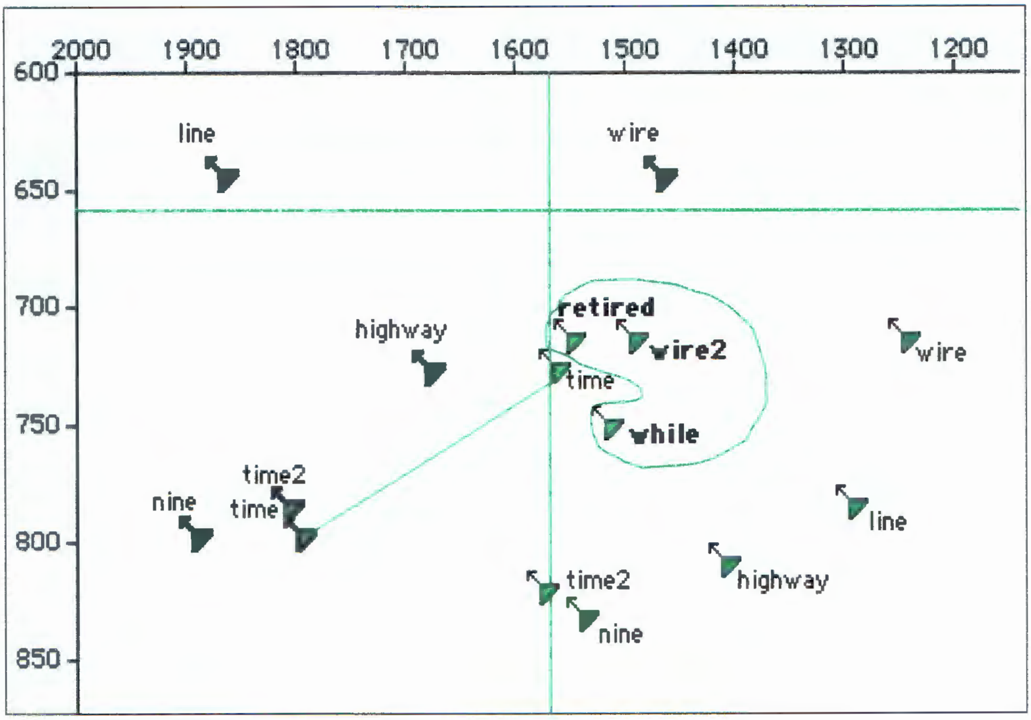


Figure 31: Speaker 6: /ay/ tokens pre-resonant.

Analysis for the final feature for the Midlands dialect pattern is next. The low-back merger description of it being in transition is somewhat ambiguous. The means of the formants for /o/ and /oh/ indicate a distinction between the vowel classes (see Table 28). But what are the features of a transitional low-back merger?

Table 28: */o/ and /oh/ class means*

Speaker	/o/ Class Means		/oh/ Class Means	
	F1	F2	F1	F2
1	801	1340	687	1086
2	791	1207	715	1113
3	773	1370	666	1113
4	786	1313	735	1175
6	809	1318	734	1089
7	841	1233	744	1039
9	792	1305	727	1124
10	757	1262	733	1143

Plot charts for the speakers' low-back vowels provide some aid to the current discussion. The /o/ class tokens are indicated by red squares and the pink triangles represent the /oh/ class tokens. Larger circles indicate means for the vowel classes under consideration (see Figure 33).

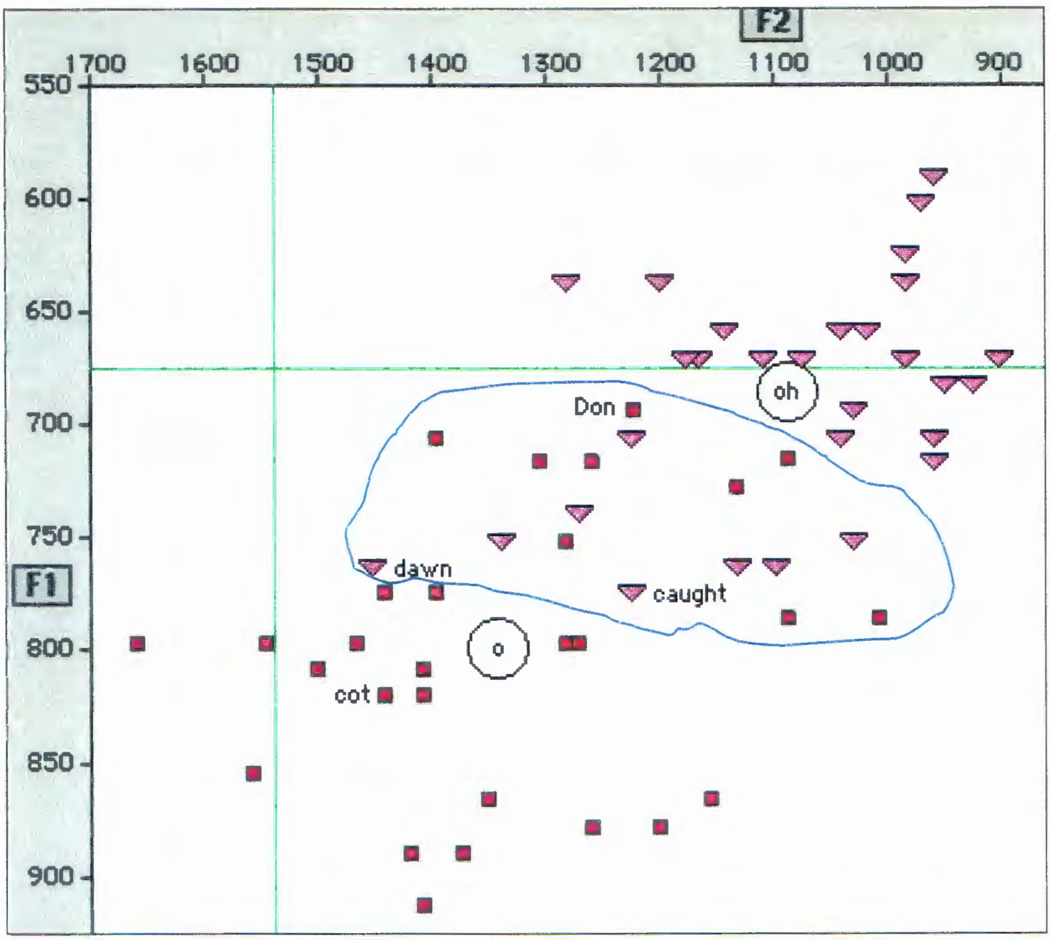


Figure 32. Speaker 1: /o/ and /oh/ overlap tokens.

The plot chart for Speaker 1 in Figure 32 shows the place for the /o/ and /oh/ tokens. The region of overlap for Speaker 1's data is unique among the other plot charts presented later. The region for /o/ and /oh/ overlap tokens occurs between the grand means, which appear in a blue circle on Figure 32, for the overall classes' means. There are no /o/ tokens, red squares high and back of /oh/ class means, and alternately, /oh/ tokens, pink triangles, do not occur low and front of the /o/ class means.

Percentages for the /o/ and /oh/ tokens which occur in the overlap region, encircled by blue, are presented and discussed below.

In Figure 32, two sets of minimal pairs are labeled. The /o/ tokens are labeled to the left, and the /oh/ tokens are labeled to the right of their symbols. The places for *cot* and *caught* occur as anticipated with *caught* (/oh/ class) higher and back than *cot*. *Caught* is the lowest placed token for its vowel class, whereas *cot* appears within a cluster of its class members.

The pre-nasal pair (*Don*, *dawn*) appears front of the other minimal pair. The *dawn* and *Don* realizations appear reversed of anticipated place. *Don*, from the /o/ class, is higher and back of *dawn*. Thus, each of these words appears closer to the class means of the vowel that they are not historical members of. This apparent reversal of place within this minimal pair may be indicative of a transition toward a merger. The presence of several tokens in the area closest to the *Don/dawn* minimal pair indicates an overlap between the /o/ and /oh/ classes.

Data for Speaker 2 occurs below. See Figure 33. Two circles appear on the plot chart for Speaker 2 in Figure 34. The pink circular shape identifies the region for /oh/ utterances where /o/ tokens appear. The red shape identifies /o/ region where /oh/ tokens occur. The data related to the total and percentages of these tokens are related at the end of this section.

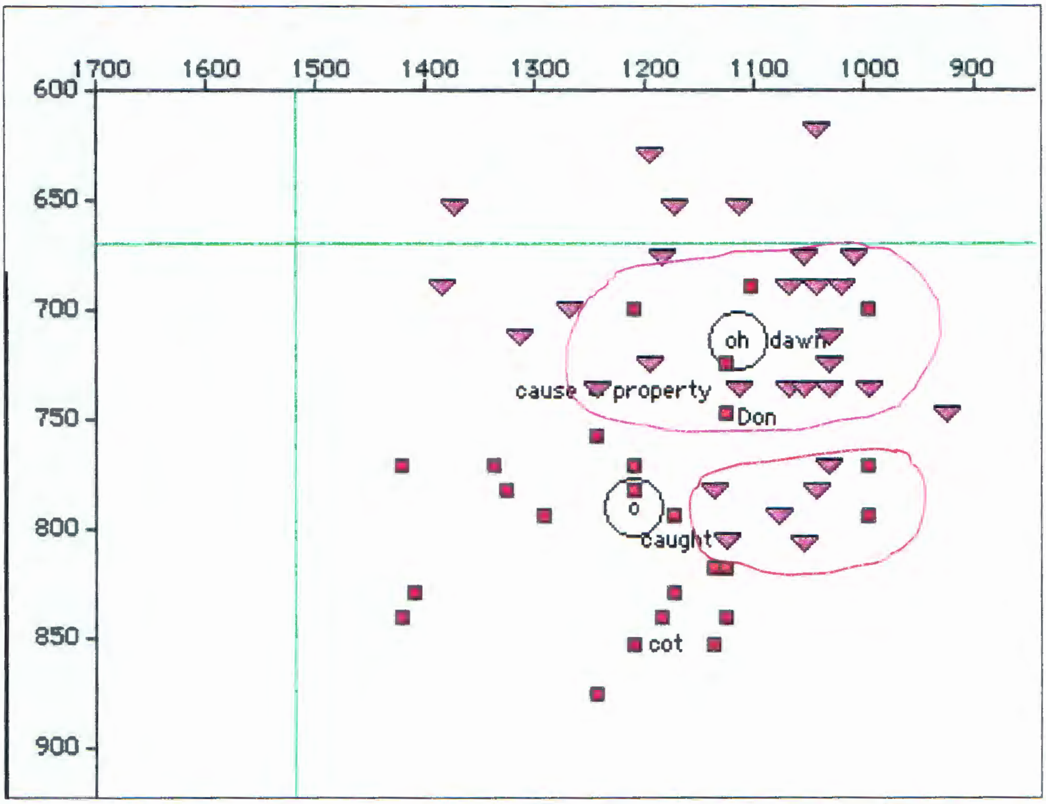


Figure 33. Speaker 2: /o/ and /oh/ tokens.

Two sets of minimal pairs are labeled. The /oh/ class tokens, *caught* and *dawn,* are labeled to the left. The /o/ class tokens, *cot* and *Don,* are labeled to the right. Labels for the tokens of *property* and *cause* are also offered as their utterances are identical to one another. This identical production is meaningful as the tokens are members of the separate classes. This identical production as well as the pre-nasal minimal pair, *Don* and *dawn*, appear within the pink shape for /oh/ class. The data for Speaker 2 appear to offer some evidence for a transition within the /o/ and /oh/ classes.

Speaker 3's low-back vowel tokens appear next (see Figure 34).

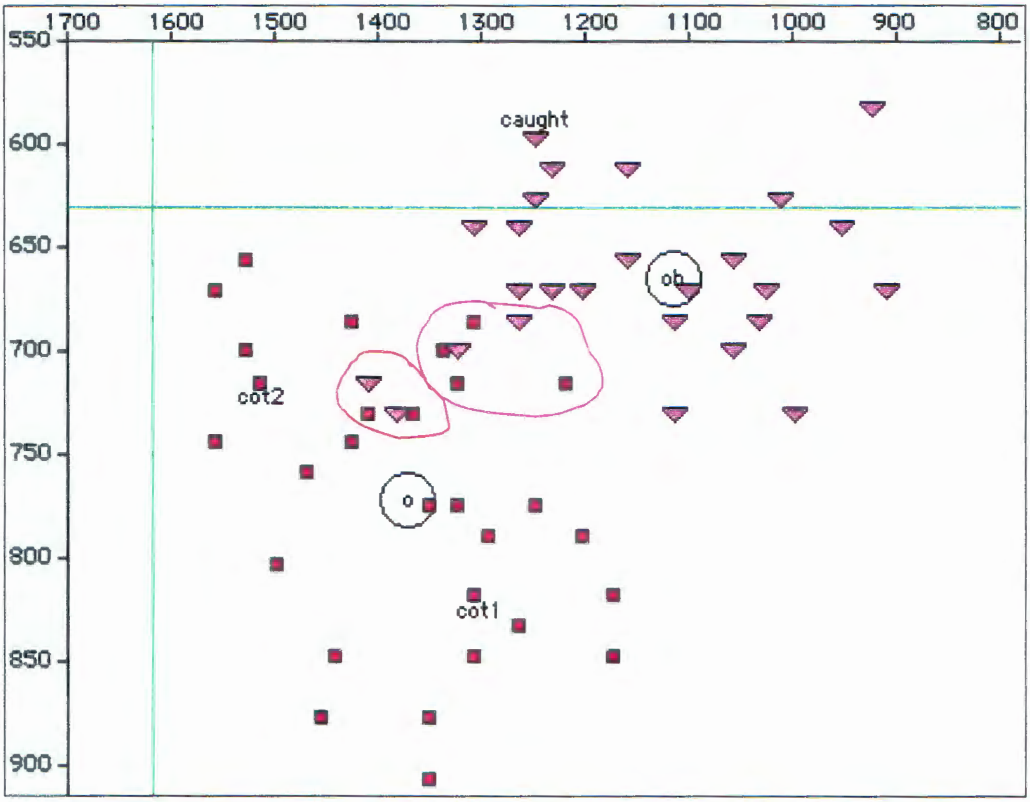


Figure 34. Speaker 3: Low-back tokens.

One minimal pair is labeled on the plot chart in Figure 35. There are two tokens for the /o/ class, labeled *cot1* and *cot2*. They both occur within the cluster of /o/ class tokens. The /oh/ minimal pair token, *caught*, also occurs away from the overlap region designated by the pink and red circular shapes. The /o/ tokens, red squares, that appear in the pink shape and the pink triangles, /oh/ tokens, that appear in the red shape are discussed further below.

Generally, Speaker 3's data indicate weak evidence for the presence of the low-back merger. There is some overlap region present and it may represent the very initial stages for the development of the low-back merger.

The data for Speaker 4 appears in Figure 35 below.

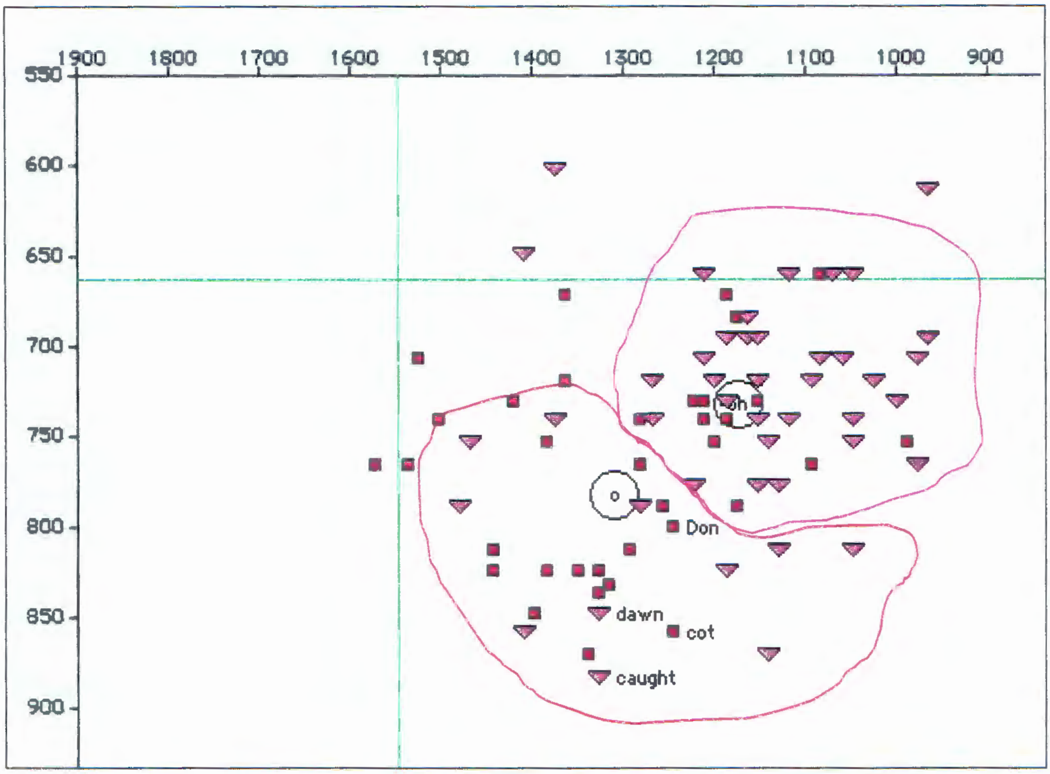


Figure 35. Speaker 4: /o/ and /oh/ tokens.

The pink circle again indicates the region for /oh/ class where /o/ tokens occur and the red shape identifies the /o/ class region where /oh/ tokens appear.

Two sets of minimal pairs are present, and interestingly, both sets appear within the red shape. The /oh/ class tokens, *caught* and *dawn,* appear in front of their counterparts of *cot* and *Don*. The place for the two /oh/ tokens may reflect a transition within the /oh/ class since the /o/ tokens, *cot* and *Don*, occur, more or less, in an anticipated place for a non-transitioned vowel system.

Data for Speaker 6 follows (see Figure 36).

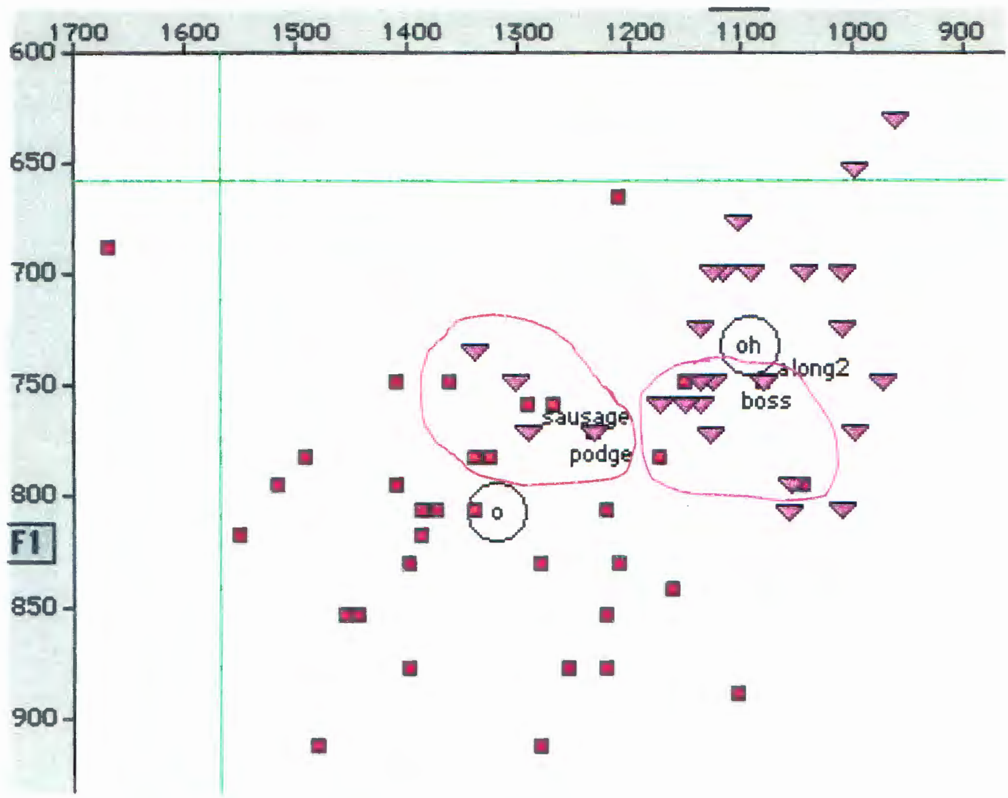


Figure 36. Speaker 6: /o/ and /oh/ overlap tokens.

As above, the pink shape indicates the region of /oh/ place where /o/ tokens appear. The red shape transversely identifies the opposite relationship.

No minimal pairs are present for discussion in Figure 36; however, two pairs of tokens are produced identically. One pair, *sausage* and *podge*, occur within the /o/ cloud. The other pair, *along2* and *boss*, occurs within the /oh/ cloud. Also within the /oh/ vowel space, two of the remaining three /o/ tokens (red squares, which are not labeled) appear very close to /oh/ (pink triangles) tokens. Despite the apparent proximity of the overlap tokens, the overlap data is limited.

Data for Speaker 7 is presented next. For Speaker 7, the tokens for /o/ and /oh/ classes appear clustered separately in Figure 37. /o/ is generally fronter and low of the /oh/ class. Three /o/ tokens (red squares) appear around the /oh/ means circle are encircled in pink. A red shape indicates the region where four /oh/ class tokens apparently occur in /o/ place. However, the overlap is not widespread.

One minimal pair, *caught* and *cot,* occurs within the pink shape very near the /oh/ class means. Considering the proximity of the pair to one another, an observation can be asserted that these words have merged. This observation is very interesting considering that overall the classes appear distinct due to a general lack of overlap among the tokens. Similarly, the few /o/ tokens in the raised and back position of /oh/ class and the near merger of the *cot/caught* minimal pair may be indicative of an initiation toward a low-back merger.

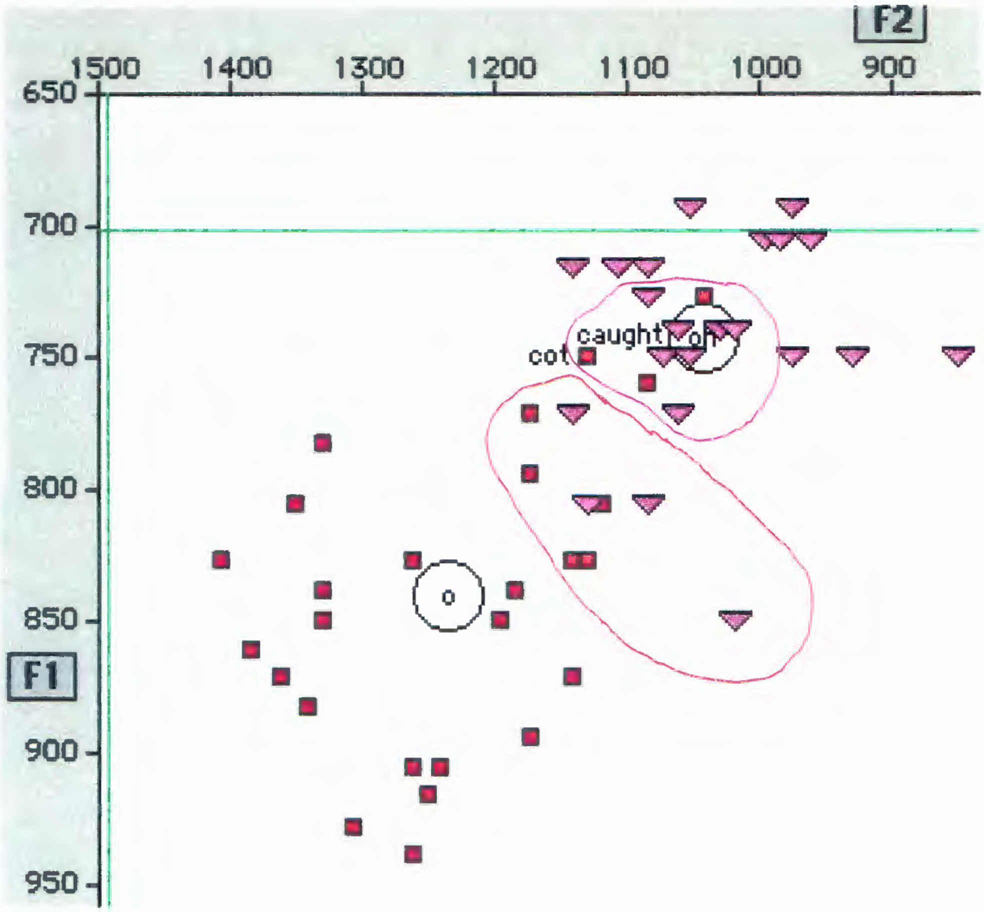


Figure 37: Speaker 7: /o/ and /oh/ overlap tokens.

