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Dialect Divisions in the Treasure State

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The University of Montana

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1. Introduction

The atlas projects of American dialectology have traditionally focused on broad coverage and describing the features of large regions. Atlas research has left many areas of American dialectology underexplored, especially in the western United States. Labov, Ash, and Boberg (2006) place all states west of the great plains into a single dialect area called the West (map 1).



Map 1 showing dialect areas from Labov et al. (2006 p148)

Labov et al. cite a lack of homogeneity as a primary feature of the West dialect area. Increasingly linguists have challenged the largely heterogenous West dialect area and began more small-scale research on single cities, states, and regions.

This paper reports on the results of a single-state dialectology research project examining a possible east-west dialect division in Montana. Montana is the second least populous state (U.S. Census 2018). Labov et al. (2006) use a sample of five speakers to place Montana in two dialect areas. Only four Montana specific papers have been published, the most recent being Bar-el, Rosulek and Sprowls (2017). Bar-el et al. examine the place of Montana English within the West based on production data as well as Montanans' perceptions about Montana English. Bar-el et al. found that most Montanans do not consider Montana English distinct from Standard American English (SAE)¹. Bar-el et al. also shows many Montanans consider the English spoken in western and eastern Montana distinct dialects.

¹ Standard American English (SAE) is the variety of English used in mass media and taught to second-language English learners in North America (Akmajian, Farmers, and Bickmore 2017)

My research examines the perceptual east-west dialect distinction reported in Bar-el et al. to determine if there are differences in speaker phonology² and morphosyntax in western and eastern Montana. Using self-reported data gathered from 112 Montanans across the state I find no statistically significant variation in the English spoken in the Montana counties on either side of Lewis and Absaroka mountain ranges in central-western Montana.

This paper is organized as follows: Section 2 discusses existing research on Montana English, focusing on Labov et al. (2006) in 2.1, Bar-el et al. (2017) in 2.2, and other Montana specific studies in 2.3. Section 3 examines previous research on the morphosyntactic constructions reported to be present in Montana by Labov et al. and Bar-el et al.: *needs* + past participle and positive *anymore*. Section 4 details the methodology for data collection and analysis. Section 5 summarizes the data, and section 6 shows generalizations of trends in the data. Finally, Sections 7 and 8 present implications and lasting questions raised by my research.

2. Previous Research on Montana Phonology

Previous Montana dialect research is limited to Labov et al. (2006) and a small number of papers exclusively focused on Montana English. This leaves Montana underexplored compared to states with larger populations, like New York, and regions where dialects are considered more distinct, like southern Appalachia (see Montgomery and Reed n.d. for a list of publications on southern Appalachian English). Labov et al. base their analysis of Montana on five speakers from four towns. Labov et al.'s analysis results in Montana being placed in the West dialect area along with many neighboring states. Most states in the West dialect area are also defined using a sample of less than ten speakers.

