

A Phonetic Exploration of the English of Portland, Maine ¹

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1 Introduction

Linguists in the United States have been interested in the dialects of English-speakers from Maine for many decades (e.g., Perkins 1927, Heffner 1938, Lambert 1976), but few researchers have focused exclusively on Maine in more recent years. To contribute to this research, I studied the speech of residents of Maine currently living in the Portland area. Filling this gap in the literature is important because more recent data on the speech of Maine English is needed to provide a current view of the linguistic situation of Maine as well as a more complete geographic view of New England speech as a whole. I designed my study to be a survey of the current state of English in Portland, Maine. I focused on the phonetics of Maine residents, particularly the nasal short-*a* system, the NORTH-FORCE distinction, and the LOT-THOUGHT merger.

Using these characteristics as a jumping-off point, I compared the general findings of Labov et al. (2006) and Nagy and Roberts (2008) to the results of my own speakers in a synchronic analysis of the current overall characteristics of Portland speech. While my analysis finds both similarities and differences between the current speech of Portland and what prior

¹ Many thanks to Aaron Dinkin for assistance in designing this research, to Catharine and Gregory Moser for hosting me for my fieldwork, to Jeremy Fahringer and Lynne Schofield for their advice on statistical methods, to Sarah Bristow and Karuna Doraiswamy for their feedback on my drafts, to Nathan Sanders and Brittany McLaughlin for advising me on all aspects of my work, and to those who participated in my research.

research suggests, it is my hope that this exploration will serve as a starting point for further in-depth research on how people speak in Portland, Maine.

2 Background²

2.1 Earlier Research on Maine in Particular

Maine has been recognized by linguists as linguistically distinct since the early 20th century (e.g., Perkins 1927, Perkins 1929, Heffner 1938, Bennett and Irwin 1974, Lambert 1976, Bennett 1979). During the early decades of the 20th century, academics studying what they called the “Maine dialect” were almost exclusively concerned with colloquial expressions as a way of distinguishing the speech of different regional communities. Perkins (1927, 1929) lists several hundred expressions that were already falling out of use when she gathered them from the literary works of the authors Sarah Orne Jewett and George Savary Wasson. Heffner (1938) responds to her survey by noting that he himself, a native of Ohio, was familiar with about half of the expressions she lists as part of the “Maine dialect,” and concludes that residents of Maine had preserved some older phrases that settlers moving west had forgotten.

It was not until the 1970s that linguists began to analyze the dialogue written by Wasson in particular with respect to its representation of the phonology of Maine speech, not just its lexicon. Bennett and Irwin (1974) test and affirm the claim that Wasson’s orthographic representation of the speech of Kittery Point is faithful to the actual speech of the residents of that area at the time. Bennett (1979) also produced a follow-up to the earlier article, in which he analyzes Wasson’s notebooks in the same way that he analyzed his published text, with similar conclusions. These two threads of research appear to be the only major works focusing exclusively on the language of English speakers from Maine up through the present.

² See Appendix A for an explanation of the notation systems used in this paper.

2.2 Earlier Research on New England in General

Research on New England as a whole, however, has been much more common. Perhaps the earliest work on New England phonology is an article by Grandgent (1899) that attempts to outline major changes in New England speech in the century prior to its publication. What we would recognize as linguistic analysis based on the speech of informants was not applied to New England until a few decades later, with Kurath's (1939) seminal regional survey. Most of the research on New England since then up until a few decades ago has been focused mostly in response to his work. In this section, I discuss Kurath's survey and the follow-up survey done by Carver (1987).

Kurath's survey of New England culminated in the *Linguistic Atlas of New England* (Kurath et al. 1939) and its associated *Handbook* (Kurath 1939), although some of his conclusions were later revised in *A Word Geography of the Eastern United States* (Kurath 1949). To draw the boundaries between dialect regions, Kurath methodically analyzed the presence of specific lexical items in the vocabularies of speakers and used the results to transform a map of the locations of the speakers into specific dialect regions, explaining that "[e]very word that is not in nation-wide use has its own spread geographically" (Kurath 1949:11). Kurath seems to equate the geographic spread of particular words with the spread of a settling population, and relies heavily on the history of English-speakers' settlement of New England in his analysis of speech boundaries. He splits the region into eastern and western areas based on the geographic isolation between the two original settlement areas on the Atlantic coast and around the Connecticut River, but he does back up this analysis with evidence of r-dropping and a low back merger, most likely the LOT-THOUGHT merger, being present in the Eastern but not the Western area (Kurath 1939:8-9).

For his specific analysis of Maine, however, he uses the settlement history almost exclusively to distinguish the two sub-dialect regions within the state. He separates the southern coastal area (settled by groups from the Massachusetts Bay and Plymouth areas in Eastern New England) from the northern St. John River area (settled by Loyalists from parts of Western New England), and as such claims that “many of the western [New England] dialect features” were present in northern Maine at the time (Kurath 1939:17). He also states that Maine and New Hampshire are the most conservative states of New England in general and preserve many of the characteristics of older Eastern New England speech that were disappearing from eastern Massachusetts and other southern parts of the eastern region at the time. This original analysis includes Maine in Eastern New England along with eastern New Hampshire, Massachusetts, and Connecticut, as well as all of Rhode Island.

Kurath revised this analysis in *A Word Geography of the Eastern United States*, which is based almost exclusively on lexical isoglosses. In this new analysis, the conservative nature of New Hampshire and Maine is reflected in their inclusion with eastern Vermont in a new sub-region, Northeastern New England (region 1 in Figure 1), and separate from the less conservative parts of the eastern area, especially around Boston.

Kurath’s work was foundational to the study of New England dialectology, and many researchers have commented on, responded to, and done their own work building upon his original *LANE* survey (e.g., Marckwardt 1940, Menner 1942, Thomas 1961, Carlson 1965, Davis 1976, O’Cain 1979, Peters 1979, Maynor 1982). Among them, Carver did his own large-scale survey in 1987, *American Regional Dialects*, based primarily on the *Dictionary of American Regional English (DARE)* data (Carver 1987:vii). He based his New England analysis

very much on Kurath's work, but modified the dialect map of New England to reflect the changes that had taken place in the five decades between the two studies.