The data for Speaker 9 now proceeds (see Figure 38).Two minimal pairs are labeled on the plot chart in Figure 38 for Speaker 9. The /o/ tokens, *cot* and *Don*, appear lower than their /oh/counterparts, *caught* and *dawn.* Speaker 9 is clearly maintaining a difference for the minimal pair. The *caught* and *dawn* tokens occur front and lower than the /oh/ class means, but the /o/ tokens of *cot* and *Don* occur lower than the /o/ class means thereby maintaining a secure distinction from the /oh/ utterances. A merger of the low-back vowels does not appear to be complete for Speaker 9.

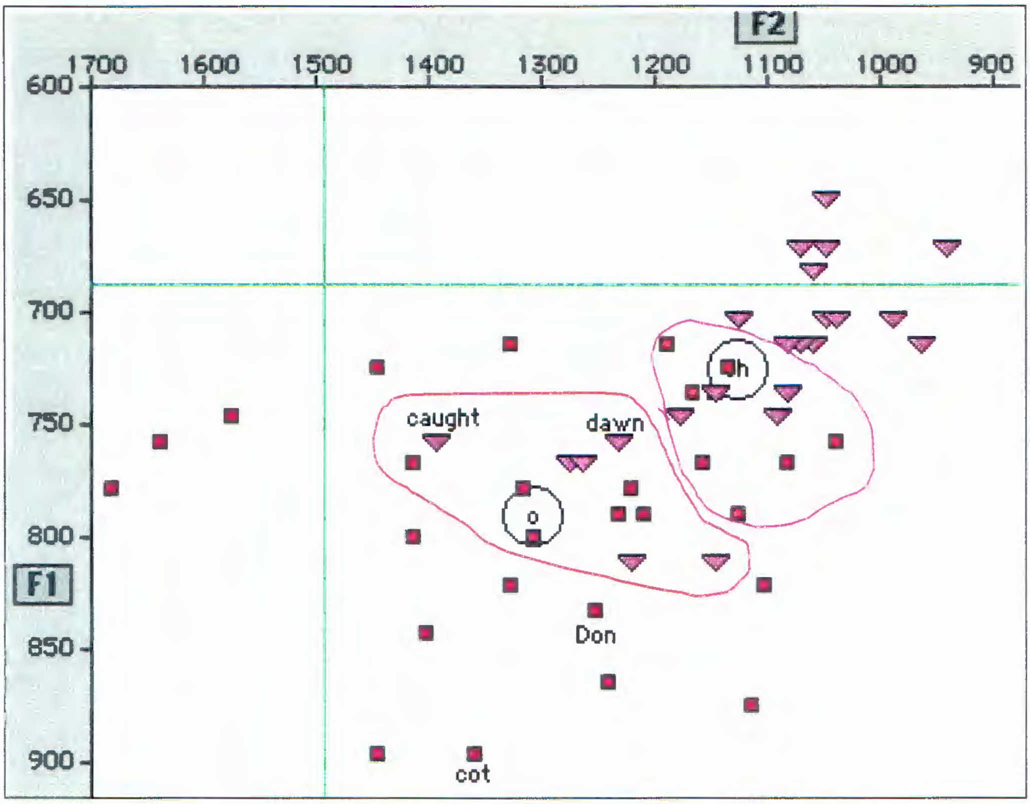


Figure 38. Speaker 9: /o/ and /oh/ tokens.

Speaker 10's plot chart for the low-back vowels indicates widespread diffusion among the tokens in Figure 39. The intermixing of the tokens for low-back vowel classes is evident. One minimal pair has been labeled. Considerable difference is observed between the two places of the minimal pair tokens. They both appear on the margins of their respective vowel classes. *Don* is realized among the lowered tokens of /o/ class (red squares) whereas, *dawn* occurs in the high-back margin for /oh/ class (pink triangles). Speaker 10 is maintaining distinctiveness, at least, in this minimal pair example. Generally, though, a transition toward the low-back merger appears to be in progress in Speaker 10. This evidence patterns with a Midlands Features description.

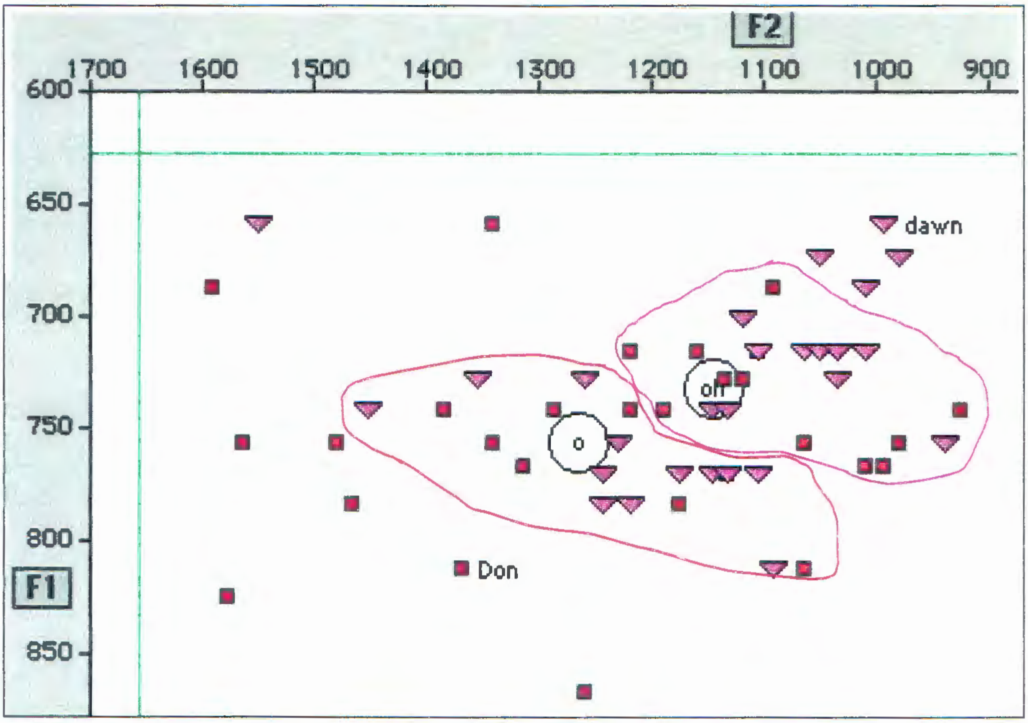


Figure 39: Speaker 10: /o/ and /oh/ overlap data.

The discussion above is rather imprecise due to its reliance on the locations on a plot chart. Another way to consider the data is to calculate the percentage of tokens in /o/ and /oh/ classes that occur in the opposite vowel class region. Table 29 provides the data used for consideration.

Table 29: *Speakers, 1, 2, 3, 4, 6, 7, 9, and 10: Percentage of low-back vowels in transitional places*

Speaker	/o/		/oh/		Overall % of Transitioned Tokens
	# of Tokens	# Occurring in Transitioned Place	# of Tokens	# Occurring in Transitioned Place	
1	29	9	29	8	29%
2	28	6	31	6	20%
3	30	4	29	2	10%
4	28	14	44	12	36%
6	35	4	26	4	13%
7	26	3	22	4	14%
9	29	8	25	6	25%
10	30	12	28	12	41%

As evident in Figures 32, 35, 36, 38, and 39 above, outliers are present among the data. These outliers were included in the total tokens, but not included in number of tokens occurring in transitioned place. The purpose of the percentage results is to provide a general view of the extent of any merger within the low-back data.

The data indicate that the low-back merger is not present in any of the subjects. The percentages of the tokens in transition indicate that four speakers, #s 2, 3, 6, and 7, with percentages at 20% or lower, exhibit possible initial stages for a low-back merger. Speaker 9 exhibits about a quarter of his low-back vowels in transitioned places. Speakers 1, 4, and 10 exhibit stronger evidence for the development of the low-back merger with percentages near 30% or higher.

The Midlands feature for a transitional low-back merger has been considered in the above analysis and discussion. Four speakers (#s 2, 3, 6, and 7) are determined to be in an initial stage for the low-back merger transition. The four other speakers, #s 1, 4, 9, and 10, are considered to meet the Midlands description for a transitional low-back merger.

4.8.1 Midlands Features Summary

Eight speakers were considered for five dialect descriptions reported for the Midlands features. These five items and the determination of whether each of them was present in a speaker's data set are listed with the determination of yes or no on Table 30. It provides the total number of items that any given speaker met.

Table 30: *Midlands dialect summary*

Speaker	/ow/ F2 > 1200 Hz	/aw/ Fronting?	Difference Between F2/e/ and F2/o/ >375 Hz	/ay/ Glide	Transitional Low-back Merger?	# of Features Met
1	No	Yes	Yes	No	Yes	3:5
2	Yes	No	Yes	No	Yes, initial stage	3:5
3	No	No	Yes	No	Yes, initial stage	2:5
4	Yes	Yes	Yes	No	Yes	4:5
6	No	Yes	Yes	Yes	Yes, initial stage	4:5
7	No	Yes	Yes	No	Yes, initial stage	3:5
9	No	No	Yes	No	Yes	2:5
10	No	Yes	Yes	No	Yes	3:5

Speakers 4 and 6 meet four of the five dialect items described for Midland speech. Their vowel systems meet more than half of the Midlands Features, and they may be considered to be representative of the Midlands Features. Speakers 1, 2, 7, and 10 apparently meet three descriptive items for the Midlands Features. Their participation with the Midlands Features dialect is suspect. Consideration for the presence of the Californian/Canadian Shift (CCS) as observed for a western dialect is considered below.

Speakers 3 and 9 apparently meet two of the Midlands descriptions. This finding is not altogether surprising since their /ow/ and /aw/ both occur in back place indicating a Northern or Western dialect. Consideration for Speakers 3 and 9 moves forward with the analysis for the Californian/Canadian Shift.

4.9 CALIFORNIAN/CANADIAN SHIFT AND WEST FEATURES

Speakers 1, 2, 7, and 10 were considered for the Southern and Midlands dialects. Neither dialect is strongly represented in these speakers' vowel systems. They are therefore evaluated for the Western dialect characterized by the Californian/Canadian Shift (CCS).

Speakers 3 and 9 exhibit Northern features with back places for both /ow/ and /aw/ classes. Review of the Northern dialect via the features of the NCS against their vowel systems observed that Northern features were not present. The only other dialect with the back /ow/ and /aw/ classes is the Western dialect, and the vowel systems for speakers 3 and 9 are also included for the final dialect analysis of this project.

A prerequisite feature for the Western dialect is the presence of the low-back merger. Low-back data has been reported for all speakers under current consideration above on pages 94-103. However, none of the six speakers considered for the Western dialect have the low-back merger in place and complete.

The chain shift considered in this project is a hybrid of two separate reports as discussed in chapter 2. The combined chain shift was presented in Figure 9. Its features are recapitulated below:

- /o/ back with F2 less than 1275 Hz (Labov, 2002).
- /ae/ back with F2 less than 1825 Hz (Labov, 2002).
- /e/ lowered with F1 greater than 650 Hz (Labov, 2002).
- /u/ and K/uw/ front with F2 greater than 1400 Hz (Conn, 2002).
- /ow/ front with F2 near 1400 Hz (Labov, 2002).

Relevant data for the first three dialect items is listed in Table 31.

Table 31: *Vowel data*

Speaker	/o/ F2 <1275 Hz	/ae/ F2 <1825 Hz	/e/ F1 > 650 Hz
1	1340	2001	647
2	1207	1819	626
3	1370	1820	625
7	1233	2106	670
9	1305	1847	669
10	1262	1965	602

With the absence of the low-back merger among the speakers, the consideration for the backing of /o/ is problematic. /o/ is only backed once the merger is complete as described for the CCS. However, as indicated by the italicized /o/ data in Table 31, three speakers, #s 2, 7, and 10, meet the description for a backed /o/.

The backing of /ae/ is met by two speakers, #s 2 and 3. Their data are italicized on Table 31 above as well.

The third feature described for the CCS is the lowered realization of /e/. Speakers 7 and 9 exhibit lowered means for /e/.

The last three elements for the CCS have the data listed in Table 32.

Table 32: *Back vowel data*

Speaker	/u/ F2 > 1400 Hz	K/uw/ F2 > 1400 Hz	/ow/ F2 Near 1400 Hz	# Met?
1	1207	1050	1023	0:6
2	1395	No data	1411	3:5
3	1638	No data	1084	2:5
7	1370	928	1071	2:6
9	1350	1735	1007	2:6
10	1205	1493	1072	2:6

Speaker 3 exhibits a front place for /u/ and meets the description for the CCS. Speakers 2 and 3 have no data present in the K/uw/ subset and analysis cannot be performed. Speakers 9 and 10 K/uw/ subset means indicate a front position as described for the CCS. Speaker 2 is the only subject who meets with the CCS description for /ow/.

Table 32 also provides the ratio for the number of dialect descriptions that each subject's data has met. Speakers 2 and 3 could only be considered for five descriptions due to the lack of data mentioned previously. Speaker 2, with three descriptions present in his vowel system, appears to have more CCS descriptions than the other five subjects. Speaker 3 meets with two out of five dialect items. Speakers 7, 9, and 10 exhibit two out of six dialect items. Speaker 1 exhibits no features as described by the CCS.

A summary of findings per speaker concludes this chapter.

4.10 SPEAKER SUMMARY

The visual comparison planned of the plot charts available from similar speakers from Ohio and Tennessee (Fridland, 1998; Thomas, 2001) was not fruitful. None of my subjects' charts appeared to match any of the ones from Ohio or Tennessee. Thus, no further discussion of this comparison is offered for individual speakers.

Ten subjects are present in this study. Their vowel systems were subject to at least two different dialect analyses depending on certain vowel characteristics identified. Some speakers' vowel system were subject to three different dialect analyses. A summary of the findings for each speaker present in the study is listed below in Table 33.

Table 33: *Summary of all dialects for all speakers*

Speaker	Southern	Midlands	Northern	Western
1	Stage 2 initial phase	/aw/ front; F2/e/-F2/o/= Transitional low-back merger	Not Performed	None
	1:4	3:5		0:6
2	Stage 2 initial phase	/ow/ Front; F2/e/-F2/o/ Transitional low-back merger	Not Performed	/o/ back /ae/ back /ow/ F2
	1:4	3:5		3:5
3	Stage 1 initial phase	F2/e/-F2/o/=>375 Hz Transitional low-back merger	Possible /^/ backing	/ae/ back /u/ front
	1:4	2:5	1:5	2:5
4	Stage 2 initial phase	/ow/ front; /aw/ front F2/e/-F2/o/=>375 Hz Transitional low-back merger	Not Performed	Not Performed
	1:4	4:5		
5	None	Not Performed	/ae/ raising /o/ fronting /oh/ lowering /^/ backing F2/e/-F2/o/	Not Performed
	0:3		5:5	
6	Stage 2 initial phase	/aw/ front; /ay/ glide F2/e/-F2/o/=>375 Hz Transitional low-back merger	Not Performed	Not Performed
	1:4	4:5		
7	None	/aw/ front; F2/e/-F2/o/ Initial phase for Transitional low-back merger	Not Performed	/o/ back /e/ lowered
	0:4	3:5		2:6
8	Stage 2 initial phase	Not Performed	/ae/ raising /oh/ lowering /^/ backing F2/e/-F2/o/=<375 Hz	Not Performed
	1:4		4:5	
9	None	F2/e/-F2/o/=>375 Hz Transitional low-back merger	None	/e/ lowered K/uw/ front
	0:4	2:5	0:5	2:6
10	None	/aw/ front; F2/e/-F2/o/ Transitional low-back merger	Not Performed	/o/ back K/uw/ front
	0:4	3:5		2:6

4.10.1 Summary Speaker 1

The vowel system for Speaker 1 was considered for three different dialects: Southern, Midlands, and Western. The data indicate no alignment with the Western dialect. Stage 2 of the Southern Shift may be initially present in his vowel system. Three out of five dialect Midlands features are present in Speaker 1's system.

4.10.2 Summary Speaker 2

Speaker 2's vowel system was considered against three different dialects as well. The reversal of /e/ and /ey/ as reported for Stage 2 of the Southern Shift appears to be in an initial phase in his vowel system. Interestingly, he shows equal tendency for the Midlands and Western dialect descriptions with three out five features each being apparently present in his speech.

4.10.3 Summary Speaker 3

Speaker 3's dialect was considered for all four dialects. The data show a possible indication for the presence of Stage 1 of the Southern Shift. Initial diagnostics of the /ow/ and /aw/ place, as well as, the front/back relation of /e/ and /o/, both indicate the presence for a Northern/Western dialect. However, weak evidence for one feature within the Northern dialect was found. Two other features (out of five) may be present for the Western dialect. The same observation is made about the dialect of Speaker 9 below.

4.10.4 Summary Speaker 4

Speaker 4's frontness of /ow/ and /aw/ and the front/back relation for /e/ and /o/ indicate a Southern/Midlands pattern. The data for Stage 2 description appears to be in an initial phase of reversal. The major difference between the Southern and Midlands dialects is the presence of the Southern Shift, which is absent in this speaker's vowel system. Four of the five Midlands features were present in this speaker's speech.

4.10.5 Summary Speaker 5

Speaker 5 exhibited no Southern dialect features. The initial diagnostic for the front/back place of /ow/ and /aw/ did not pattern with expected outcomes for the Atlas of North American English dialect tree for a either a Northern/Western dialect or Southern/Midland dialect. The front/back relation for /e/ and /o/ indicated a northern pattern. Indeed, all five descriptions for a northern pattern as provided for in the NCS were present in this speaker's system.

4.10.6 Summary Speaker 6

The front/back place for /ow/ and /aw/ cannot be accounted for on the Atlas of North American English's initial dialect split because his /ow/ is back and /is /aw/ is front. The front/back relation of /e/ and /o/ indicates that the Midlands dialect is present. This initial diagnostic is supported by the observation that only an initial phase of Stage 2 appears to be in development. Moreover, four of the five Midlands features were found with this speaker.

4.10.7 Summary Speaker 7

Three dialects were considered for Speaker 7, as he exhibited no Southern features. His data met three of the five dialect descriptions for the Midlands and two of the six for the Californian/Canadian Shift. Apparently, his dialect patterns more for Midlands than other patterns, although it is not a strong pattern.

4.10.8 Summary Speaker 8

Speaker 8, like others in this study, exhibits only the beginnings of a possible /e/ and /ey/ reversal described in Stage 2 of the Southern Shift. His front/back place data for /ow/ and /aw/ did not indicate a Northern pattern, but his front/back relation of /e/ and /o/ did. Interestingly, his vowel system apparently meets four out of the five Northern features described in the Northern Cities Shift.

4.10.9 Summary Speaker 9

Speaker 9, like Speaker 3 above, indicates Northern patterns with the back place for both /ow/ and /aw/. However, the front/back relation of /e/ and /o/ is similar to a Midlands dialect feature. Speaker 9's vowel system was considered against all four dialects examined in this study. The data indicate no dialect feature present for either a Southern or Northern dialect. Two out of five items are present for the Midlands, and two out of six dialect items are present for the Western dialect.

4.10.10 Summary Speaker 10

Three dialects were considered for Speaker 10's vowel system. No Southern features were identified. The Western dialect was met by two out of six features. The Midlands dialect is the strongest dialect present in the vowel system with three out of five items present.

4.11 SUMMATIVE DISCUSSION

The final question of this project inquires to what exactly may be said about the vowel systems of the subjects considered above. Subjects occasionally produce southern-like utterances, but no features were categorical for any speaker. The identified dialect features occur within the /ay /class and the possible initial reversal of /e/ and /ey/ classes.

Two speakers apparently exhibit northern-like vowel systems as in the Northern Cities Shift (NCS). No further dialects were considered for these two speakers.

The remaining eight speakers were evaluated for Midlands dialect features. All eight speakers exhibit two: Hz value differences in the front/back relation of /e/ and /o/ described for Midlands; and the transitional status of the low-back merger. Five of the speakers exhibit /aw/ front of central axis. /ow/ fronting is only evident in two speakers. One speaker exhibits /ay/ utterances similar to Midlands descriptions. Two speakers exhibited four of the five Midlands dialect features and no further analysis was performed for their data.

Six speakers were considered for the Western dialect as in the Californian/Canadian Shift (CCS). The various dialect items present indicate no emerging pattern for the western features. Five of the speakers exhibit various dialect descriptions, but they share no single item of the Western pattern.

Overall, the data support Reed's (1957) observation that Midlands dialect features *tend* to be more present than other features.

CHAPTER 5: IMPLICATIONS, LIMITATIONS, AND THE FUTURE

The final observations offered in this chapter are separated into three parts. In the first part, I discuss the three implications that I draw from the analytical process undertaken for the study. The middle section of this chapter makes observations to the real and potential shortcomings of the study and its findings. The final section offers commentary that future dialect studies of Oregon speech may want to consider.

5.1 IMPLICATIONS

The answers to the overt hypothesis and guiding questions of this study were addressed in chapter 4. In this section, I discuss three observations I have made from this project, which may provide insight to the speech present in the early 20^{th} century in some rural communities in Oregon. In particular, I discuss the observations that the 10 speakers present in this study do not share a single dialect, the low-back merger is absent, and the results of the F2/e/ - F2/o/ formula are reliable for diagnosing a dialect.

5.1.1 The Presence of Multiple Vowel Systems

One expectation going into this study was that my subjects' vowel systems would share broad speech features with preponderance for Southern patterns. I asserted in chapter 2 that a leveling similar to the observations of the development of koinezation may be present among my informants (Siegel, 1985). I expected to find a stable speech system, but that's not what I found. The population who settled the West was a variegated miscellany, and the findings show several dialects are present, maintaining the characteristic of the settling of the West.

These characteristics can be seen by examining the backgrounds of my subjects. Table 6, in chapter 3, reports on the demographics of my informants' parents. Five fathers and one mother were native Oregonians. Two fathers and three mothers are confirmed to be born in the United States but outside of Oregon. One father is confirmed to have been born outside of the United States and the birthplaces for the remaining two fathers and six mothers are unknown. Based on the demographics of my informants' parents, as sketchy as the data are, I have documented the ongoing influx of speakers into Oregon. Two of my informants' families represent migration into Oregon as late as the 1930s. These late settlers moved here from the dust bowl states of Oklahoma and Nebraska. Given these varied backgrounds, my expectation for a level, stable dialect was perhaps not reasonable because the migration into Oregon had not leveled off. The dialect could not possibly have leveled considering there was continuing contact with a consistent source of other dialects.

Vowel systems of four speakers are identified as having patterns similar to dialects described elsewhere. Speakers 5 and 8, apparently, are Northern in their speech patterns, and speakers 4 and 6 have vowel systems similar to the Midlands dialect. The vowel systems of the remaining six speakers exhibit a smattering of features from the various dialects considered. No single dialect emerges as present for these six speakers.

Examining data within a specific speech community finds the same outcome. All 10 of my informants are not from a single speech community. Five informants are native to the East Multnomah County area, which includes Gresham, Boring, and Bull Run. The city of Sandy is also considered part of this speech community due to its proximity to the other towns, even though Sandy is located within Clackamas County. Among these five informants, a single dialect does not emerge. Two speakers indicate a presence of the Midlands dialect and a third tends toward it. One speaker exhibits a northern-like vowel system, and the fifth speaker shows no strong preference for any other dialect reported in North America. Thus, it appears that this study provides documentation of old *systems* of speech instead of an old system.

5.1.2 The Absence of the Low-back Vowel Merger

In spite of the multiplicity of vowel systems observed, there is a single dialect feature that is present in all 10 speakers. None of my subjects exhibit the low-back vowel merger. Because the low-back merger is not present in southern speech, I expected this merger to be absent. The absence of this merger is important because the prerequisite characteristic of the Western dialect is the intact low-back merger.

In chapter 4, the low-back data for speakers 5 and 8 were not considered because the vowel systems showed strong evidence for the Northern dialect. The Northern dialect's resistance to the low-back merger was not examined in this study. The analytical process did not allow for discussion of Speakers 5 and 8 data sets. The plot charts and brief discussion for these two speakers are included in Appendix J. The observations for all ten speakers indicate an initial presence of some merged tokens, but the merger is not complete.

Since my data indicate that the low-back merger is in its initial stages among my informants, who are representatives of early 20th century speech, then if the low-back merger is characteristic of the Western dialect at the end of the 20th century, then the implication is that the low-back merger must be developing fairly rapidly.