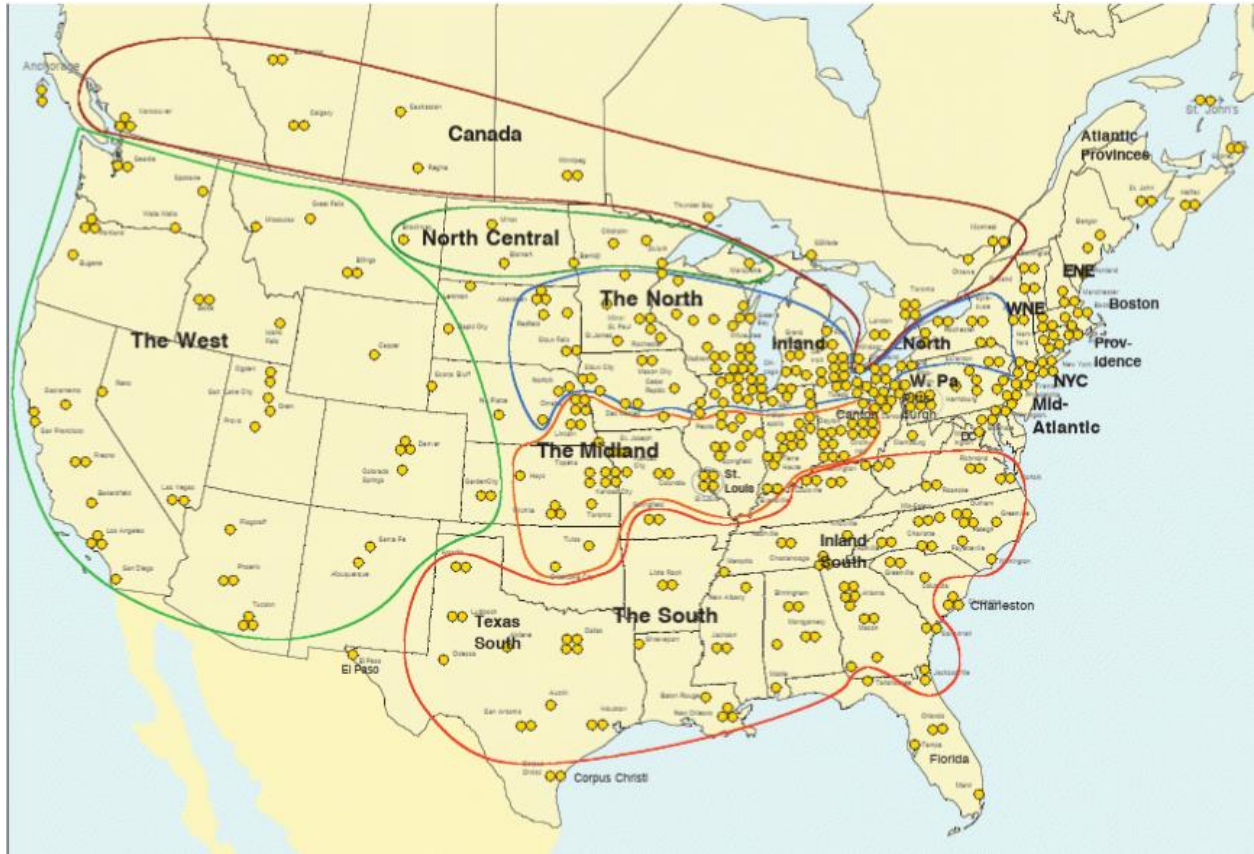
My research builds on Labov et al. (2006) and Bar-el et al. (2017), the only studies of Montana English that use modern techniques for data collection and analysis. Labov et al. is a comprehensive survey of English spoken in North America with a primary focus on phonological features, although Labov et al. include a smaller discussion of morphosyntactic features. Bar-el et al. is a Montana specific survey that focuses on the placement of Montana English in relation to other states within Labov et al.'s dialect area of the West. Bar-el et al.'s analysis is based on morphosyntactic, phonological, and perceptual data collected from interviews with Montanans. Labov et al. is discussed more thoroughly in subsection 2.1 and Bar-el et al. in subsection 2.2. Subsection 2.3 discusses Montana specific research predating Bar-el et al.

2.1 Labov et al. (2006)

Labov et al.'s (2006) *The Atlas of North American English* used the Telesur telephone survey in the mid-1990s to collect large amounts of phonological, morphosyntactic, and lexical data from urban areas in the continental United States and southern Canada. Telesur data were analyzed to create feature isoglosses. The phonological isoglosses are further analyzed to create dialect areas of homogenous speech. Labov et al.'s focus on urban centers results in less extensive coverage and smaller samples of less populous states with only a few large towns. Most states west of the Great Plains have a sample of fewer than ten speakers. For Montana, Labov et al. samples eight

² Phonology is used generically to refer to phonetics and phonology throughout the paper. My research collected data on respondents' perceptions of their own speech and is phonological in nature. Some previous research collected data on speaker production and perception and therefore contains phonetic and phonological data.

speakers from four towns. Data from only five speakers are used for the phonological analysis of Montana (see map 2).