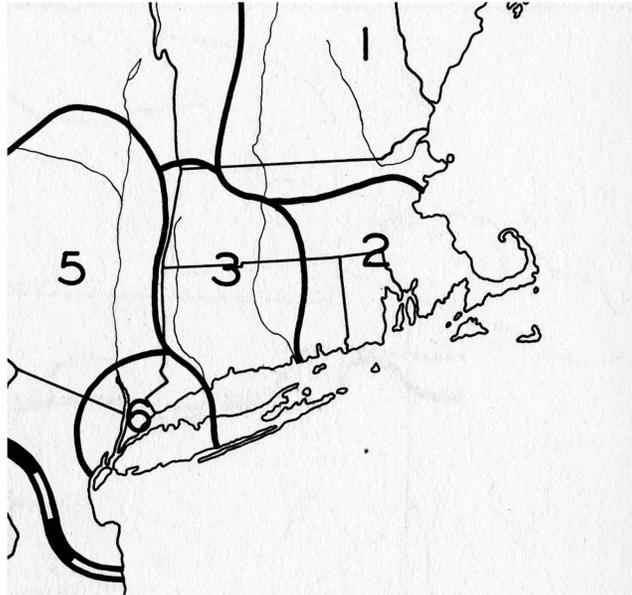


Figure 1: Revised regions of New England according to *LANE* (taken from Kurath 1949:91): 1 Northeastern New England; 2 Southeastern New England; 3 Southwestern New England; 5 the Hudson Valley; 6 Metropolitan New York

Like Kurath, Carver begins his discussion with the history of the settlement of New England.

He summarizes Kurath's comments on the subject, stating that the "two dominant centers from which sprang New England's subregional characteristics" were the Massachusetts Bay area and Lower Connecticut River Valley area, which were settled in the first period of colonization directly from England from 1620 to 1640 (1987:21, 23). It was during the second period of settlement that the Massachusetts Bay area expanded up along the Atlantic Coast to Penobscot Bay in southern Maine.

Carver critiques Kurath for depending too much on this settlement history in his analysis of the *LANE* data; he claims that most of Kurath's original subregions are based conservatively on what in the 1930s were already "relics" of earlier dialect regions. Carver extracts a new set of isoglosses from the *DARE* data; using these he constructs a new Eastern New England region,

ranging from the Penobscot Bay in Maine down through central Massachusetts, with a western border running straight through Vermont (see Figure 2). He also separates northern Maine into its own subregion, and, like Kurath, justifies this decision independent of much linguistic data, based primarily on the separate settlement history of the upper coastal area of the state, with ties to New Brunswick instead of the Massachusetts Bay.

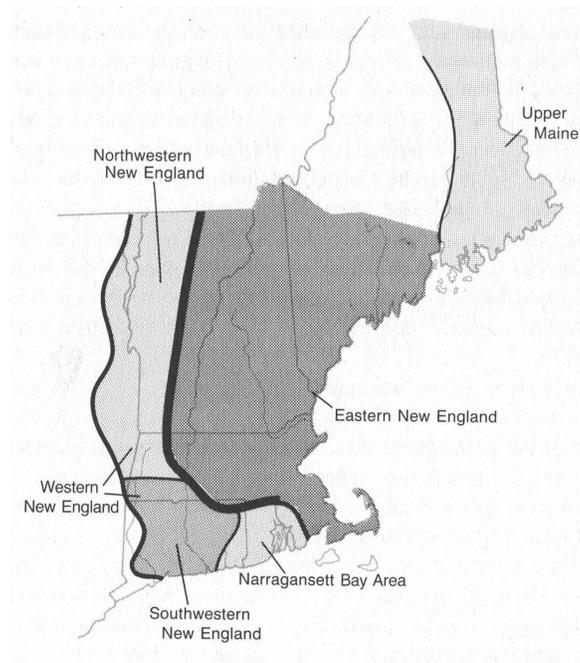


Figure 2: Regions of New England according to *DARE* (taken from Carver 1987:30-1)

In sum, both Kurath and Carver rely on mainly lexical isoglosses to identify specific regions of New England speech, and for Maine in particular they are heavily reliant on settlement history. With these methods, they both include southeastern Maine in an eastern or northeastern subregion of New England, separating the northeast coast of Maine from the rest of the state.

2.3 Recent Research on New England in General

Most recently Labov et al. (2006) conducted a more phonetics-based study of New England dialects in the *Atlas of North American English* based mainly on Telsur research data (2006:3).

Using a comprehensive analysis of the phonetic isoglosses of the region, they affirm the east/west split proposed by both Kurath and Carver, identify a specific north/south split, and recategorize northern Maine with the rest of the Northeastern New England dialect region.

Labov et al. affirm the east/west split based on r-vocalization, which they claim is present in Eastern New England but not in the Western region; they also identify a north/south split based on two separate phonetic isoglosses that group the Northeastern and Northwestern subregions together apart from their southern counterparts: the low back merger that Kurath noted and the fronting of /æ/ before /r/ (2006:225-9).

To distinguish Northeastern New England from the Northwestern area, Labov et al. note that only Northeastern New England additionally fronts /æ/ even when not followed by /r/, producing a general /æ/-fronting pattern (2006:230-1). They also add that even though their six tokens are not dense enough to make this pattern definitive, they point to Nagy (2001) as having found similar results in NH and MA, especially around the Boston area. They additionally comment briefly on the NORTH-FORCE distinction that they say is falling out of use among younger generations of speakers in the region (2006:226, 230).

Labov et al. also found the only concrete evidence of the distinct Northern Maine subregion proposed by both Kurath and Carver. In their summary of the short-*a* system predominant in New England, they mention that parts of Maine have a nasal pattern somewhat different than that of the rest of the region: While most speakers both raised and fronted /æ/ in any word ending with a nasal consonant, two Maine speakers produced vowels in this category that were only fronted (see Figure 3). These two tokens were produced by speakers living north of Penobscot Bay, and thus their distinctive nasal fronting pattern could be evidence of the northern Maine dialect area that Kurath and Carver both claim to exist. However, Labov et al.

themselves admit that one of the primary limitations of the Telsur data they used is that it only sampled urban areas, and as such their survey “does not include many rural and local dialects that are a distinctive and important part of the linguistic ecology of North America” (2006:149).