5.1.3 The Diagnosis for a Dialect

This study attempted to perform a dialect diagnosis based on two dialect features. The front/back places of /ow/ and /aw/ and the front/back relation of /e/ and /o/. As mentioned earlier in this project, performing a dialect diagnostic has not been attempted elsewhere, at least not that I have been able to identify. I took this step to help manage the data. Instead of analyzing all of the vowel systems against all of the other reported dialects, I hoped to simplify the analysis process by finding an early indicator as to which dialect may be present. Based on the process and findings of this project, I believe the front/back relation of /e/ and /o/ is a usable diagnostic. The discussion below details the findings of the two diagnostic approaches used in this study.

The data for the front place for /ow/ and /aw/ did not provide the initial dialect split as outlined on the Altas of North American English (ANAE) dialect tree (see Figure 12) for 7 of my 10 speakers. The ANAE is based on the informants of the TELSUR project, who are urban and in many cases, younger than my informants. The dialect tree may not be representative of non-urban speakers and/or older speakers.

Of the three speakers who exhibited front or back places for both /ow/ and /aw/, two speakers (#s 3 and 9) exhibited back places for /ow/ and /aw/, which is a Northern description. However, they did not have vowel systems that matched the dialect for the Northern features. The front/back place for both /ow/ and /aw/ was an effective indicator for one speaker (# 4) in this study.

On the other hand, the results for the/e/ and /o/ front/back relation (F2/e/ - F2/o/) provided accurate dialect directions for all speakers. For the two speakers (#s 3 and 9, again) whose /ow/ and /aw/ places directed the analysis to a Northern dialect, the results of the F2/e/ - F2/o/ diagnostic indicated the presence of the Midlands dialect. Both of these two vowel systems exhibited more features for the Midlands dialect than the Northern one.

Conversely, two other speakers (#s 5 and 8) whose front/back places for /ow/ and /aw/ were mixed, indicating neither a Northern nor a Southern/Midlands dialect, exhibited results with the F2/e/ - F2/o/ formula pointing to a Northern dialect. Indeed, the analysis supported the results of the F2/e/ - F2/o/ calculation, and both of these speakers show strong evidence for Northern speech.

The F2/e/ - F2/o/ formula indicated the Midlands dialect for Speakers 4 and 6. This result was congruent with the /ow/ and /aw/ front place for Speaker 4. The results for Speaker 6's /ow/ and /aw/ places were inconclusive. Analyses for these two speakers, again, support the predictive measure of the F2/e/ - F2/o/ results because Speakers 4 and 6 follow the Midlands dialect pattern. The results of the F2/e/ - F2/o/ formula for the remaining four speakers, #s 1, 2, 7, and 10, indicated a Southern/Midlands dialect, and the Midland dialect was most prevalent for these speakers, with three out of five Midlands features present for all four speakers.

Based on the final observations of all speakers, the front/back relationship of /e/ and /o/ is a better initial indicator to the general direction of a dialect. As mentioned above, no other study has explored the diagnostic process of an individual speaker. I can postulate that one application for a dialect diagnostic would be within speech recognition software, where the human to machine interface requires a machine to be able to identify, to *comprehend*, the speech patterns of its interlocutor. The results to the F2/e/ - F2/o/ formula may provide an adequate first-tier hierarchy for software engineers and programmers attempting to develop speech recognition protocol.

5.2 LIMITATIONS

The following discussion addresses several factors related to short comings in this project. Some areas of concern have to do with the analytical approach I took. Other matters consider the reliability of the data itself.

One intent of this project was to diagnosis what dialect is present in NORM subjects rather than to describe their vowel systems. Attempting to diagnosis a dialect meant that analysis had an a priori goal. The data were reviewed for particular dialect traits as reported in chapter 4. This approach may have missed dialect patterns present among the subjects that are not evident in dialect features reported elsewhere.

Data from 10 speakers were analyzed in this study. The subset that these data constitute may not be representative of the overall speech pattern present among other Oregon NORMs. A larger study with more informants may find that my data are not consistent with a greater number of data.

With any analysis of this level, time and the constraints of time are tantamount to the depth and breadth of detail offered. Because of the level of detail necessary to examine the /ay/ class, all /ay/ data were double- and triple-checked, re-measured, and the like. Some tokens were omitted largely due to second or tertiary stress factors. Similarly, the data for the high front vowel classes were reviewed, revised, and/or confirmed. These vowel classes were carefully reviewed because they are part of the chain shift for the Southern dialect, which is the primary interest in this project.

Speakers 5 and 9 were the data sets that were most affected by the reanalysis of the primary data. This observation is not altogether surprising given that these two speakers were the first ones vowel measurements were conducted on.

The time necessary to navigate the technology that supports the ability to review speech at this level is not to be underestimated. As analyses moved away from the Southern Shift and relied more heavily on the vowel class means data, less attention was given to the verification of the data. A few obvious and extreme outliers were omitted, but those were dealt with individually. No full scale review of the entire vowel class, outside of those mentioned above for the Southern dialect, was performed due to the limitations of time. Most of the discussion offered about the data is limited to the vowel class means; however, within various vowel classes there are marginal outliers included in the vowel class sample set, which if were omitted from the data set, could have important affects on the vowel class means calculation, which could ultimately affect the final analysis.

Plotnik 07 omits highly influential phonemic environments from its means. For example, it omits environments before [l] and after the liquids ([j], [w], [r], and [l]—including [l] clusters [e.g. bl, cl, etc.]). Plotnik 07 is still a beta version, and there are instances where means appear to include these so called omitted environments. In the charts in Appendices G1-10, anticipated tokens and Plotnik 07 reported tokens used in means calculation are listed. More detailed observation and discussion on the apparent discrepancies between what Plotnik 07 says it measurements and what is actually measured is outside the scope of the present project.

The normalized means calculated by Plotnik 07 were relied upon for the analysis in chapter 4. The normalization process allows vowel systems of individuals to be compared to one another. Each speaker's utterances are defined by the physical characteristics possessed by the individual. A 50 Hz measurement in a child does not equate to the same degree of difference observed in an adult. Normalized data allows for comparative measure among and between speakers and groups of speakers.

I am somewhat tentative about reliance of data reported based on the normalization process and means calculation formulas performed by Plotnik 07. My concern with the normalization process is the normalized data are generated from TELSUR subjects, who are younger and urban—the exact opposite of my subjects. A review of the raw data and the normalized data does not reveal any radical differentiation between the data sets, and my concern may be mislaid.

In the more recent work of the TELSUR project, Labov (2002) describes an isogloss that relies on the deletion of the /ay/ glide before voiced obstruents, finally, and voiceless consonants. This characterization omits the pre-resonant environments which are overtly stated as /ay/ glide deleted environments for the Midlands. From this report, it is unclear whether Labov is intending to omit the pre-resonant environment, wholesale, from Stage 1 of the Southern Shift (SS).

I relied on the earlier work of Labov (1994), which clearly states that southern states /ay/ glide deletion is occurring before all consonants. I included the pre-resonant tokens in the analysis for Stage 1 of the SS. The inclusion of the pre-resonant tokens affected the percentages for the presence of the /ay /glides, but not enough to change the final observation that southern features are not advanced or widespread among the subjects.

Based on what I read from Labov, he did not offer a clear definition of an inglide. I maintained very conservative interpretations in the study. The definitions I relied on presumed that the glide was not lost in its entirety —that an inglided diphthong referred to some in-between stage from full diphthongal production to complete loss.

Data present do not meet the criteria set forth in the study but should be included as some sort of monophthongized /ay/s. These data can be best characterized as centralized diphthongs. The glide appears in the schwa place. Speakers 5 and 9 data are below (see Figures 40 and 41).

As can be seen on Figures 40 and 41, Speakers 5 and 9 produce /ay/ glides that are raised, but are short of the high-front realization. Speaker 5's glide actually ends up back of the vowel nucleus. Speaker 9's data is front of vowel nucleus, but only slightly so. Both glides place very near to schwa in the respective vowel systems. In my opinion, these glides are less than ideally produced. However, they do not meet the definition for /ay/ glide deletion relied upon in this project.

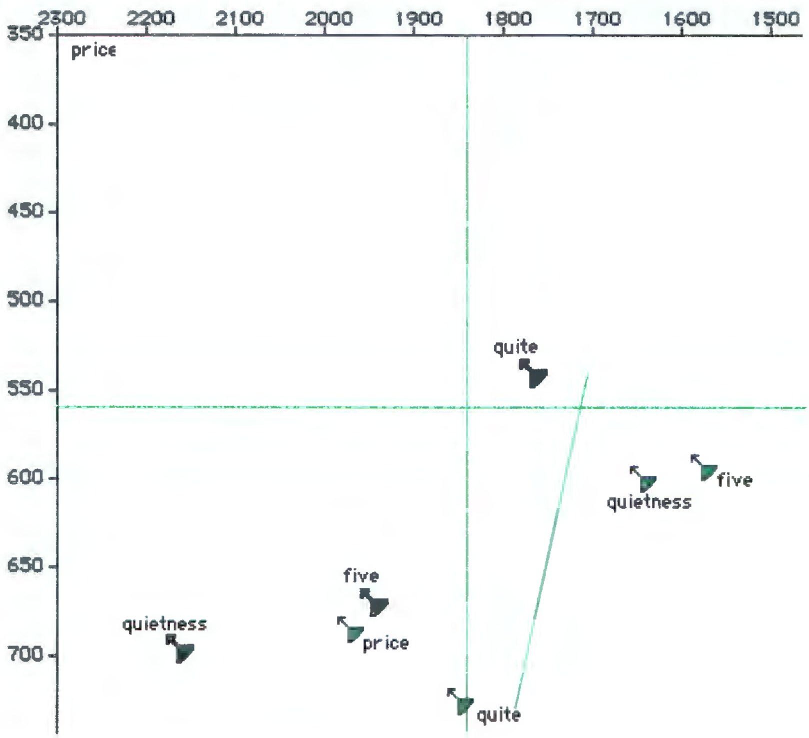


Figure 40: Speaker 5: /ay/ upward token.

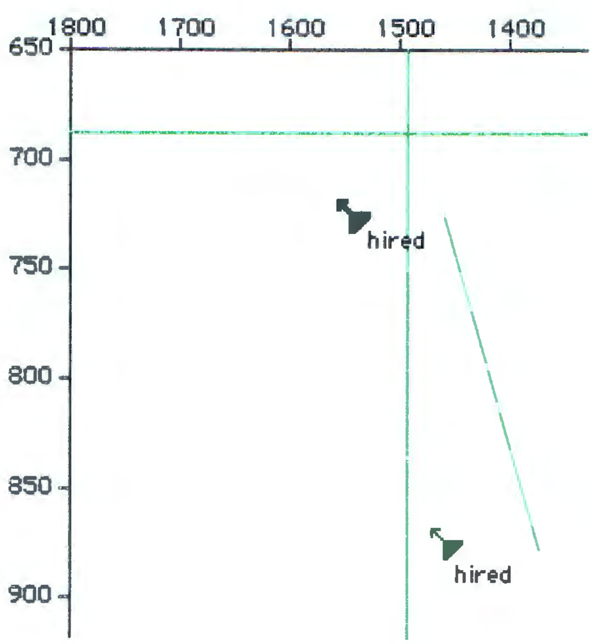


Figure 41: Speaker 9: /ay/ upward token.

In this study, one of the criteria for the determination that /ay/ glide had transitioned to an /ah/ realization is that the glide had lost its raising. Data present among the subjects indicated that only a slight raising was present. If there were an acoustic measurement available for a lack of adequate raising, then more /ay/ glide deleted data would have been included.

For example, let's arbitrarily use a 100 Hz difference in the raising of the glide target from its vowel nucleus as an acoustic measurement for the determination of a less than adequate raising of the glide. Speaker 10's data provide an excellent sample set to consider for this example. Formant data for the relevant discussion are provided in Table 34 below.

Table 34. *Speaker 10: /ay/ glide deletion Hz measurements*

Vowel Category	Sample Word	Vowel Nucleus F1	Glide Target F1	Difference in F1 Hz	Reported Previously?
Final	Bye	688	757	-69 lowered	Yes
Pre-Voiced Obstruent	Five	743	743	0	Yes
	Five2	660	660	0	Yes
Pre-Resonant	I'll	729	702	+29 raised	Yes
	Line	768	688	+80 raised	No
Pre-voiceless Consonants	Alright	771	716	+55 raised	No
	Life	743	729	+14 raised	No
	Wife	768	702	+66 raised	No

The plot chart in Figure 42 provides a visual aid for this discussion, also.

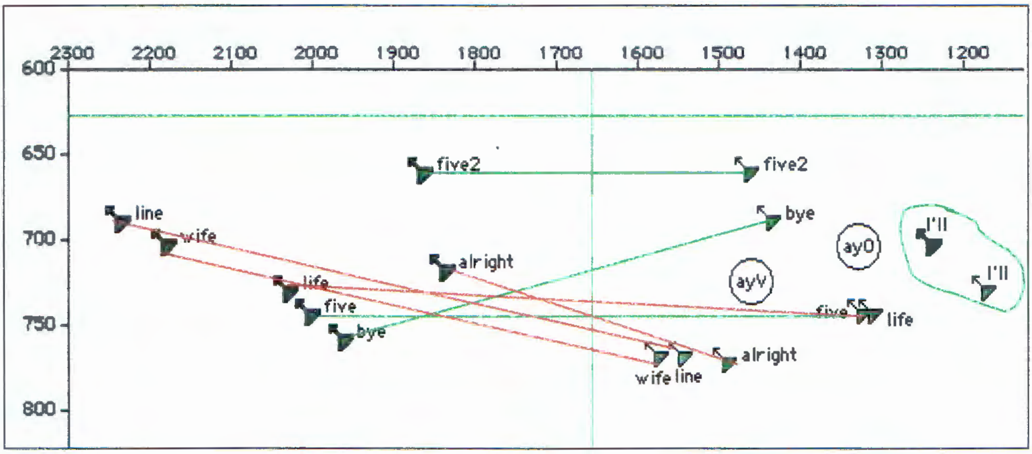


Figure 42: Speaker 10: /ay/ partial diphthongs.

Eight of the speaker's 16 /ay/ tokens appear on the vowel plot chart in Figure 42. The eight tokens have been labeled, and the symbols of the glides have been highlighted for clarity between the vowel nucleus and the glide target places. The grand means for the /ay/ class subsets are also present in circles. The discussion below speaks to the partially realized diphthongs.

Tokens connected by green lines were reported in the analysis and the loss of the raising of the glide. The encircled token was also identified in the analysis due to its glide occurrence within the vowel space. The data for *line*, *alright*, *life*, and *wife* indicate a higher place for the glide target, but the height does not approach an anticipated realization in high-front place. The fronting of the glide appears in tact, but with the loss in the F1 differential between the diphthong's parts, these vowels are only partially diphthongized.

Relying upon the hypothetical and arbitrary definition that /ay/ glide transitions to an /ah/ inglide when the difference between the vowel and glide is less than +100 Hz, Speaker 10's /ay/ data would have been doubled. Also, the argument would have been less complex, because the hypothetical acoustic argument explored here would have also accounted for the production of the four originally reported tokens, *bye, five, five2,* and *I'll.*

The grand means were included on the plot chart in Figure 43 above to highlight the fact that this definition of an inglided vowel would not have impacted the final observation that Stage 1 of the SS is not advanced because the means for the /ay/ class are still back of central axis. However, by increasing the percentages of inglided tokens for the /ay /class, the finding may have resulted in a stronger observation that development for Stage 1 may be present among the speakers. An acoustic measurement as suggested above would have impacted the findings of each speaker's data.

Generally, the vowel class means used for analysis of Stages 2 and 3 of the SS have fewer tokens than other vowel classes present in the study. Because Stage 1 is not widespread and most observations were about the initial phase for Stage 2, I do not believe that the scant data affect the Stage 3 observation that it is not present. The scant data surely limit the observations proffered about Stage 2 in this study.

The scarcity of data is amplified within the /i/ and /e/ pre-nasal merger subsets considered for the pre-nasal merger. The analysis herein relied on the subset means of the pre-nasal environments. Most pre-nasal subset means for /i/ and /e/ are based on fewer than five tokens. Also, the reported presence for the pre-nasal merger (Labov, 1996) relied upon the production and perception of two minimal pairs: pin/pen and him/hem. Neither minimal pair is present in my data. The analysis herein relied upon the subset means for all pre-nasal tokens including [n] before [g].

Some of the reported dialect descriptions are ambiguous or unclear in their characterizations. Several dialect descriptions have no acoustic values attached to them as discussed above for the /ay/ inglide description. The examples include: the fronting of /aw/ and the transitional low-back merger for the Midlands dialect, and the backing of /^/ and the lowering of /oh/ for the Northern dialect. Determination of these particular features and ultimately the observation that a particular vowel class meets or does not meet a given dialect feature is limited due to the somewhat subjective nature of the feature(s).

The analyses and observations are limited, and in some cases severely so, by the limitations discussed above.

5.3 FUTURE STUDIES

My observations below relate to two separate fields for future studies: the social side of sociolinguistics and specific linguistic features. Although this study was not a sociolinguistic endeavor, I have a few observations that may help direct future projects grounded in the sociolinguistic field. The second part of the discussion below speaks to the specific linguistic features that may prove interesting.

Generally, more study needs to occur about the Western dialect. The dialects of non-urban speech may prove to be important indicators to the Western features. Studies looking at the urban-rural divide may help explain some of the apparent rapidity observed in the emergence of the Western dialect. Recent census records indicate that there are now more native Californians living in Oregon than native Oregonians. There may be a dwindling opportunity to capture the speech of Oregon as, I believe, the numbers of Californians speakers will eventually supplant their speech behavior onto the Oregon linguistic landscape.

Continuing study of Oregon NORMs would surely need to account for social factors among the informants. In large part, my informants did not voluntarily offer demographic information about their mothers. Much of the maternal information was vague, at best. Assuming that the mothers were the primary caregivers of my informants, the speech of my informants would have been more heavily influenced by their mothers' speech patterns. Another study examining the early 20th century would need to control for the variety of speech patterns that were still migrating into Oregon.

A closer review of migration patterns may provide insight to dialect islands that may be present. Jacksonville, Oregon, may be a pocket for Southern speech since an apparent majority of the settlers to the vicinity are from the South. The presence of foreign languages may also be observed among various Oregon locations as mentioned in chapter 2 based on Juengling's (1998) findings.

Two social factors that may not prove fruitful are occupation, specifically logging, and class. All ten of my informants worked in the woods at some time in their lives. They all spoke comfortably about the falling of trees and the bucking of rounds and the equipment used for harvesting timber. Even though logging was not the major occupation for half of my informants, I would have had difficulty in identifying loggers as a separate social group because all of my informants identified themselves as loggers. At least four of my informants whose major occupation was not logging (one was an office worker, no less) engaged in the logging industry as a side income to their regular jobs. Any study attempting to code informants, specifically NORMs in Oregon, by their occupation may have to address the apparent widespread work experience in the logging industry.

The separation of social groups based on socioeconomic class does not seem to be true in my community of speakers. This claim is based on my personal observations of the greater community. Residents with very different economic situations share lifestyle and social networks. A millionaire who earned his wealth does not exhibit *nouveau riche* behavior. He lives in a home that is not indicative of his wealth. His friends are long-time community members, that is to say they are life-long friends. They could be referred to as the 'old boys club'. Similarly, I know two women who are best friends. One is a very successful attorney, and the other is a housekeeper. These two women vacation together. They socialize around holidays and family celebrations. By all outward appearances, the disparity of their incomes does not affect their social interactions.

Based on my observations, I believe a social factor present in the Oregon NORM community has to do with work ethic. I have observed many people in East County make derogatory and pejorative remarks about others' laziness. If an individual is perceived as not performing an honest day's work, that individual is negatively judged by, what I believe is, the broader community. As a social factor, work ethic may be a replacement for socioeconomic class among Oregonian speakers.

Other social factors, more usual to the study of sociolinguistics such as gender, education level, race, ethnicity, and age, would provide insight to the speech patterns of Oregonians. Based on this study, a couple of specific linguistic features may provide results that inform us about the emergence of the Western dialect.

Microanalysis for the /e/ and /o/ front/back data would broaden our understanding of the dialect exhibited in the Northwest. Table 20 documents an F2/e/ - F2/o/ differential of up to 734 Hz. Labov (2002) documents the split between the Northern and Midlands dialect at 375 Hertz difference. Is there some pattern that emerges for differences greater than 375 Hz?

Further analysis of the overlap of low-back tokens should examine the environments of the tokens that occur in the merged places and the environments of tokens that do not occur in the areas of overlap. From a pilot analysis of the data in this project, I believe examining the specific environment of the low-back vowels after glottal stops or before coronals would find that they are one of the last environments to become merged.

The productions as well as listener perceptions of minimal pairs may provide useful insight to the development of the low-back merger. The low-back merger is a prominent dialect feature across English of North America. What environments or categories are leading the merger? Which ones are lagging? Is there evidence to suggest that one or both of the low-back vowel classes may be splitting? Is only part of a vowel class undergoing the merger? A concerted focus based solely on the low-back vowels would add to our understanding of the merger.

5.4 CONCLUSION

The findings of this study found residual presence of the Southern dialect features as described by the Southern Shift. Other dialects are more prevalent than the dialect of the South, but no dialect emerges as dominant among the informants of this study. The absence of the low-back vowel merger among the informants is a notable finding having possible implications for the development of the Western dialect.