Map 2 showing speakers for the phonological sample of Labov et al. (2006 p280)

Labov et al. place western and southeastern Montana, represented by the urban areas of Missoula, Great Falls, and Billings, in the West dialect area. The northeastern portion of Montana, represented by the town of Brockway, is placed in the North Central Transition area. The West is the largest dialect area in *The Atlas of North American English*. The West is bounded by the Great Plains, the Pacific Ocean, and the Mexican and Canadian borders. The North Central transition area is a much smaller dialect area stretching from Brockway, Montana to western Michigan along the Canadian border.

The West is also the least homogenous dialect area and is defined by fewer phonological features than other dialect areas. The phonological features Labov et al. use to define the West are the merger of [ɑ] and [ɔ], also called the *caught-cot* or low back merger, and [u] fronting. Labov et al. defines [u] fronting as a speaker's pre-coronal [u] F2 value being at least 500 Hz greater than the speaker's pre-coronal [oo] F2 value. The West is also defined by the phonological features it lacks, such as Canadian [eɪ] raising, and [oo] fronting. The North Central area is differentiated from other dialect areas by a lack of major sound changes other than the low back merger. The North Central transition is distinct from the West and Canada because it lacks [u] fronting.

Labov et al. also examine lexical and morphosyntactic variation in North American English. The lexical data includes the pronunciation of *roof* as either [ɹʊf] or [ɹʊv]. The morphosyntactic data includes the *needs* + past participle and positive *anymore* constructions. Labov et al.'s sample

for the lexical and morphosyntactic data is larger than the phonological data and consists of additional respondents. There are eight respondents in the sample for the lexical and morphosyntactic data in Montana. The lexical and morphosyntactic sample includes the five respondents from the phonological sample. The lexical and morphosyntactic sample represents the same four towns as the phonological sample. Labov et al. reports that seven of the eight Montanans pronounce *roof* as [ɹɒf]. Labov et al. finds both the *needs* + past participle and the positive *anymore* morphosyntactic constructions are used by the majority of Montanans. The speaker from Brockway pronounces *roof* as [ɹɒf] but does not use the *needs* + past participle or positive *anymore* constructions. However, this difference is not used to differentiate the West and North Central Transition area as Labov et al. define dialect areas using speakers' phonological differences.

2.2 Bar-el et. al. (2017)

Bar-el et. al. (2017) assesses Montana's place within the West dialect area and is the first Montana specific study to analyze acoustic and perceptual data. Bar-el et al. uses data from sociolinguistic interviews and map tasks to assess Montanan's attitudes about Montana English relative to other states and any dialect divisions within Montana. Bar-el et al. also analyzes the production of phonetic features based on data from 17 Montanans, including those features typical of the West: the low back merger, [u] fronting without [oo] fronting, prevelar [æ] raising, [æ] retraction and the *pin-pen* merger, the last of which Labov et al. (2006) mentions as a feature of the South dialect area.

Perceptual data from map tasks and interviews reveals that most Montanans consider Montana English more like English of other northwestern states than southwestern states, although many Montanans did not consider Montana English distinct from any other states (Niedzielski and Preston 2010). In a Montana map task, many respondents believed that eastern and western Montana English are different dialects.

Production data showed most of the features of Labov et al.'s West dialect area are present in Montana. However, speaker specific prevelar [æ] raising, especially among female speakers, and the alignment of *pin* and *pen* along F2 values are a digression from the typical features of the West. As Bar-el et al. note, the *pin-pen* merger is typically a merger of F1 values.

Bar-el et al. collected data in western Montana and while information on speaker hometowns was collected, no analysis on differences in speaker production or perception based on hometown location was conducted. This means that there is currently no analysis of perception or production of eastern Montanans living in eastern Montana.