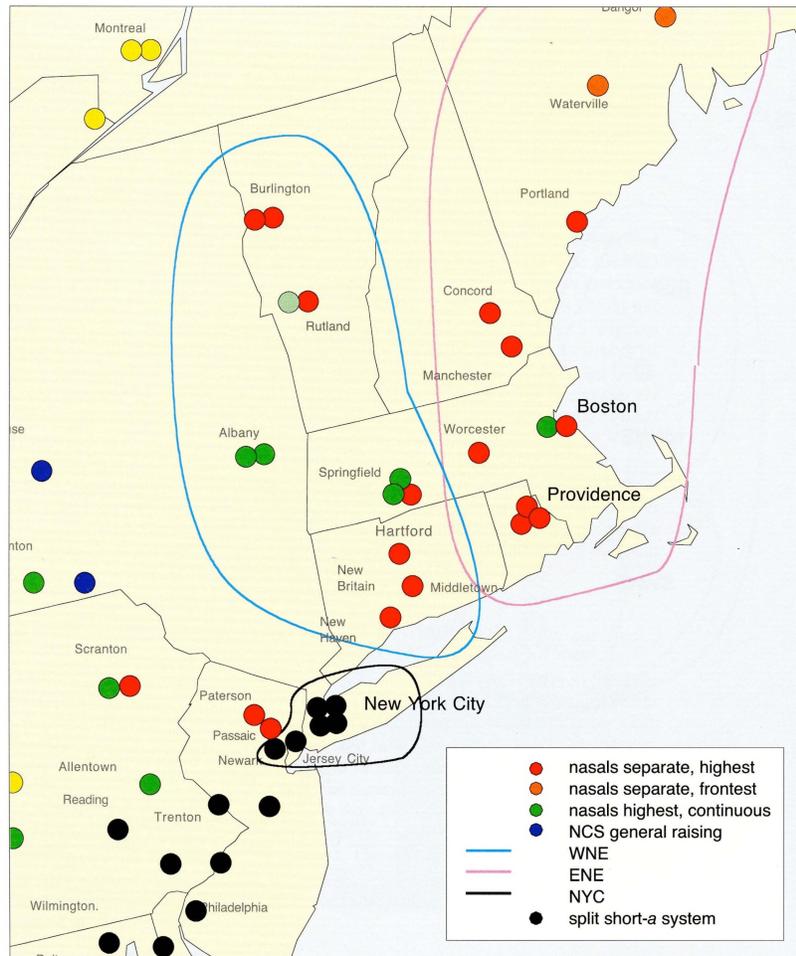


Figure 3: The New England short-a system according to ANAE (taken from Labov et al. 2006:232)

In fact, because most of Maine is quite rural, this was probably a limiting factor in accurately describing and categorizing the speech of northern Maine for both Kurath and Carver as well.

Recent non-survey studies have contributed to discussion on New England phonology by examining the Boston area (e.g., Hartley 2005, Nagy and Irwin 2010) and the east/west dialect split around New Hampshire (e.g., Nagy 2001, Stanford 2012). Those most relevant to

the discussion here are Dinkin (2005) and Nagy and Roberts (2008), which used the *LANE* data to look at New England as a whole. Dinkin finds that a section of southeastern Maine just south of Casco Bay shows a complete MARRY-MERRY-MARY merger, while the other parts of the state mostly show either a two-way merger or a three-way distinction. Nagy and Roberts summarize several splits and mergers, including three relevant to Maine: the LOT-THOUGHT merger in Eastern New England, the NORTH-FORCE distinction unique to this same region, and a MARY-MARRY merger in Calais, Maine. I used these findings, and those of Labov et al., to design my own research of current-day Portland-area speech in Maine.

3 Methodology³

3.1 Design

3.1.1 Phonological Features

Using the speech data I would collect during my fieldwork, I planned to analyze two characteristics of Maine speech noted by Labov et al. (2006): the NORTH-FORCE distinction and the short-*a* system in which /æ/ is raised and fronted before nasals. According to them, NORTH and FORCE should be merging among younger speakers but might still be present among more conservative younger speakers. This is consistent with Johnson's (2007) finding that low vowel mergers in Southeastern New England are more present among younger speakers, especially when a large enough proportion of younger children with merged dialects move into areas that are generally non-merged, causing their peers to abandon their distinct phonemes for the merged ones in turn. As for the short-*a* system, speakers from more northeastern parts of the state may only be fronting /æ/ before nasals, and not raising it; Johnson also mentions this when

³ This study was conducted with IRB approval from Swarthmore College. The procedure for the SSEs and interviews is included in Appendix B.

describing this phoneme as being more fronted in Boston (part of Eastern New England) than in other subregions of New England.

To study the findings of Dinkin (2005) and Nagy and Roberts (2008), I created a set of word pairs to elicit the possible minimal pairs outlined in the previous section. Both works cover the MARY-MARRY-MERRY merger but are equally indeterminate about what we could expect to find among speakers in Portland: Dinkin claims there to be a complete merger in the Downeast region, with a two- or three-way distinction just north of there, exactly where Portland is; Nagy and Roberts cite the majority of speakers in Calais, Maine as having a two-way distinction, presumably the same two-way distinction that Dinkin mentions. As such, I used their MARY-MARRY merger to /e/ and the distinction of MERRY as /ɛ/ as my expectation for what speakers in Portland would say.

Nagy and Roberts also report a LOT-THOUGHT merger to /ɑ/ and a continued distinction between NORTH /ɔ/ and FORCE /o/ in Eastern New England, including Maine, so I included these word pairs also, adding to *north* vs. *force* the minimal pairs *for* vs. *four*, *horse* vs. *hoarse*, and *horror* vs. *explorer*. For the MARY-MARRY-MERRY split, I used *fairy* vs. *ferry* for a MARY-MERRY split, *Barry* vs. *berry* and *Harold* vs. *herald* for a MARRY-MERRY split, and *cherry* for an additional token of MERRY. The word pairs I created based on the findings of these two studies are shown in Figure 4.

lot / thought	north / force for / four horse / hoarse horror / explorer	Mary / marry / merry fairy / / ferry / Barry / berry / Harold / herald / / cherry
[ɑ] (no difference)	[ɔr] / [or]	[e] / [e] / [ɛ]

Figure 4: Word pairs based on the findings of Nagy and Roberts (2008) and Dinkin (2005)

I had also originally included a sample text from Nagy and Irwin (2010) to allow me to gather data on New England rhoticity, most exemplified by the stereotypical Boston characteristic of dropping /r/ in codas. Although I was unable to examine this phenomenon, it was included in my research procedure.

3.1.2 Survey Structure

I based my interview procedure on the format used by Aaron Dinkin for his research in the area of Watertown, NY (Dinkin 2013). His schema for the short sociolinguistic encounter (SSE) based on the work of Ash (2002) sections the interview into questions about demographics, questions about travel and other contact outside of the area, and topics for discussion. Following this model, I used the demographic questions to solicit relevant information about the participant's life that could affect their speech: places of residence, education level, occupations, language learning, and family history were asked about in a straightforward manner. Because the travel questions used by Dinkin were generally too focused for my purposes, I decided to include similar but more general questions about travel in my demographic section. I also used the discussion questions to elicit more casual speech that was hopefully more representative of participants' normal speech, asking them about local news and events, stories from their childhood, and the job market in the area.