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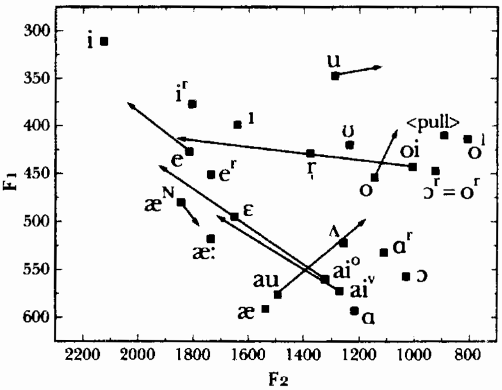
APPENDIX A

THOMAS NORMS

SPEAKER 21

Male, Born 1918, from Cheviot, Ohio

(*DARE* OH 076; recorded in 1968)

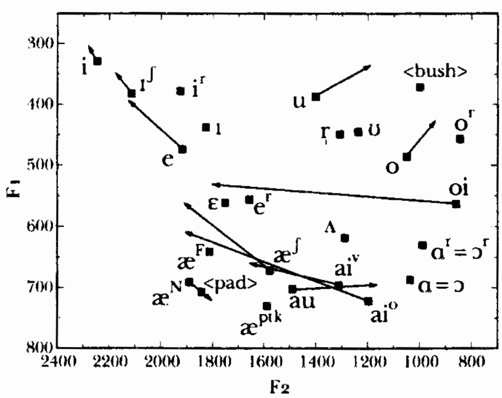


NOTE: His /o/ is back (fronted forms are more common in the Cincinnati area), but he shows the Cincinnati split of /æ/ and /æ:/. (reading passage and conversation; NCSU)

SPEAKER 22

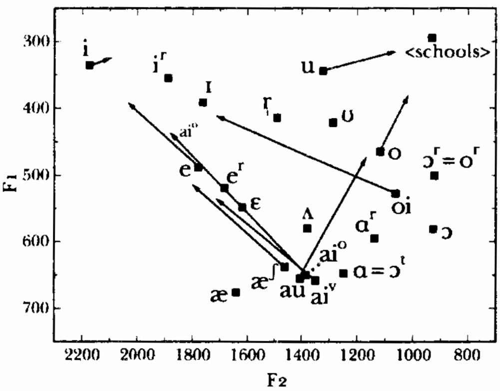
Male, Born 1897, from Ripley, Ohio

(*DARE* OH 058; recorded in 1968)



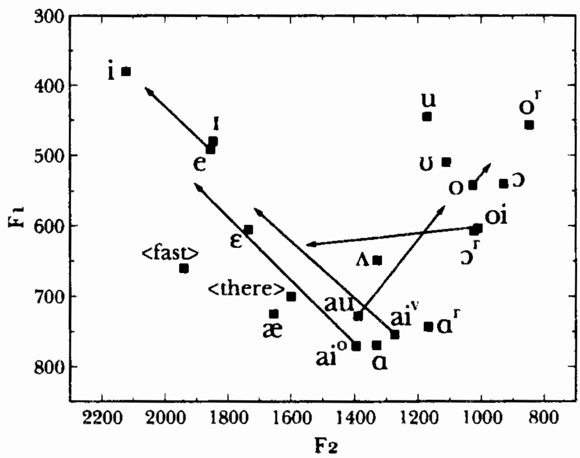
NOTE: He shows mergers of /ɑ/ with /ɔ/ and of /ɑr/ with /ɔr/. His /aiᵛ/ shows weak glides. He appears to have a split of /æ/ and /æ:/, with /æ:/ (represented by /æ^F/ and apparently *pad*) produced as [æɛæ] (only the highest point is shown on the plot). Often *r*-less in unstressed syllables, but otherwise *r*-ful. (reading passage and conversation; NCSU)

SPEAKER 25
Male, Born 1892, from Mt. Vernon, Ohio
(*DARE* OH 074; recorded in 1968)



NOTE: His /o/ and /au/ nuclei are not fronted. He shows a partial merger of /ɑ/ with /ɔ/. His /oi/ and /ɔr = or/ nuclei are mid. (reading passage and conversation; NCSU)

SPEAKER 63
Male, Born 1859, from Gatlinburg, Tennessee
(used by Hall 1942; courtesy of Michael Montgomery;
recorded in 1937 or 1938)

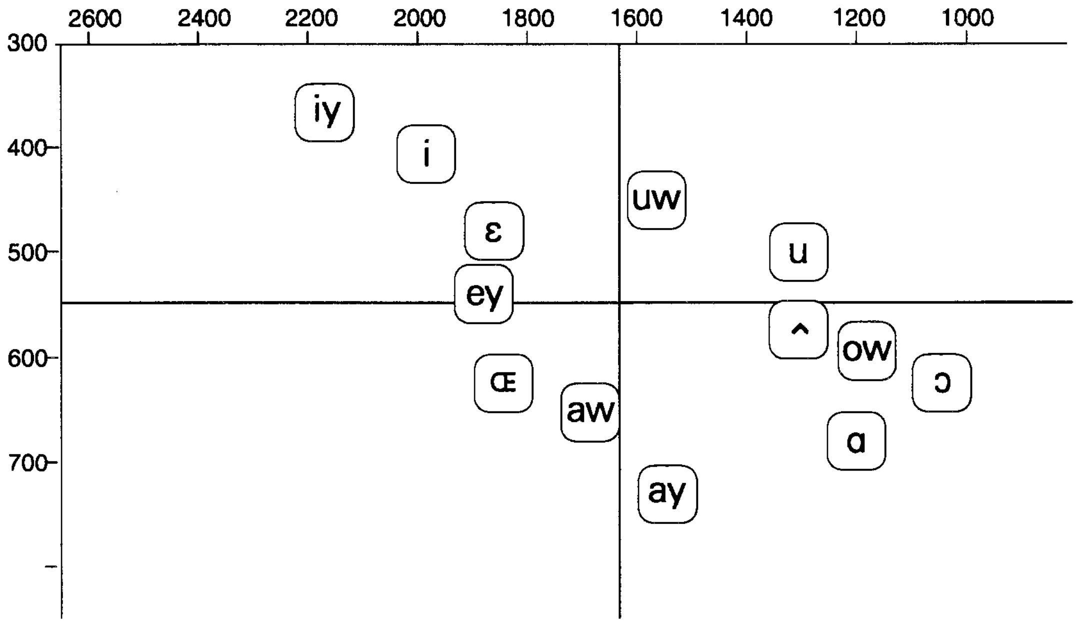


NOTE: His /ai/ shows strong glides in all contexts. His /au/ nucleus is central. His /er/ nucleus (in *there*) is low. He keeps /ɔr/ and /or/ distinct and is mostly *r*-ful. (conversation; UT)

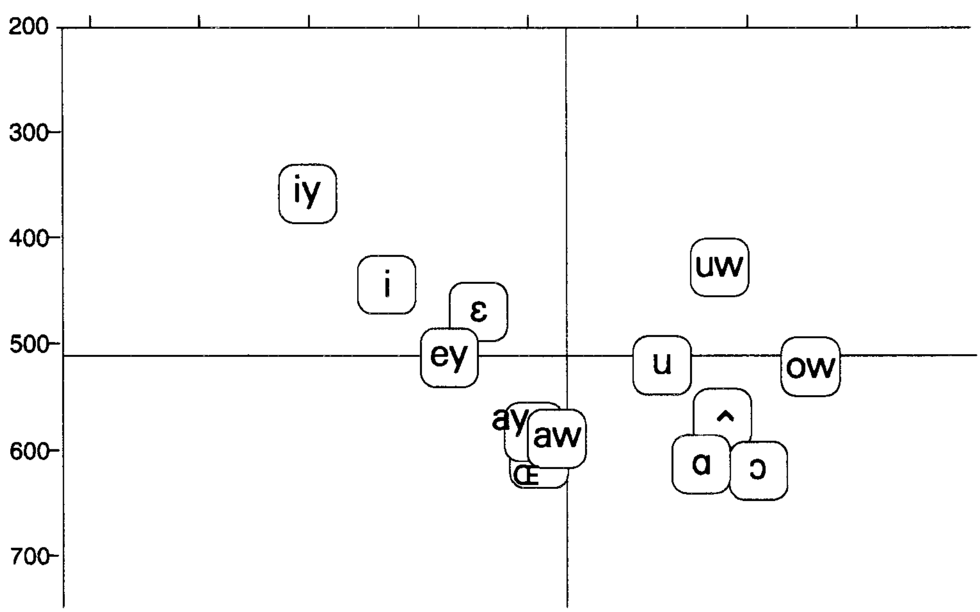
APPENDIX B

FRIDLAND NORMS

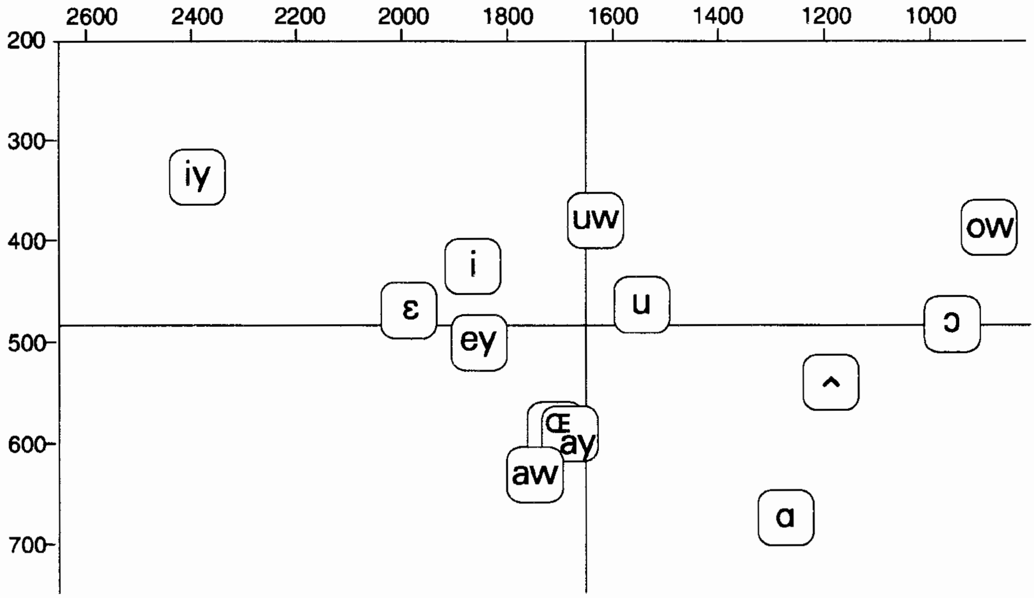
Male Speakers
Figure 4.18 Speaker F Vowel Means



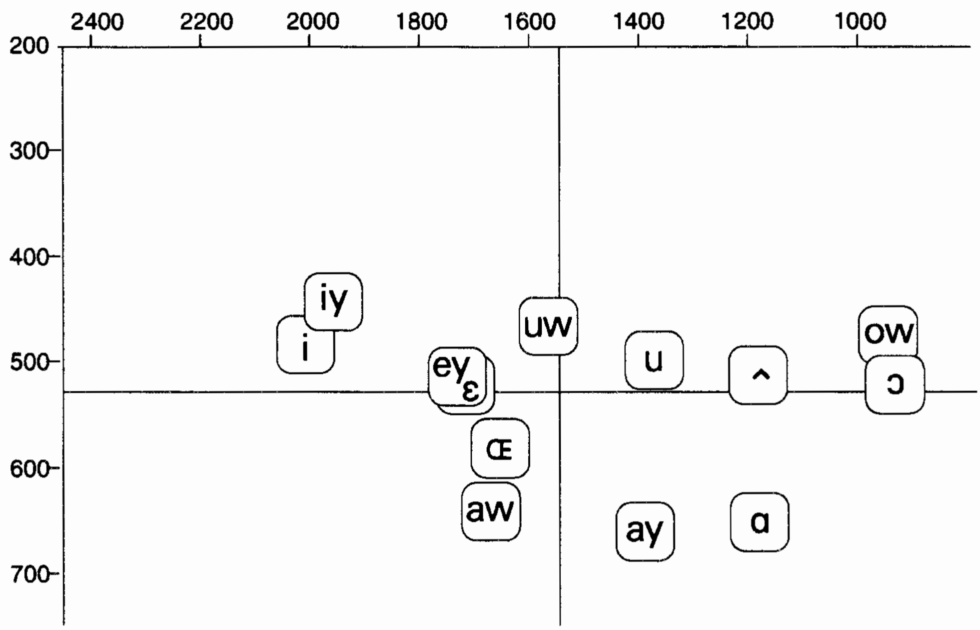
Male Speakers
Figure 4.19 Speaker G Vowel Means



Male Speakers
Figure 4.16 Speaker 9 Vowel Means



Male Speakers
Figure 4.16 Speaker 32 Vowel Means



APPENDIX C

SCREENING INTERVIEW

SCREENING INTERVIEW

Introduction: This is a study that is being done by a graduate student in linguistics at Portland State University. The study was designed to learn about the work experiences, historical memories, and the speech of native Oregonians. I have some questions to make sure that you are eligible to participate in the study.

What was/is your major occupation?_____________________________
Were you born in rural Oregon / move here before the age of 6 years? Y / N
How long have you lived in the area?______________________________
Is English your native language?______________________________
Was English your parents'/caregivers' native language? Y / N
Are you willing to read some short sentences? Y/N
Participant Name: _______________________________ Male / Female
DOB _____________
What is your ethnic background?_______________________________
Contact Phone Number: _________________

The interview will take about an hour. We can schedule one meeting or several meetings to complete the interview. When would you like to be interviewed?

____

Where would you like to be interviewed? Address and directions:

Have you ever lived outside of Oregon? Where, when, and for how long?

____

Were you ever in the military? What branch, when, and for how long?

____

Did you graduate from High School? Y / N
Have you taken any college courses? Y / N
Are you a college graduate? Y / N

APPENDIX D

INTERVIEW QUESTIONNAIRE

INTERVIEW QUESTIONNAIRE

When we talked on the phone, Lisa asked some questions to determine that you would be eligible to participate in this study and to learn a bit about you. I would like to review the information that was collected to make sure that I got it right. [Remember you do not have to answer every question, only the ones you want to.]

You were born in Oregon, or moved here before the age of 6?

You and your parents/caregivers speak English as native language?

Where are your parents from?

You have lived in _______(name of rural community) for ____ yrs? What other areas have you lived in? What areas of Oregon do you like and why?

You did / did not graduate high school.

You worked as a TB / PL. How long did you do that? Did you like it?

-What was the most important part of your job?
-What was the most complicated?
-What is the part that most outsiders don't understand?
-What are some of the names of tools and what were they used for?
-Were you ever in, witness, or know about an accident at work?
What happened?
-Tell me about some safety precautions you had to take at work.
-Tell me about some of the tools that made your job easier or safer.

-Tell me about the town/community you live in.
-Have there ever been any big changes in the community? What were they?
-What do you like about living outside of the city?

-Have you ever done anything that you are really proud of?
-What is something that you really like to do?

Now I would like to ask you to read the following set of cards.

APPENDIX E

WORDS AND PHRASES

Words and Phrases Appearing on 3 x 5 Cards

1. "cot"
2. "scotch whiskey"
3. "God bless America"
4. "Boss"
5. "Wizard of Oz"
6. "John-John"
7. "oh my gosh"
8. "bomb"
9. "Don"
10. "walk"
11. "talk"
12. "hodge podge"
13. "Scotland Yard"
14. "caught"
15. "got to go"
16. "cause and effect"
17. "gauze"
18. "patty sausage"
19. "Gone with the Wind"
20. "mow the lawn"
21. "dusk to dawn"
22. "alms for the poor"
23. "Maupin"
24. "modern man"
25. "wedge and maul"
26. "Mall 205"
27. "saw blade"
28. "whip saw"
29. "log chain"
30. "fog horn"
31. "odds and ends"
32. "pay out reel"
33. "shotgun"
34. "hot stick"
35. "hot blocks"
36. "honorable discharge"
37. "flora and fauna"
38. "botch job"
39. "fawn"
40. "Dodge City"
41. "hee-haw"

APPENDIX F

INFORMED CONSENT

Informed Consent Form

A Dialect Study of Oregon NORMs

You are invited to participate in a research study conducted by Lisa Wittenberg Hillyard from Portland State University, Department of Applied Linguistics. Lisa hopes to learn about the dialect(s) of non-mobile, older, rural, males of Oregon. The study is being conducted in partial fulfillment of her Master's degree. Lisa is working under the supervision of Dr. Tucker Childs.

If you decide to participate, you will be asked to be interviewed. The interview questions will be about your occupation and personal interests. The interview should last for an hour. Your voice will be recorded during the interview. After the interview is complete, your voice will be measured and analyzed on spectrographic images. The information received from your interview may be published in journals and on the internet.

Any information that is obtained in connection with this study and that can be linked to you or identify you will be kept confidential. This information will be kept confidential by giving you a label identifying whether you worked as a timber worker or a power lineman. Then a number will be added to the code which identifies you as to which interview you were. For example, TW-2 would mean that you were the second timber worker interviewed.

All records from this study will be kept secure at the residence or office of Lisa Wittenberg Hillyard for a minimum of three years and then, until her academic career is complete.

You may not receive any direct benefit from taking part in this study, but the study may help to increase knowledge that may help others in the future.

Your participation is voluntary. You do not have to take part in this study, and it will not affect your relationship with Portland State University. You may withdraw your participation from this study at any time without affecting your relationship with Portland State University.

Your signature indicates that you have read and understood the above information and have agreed to take part in this study. By signing, you are not waiving any legal claims, rights, or remedies. The researcher should provide you with a copy of this form for your own records.

Date: _______________ Signature: _________________________________

Date: _______________ Signature of Witness: ______________________

If you have concerns or problems about your participation in this study, please contact either the Human Subjects Research Review Committee, Office of Research and Sponsored Projects, 111 Cramer Hall, Portland State University, 503-725-8182, or Lisa Wittenberg Hillyard at 9590 SE Telford Road, Boring, OR, 97009 or 503-663-9361 or <lisawitt@gte.net>.

APPENDIX G

OREGON NORMS DATA

Speaker 1:

Male, born in 1908 in Gresham, Oregon. Lived in Gresham or Sandy his entire life.

Age 92 at time of recording

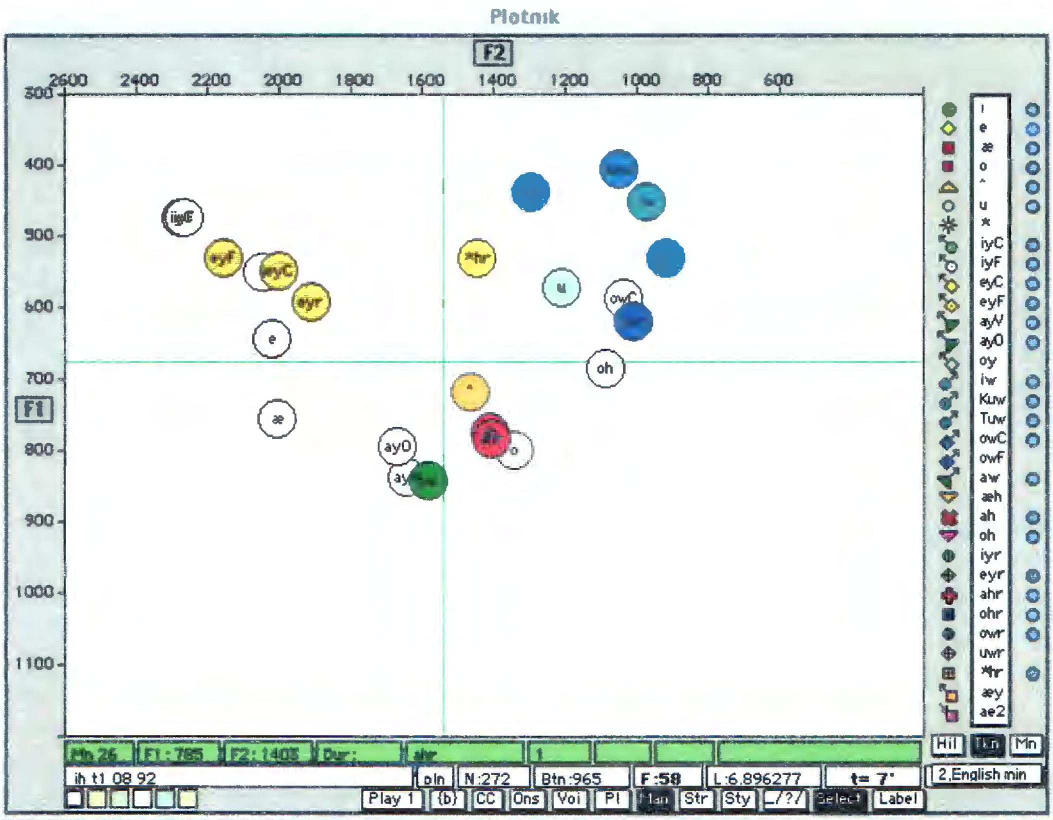


Figure G-1: Speaker 1's grand means vowel system

Chart G-1: *Speaker 1 grand means data*

Vowel Class	Total # of Vowel Nucleus Tokens	Means from complete data		Anticipated # of Tokens Calculated in Plotnik Means	# of Tokens Used in Plotnik Means	Means as Calculated by Plotnik	
		F1	F2			F1	F2
/i/	16	546	2018	5	11	553	2043
/iy/C	7	476	2300	3	4	477	2272
/iy/F	4	477	2263	4	4	477	2263
/e/	8	651	1945	3	6	647	2016
/ey/C	11	564	1992	4	7	552	1998
/ey/F	2	580	1796	1	1	534	2152
/ae/	16	770	1992	11	14	758	2001
/^/	14	720	1460	10	10	719	1461
/ay/V	14	839	1637	13	13	839	1637
/ay/O	4	795	1667	1	4	796	1667
/aw/	12	837	1584	12	11	844	1581
/u/	13	574	1206	6	13	574	1207
K/uw/	2	500	1125	1	1	408	1050
T/uw/	6	438	1291	6	6	439	1292
/iw/	1	454	970	0	1		
/ow/C	18	567	1035	6	16	565	1023
/ow/F							
/ah/	2	798	1348	1	1	775	1406
/o/	28	797	1334	28	27	801	1340
/oh/	29	688	1089	15	26	687	1086
/oy/							
/iy/R	1	443	1544	0			
/ey/R	5	596	1823	4	4	595	1908
/ah/R	7	785	1403	7	7	785	1403
/oh/R	2	620	1004	2	2	621	1005
/ow/R	6	545	945	5	5	534	918
/uw/R							
/*h/R	4	557	1208	1	1	534	1441
Total	235			147	190		

Total Figures do not include measurements for glide targets

Speaker 2

Male, born in 1908 near Champoeg Park, Oregon. Spent four years in United States Army, stationed in Hawaii. Lived on Mt. Hood (near Welches) since 1936. Age 92 at time of recording.

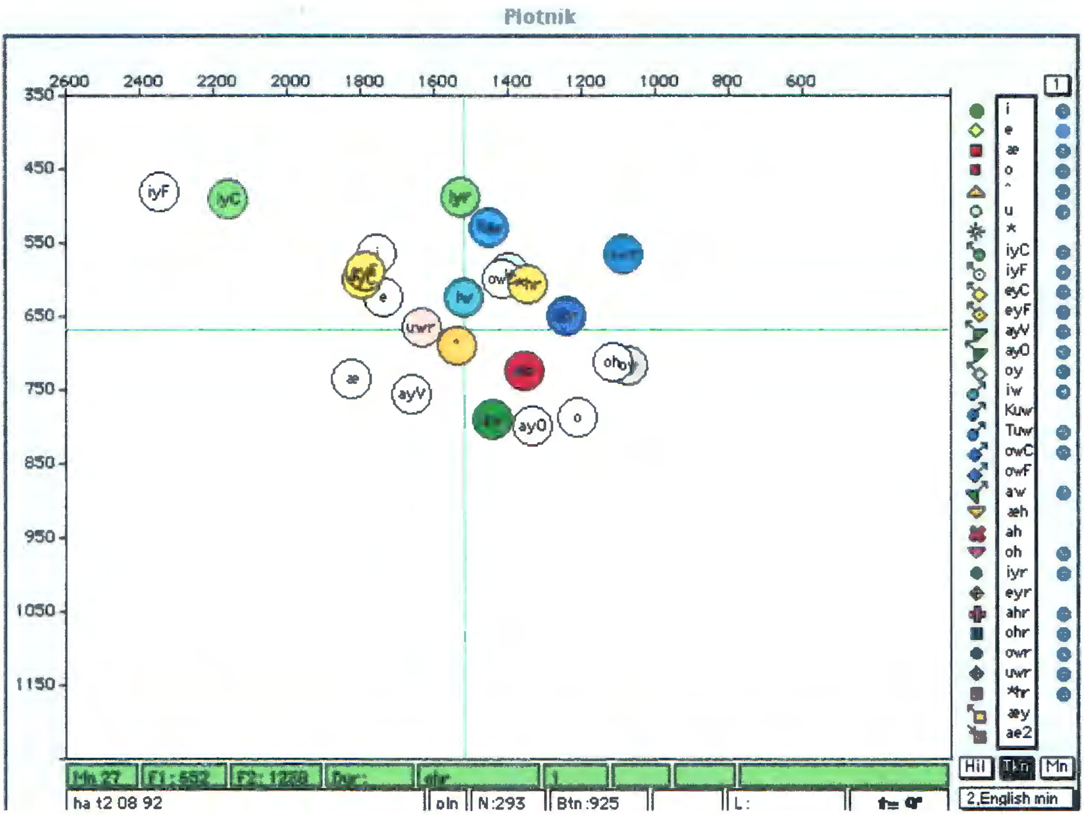


Figure G-2: Speaker 2's grand means vowel system

Chart G-2: *Speaker 2 grand means data*

Vowel Class	Total # of Vowel Nucleus Tokens	Means from complete data		Anticipated # of Tokens Calculated in Plotnik Means	# of Tokens Used in Plotnik Means	Means as Calculated by Plotnik	
		F1	F2			F1	F2
/i/	18	575	1770	8	12	568	1752
/iy/C	7	465	2204	5	3	493	2159
/iy/F	2	483	2342	2	2	484	2342
/e/	28	636	1679	20	17	626	1735
/ey/C	9	618	1741	7	10	602	1791
/ey/F	5	579	1773	5	3	590	1782
/ae/	22	739	1793	19	20	738	1819
/^/	23	687	1513	16	18	691	1533
/ay/V	15	762	1615	14	12	764	1639
/ay/O	3	799	1305	1	2	801	1331
/aw/	11	787	1434	9	10	793	1437
/u/	8	591	1404	5	7	592	1395
K/uw/	3	571	1205	2			
T/uw/	2	495	1586	2	1	530	1450
/iw/	1	626	1518	1	1	626	1518
/ow/C	10	611	1433	7	8	601	1411
/ow/F							
/ah/							
/o/	28	790	1199	25	25	791	1207
/oh/	30	715	1109	21	30	715	1113
/oy/	4	719	1071	0	2	719	1071
/iy/R	2	490	1525	1	1	490	1525
/ey/R							
/ah/R	4	724	1351	4	4	725	1351
/oh/R	7	645	1206	6	6	652	1238
/ow/R	6	583	1093	5	5	567	1082
/uw/R	1	667	1628	1	1	667	1628
/*h/R	6	591	1424	4	3	607	1344
Total	257			189	203		

Total Figures do not include measurements for glide targets

Speaker 3

Male, Born 1922 in Bull Run, Oregon. Lived in Pleasant Home and Boring for entire life except for four years in the United States Navy.

Age 79 at time of recording

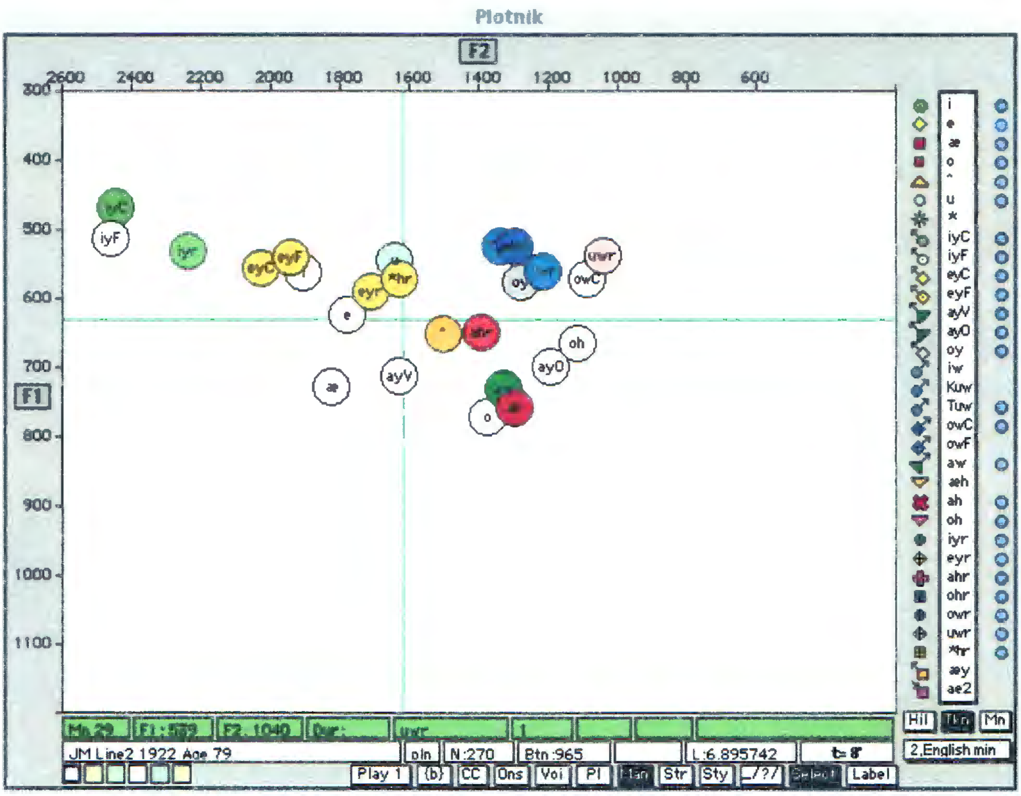


Figure G-3: Speaker 3's grand means vowel system

Chart G-3: *Speaker 3 grand means data*

Vowel Class	Total # of Vowel Nucleus Tokens	Means from complete data		Anticipated # of Tokens Calculated in Plotnik Means	# of Tokens Used in Plotnik Means	Means as Calculated by Plotnik	
		F1	F2			F1	F2
/i/	17	560	1869	10	12	564	1901
/iy/C	11	467	2496	7	9	469	2445
/iy/F	8	504	2441	6	6	515	2457
/e/	18	622	1785	9	16	625	1775
/ey/C	6	545	2087	1	4	558	2024
/ey/F	7	538	2058	5	6	542	1939
/ae/	17	725	1800	12	14	730	1820
/^/	6	650	1505	1	17	654	1498
/ay/V	11	714	1619	9	8	714	1623
/ay/O	2	671	1334	0	1	701	1187
/aw/	10	721	1342	10	6	734	1324
/u/	6	534	1647	4	7	547	1638
K/uw/	2	488	1446	0			
T/uw/	1	525	1335	1	1	525	1335
/iw/							
/ow/C	13	569	1098	9	11	573	1084
/ow/F							
/ah/	1	760	1291	1	1	760	1291
/o/	30	770	1367	26	27	773	1370
/oh/	29	667	1111	17	26	666	1113
/oy/	3	574	1500	2	3	578	1276
/iy/R	5	524	2148	3	3	534	2233
/ey/R	6	593	1708	6	6	593	1709
/ah/R	8	650	1389	8	8	650	1389
/oh/R	2	525	1291	2	2	525	1291
/ow/R	3	580	1143	1	2	562	1210
/uw/R	1	539	1040	1	1	539	1040
/*h/R	7	567	1581	5	5	573	1624
Total	229			154	202		

Total Figures do not include measurements for glide targets

Speaker 4

Male, Born in 1922 in Boring, Oregon. Lived in Boring and Gresham entire life.

WWII Air Force Experience

Age 79 at time of recording

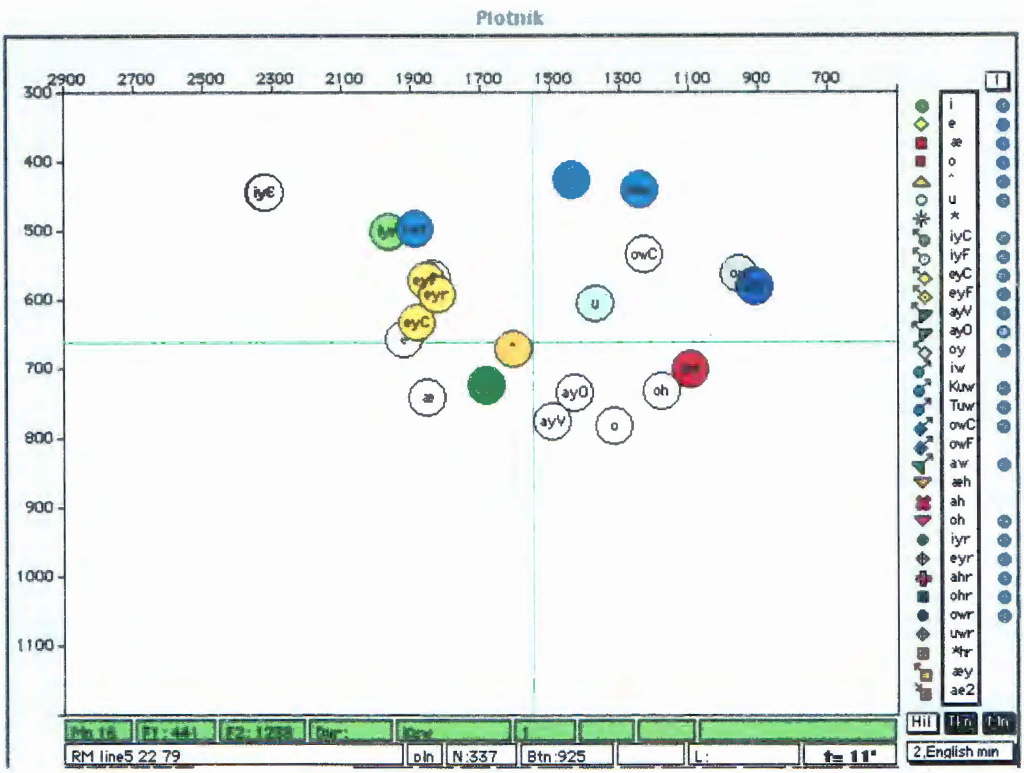


Figure G-4: Speaker 4's grand means vowel system

Chart G-4: *Speaker 4 grand means data*

Vowel Class	Total # of Vowel Nucleus Tokens	Means from complete data		Anticipated # of Tokens Calculated in Plotnik Means	# of Tokens Used in Plotnik Means	Means as Calculated by Plotnik	
		F1	F2			F1	F2
/i/	12	579	1832	6	10	571	1834
/iy/C	9	460	2359	6	6	447	2321
/iy/F	5	442	2273	4	4	446	2316
/e/	20	669	1868	12	15	661	1915
/ey/C	6	620	1846	2	3	636	1878
/ey/F	6	590	1874	5	5	574	1851
/ae/	17	745	1845	16	17	745	1846
/^/	25	675	1579	22	23	673	1601
/ay/V	13	776	1477	13	9	779	1488
/ay/O	7	758	1416	1	6	737	1423
/aw/	19	720	1634	17	15	727	1679
/u/	9	600	1427	4	6	607	1368
K/uw/	4	471	1314	2	3	441	1238
T/uw/	4	429	1436	4	4	429	1436
/iw/	1			1	1	404	1980
/ow/C	12	544	1222	7	10	538	1226
/ow/F							
/ah/							
/o/	28	765	1304	36	27	786	1313
/oh/	44	739	1773	27	42	735	1175
/oy/	3	565	952	3	3	565	952
/iy/R	3	503	1960	3	3	503	1960
/ey/R	6	594	1821	6	6	595	1821
/ah/R	2	704	1091	2	2	704	1091
/oh/R	6	538	909	6	6	583	909
/ow/R	2	499	1882	2	1	499	1882
/uw/R							
/*h/R							
Total	279			207	232		

Total Figures do not include measurements for glide targets

Speaker 5

Male, Born in 1922 in Gresham, Oregon. Lived in Sandy as an adult.

Age 79 at time of recording.

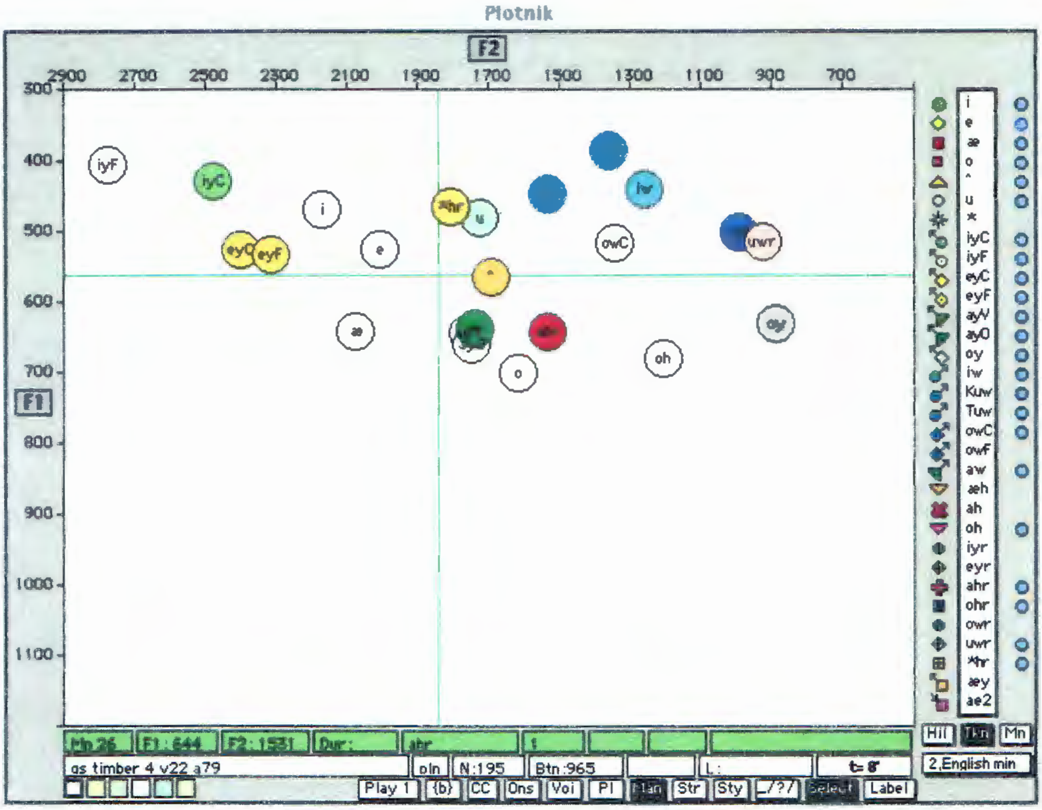


Figure G-5: Speaker 5's grand means vowel system

Chart G-5: *Speaker 5 grand means data*

Vowel Class	Total # of Vowel Nucleus Tokens	Means from complete data		Anticipated # of Tokens Calculated in Plotnik Means	# of Tokens Used in Plotnik Means	Means as Calculated by Plotnik	
		F1	F2			F1	F2
/i/	22	475	2166	13	13	478	2181
/iy/C	8	426	2498	6	6	424	2542
/iy/F	4	421	2629	2	2	409	2772
/e/	9	534	2022	5	2	528	1984
/ey/C	6	495	2481	5	5	520	2431
/ey/F	4	536	2310	3	4	536	2311
/ae/	16	645	2075	15	11	684	2056
/^/	7	566	1689	4	5	596	1700
/ay/V	8			7	7	646	1752
/ay/O	3	670	1819	0	2	663	1745
/aw/	3	639	1732	3	3	639	1733
/u/	9	484	1720	7	7	479	1878
K/uw/	2	421	1467	1	1	388	1359
T/uw/	4	449	1529	4	4	449	1530
/iw/	1	441	1256	0	1	441	1256
/ow/C	10	527	1281	5	8	512	1351
/ow/F							
/ah/							
/o/	18	700	1607	15	16	704	1613
/oh/	21	680	1199	13	19	683	1201
/oy/	1	513	1322	0			
/iy/R	1	389	2505	0			
/ey/R							
/ah/R	1	644	1531	1	1	644	1531
/oh/R	1	504	988	1	1	504	988
/ow/R	1	555	1053	0			
/uw/R	1	516	919	1	1	516	919
/*h/R	2	467	1803	2	2	468	1804
Total	164			114	114		

Total Figures do not include measurements for glide targets

Speaker 6

Male, Born in 1927 in Boring, Oregon. Lived in Boring vicinity for entire life

except for some military service.

Age 74 at time of recording.

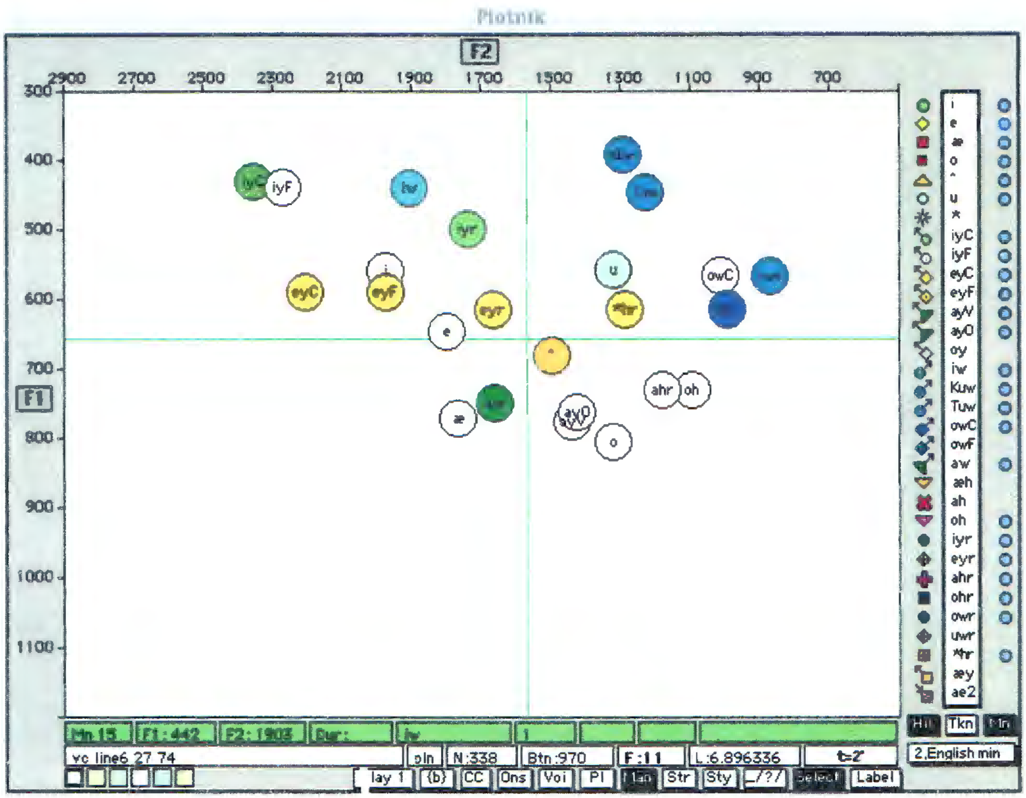


Figure G-6: Speaker 6's grand means vowel system

Chart G-6: *Speaker 6 grand means data*

Vowel Class	Total # of Vowel Nucleus Tokens	Means from complete data		Anticipated # of Tokens Calculated in Plotnik Means	# of Tokens Used in Plotnik Means	Means as Calculated by Plotnik	
		F1	F2			F1	F2
/i/	22	572	1893	15	17	563	1972
/iy/C	15	435	2284	6	9	432	2354
/iy/F	5	433	2221	2	2	443	2268
/e/	17	649	1814	10	13	648	1794
/ey/C	15	597	2153	10	11	591	2201
/ey/F	9	584	1961	9	8	591	1970
/ae/	19	776	1755	14	15	773	1762
/^/	21	683	1475	16	18	684	1494
/ay/V	20	768	1443	14	14	778	1435
/ay/O	7	764	1422	2	7	764	1422
/aw/	12	752	1632	10	9	750	1659
/u/	9	561	1313	6	9	561	1314
K/uw/	2	424	1284	0	1	395	1290
T/uw/	3	454	1133	2	2	448	1225
/iw/	1	442	1903	1	1	442	1903
/ow/C	14	565	995	8	12	570	1008
/ow/F							
/ah/							
/o/	35	791	1285	34	34	809	1318
/oh/	26	737	1105	13	23	734	1089
/oy/							
/iy/R	6	513	1714	2	2	502	1732
/ey/R	6	615	1635	5	5	617	1660
/ah/R	11	733	1174	11	11	733	1174
/oh/R	4	615	986	4	4	616	987
/ow/R	8	574	881	6	7	570	868
/uw/R							
/*h/R	6	587	1329	4	4	616	1284
Total	293			200	228		

Total Figures do not include measurements for glide targets

Speaker 7

Male, born in 1931 in Nebraska. Moved to Gresham, Oregon in 1936.

Age 70 at time of recording

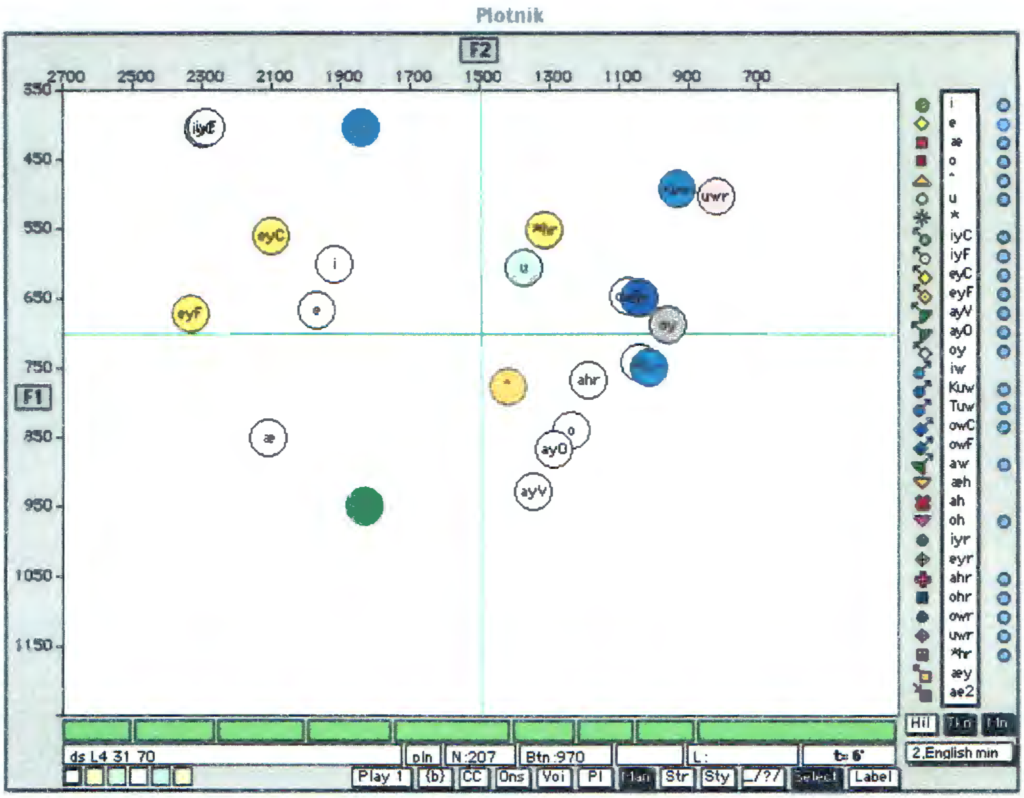


Figure G-7: Speaker 7's grand means vowel system

Chart G-7: *Speaker 7 grand means data*

Vowel Class	Total # of Vowel Nucleus Tokens	Means from complete data		Anticipated # of Tokens Calculated in Plotnik Means	# of Tokens Used in Plotnik Means	Means as Calculated by Plotnik	
		F1	F2			F1	F2
/i/	10	589	1814	3	4	603	1917
/iy/C	7	405	2246	4	5	408	2292
/iy/F	3	421	2261	2	2	406	2283
/e/	14	678	1853	8	4	670	1967
/ey/C	5	552	2058	4	4	562	2100
/ey/F	2	622	1900	1	1	673	2328
/ae/	8	852	2105	8	8	853	2106
/^/	14	770	1386	9	10	779	1418
/ay/V	12	909	1368	8	10	924	1339
/ay/O	4	883	1278	2	3	869	1284
/aw/	10	952	1827	6	42	952	1828
/u/	5	608	1370	4	5	608	1370
K/uw/	5	448	1123	1	2	495	928
T/uw/	1	406	1839	1	1	406	1839
/iw/							
/ow/C	7	659	1097	4	6	648	1071
/ow/F							
/ah/							
/o/	26	841	1233	29	26	841	1233
/oh/	22	743	1035	17	20	744	1039
/oy/	2	689	956	2	2	689	956
/iy/R							
/ey/R							
/ah/R	4	770	1184	4	4	770	1184
/oh/R	1	650	1039	1	1	650	1039
/ow/R	4	750	1010	4	3	750	1010
/uw/R	1	506	817	1	1	506	817
/*h/R	6	554	1313	3	3	554	1313
Total	175			121	167		

Total Figures do not include measurements for glide targets

Speaker 8

Male, born in 1932 in Vernonia, Oregon and grew up in Vernonia, Glenwood, and Tillamook. Retired to Beaverton area.

Age 69 at time of recording.

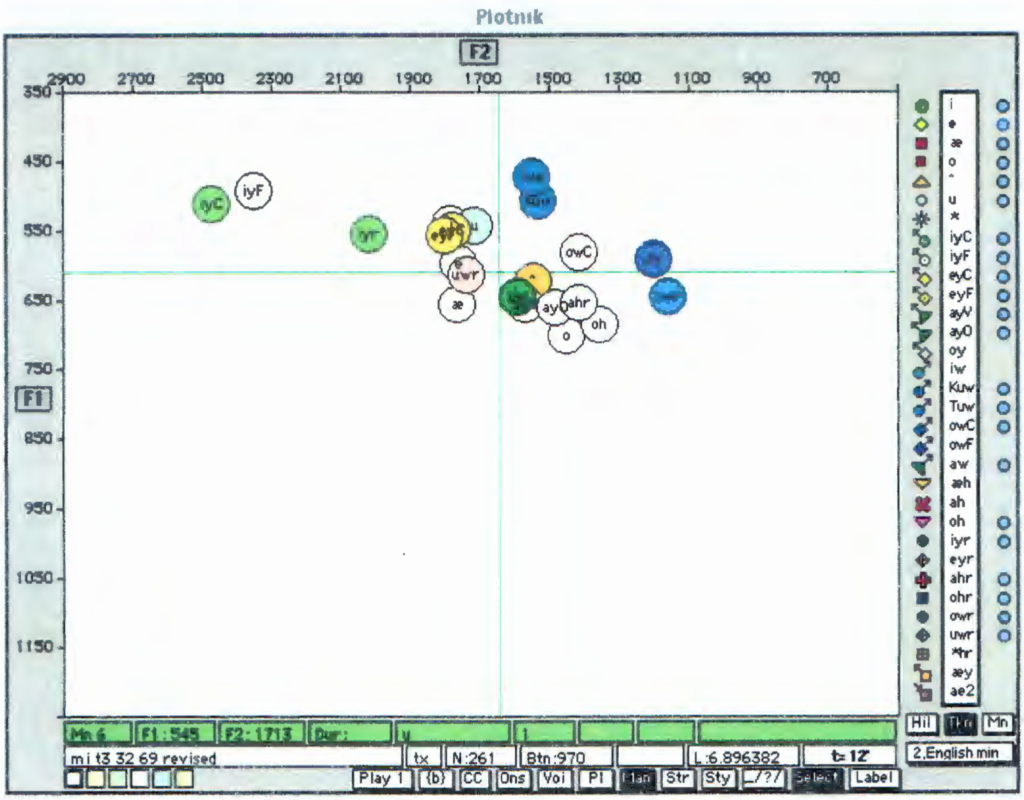


Figure G-8: Speaker 8's grand means vowel system

Chart G-8: *Speaker 8 grand means data*

Vowel Class	Total # of Vowel Nucleus Tokens	Means from complete data		Anticipated # of Tokens Calculated in Plotnik Means	# of Tokens Used in Plotnik Means	Means as Calculated by Plotnik	
		F1	F2			F1	F2
/i/	18	536	1750	6	8	543	1798
/iy/C	9	503	2413	8	7	512	2471
/iy/F	7	485	2349	6	6	494	2346
/e/	20	594	1760	16	6	594	1801
/ey/C	9	546	1761	6	7	550	1776
/ey/F	6	563	1853	5	5	557	1797
/ae/	20	657	1762	17	10	692	1710
/^/	18	620	1544	15	11	638	1570
/ay/V	10	659	1568	7	8	658	1565
/ay/O	7	659	1471	2	5	662	1478
/aw/	9	644	1610	9	5	647	1588
/u/	8	547	1684	4	5	545	1713
K/uw/	1	507	1528	0	1	507	1528
T/uw/	3	473	1549	3	3	474	1549
/iw/							
/ow/C	17	600	1416	10	12	584	1411
/ow/F							
/ah/							
/o/	23	689	1440	22	22	703	1449
/oh/	28	688	1353	28	28	688	1353
/oy/							
/iy/R	2	555	2016	2	2	555	2016
/ey/R							
/ah/R	7			5	6	655	1411
/oh/R	1	592	1200	0	1	592	1200
/ow/R	3	648	1232	2	2	646	1158
/uw/R	1	615	1735	1	1	615	1735
/*h/R		482	1590				
Total	230			165	153		

Total Figures do not include measurements for glide targets

Speaker 9

Male, Born in 1932 in Oklahoma. Moved to Clackamas County in 1938. Lived in

Estacada, Oregon for entire life.