Opening my interviews with the demographic section allowed me to gather the background information I needed while starting my interviews of participants with basic questions – where they grew up, where they went to school, where their parents were from – that mimicked a general survey and would acclimate them to the format of the interview. This also allowed them to become more comfortable with being recorded, especially if they were approached in public. This would hopefully give them time for their speech to become more

candid during the next section, since it is generally acknowledged that informants only speak more informally as an interview session progresses (Ashby 1976, 1981).

The next section, discussion topics, was comprised of a set of questions that would encourage participants to talk more freely than during the earlier demographic questionnaire. These questions are meant to elicit more casual and free-flowing speech not only because they were asked later in the interview, but also because of their open-ended and affective design. Following the tradition of Labov and Waletzky's (1997) research on personal narratives, I included discussion questions meant to elicit stories from the participants' childhood such as "Did you ever get in a fight?" and "Did you ever have any tough teachers?" These are more likely to generate larger amounts of informal speech due to their emotional quality and narrative structure, and the more informal speech they produced would hopefully render phonemes that were reasonably representative of the participant's normal speech. An additional precaution I instated to try to prevent my data from being skewed was to advertise my research as a college project on "communication in Maine," which hopefully kept my subjects from thinking too deeply about how they were talking.

With all of these elements comprising the design of my procedure, a typical interview proceeded as follows. I would approach potential participants on the street, in their store, or through networking. I would ask them to participate in a "survey on communication in Maine," which I did to keep my subjects from thinking too deeply about how they were talking. Those who were interested were screened for eligibility, which I usually determined by asking potential participants if they were "from Maine," and I proceeded with the recorded interview if they met the criteria for inclusion. After asking them for their demographic information, I would invite them to speak on a topic of their choice. I would finish by asking them to read the

selected text and to read aloud and compare the pairs of words. After the recording was complete, I would explain to them the true nature of my study – how people speak in Maine – and would briefly go over the basic points of my debriefing form, which each participant received a copy of before finishing the encounter.

3.2 Data Collection

For potential subjects to be eligible to participate in the study, they had to be adult native speakers of English who had spent at least part of their childhoods in Maine. Because I was located in Portland while I was conducting my research, all of the participants I was able to find were living in or near Portland at the time, even though many of them had grown up in other parts of the state before moving there.

To gather data, I would approach potential participants in public, usually on the street, or network through my friends and family in the area. Networking helped me to find several older speakers, mostly men; canvassing helped me to find some younger and middle-aged subjects, also mostly men. Although I had not planned to approach local business owners or employees, my low number of female subjects led me to approach several women who were employees or owners of local businesses. I gathered a significant amount of data this way, principally from locations on Congress Street between Munjoy Hill and Monument Square. This area was also my primary location for canvassing, along with the wharf area and the Eastern Promenade park area.

3.3 Subjects

I interviewed a total of 16 subjects, ten men and six women, but decided to analyze only the results of the men for several reasons. While my male subjects group nicely into three age

brackets (young adult, middle-aged, and elderly), my female subjects were skewed toward younger ages, especially since I had recruited them directly at their place of employment around Congress Street. Not only are the employees in this area more likely to be younger, but this method of recruiting also left out non-employed populations, especially older women who had retired; I only interviewed one woman above 50, who I recruited through networking, not canvassing. By contrast, the ages of my male subjects were more evenly spread, and this allowed me to have at least two subjects in each age bracket, even after excluding the data from my interview of subject 9, which did not provide enough tokens to analyze.

ID	Age	Childhood Residence	Time Outside New England	Education	Occupation
4	24	Pittsfield	n/a	High school	Acting, entertainment, massage therapy
2	32	Topsham	n/a	College	Publishing
5	41	Brownville Junction	n/a	Some college	Politics
1	44	South Portland	Some time living out of state	High school	Transportation, retail, hospitality
13	57	Portland	n/a	High school	Sexton
7	58	York County	Military posts in various locations	Trade school	Unemployed
8	58	Biddeford	Some time living out of state	Some college	Retired
14	62	Portland	Travel to Ireland, college out of state	Post-graduate	College professor
3	89	Portland	Military posts in various locations and some time living out of state	Post-graduate	Retired

Figure 5: Male speakers shown from youngest to oldest with additional demographic information

Of the remaining nine male subjects (see Figure 5), two were young adults, two were middle-aged, and five were elderly (three between 55 and 65, with the oldest male subject an outlier at 89). Four of them went to high school, three had gone to trade school or completed some college, and three had completed college or some higher level of education. Two had various

current jobs, four had a single steady job, two were retired, and one was unemployed; their work history was in various industries, but in general at a working-class level. In this respect the socioeconomic factors of my speakers are relatively diverse and hopefully at least somewhat representative of the region.

Ideally, my subjects would have been born, grown up, and lived in the same location in Maine, or at least not outside of Maine, before I encountered them in Portland, but many subjects had spent a significant amount of time in other states, regions, or countries. Speakers 1, 3, 7, and 8 had gone out of state for employment purposes, and speaker 14 had gone to college in Florida. Additionally, several subjects had moved significantly as children; most notably, speaker 7 had lived in other parts of New England before moving to Maine as a child, and speaker 5 had moved around upstate Maine so frequently that he could not name any location where he had spent more than a year or two before entering high school.

While these transient childhoods may have had some unknown effects on the speech of these subjects, neither mentioned any awareness of their own speech patterns. By contrast, both speakers 5 and 14 discussed how their occupational training or travel experiences had made them more aware of their own speech, and while other subjects did not mention this explicitly, speakers 1, 3, 7, and 8 may have also had similar experiences due to the extensive time they spent outside of Maine. I discuss these issues further in Section 4.

3.4 Data Analysis

3.4.1 Data Extraction

Once the interviews were complete, the sound files were converted from WMA to WAV format with HewBo. Using QuickTime, each interview file was split into three parts based on the three sections of the procedure – demographic questions and discussion questions, the text reading,

and the word pair solicitation – which converted them back into WMA format. The two question sections were included together because some participants' discussion section was not very long and because some participants spoke freely about their childhoods and family history, most notably speakers 3, 5, and 8. Additionally, speaker 7 was unable to read my word pairs, so his interview did not produce a word pair file, and the speech files for speaker 5 became corrupted, so I was only able to analyze his word pairs.