Military service was restricted to National Guard Service in Hood River.

Age 69 at time of recording.

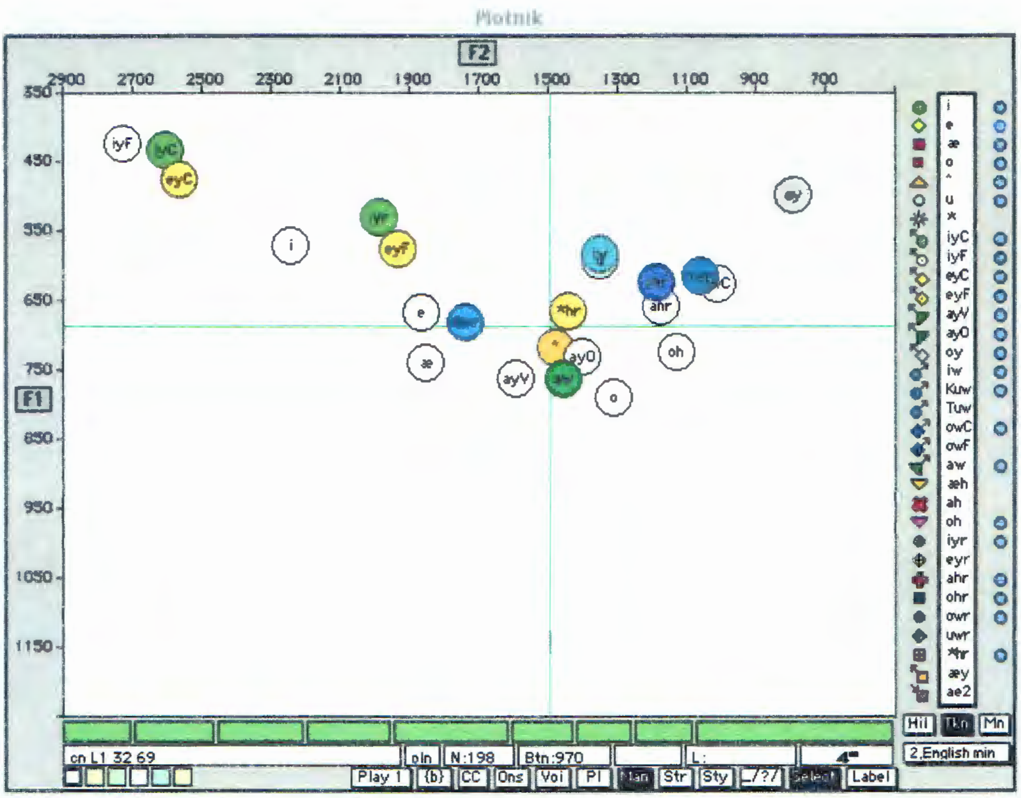


Figure G-9: Speaker 9's grand means vowel system

Chart G-9: *Speaker 9 grand means data*

Vowel Class	Total # of Vowel Nucleus Tokens	Means from complete data		Anticipated # of Tokens Calculated in Plotnik Means	# of Tokens Used in Plotnik Means	Means as Calculated by Plotnik	
		F1	F2			F1	F2
/i/	7	592	2018	4	4	573	2237
/iy/C	1	435	2604	1	1	435	2604
/iy/F	4	425	2722	4	4	425	2723
/e/	15	658	1872	8	9	669	1863
/ey/C	2	570	1896	2	1	479	2562
/ey/F	3	579	1928	3	3	579	1928
/ae/	11	742	1846	10	11	742	1847
/^/	15	719	1447	12	12	720	1473
/ay/V	7	799	1501	5	4	764	1588
/ay/O	5	734	1397	2	5	734	1398
/aw/	8	764	1452	7	8	764	1453
/u/	7	593	1350	5	7	594	1350
K/uw/	1	682	1735	1	1	682	1735
T/uw/							
/iw/	1	586	1348	1	1	586	1348
/ow/C	11	627	1006	6	11	628	1007
/ow/F							
/ah/							
/o/	29			26	26	792	1305
/oh/	25			17	23	727	1124
/oy/	2	548	876	1	1	500	790
/iy/R	3	532	1857	1	1	532	1982
/ey/R							
/ah/R	4	661	1169	4	4	661	1169
/oh/R	4	629	1797	3	3	625	1184
/ow/R	5	624	1058	4	4	618	1058
/uw/R							
/*h/R	4	623	1442	2	2	667	1439
Total	174			144	144		

Total Figures do not include measurements for glide targets

Speaker 10

Male, born in 1939 in Hubbard, Oregon. Moved to Culver, OR in 1950.

Lived in Idaho for two years as a young adult.

Age 62 at time of recording.

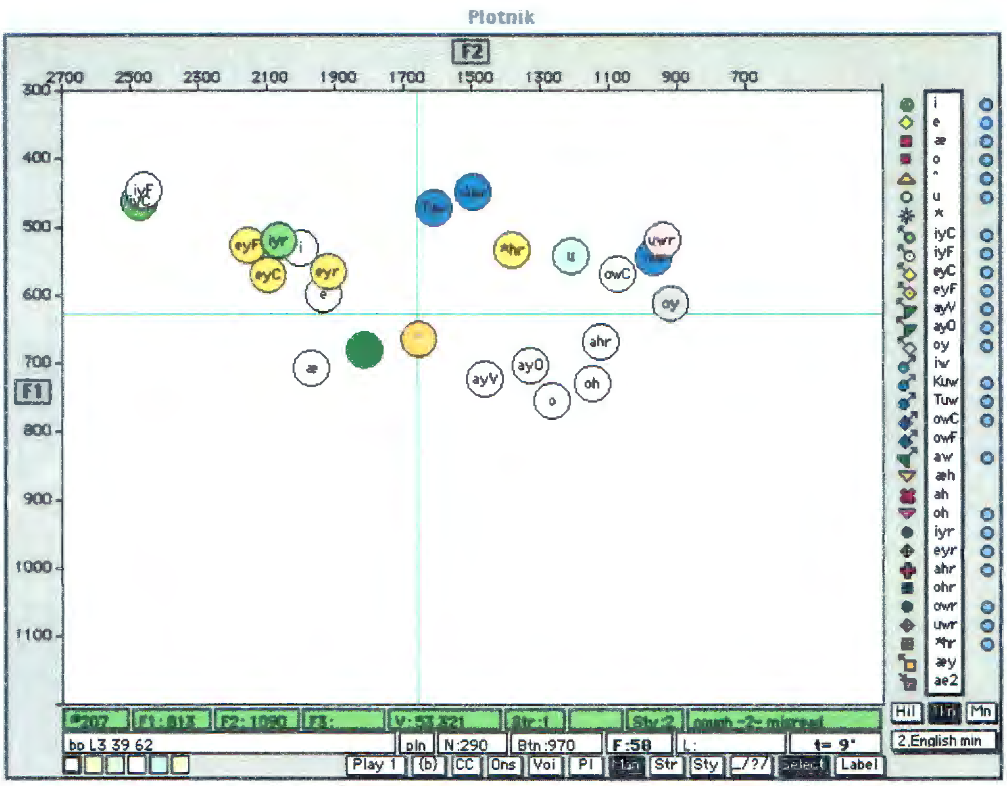


Figure G-10: Speaker 10's grand means vowel system

Chart G-10: *Speaker 10 grand means data*

Vowel Class	Total # of Vowel Nucleus Tokens	Means from complete data		Anticipated # of Tokens Calculated in Plotnik Means	# of Tokens Used in Plotnik Means	Means as Calculated by Plotnik	
		F1	F2			F1	F2
/i/	18	533	1941	12	14	533	1996
/iy/C	13	461	2455	10	12	464	2470
/iy/F	5	449	2457	5	5	449	2457
/e/	20	603	1936	17	19	602	1929
/ey/C	13	561	1999	10	7	571	2093
/ey/F	2	528	2151	2	2	529	2151
/ae/	23	714	1908	16	17	710	1965
/^/	15	665	1652	15	15	666	1653
/ay/V	10	719	1370	6	7	725	1459
/ay/O	6	715	1367	2	5	705	1326
/aw/	9	695	1816	6	7	683	1810
/u/	7	545	1205	6	7	545	1205
K/uw/	4	462	1531	2	1	452	1493
T/uw/	6	474	1608	6	5	474	1609
/iw/							
/ow/C	13	571	1071	17	13	572	1072
/ow/F							
/ah/							
/o/					26	757	1262
/oh/	27	734	1138	17	26	733	1143
/oy/	3	614	914	3	3	614	914
/iy/R	3	503	2111	2	2	522	2061
/ey/R	6	567	1915	5	6	568	1915
/ah/R	4	671	1121	4	4	671	1121
/oh/R							
/ow/R	5	560	998	5	4	546	965
/uw/R	1	522	937	1	1	522	937
/*h/R	3	535	1377	3	3	536	1378
Total	247			200	207		

Total Figures do not include measurements for glide targets

APPENDIX H

ANALYSIS AND DISCUSSION FOR STAGE 1 OF THE SOUTHERN SHIFT

Analysis and Discussion for Stage 1 of the Southern Shift

Plotnik 07 has two subsets for the /ay/ class: one finally before voiced phones (/ay/V) and the other before voiceless phones (/ay/0). Together, these two coded subsets represent the /ay/ class.

Diphthongs, such as /ay/, have two measurements: one for the vowel nucleus and the other for the glide target. For most tokens (words), two symbols (green triangles) appear: one for the place of the vowel nucleus and another for the place of the glide. Some tokens do not possess a glide and thus, only one symbol is present on the chart. The single symbol is considered the vowel nucleus.

Plotnik 07 calculates the mid-central place along the x-y axis. The crossing of axes is the place for schwa in the speakers' vowel systems. On the plot charts, these axes appear as green lines. The vertical y-axis relates to the center place for the vowel system and is referred to in this project as central axis.

The relationship of /ay/ to the central axis of a given speaker provides the relative front/back place of /ay/ within that speaker's vowel system. In a non-transitioned vowel system, the vowel nucleus of /ay/ is back of central axis. If a speaker's /ay/ vowel nucleus occurs in front of the speaker's central axis, it is considered to be fronted. The place of the /ay/ vowel nucleus is an indicator of a Southern speech feature.

The discussion below is centered on the realization of the glide. In a non-transitioned vowel system, the /ay/ glide occurs in a high-front position. However, the glide may not actually reach the high-front target and fall somewhere short of that place. An /ay/ vowel class symbol that appears in a place other than a high-front position symbol represents such an undershoot.

Evidence for glide deletion relies on complete monophthongization and the transition of the glide from an upglide /ay/ to an inglide /ah/. These data may be fully monophthongized vowels or vowels whose glides are not raised.

The order of the data presented below is intended to go from the simplest, most straight forward evidence, that which is easiest to understand, to more complex evidence that requires more familiarity with definitions used for glide deletion status in this study.

The most conservative interpretation for glide deletion is complete monophthongization. Speaker 2 exhibits three monophthonized tokens. These tokens were completely monophthonized and did not show an intermediate glide that was not raised. Data for Speaker 2 appears below (see Figure H-1).

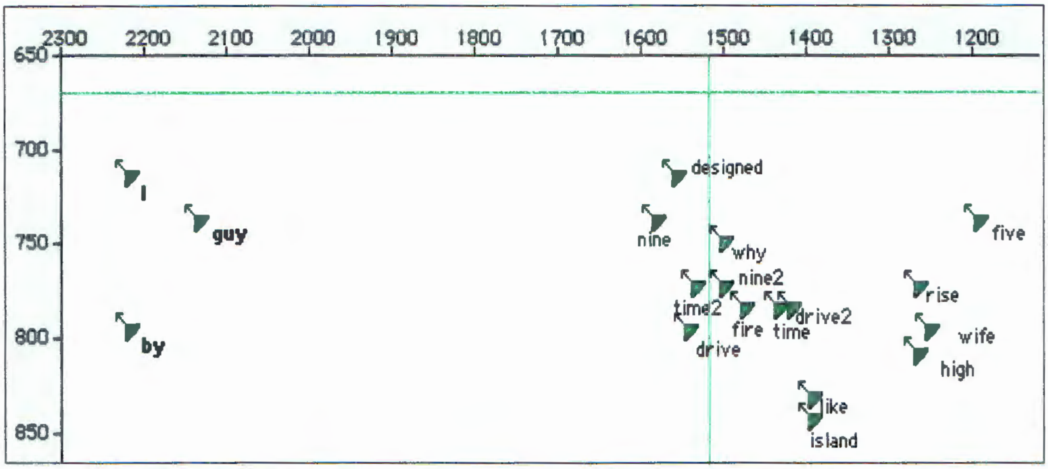


Figure H-1. Speaker 2: /ay/ monophthongal and vowel nuclei tokens.

Figure H-1 shows three monophthongs, *by, guy,* and *I*, for Speaker 2. The labels of the tokens are highlighted on the plot chart. The monophthongal tokens for Speaker 2 occur in final position. However, monophthongization is not categorical. There are two other final position tokens, *high* and *why*, that are fully diphthongized. The glide symbols for these two tokens do not appear on this view of the speaker's vowel system. The *high* and *why* tokens occur back of the central axis.

The other tokens that appear in Figure H-1 are the vowel nuclei of the other /ay /tokens present for Speaker 2. They are provided here to indicate the relative back place of the /ay/ vowel which highlights the relative extreme fronting of the monophthongal tokens observed.

The presence of monophthongized tokens coupled with the fronting of those tokens indicates a southern feature in this speaker's vowel system. However, the adherence to the chain shift described by the SS and all its stages may be in a rather early development because the fronted monophthongization is not categorical.

Speaker 3 exhibits not only complete monophthongized data, but also tokens representative of the glide produced with a straight forward trajectory. Figure H-2 shows data for Speaker 3 under consideration.

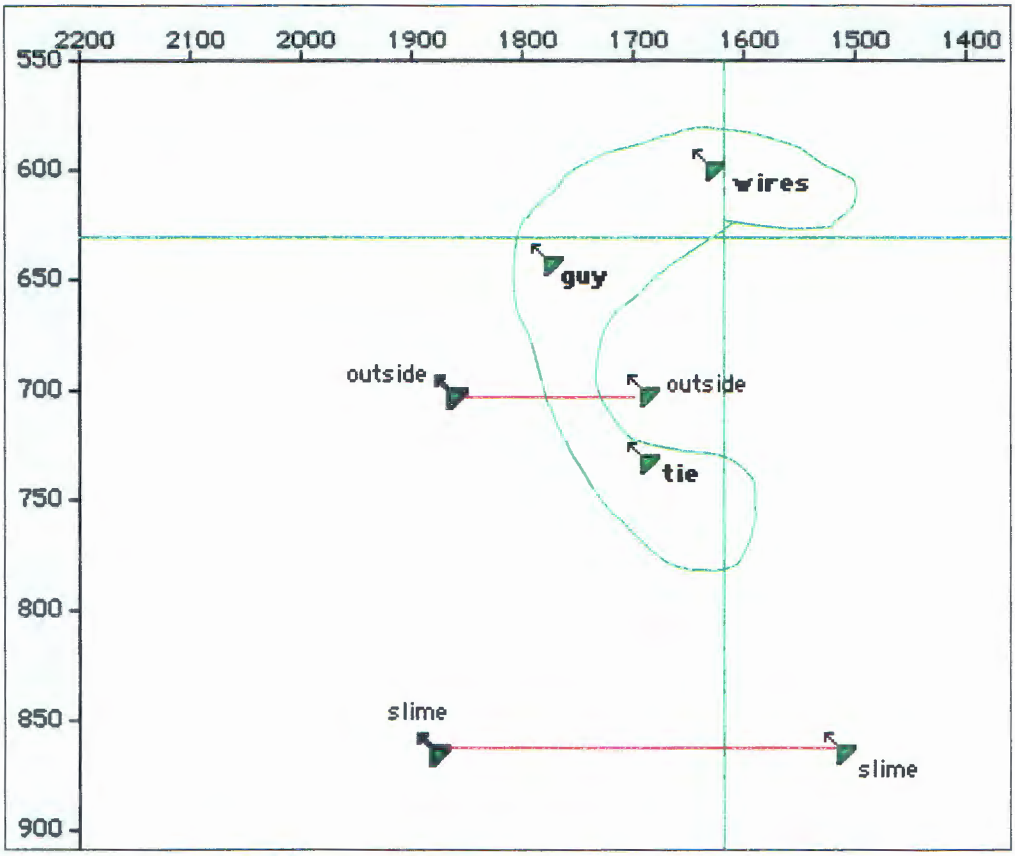


Figure H-2. Speaker 3: /ay/ monophthongal tokens.

Three tokens are fully monophthongized in Speaker 3's vowel system. They are *guy, tie,* and *wires* and are encircled by a green line.

Recall that Stage 1 of the SS has /ay/ transitioning to /ah/. That is to say, the upglide loses its rising transition. For Speaker 3, *outside* and *slime* demonstrate the reality of this change in the glide. A red line connects the vowel nucleus symbol to the glide target symbol. The symbol (green triangle) for the glide has been highlighted. The glides exhibit a fronted position, but there is no evidence for raising. The formant values for Speaker 3's data appear in Chart H-1.

Chart H-1: *Speaker 3: /ay/ tokens with identical F1 Hz values*

Token	Vowel Nucleus		Glide Target	
	F1	F2	F1	F2
Outside	701	1689	701	1865
Slime	863	1512	863	1880

The lack of raising in the glide target is evident in the identical F1 Hz measurements for the vowel nucleus and the glide target. The Hz measurements are listed in Chart H-1.

The nucleus of the vowel for *slime* appears back of central axis, which is counter to southern descriptions. The *outside* token's vowel nucleus occurs front of central axis as does all three of the monophthongal utterances, *guy*, *tie,* and *wire.* The pre-resonant token, *wire,* is potentially an outlier given its rather extreme height. Its place may be accounted for given its pre- and post-liquid position, however. Nonetheless, the four tokens of monophthongized /ay/ that occur front of central-axis represent the presence of a southern feature for Speaker 3. As for Speaker 2, the fronted monophthongized tokens are not categorical for Speaker 3 and may be indicative of an early stage for chain shift development as described in the SS.

Analysis of the data for Speaker 8 follows. Speaker 8 is the second speaker who exhibits an /ay/ glide with fronting but no raising (see Figure H-3).

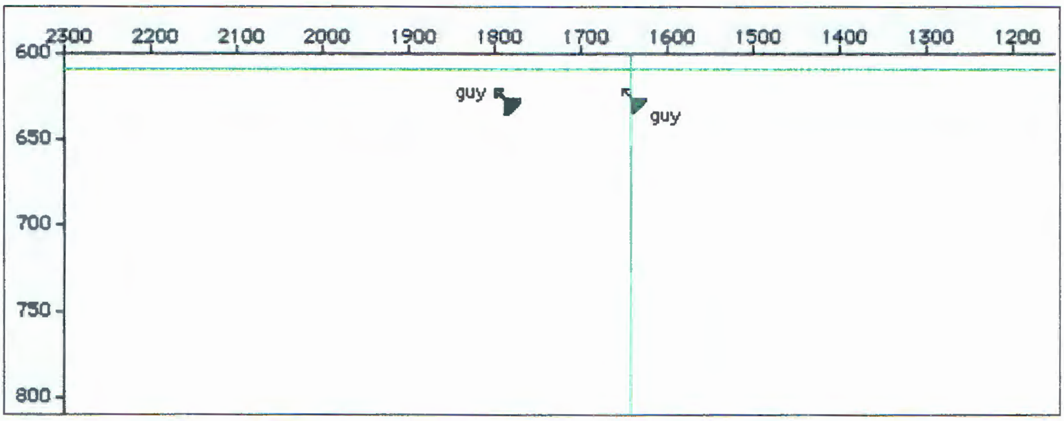


Figure H-3. Speaker 8: /ah/ token.

As can be seen in Figure H-3, Speaker 8 has one token, *guy*, that exhibits a glide that transitions front with no raising. The trajectory for *guy* is straight forward without any raising. Chart H-2 offers the formant data.

Chart H-2: *Speaker 8: /ay/ Token with Identical F1 Hz Values*

Token	Vowel Nucleus		Glide Target	
	F1	F2	F1	F2
Guy	628	1638	628	1785

The F1 values, as listed on Chart H-2, are identical relating to the straight forward place of the glide target in Figure H-3.

The vowel nucleus for *guy* occurs slightly back of central axis. No claim can be reliably made on a single token, but its production does not support the presence of a southern feature for Speaker 8.

Two subjects produce tokens with glides that are front and lowered from their vowel nuclei. Data for Speakers 4 and 5 follow. Speaker 4's data are presented in Figure H-4.

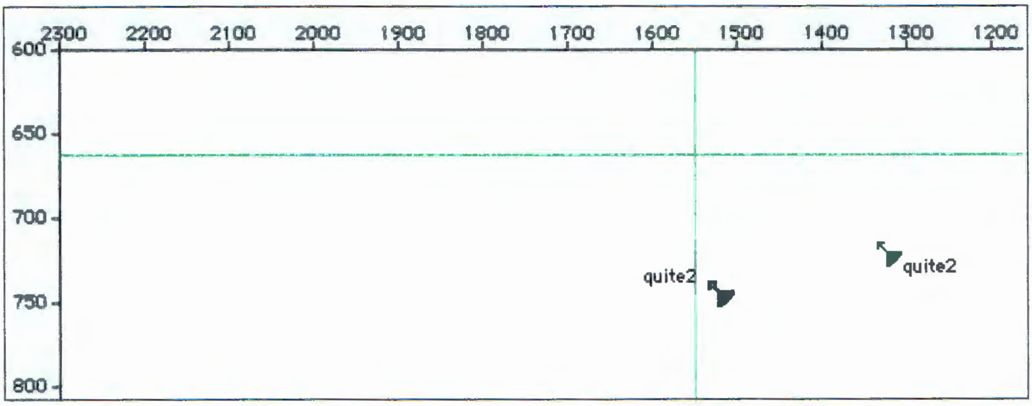


Figure H-4. Speaker 4: /ah/ token.

Only one token exhibits a lowered glide utterance. Chart H-3 provides the formant data under discussion.

Chart H-3: *Speaker 4: Lowered glide token of /ay*

Sample Word	Vowel Nucleus		Glide Target	
	F1	F2	F1	F2
Quite2	720	1315	742	1514

For raising to occur, the F1 Hz value for the glide target must be less than the value for the F1 of the vowel nucleus. As evident in Chart H-3 for Speaker 4, *Quite2*'s glide target F1 (742 Hz) is actually greater than the F1 for the nucleus of the vowel (720 Hz).

This single monophthongized token does not appear front of central axis, and ultimately, Speaker 4 does not apparently exhibit any southern feature within the /ay/ class.

Speaker 5's data are discussed next. Three tokens appear in Figure H-5. As can be seen on the plot chart in Figure H-5, the tokens' vowel nuclei have been connected to their glide targets with blue lines. All three of Speaker 5's tokens exhibit the lowered glide realization discussed for Speaker 4.

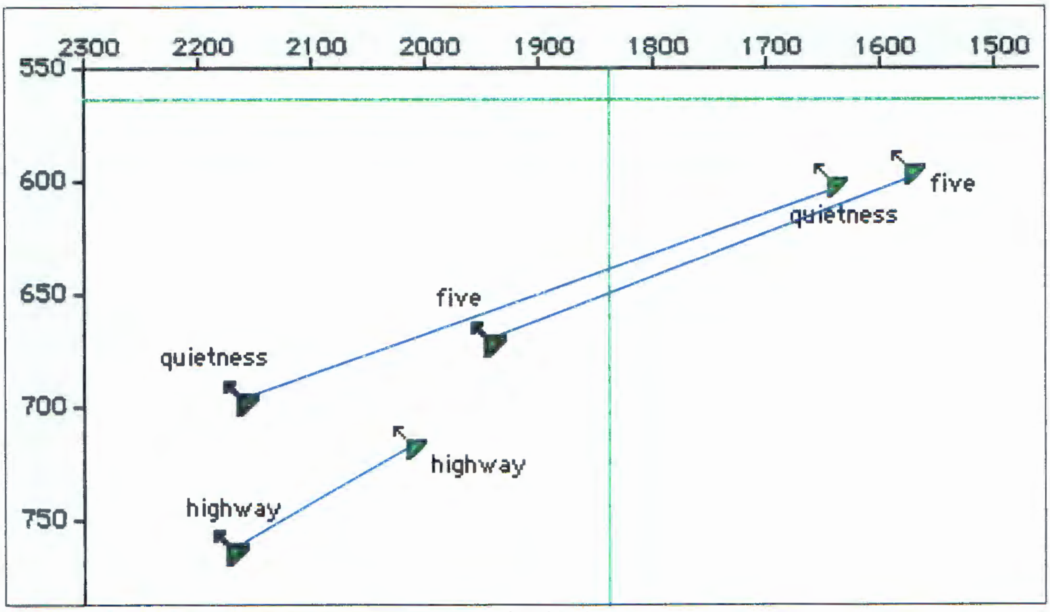


Figure H-5. Speaker 5: Lowered glide /ay/ tokens.

Chart H-4 offers the formant values for the inglided tokens for Speaker 5.

Chart H-4: *Speaker 5: Lowered glide tokens for /ay*

Token	Vowel Nucleus		Glide Target	
	F1	F2	F1	F2
Five	594	1575	670	1944
Highway	717	2013	762	2172
Quietness	601	1642	696	2162

The F1 values for the glide targets are all greater than the F1s for the vowel nuclei as listed on Chart H-4. Fronting is evident for all tokens and is indicated by the F2 values, which are greater for the glide targets. Of the three tokens, only one, *highway,* occurs front of central axis. This single occurrence is indeed a southern feature that is present in Speaker 5's vowel system.

Speaker 9 exhibits two realizations of /ay/ utterances with glides with no raising and lowered glides. Data for Speaker 9 are considered in Figure H-6. It presents the place for the vowel nucleus and glide targets for four tokens.

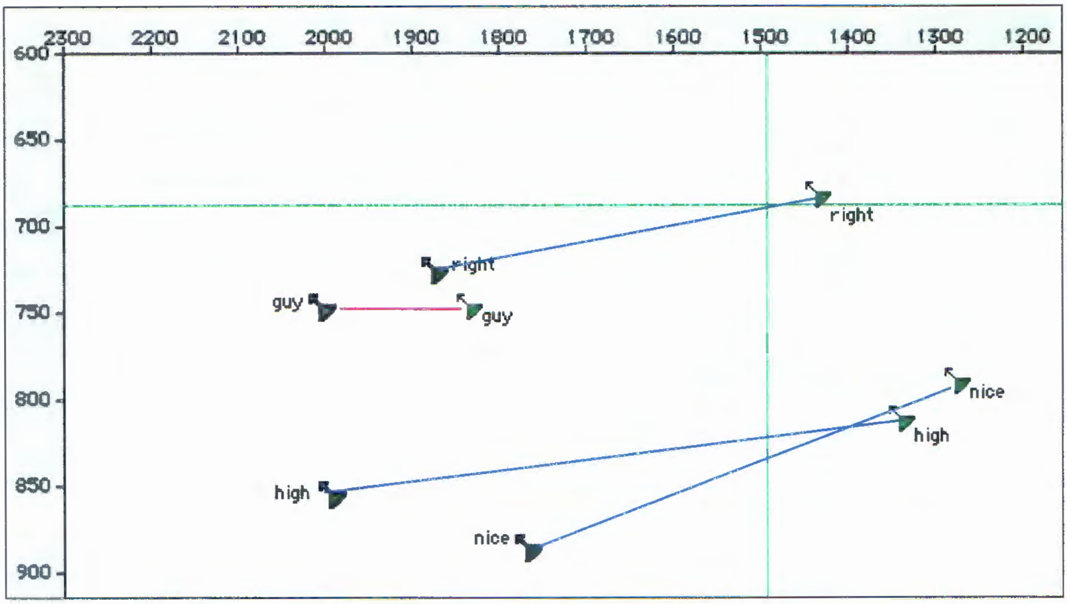


Figure H-6. Speaker 9: /ah/ tokens.

Chart H-5 provides the formant data.

Chart H-5: *Speaker 9: /ay/ tokens*

Token	Vowel Nucleus		Glide Target	
	F1	F2	F1	F2
Guy	747	1832	747	2003
High	812	1337	855	1992
Nice	790	1273	886	1767
Right	682	1434	725	1874

Guy, with identical F1s is connected by a red line for the vowel nucleus and glide target and exhibits a straight forward place for its glide target without any raising or lowering. The other three tokens, *high, nice,* and *right*, all have lowered glides, as indicated by the greater values for the glide targets' F1s. On Figure H-6, their vowel nucleus has been connected to their glide targets with blue lines. Only *guy* occurs front of central axis. Speaker 9 provides evidence for a southern feature, but it is weak based on a single token.

So far determination for monophthongized /ay/ utterances has relied on two forms of glide realization. The glide is completely lost and considered monophthongized or the glide is not raised. It may be either forward from the vowel nucleus or lowered. This second realization truly affects the trajectory of the glide. The glide does not appear to be headed in the anticipated direction, or rather, place of high and front position within the vowel system.

One commonality of the vowel systems for Speakers 1, 6, and 10 is that each speaker demonstrates three types of monophthongal /ay/ tokens. The data from these speakers are reported here, as a group, because they provide examples where the trajectory of the glide is both raised and front of the vowel nucleus, but falls far short of the high-front place. The glides are apparently realized within the space for the vowel nucleus. Along with previously discussed types of monophthongal /ay/ realizations, the data for Speakers 1, 6, and 10 are presented below, starting with Speaker 1 (see Figure H-7).

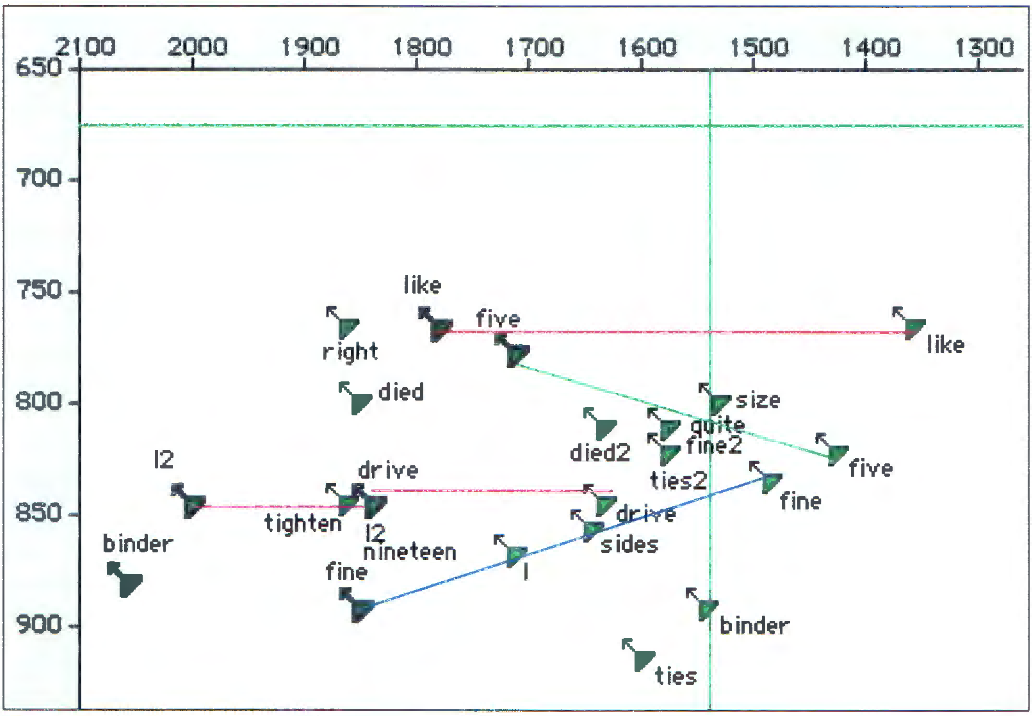


Figure H-7: Speaker 1: /ah/ tokens.

Figure H-7 displays vowel nuclei for all /ay/ tokens for Speaker 1 and five tokens are connected to their glide targets by lines. The tokens connected by red, pink, and blue lines are produced similar to patterns seen above. Three tokens, *drive, I2,* and *like,* exhibit straight forward glides with no raising. The vowel nucleus of *I2* and the glide target for *drive* are identical and appear as a single symbol. This same symbol also represents the vowel nucleus for *nineteen*. The green triangle (symbol) has all three labels attached to it: *drive* above it and *nineteen* and *I2* below it. The connecting pink line shows the symbols' relation for *I2* and the red line indicates the connection for *drive. Like* is also connected by a red line indicating a straight front glide. A fourth token, *fine*, is connected by a blue line. This token is front and lowered as observed above. The fifth and final token considered to be representative of a monophthongal utterance for Speaker 1 is *five.* As can be seen, the glide target occurs within the vowel nucleus space. I consider this type of utterance to be representative of glide deletion.

Chart H-6 provides the formant data relevant to this discussion. The F1 normalized Hz values are identical for the vowel nuclei and the glide targets for the three tokens of *I2, drive,* and *like*. There is no raising among these tokens and are considered monophthongs for this study. *Fine* is lowered and the F1 value for the glide (890) is greater than the F1 for the vowel (833) indicating the lowered place. The data for *five* are included for thoroughness. The raising and fronting are evident in the Hz value differences for the vowel nucleus and the glide target.

Chart H-6: *Speaker 1: Lowered glide and identical F1 Hz values for /ay/ tokens*

Tokens	Vowel Nucleus		Glide Target	
	F1	F2	F1	F2
Drive	844	1635	844	1842
Like	764	1360	764	1784
I2	844	1841	844	2003
Fine	833	1487	890	1854
Five	821	1429	775	1715

Two of the five tokens occur front of central axis. These data indicate the presence of a southern feature for Speaker 1.

Data for Speaker 6 are presented next (see Figure H-8).

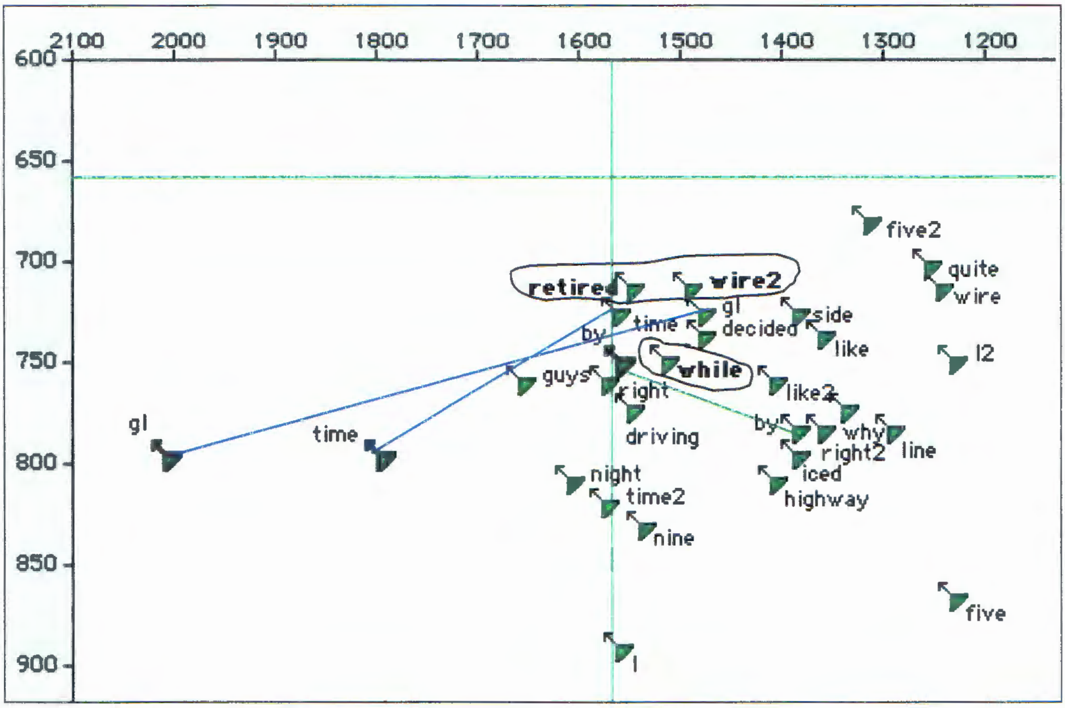


Figure H-8. Speaker 6: /ay/ to /ah/ tokens.

Speaker 6 exhibits multiple variations of the deleted /ay/ glide. He is the third and last speaker who exhibits complete monophthongized tokens. They are highlighted and encircled with a black line on the plot chart in Figure H-8 above. The monophthongal tokens for Speaker 6 all occur in pre-resonant position, either before /r/ or /l/. *Retired, while,* and *wire* are unlike the complete monophthongal tokens above for Speakers 2 and 3 in that they all occur back of speaker's central axis.

Two of Speaker 6's other /ay/ to /ah/ tokens are examples of the glides being realized in front and lowered place. Blue lines connect the vowel nuclei to their glide target symbols. The *time* token also fits into the resonant category as the /ay/ is in a pre-nasal position. The *gI* token is referring to military personnel, and the /ay/ is in final position. The F1 values for the glides are actually greater, indicating a lowered position, than the vowel nuclei. The formant data appear in Chart H-7.

Chart H-7: *Speaker 6: /ay/ with glide target F1s greater than vowel nucleus F1s*

Token	Vowel Nucleus		Glide Target	
	F1	F2	F1	F2
GI	726	1479	796	2009
Time	726	1562	796	1797

A sixth token, *by*, has its vowel nucleus and glide connected with a green line on the plot chart in Figure H-8. The glide symbol is highlighted and as can be observed it occurs within the cluster of vowel nuclei. This token exhibits such minor transition in both the raising and the fronting of the glide that it occurs within the vowel nucleus space for Speaker 6. Impressionistically, this token appears to be more monophthongal than fully diphthongal in production. *By* is included in the data set as an example of a monophthongal token for Speaker 6.

Neither the monophthong nor the vowel nuclei for the lowered glide tokens or the vowel nuclei or the glide target for *by* appear front of central axis. Speaker 6's data do not qualify as a southern dialect.

Consideration of Speaker 10's data is next (see Figure H-9). The vowel nuclei for all /ay/ tokens are shown on the plot chart in Figure H-9 for Speaker 10. Four tokens are connected to their glide targets, also present in Figure H--9, by lines. Two tokens exhibit the glide with a straight forward utterance. *Five* and *Five2* are connected by red lines. The *bye* token exhibits a lowered realization of the glide, and its vowel nucleus and glide target are connected with blue line. The fourth token, *I'll*, is connected by a green line. As seen in Speakers 1 and 6 above, the glide for *I'll* occurs within the vowel space and is considered to more monophthongal than diphthongal.

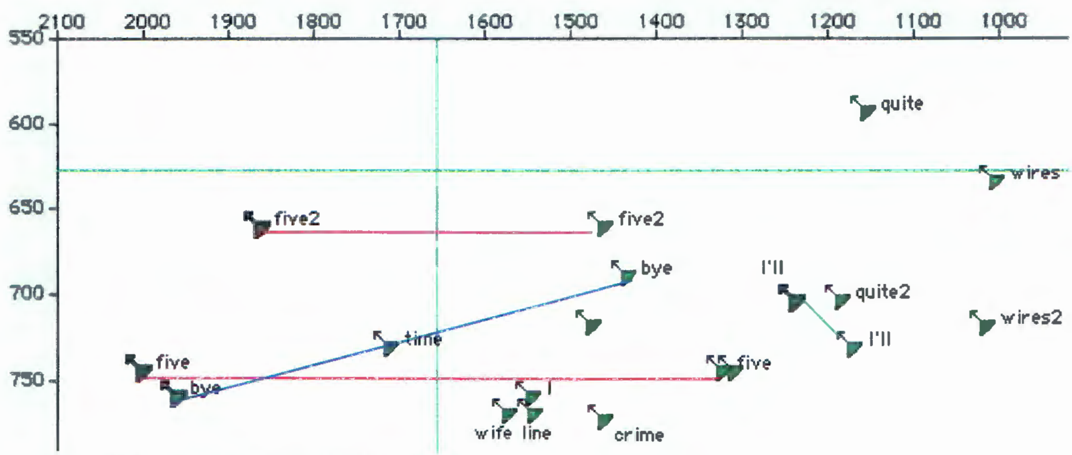


Figure H-9. Speaker 10: /ah/ tokens.

The formant data for Speaker 10 appear in Chart H-8 below.

Chart H-8: *Speaker 10*

Sample Word	Vowel Nucleus		Glide Target	
	F1	F2	F1	F2
Bye	688	1437	757	1964
Five	743	1327	743	2006
Five2	660	1465	660	1867
I'll	729	1173	702	1243

None of the four vowel nuclei appear front of central axis. Southern features do not appear to be present in Speaker 10 based on these data.

The final subject considered in this study has no /ay/ tokens that meet the monophthongal definitions contained herein. Speaker 7 obviously does not meet the initial criteria for Stage 1 of the SS.

The summary of the analysis and discussion above appear in sections 4.2.1 and 4.2.2 in Chapter 4.

APPENDIX I

/i/ AND /e/ PRE-NASAL DATA AND DISCUSSION

All pre-nasal symbols have been highlighted for ease of identification. /i/ class labels usually appear to the right, and /e/ class labels usually appear to the left. Some labels are variously placed as space permits. Means for /e/ and /i/ classes appear in circles on the plot charts in the figures that follow.

SPEAKER 1

Speaker 1 has five pre-nasal tokens identified in Figure I-1. *End* occurs in front and higher than its vowel class means. There are no identically produced pre-nasal tokens and no conclusions can be drawn from these data due to their scarcity.

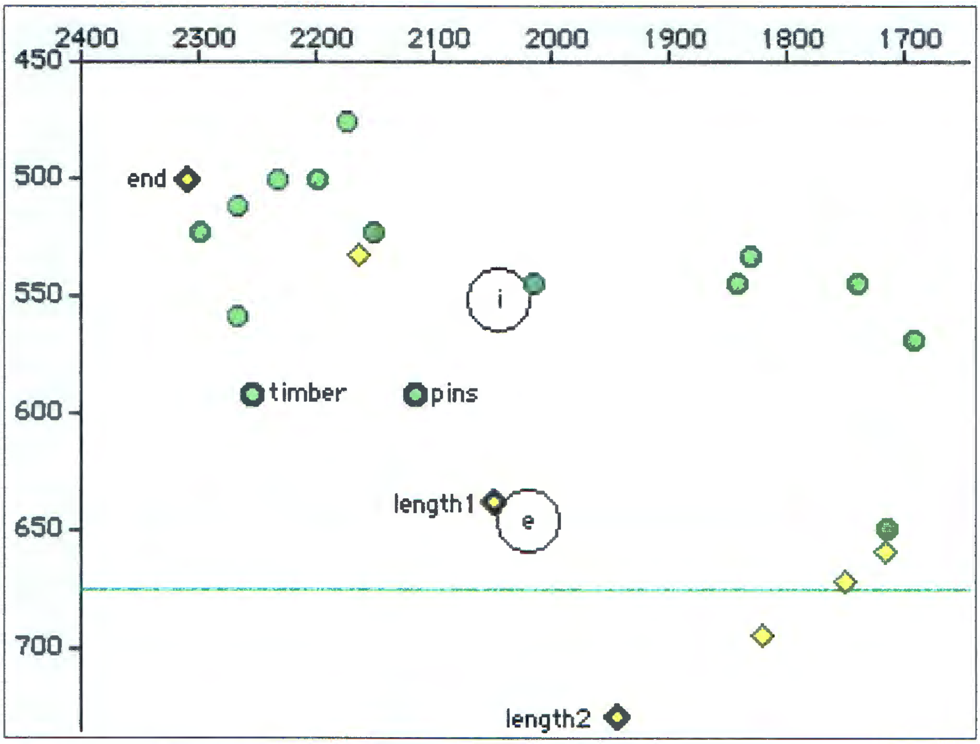


Figure I-1: Speaker 1 /i/ and /e/ pre-nasal tokens

Chart I-1 provides the formant data and means calculated from the pre-nasal token data. The individual tokens for each class indicate a difference between the classes for both F1 and F2 values.

Chart I-1: *Speaker 1 /i/ and /e/ pre-nasal data*

/i/N Tokens	F1	F2	/e/N Tokens	F1	F2
Pins	592	2118	end	500	2313
Timber	592	2255	Length1	729	1945
			Length2	638	2049
/i/N Means	592	2186	/e/N Means	622	2102

SPEAKER 2

The evidence for Speaker 2 is a bit richer, but not much. Four tokens are present for /i/ class and five for /e/ class. Chart I-2 provides formant data and calculations of means for the pre-nasal environments. Overall class means for /i/ and /e/ are also provided.

The pre-nasal /e/ is equally high as the overall /e/ class as reflected in the F1 means. The F2 means of the pre-nasal occurrence indicate that it is front of the overall class means.

The height between the two pre-nasal classes is closer than the height difference between the overall class means. The difference found in the F2 means between the pre-nasal subsets of /i/ and /e/ is 50 Hz and difference in the F2 means for the overall class is 17 Hz. These values are relatively close to one another, but do indicate a slight fronting tendency of the pre-nasal environment.

Chart I-2: *Speaker 2 /i/ and /e/ pre-nasal data*

/i/N Tokens	F1	F2	/e/N Tokens	F1	F2
Been	490	1841	Engine	583	1983
Timber	677	1759	End	619	1736
Winch	583	1983	Fended	583	1771
Winch2	619	1889	Friends	713	1748
			Incidentally	654	1748
/i/N Means	592.25	1868	/e/N Means	630.4	1818.4
/i/ class Means	568	1752	/e/ class Means	626	1735

The slight fronting evident in the formant values can be seen in Figure I-2 indicating the place for of the pre-nasal tokens under consideration. This fronting is highlighted by the identical production of 'winch' and 'engine' occurring in the front-most place for pre-nasal subset.

The low amount of words under consideration restrains any claim made. Be that as it may, the pre-nasal /i/ is slightly higher than the overall /i/ class as indicated by the F1 means. The F2 means for the pre-nasal /i/ subset is greater than 100 Hz than the overall class means.

Generally, the data suggest a potential for an initial transition toward the merger of /i/ and /e/ classes in the pre-nasal environment separate from the close proximity of the overall classes. The merger is not complete, though.

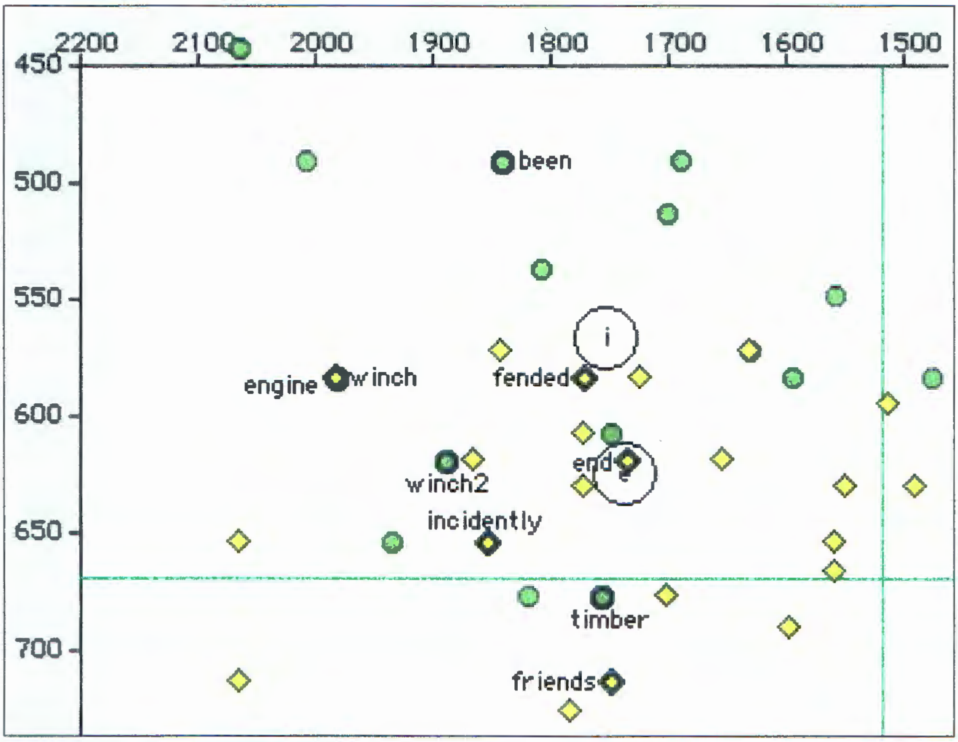


Figure I-2: Speaker 2 /i/ and /e/ pre-nasal tokens

SPEAKER 3

Five tokens for Speaker 3 are present: two for /i/ class and three for /e/ class. In Figure I-3, the /i/ tokens, *gym* and *gym2* occur very near the /i/ class means. Likewise, the /e/ token, *friend*, occurs near to its class means. *Ten* and *many* appear low and front of /e/ class means and do not overlap with /i/ tokens at all.