Each usable file was then reconverted into the WAV format and annotated using ELAN. For the text reading and word pair solicitation, the whole file was annotated; for the question sections, the last ten minutes of the discussion section were annotated. Some speakers' discussion question sections were shorter than 5 to 7 minutes, so for these subjects I annotated both the demographic question and discussion question sections, beginning with their answers to the third set of demographic questions, "Where were your parents born and raised? How about your grandparents?" While not quite affective, this pair of questions hopefully transported my participants mentally to the past and forced them to think more about the answer to the question than how they were responding.

To get the formant values for each subject's annotated speech, I used the Forced Alignment and Vowel Extraction (FAVE) software produced by the University of Pennsylvania. Once each file was annotated, the resulting TXT file was run through the alignment program (which uses Praat) along with the WAV file, and the resulting TextGrid file was then run through the extraction program along with the WAV file. This process produced a TXT file and Plotnik files with the formants, word values, vowel identity, and time stamp of each vowel from the annotated sections of each speaker's interview.

3.4.2 Preliminary Analysis

Using Plotnik, I plotted the vowels of each speaker's free-flowing speech. I was unable to visually examine the MARY-MARRY-MERRY or NORTH-FORCE patterns, but I was able to note some possible trends in the LOT-THOUGHT and short-*a* vowel system. Most speakers, like subject 4, appeared to have a fairly merged LOT-THOUGHT system, while a few, like subject 14, appeared to have a non-merged LOT-THOUGHT system; these two speakers' LOT-THOUGHT vowels are plotted in Figure 6. This was somewhat unexpected, because Eastern New England has been known for its strong low-back merger for nearly a century.

I was less puzzled by the results of /æ/ in the pre-nasal position, for which I expected to see fronting and raising pre-nasally, or possibly only fronting. This was preliminarily confirmed by the plots, which showed some speakers to be raising and fronting /æN/, with a few only raising /æN/, and one speaker, subject 7, showing peculiar /æN/-movement in which some of his tokens were raised, while others were backed. His results are shown in Figure 7 along with the more expected results of speaker 13.

To test these three patterns for significance – the LOT-THOUGHT merger, the NORTH-FORCE distinction, and the short-*a* system – I created three datasets, one for each feature, with information for each token on the speaker ID, ARPAbet vowel ID (produced by FAVE), F1, and F2. For the short-*a* system data I added a column for pre-nasality, and for the NORTH-FORCE system data I added a column to identify which of the two groups the token belonged to (the LOT-THOUGHT data were already separated by vowel ID). Using JMP, I then tested for the significance of each feature in predicting the formant values of the appropriate vowels.

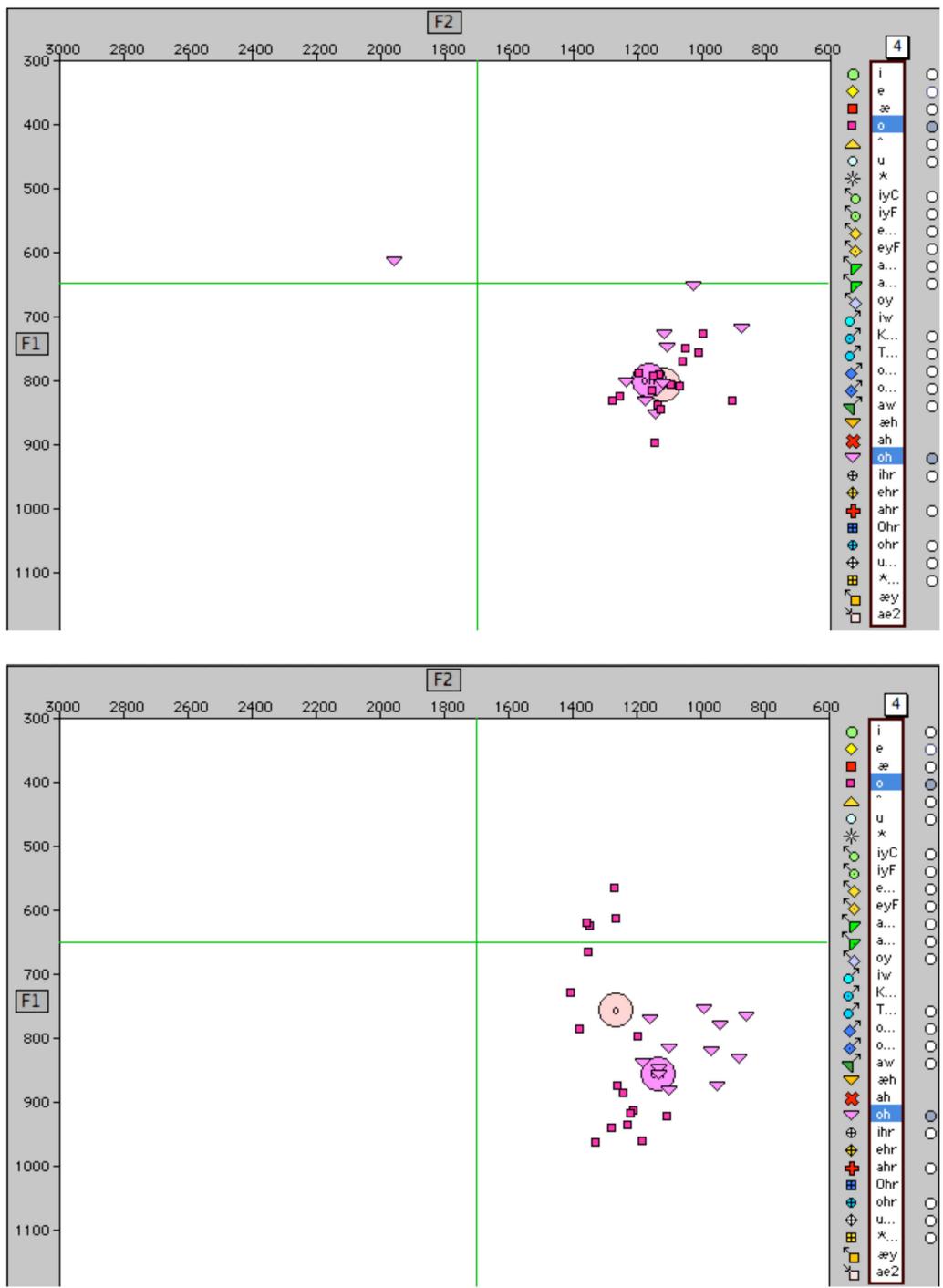


Figure 6: Speaker 4's merged LOT-THOUGHT system on top and speaker 14's non-merged LOT-THOUGHT system on the bottom: darker pink squares for "o" are LOT; lighter pink triangles for "oh" are THOUGHT