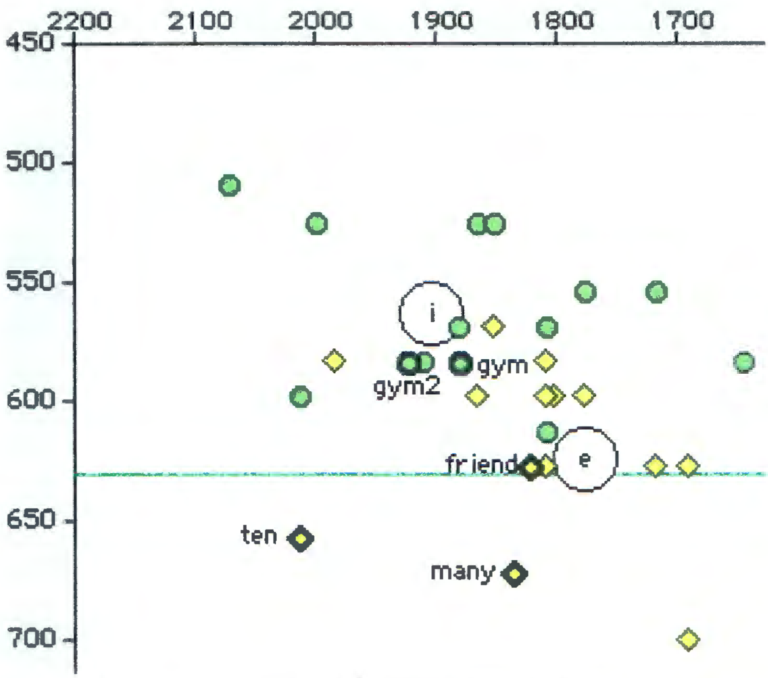


Figure I-3: Speaker 3 /i/ and /e/ pre-nasal tokens

Hertz values appear in Chart I-3 for Speaker 3. With only 12 Hz difference between the F2 values, the data would seem to suggest that the pre-nasal tokens chare a relatively close front/back place. Their distinctiveness appears to be maintained by the difference in the high/low place of articulation.

Chart I-3: *Speaker 3 /i/ and /e/ pre-nasal data*

/i/N Tokens	F1	F2	/e/N Tokens	F1	F2
Gym	583	1880	Friend	628	1821
Gym2	583	1924	Many	672	1836
			ten	657	2013
/i/N Means	583	1902	/e/N Means	652	1890

There is not enough data to make any reliable claim. The general observation is that there does not appear to be a /i/ and /e/ pre-nasal merger present in Speaker 3's speech.

SPEAKER 4

Figure I-4 provides the pre-nasal tokens for Speaker 4. Two of the four /e/ tokens appear near the /e/ class means: *them* and *when*. The other two /e/ tokens, *then* and *then2*, occur high and front of /i/ tokens.

Things is the only token available for /i/ class, and it does not occur anywhere near the /e/ pre-nasal tokens.

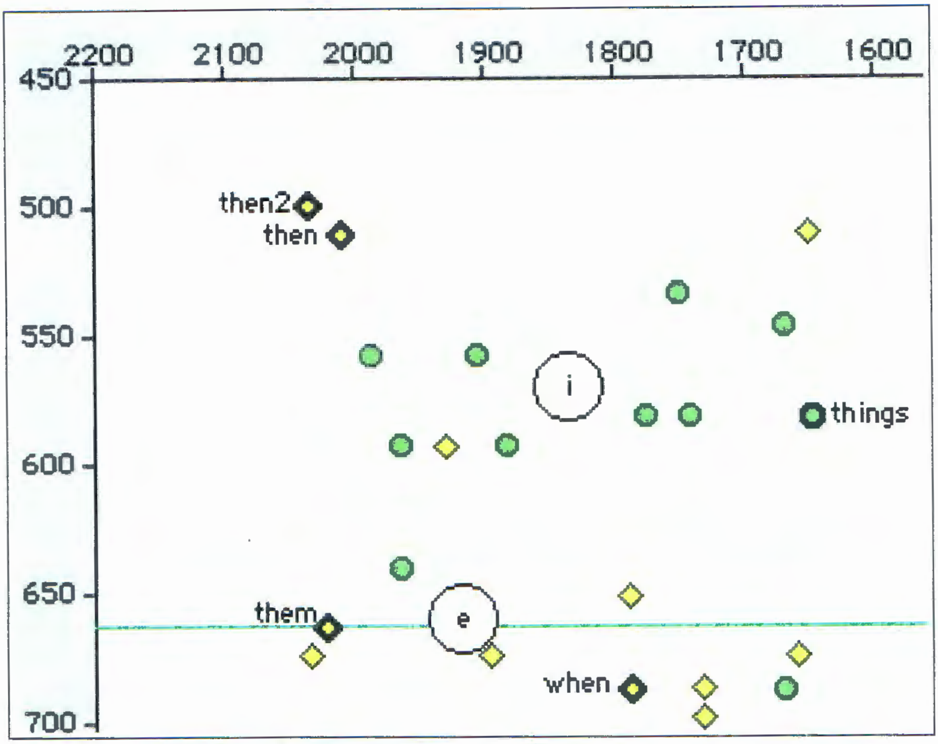


Figure I-4: Speaker 4 /i/ and /e/ pre-nasal tokens

The hertz data is provided in Chart G-4. The means for /i/N subset are based on one token and comparison to the /e/N subset means, which is based on four tokens, is not realistic.

Chart I-4: *Speaker 4 /i/ and /e/ pre-nasal data*

/i/N Tokens	F1	F2	/e/N Tokens	F1	F2
things	581	1648	Them	663	2022
			Then	511	2011
			Then2	499	2035
			When	687	1788
/i/N Means	581	1648	/e/N Means	590	1964

Again, the evidence is scant, but there is no indication for the presence of the /i/ and /e/ pre-nasal merger in this speaker.

SPEAKER 6

Figure I-5 presents the data under consideration for Speaker 6. Each vowel class has three tokens. Two /i/ tokens, *prince* and *winter* occur back and lower than the /i/ class means. This place may not be entirely unexpected as the vowels are in pre-liquid position. The third /i/ token, *shingle*, occurs relatively close to its vowel class means.

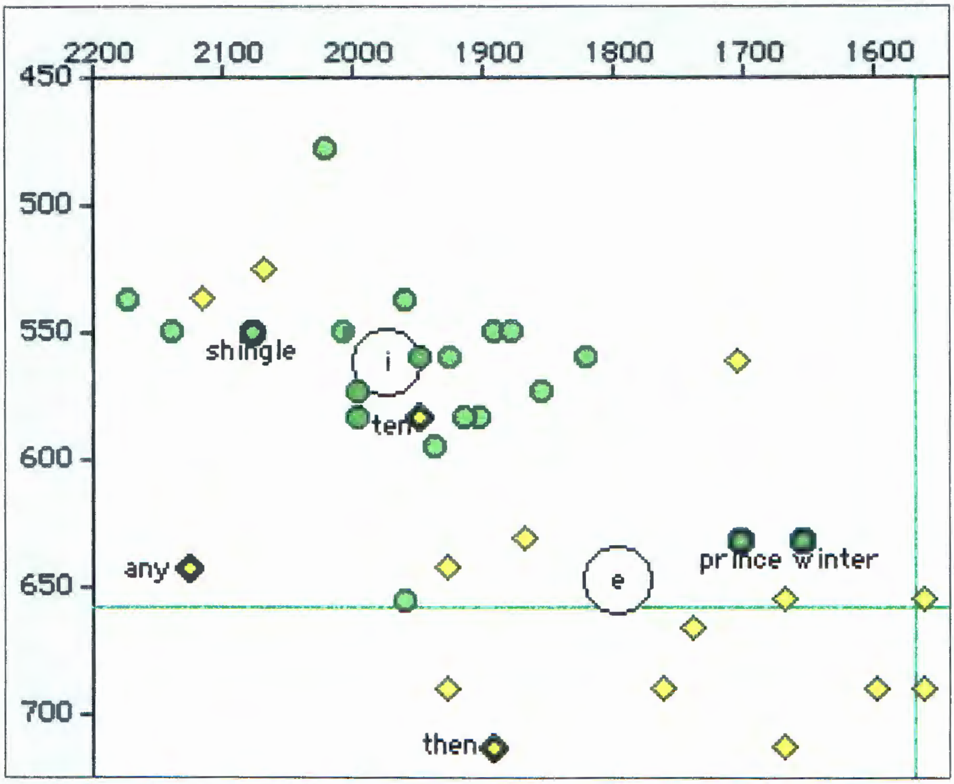


Figure I-5: Speaker 6 /i/ and /e/ pre-nasal tokens

All of the /e/ pre-nasal tokens are not close to their class means. One, *ten*, occurs among a cluster of /i/ class tokens. *Any* occurs very front of /e/ class means, and *then* occurs lower than the means.

The proximity of *shingle* and *ten* may provide some evidence for a pre-nasal merger, but the overall evidence cannot support any claim for the merger to be in place in this speaker.

SPEAKER 7

Figure I-6 indicates the three pre-nasal tokens present in Speaker 7's data. The limited data do not appear close to one another and cannot be used to make any strong observations about the existence of the /i/ and /e/ pre-nasal merger in this speaker.

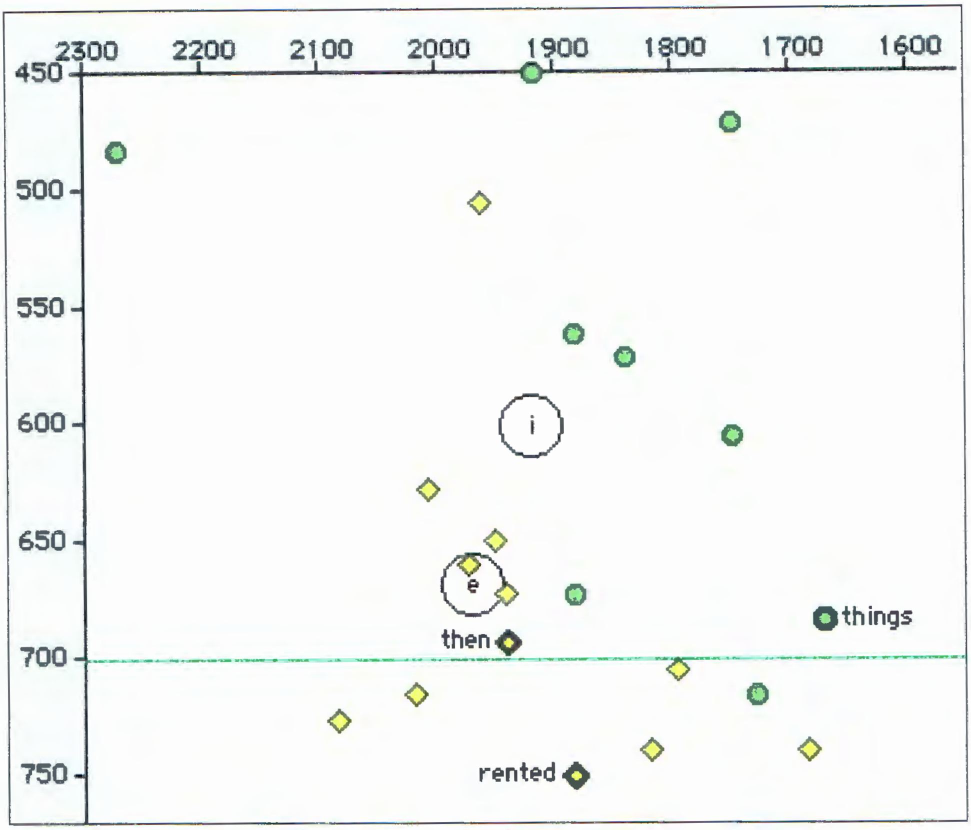


Figure I-6: Speaker 7 /i/ and /e/ pre-nasal tokens

Formant data are provided in Chart I-6 for thoroughness. The data indicate the distinctiveness is more prevalent along the front/back place rather than the high/low place.

Chart I-6: *Speaker 7 /i/ and /e/ pre-nasal data*

/i/N Tokens	F1	F2	/e/N Tokens	F1	F2
Things	684	1672	Rented	751	1884
			Spent	728	2083
			Then	694	1939
/i/N Means	684	1672	/e/N Means	724	1968

SPEAKER 8

Speaker 8's data show a little more intermixing than previously observed.

Chart I-7: *Speaker 8 /i/ and /e/ pre-nasal tokens Hz measurements*

/i/N Tokens	F1	F2	/e/N Tokens	F1	F2
Been	519	1882	Ends	555	1857
Trimmed	543	1748	Tennessee	604	1785
Wind	555	1711	Then	579	1748
/i/N Means	539	1780	/e/N Means	579	1796
/i/ class Means	543	1798	/e/ class Means	594	1801

Three tokens are present in the pre-nasal environment for each vowel class. Of course with so few tokens, no claim can be made with any certainty. The means for pre-nasal data for /i/ and /e/ present indicate a very close similarity in production compared to the means of the overall /i/ and /e/ vowel classes, respectively.

As can be seen in Figure I-7, the tokens under consideration appear to be sharing similar fronting. *Been* and *ends* are the front most tokens with relative close F2 Hz values, and *then*, *wind*, and *trimmed* share a similar back position. These places are represented in the F2 data in Chart I-8 above, too.

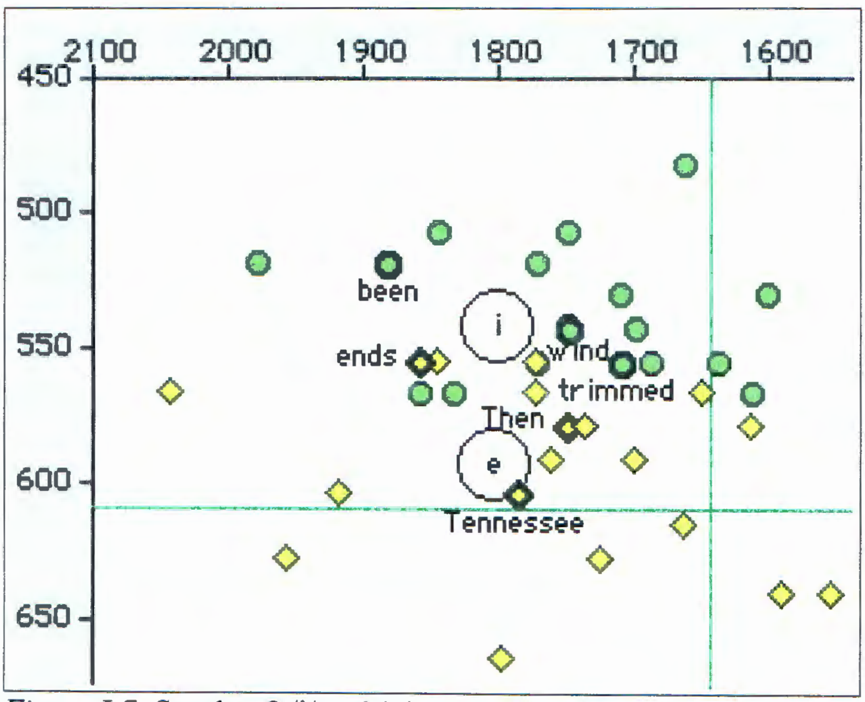


Figure I-7: Speaker 8 /i/ and /e/ pre-nasal tokens

However, the individual pre-nasal /i/ tokens appear high of the pre-nasal /e/ ones. Indeed, it is the difference in the height that maintains distinctiveness between these pre-nasal sets.

The pre-nasal merger for /i/ and /e/ has not been met from this limited data, but there may be some indication that a transition is in early stages.

SPEAKER 9

Figure I-8 shows five pre-nasal tokens, two /i/ class and three /e/ class, relatively close to one another near /e/ class means. The productions are not identical and no claim for a complete merger can be observed. The data may indicate, as seen elsewhere, early stages toward a merger, but all claims are tenuous based on the limited data.

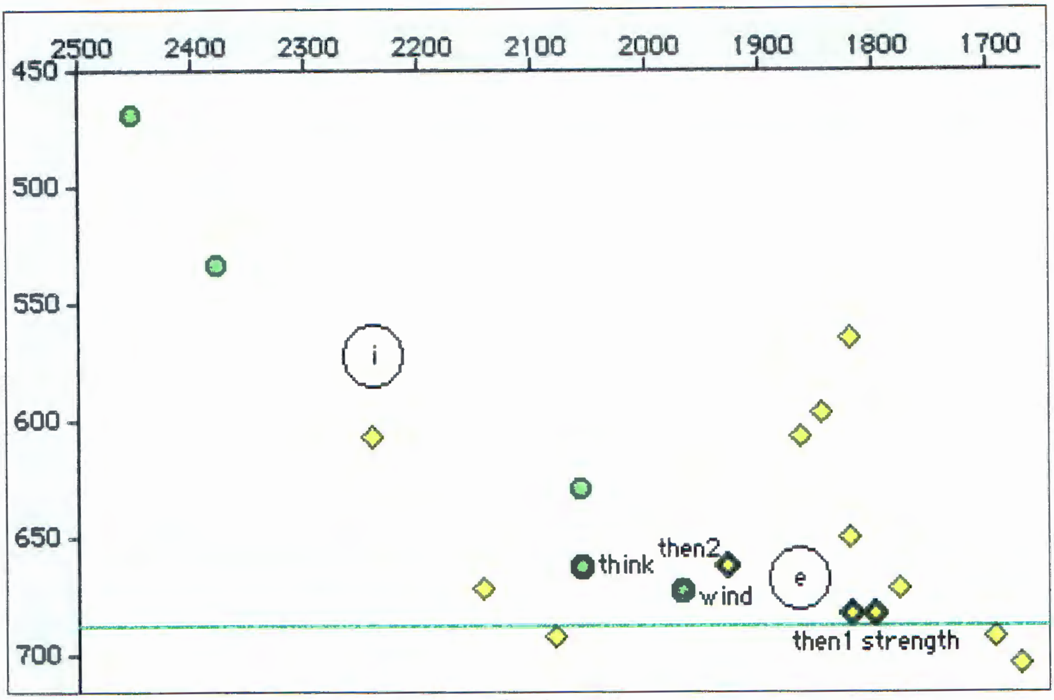


Figure I-8: Speaker 9 /i/ and /e/ pre-nasal tokens

The formant data, available on Chart I-8 show distinctive lies in the front/back place. The pre-nasal tokens appear to have similar heights.

Chart I-8: *Speaker 9 /i/ and /e/ pre-nasal data*

/i/N Tokens	F1	F2	/e/N Tokens	F1	F2
Think	662	2057	Strength	682	1799
Wind	672	1970	Then	682	1820
			Then2	662	1928
/i/N Means	667	2013.5	/e/N Means	675.3	1849

APPENDIX J

LOW BACK VOWEL DATA FOR SPEAKERS 5 AND 8

The low-back vowel tokens for /o/ and /oh/ for Speaker 5 are provided on Figure J-1. The pink circle identifies two /o/ tokens (red squares) that apparently occur within the /oh/ vowel class space. Of all the low-back data observed in this project, Speaker 5 maintains the clearest non-merged data.

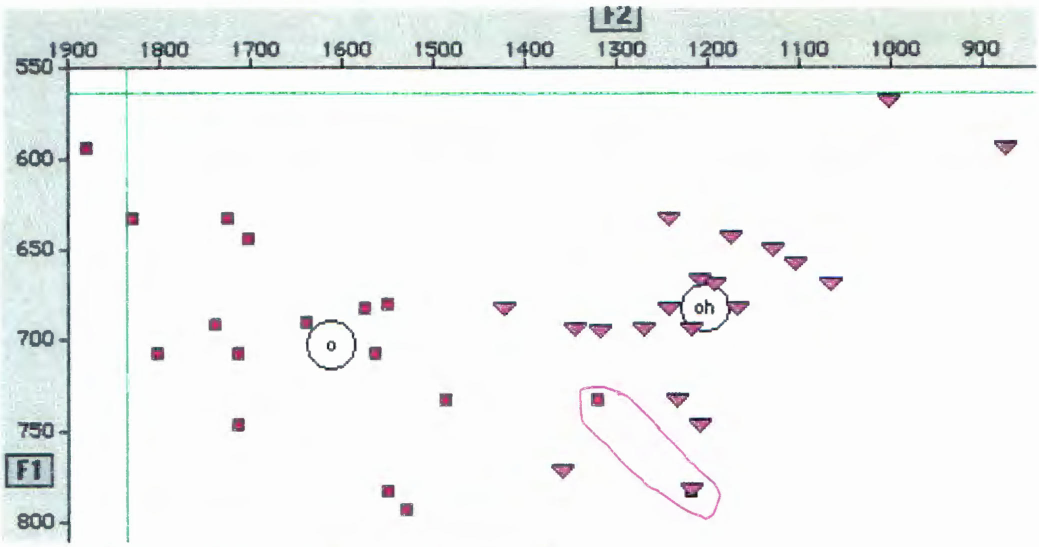


Figure J-1: Low-back tokens for Speaker 5

Speaker 8's low-back vowel tokens are presented on the plot chart in Figure J-2. The pink circle captures seven /o/ class tokens that apparently occur near in the /oh/ class grand means. The /oh/ class tokens appear scattered. Some are higher and front of the overall class means, and a cluster appears lower than class means. Two sets of minimal pairs are present among the tokens. The /o/ class tokens, *cot* and *Don*, occur relatively close to one another; however, their counterparts' places are dissimilar. *Dawn* occurs in the high and front cluster, and *caught* occurs in the lowered cluster. The place of each of the tokens suggests that the speaker is maintaining a distinction, although the distinction is different for each pair.

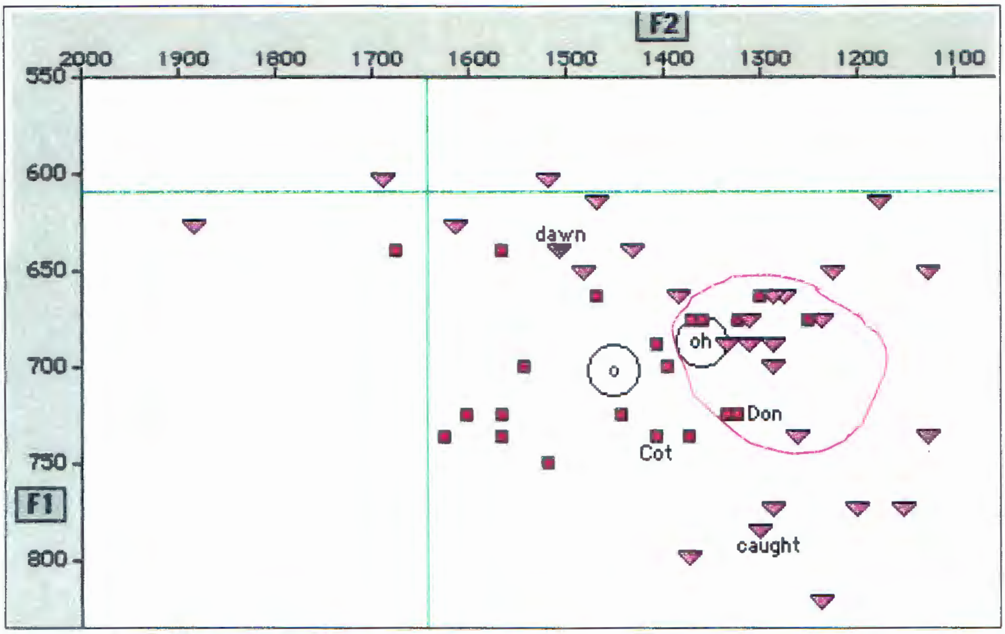


Figure J-2: Low-back tokens for Speaker 8

Finally, the general lowering observed of the /oh/ classes for both Speakers 5 and 8 is not surprising as this lowering is expected for the Northern dialect. These two speakers indicate a strong preference for the Northern dialect.