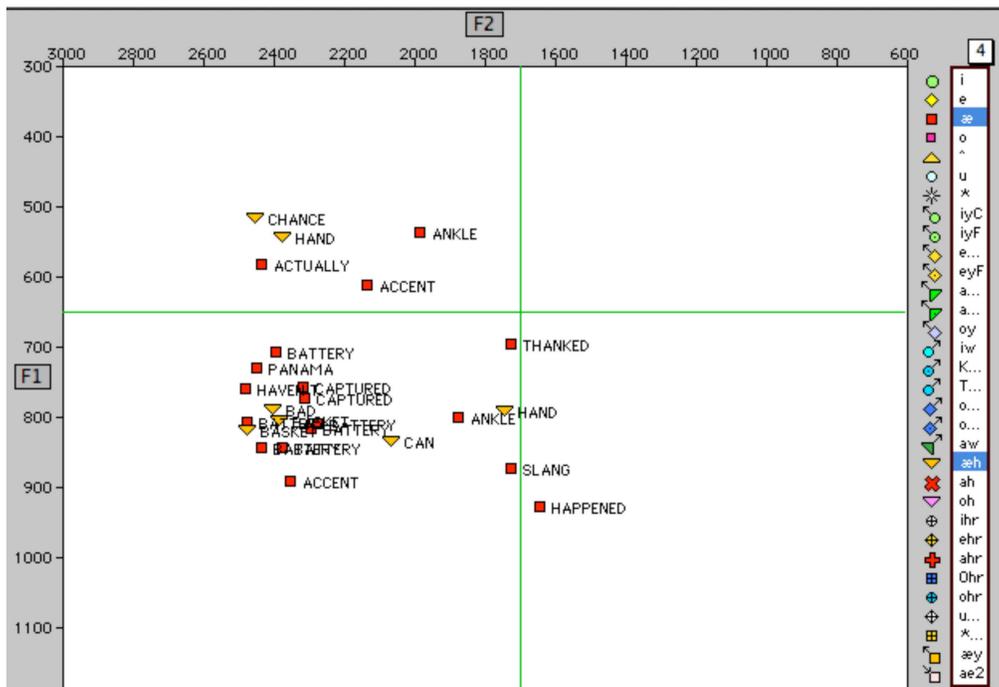
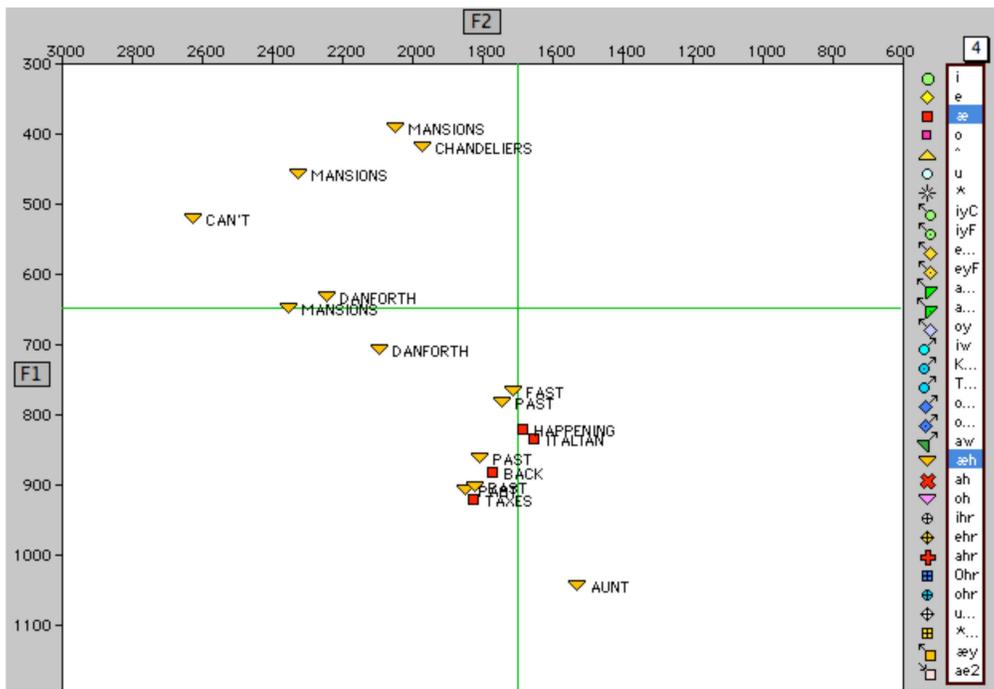


Figure 7: Speaker 13's /æ/ tokens, on top, showing raising and fronting before nasals, and speaker 7's /æ/ tokens, on the bottom, showing separate raising and backing before nasals

4 Discussion of Results

4.1 Phonetic Analysis

4.1.1 The LOT-THOUGHT distinction

To test the significance of the LOT-THOUGHT distinction, I calculated a least-squares regression of F1 and F2 separately, by speaker, using the statistical software JMP. To compensate for the added error of testing F1 and F2 separately, I used Bonferonni correction and halved my p-value significance to 0.025. Results below this number indicated a significant difference in the F1 or F2 value of the data between the two sets of vowels – AA (LOT) vs. AO (THOUGHT) – for any given speaker.

If the F1 or F2 directions show a significant difference between two variables, then they can be considered part of two separate patterns. So, for instance, if F1 were significant for the test of AA vs. AO for the LOT-THOUGHT of a specific speaker, then that speaker could be said to have the LOT-THOUGHT distinction based on vowel height. If F2 were significant, then the distinction would be made in the backness of the vowel, and if both F1 and F2 were significant, the distinction would be made based on both height and backness. But if the test showed significance for neither F1 nor F2, then the speaker could be said to not have the LOT-THOUGHT distinction. This process is shown in Figure 8.

	F2 p-value > 0.025	F2 p-value < 0.025
F1 p-value > 0.025	no significance	significance in backness
F1 p-value < 0.025	significance in height	significance in both backness and height

Figure 8: Interpretation of the significance tests for F1 and F2

After performing this test on eight of the speakers, I found that six of them had a significant distinction in both their F1 and F2 measurements between words in the LOT category and those in the THOUGHT category. This means that for speakers 1, 2, 3, 4, 7, and 14, LOT and THOUGHT

are distinguished by both height and backness. For speaker 13, only the F2 values were significant, meaning that, in his speech, LOT and THOUGHT are distinguished only by backness. Only speaker 8 showed no significance in either the F1 or the F2 direction, thus expressing a LOT-THOUGHT merger. These results are shown in Figure 9 (note that p-value significance is indicated by an asterisk).

ID	Age	F1 p-value	F2 p-value	LOT-THOUGHT merged
4	24	<.0001*	0.0205*	
2	32	<.0001*	<.0001*	
1	44	<.0001*	0.0107*	
13	57	0.0569	0.0004*	
7	58	0.0064*	0.0100*	
8	58	0.0693	0.1249	✓
14	62	0.0291*	<.0001*	
3	89	0.0103*	0.0176*	

Figure 9: Individual speaker results for a statistical test of the LOT-THOUGHT merger

4.1.2 The NORTH-FORCE distinction

The process is similar for the NORTH-FORCE test, in which the data are separated by their Wells lexical set group, north vs. force. In this case, the significance in either F1 or F2 denotes a

ID	Age	F1 p-value	F2 p-value	NORTH-FORCE merged
4	24	0.7244	0.1094	✓
2	32	0.2081	0.7674	✓
5	41	0.2899	0.4026	✓
1	44	0.2284	0.3549	✓
13	57	0.3075	0.3686	✓
8	58	0.5624	0.3294	✓
14	62	0.6702	0.2445	✓
3	89	0.4551	0.8398	✓

Figure 10: Individual speaker results for a statistical test of the NORTH-FORCE merger

significant difference between the two groups of tokens, suggesting a distinction, whereas no significance suggests no evidence of a distinction, and implies a merger. In this case, none of

the speakers' formants showed a significant difference between the NORTH and FORCE categories, implying that all of the speakers are most likely merged. This is shown in Figure 10.

4.1.3 The short-*a* system

For the short-*a* system test, the data were separated by their conditioning environments, pre-nasal vs. not pre-nasal. Significance in either F1 or F2 denotes a pattern of pre-nasal movement, in which F1-movement suggests a change in height and F2-movement suggests a change in backness. Again, no significance suggests no evidence of pre-nasal movement.

In this case, six of the eight speakers I tested showed significant difference in both F1 and F2 measurements between pre-nasal and non-pre-nasal short-*a*. This means that they have the expected short-*a* pre-nasal system in which they tense (raise and front) /æ/ pre-nasally. Two speakers showed no significance for either F1 or F2 measurements, meaning they had no pre-nasal movement at all, and thus do not have the short-*a* nasal system. This is shown in Figure 11 (note that p-value significance is indicated by an asterisk).

ID	Age	F1 p-value	F2 p-value	short-<i>a</i> pre-nasal movement
4	24	0.0224*	<.0001*	✓
2	32	0.1624	0.6528	
1	44	0.0054*	0.0004*	✓
13	57	0.0005*	<.0001*	✓
7	58	0.0019*	0.2041*	✓
8	58	0.0001*	0.0153*	✓
14	62	<.0001*	<.0001*	✓
3	89	0.7925	0.1317	

Figure 11: Individual speaker results for a statistical test of the nasal short-*a* system

4.1.4 Summary

The combined results of the statistical analyses of LOT-THOUGHT, NORTH-FORCE, and nasal short-*a* system are shown in Figure 12. These results indicate that only one tested speaker has a

LOT-THOUGHT merger, all tested speakers have a NORTH-FORCE merger, and most speakers show pre-nasal tensing in their short-*a* system.

ID	Age	LOT-THOUGHT merged	NORTH-FORCE merged	short- <i>a</i> system pre-nasal raising
4	24		✓	with fronting
2	32		✓	
5	41	<i>unknown</i>	✓	<i>unknown</i>
1	44		✓	with fronting
13	57		✓	with fronting
7	58		<i>unknown</i>	with backing
8	58	✓	✓	with fronting
14	62		✓	with fronting
3	89		✓	

Figure 12: Results from the statistical analyses of the three features shown above

These results contradict some of the findings of previous phonological research in New England. Labov et al. (2006) expect the NORTH-FORCE merger to appear only in younger generations of speakers, but here it is present at all ages and no tested speaker maintains a phonetic distinction between them. Nagy and Roberts (2008) expect the LOT-THOUGHT merger to appear at all ages, but here only one tested speaker shows a merger.

On the other hand, my findings do somewhat confirm the short-*a* system behavior found by Labov et al., in which most speakers tense /æ/ pre-nasally; five of my eight tested subjects showed this type of movement. While I did not find any evidence of speakers only fronting and not raising /æ/ in this conditioning environment, I did find evidence that some speakers may not have this short-*a* system at all, since two of my speakers did not show any /æ/-movement in the pre-nasal position. Subject 7 did show evidence of significant backing in this position in addition to raising, but the plot of his vowels in Figure 7 shows that these two movements appear separate, so it is likely that the backed tokens were the result of speaker or recording error, or measurement error in the automated alignment software.

4.2 Demographic Analysis

None of these features seem to pattern by age or any other identifiable characteristic of the speakers; for the short-*a* system results in particular, speakers 2 and 3, who showed no /æ/-movement, are 57 years apart and have no similarities between themselves that are exclusive from the rest of the subjects.

On the other hand, speaker 8, the only subject to show a merger of LOT and THOUGHT, may have been influenced by his profession as a politician. Not only would this likely make him more cognizant of his speech, but it might also lead him to speak in a more prestigious dialect – perhaps more similarly to the Standard American English varieties found in Boston or New York – or, given his somewhat conservative, libertarian, and even populist leanings, he may have cultivated a more “down-to-earth” way of speaking. In either case, his experience with the news media in particular as a politician likely influenced his speech, especially since I interviewed him in a scenario similar to that of a journalistic interview, although less formal.

This awareness of speech due to occupational training was an issue with several other participants. Speaker 4 had training in acting and seemed to use this experience as his jumping-off point for determining and describing the differences in some of the minimal pairs. When I showed him the Barry/berry pair, he considered them to be homophonous but offered *bury* as an alternate word to form a minimal pair. This awareness of pronunciation in a non-acting setting may be evidence of the effect of his training on his everyday speech.

Speaker 14 showed less phonetic awareness of his speech, but did talk a fair amount about dialectal differences between Maine and other parts of the country. He explained that his “Maine accent” used to be much stronger, but that after being made fun of for his speech while at college in Florida, he changed how he spoke to match those around him, and said that this

difference was still present. Given his position as a history professor at the university level, it is likely that this change toward more “standard”-sounding speech was encouraged as he continued his studies and entered the job market in this higher-educated field.

Both he and speaker 4 also brought up some recent historical developments in the socioeconomic situation of Portland, especially around Munjoy Hill, where I did most of my interviews. Both speakers had grown up in Portland and as such could recall how the city had been different in their youth. Speaker 14, whose family had immigrated from Ireland about a hundred years ago, stressed the historic importance of the different ethnic groups that had come to the city, especially the Irish, Italian, and Greek immigrant communities. He also had some experience in real estate and noted the gentrification of the Munjoy Hill area.

Speaker 4 also commented on this process, though with a more negative attitude, describing how more wealthy people were moving into both the urban and rural areas around Portland, building large second homes in rural communities and driving up the real estate taxes in these generally poorer parts of the state. His descriptions of the recent increase in the gentrification of Munjoy Hill matched my perception that the neighborhood was in the process of shifting from a more low-income residential area to one that is more upscale. And while neither speaker mentioned the most recent wave of immigrants, generally from East Africa, I would expect the addition of this new group, along with the flux of the socioeconomic geography of the city, to be a site of linguistic change in the near future.

5 Conclusion

In conclusion, my analysis of nine speakers currently living in the Portland, Maine area shows that while the short-*a* system of most of my subjects conforms to the expectations of Labov et

al., some speakers show no movement of /æ/ before nasals. Additionally, in contrast to the findings of both Labov et al. and Nagy and Roberts, my subjects show a NORTH-FORCE merger at all age levels, while only one speaker shows a LOT-THOUGHT merger.

Some factors that may have produced error in my results are my sample bias, in which poorer residents from neighborhoods outside of the Munjoy Hill and Monument Square area were underrepresented, the small number of speakers and the small number of tokens for some speakers, and technical errors that could have arisen from the low quality of some of the recordings and the multiple format changes of the recordings themselves. We also noticed that the FAVE-alignment program made some errors in identifying the vowel ID of several tokens, particularly between the LOT and THOUGHT lexical sets, and this was also probably a significant source of error.

Nevertheless, the results of this limited inquiry into the current state of speech in Portland, Maine, show many possible areas of future research. Further analysis could be done on both the features examined here and others noted by Labov et al. and Nagy and Roberts, like /æ/-fronting before rhotics. Studies with a larger number of subjects, and more women, would be able to make use of demographic information such as age and gender in their statistical analyses in addition to being able to perform the kind of mixed models more appropriate to this sort of repeated-measure data. This continuation of inquiry into the speech of the Portland area would add valuable insight to the current state of Maine English, as well as New England English in general.

Appendix A: Notation Equivalencies

Wells	IPA	ANAE	ARPAbet	example words
LOT	ɑ	o	AA	bot
BATH	æ	æ	AE	bat
STRUT	ʌ	ʌ	AH	but
THOUGHT / NORTH	ɔ	oh	AO	bought
MOUTH	aʊ	aw	AW	bout
PRICE	aɪ	ay	AY	bite
DRESS	ɛ	e	EH	bet
FACE	e	ey	EY	bait
KIT	ɪ	i	IH	bit
FLEECE	i	iy	IY	beat
GOAT / FORCE	o	ow	OW	boat
CHOICE	ɔɪ	oy	OY	boy
FOOT	ʊ	u	UH	put
GOOSE	u	uw	UW	boot

To avoid confusion between the various notation systems used in research on this topic, I use Wells' lexical sets (Wells 1982) to refer to specific phonemic patterns; where it is necessary to identify these patterns phonetically, I use the IPA phonetic notation system. The equivalencies between Wells' sets, IPA notation for general American pronunciation, the notation used in the *Atlas of North American English (ANAE)*, and the ARPAbet system used by FAVE⁴, are shown in the chart above. While the example words are drawn from the FAVE, most of the Wells, IPA, and ANAE equivalencies are drawn from Cerny (2009).

⁴ A PDF of the ARPAbet notation system can be found here: <http://fave.ling.upenn.edu/downloads/ARPAbet.pdf>.

Appendix B: SSE and Interview Procedure

Introduction

During this interview I will ask you a few basic survey questions and then to ask you to talk about some events from your childhood or just about living in Portland/Maine. We'll finish by doing some short exercises.

Diagnostics for Inclusion

Are you at least 18 years old? Did you grow up speaking English? Were you born in Maine/Portland? Did you grow up here? How long have you lived in Maine/Portland?

Reminder

Before we begin, I would like to remind you that you can skip any question or stop participating at any time. Would you still like to participate?

Would you mind if I record your responses? (You may decide to participate, even if you decide not to be audio recorded.) The recorder is on now, is that okay? Today is [date] and this is interview number [number].

Survey Questions

- When were you born? Where were you born and raised? How often did you move?
- Where in town are you living now? Where else have you lived?
- Where were your parents born and raised? How about your grandparents?
- Do you speak any languages besides English?
- In what city or state did you go to elementary school? How about high school? And college?
- What do you do for a living? What other kinds of jobs did you have in the past?
- How often do you go outside Portland/Maine? Where do you go? For what reasons?

Example Discussion Topics

- Do you think people talk the same here as they do in other places, like Boston?
- What do you think of living here? Do you think it's a good place to raise kids?
- What's happening around town? Is there any major news? What's the downtown like?
- Is it easy to get a job here? How did you get into your line of work?
- Where do people go for fun? Is there anything you do in town for fun?
- What are the sports that people are interested in? What teams?
- Did you ever get in a fight? Did you ever have any tough teachers?
- Did you ever go any place, when you were a kid, where you weren't supposed to go?

Short Tasks

Would you mind reading this out loud for me? Now I'm going to show you some pairs of words and I'd like you to tell me if they're different or the same.

Debriefing

The interview you just did was trying to look at how people speak in Portland/Maine. *[Give the subjects the approved debriefing script. Review the contents and answer any questions the subjects may have first.]*

I have a few other questions: Would you mind if I used some short audio-recorded clips of your speech when I present this information as part of my research in my student thesis or in published findings? You may decline this request.

If you provided your contact information (name, mailing address, phone number and/or email addresses) during the survey, would you mind if such information was kept in case there was follow up on this research on this same topic?

[Log responses to both questions.]

Thank you so much for participating!

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