2.3 Other Studies of Montana English

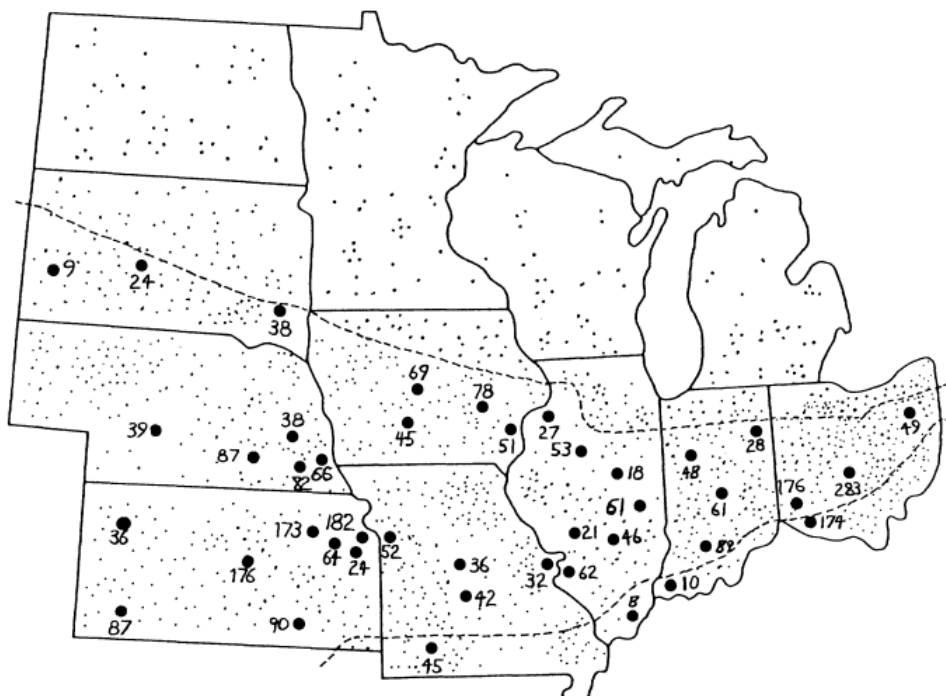
Other Montana specific dialect research lacks critical data and analysis methods. Research on Montana English predating Bar-el et al. does not use acoustic data and does not consider speaker geography in analysis. Nishikawa and Moriyama (1991) provide a comprehensive survey of Montana English vowels but is hindered by a lack of acoustic data. Nishikawa and Moriyama's had geographical coverage of 17 towns from 32 total speakers. Because Nishikawa and Moriyama's focus were a phonetic inventory, speaker hometowns were not considered in the analysis. Additionally, all speakers sampled were students at Montana State University so variation outside of this age and class range is not present. O'Hare (1964) surveyed eastern Montanans and suggests a speech distinction between southeastern and northeastern Montana but lacks acoustic

data. Alford (1974) focuses on different ethnic dialects in Montana and examines the English spoken by the Northern Cheyenne indigenous people in Montana.

3. Morphosyntactic Structures

Bar-el et al. and Labov et al. both show that positive *anymore* and the *needs* + past participle constructions as present in Montana English to varying degrees. Both morphosyntactic constructions are extensively studied in the North Midlands (map 3), where they were first identified (Stanley 1959, Parker 1975). The *needs* + past participle construction, as in *the car needs washed*, is described by Murray, Frazer, and Simon (1996) as being roughly equivalent to Standard American English (SAE)³ *the car needs to be washed* or *the car needs washing*. Murray and Simon also identify similar constructions with the verbs *wants* (1999), as in *the baby wants fed*, and *likes* (2002), as in *the dog likes walked*. The presence of the *likes* and *wants* + past participle constructions in Montana have not yet been studied. The positive *anymore* construction, as in *people read anymore*, an adverb equivalent to SAE *nowadays* is discussed by Parker (1975) and Youmans (1986).

The *needs*, *likes*, and *wants* + past participle constructions are believed to have developed in the Ulster-Scots English dialect and came to America with Ulster-Scots immigrants who settled in the North Midlands area.



Map 3 showing speaker in Murray et al.'s (1996) North Midlands area (within the dotted lines) who accept *needs* + past participle

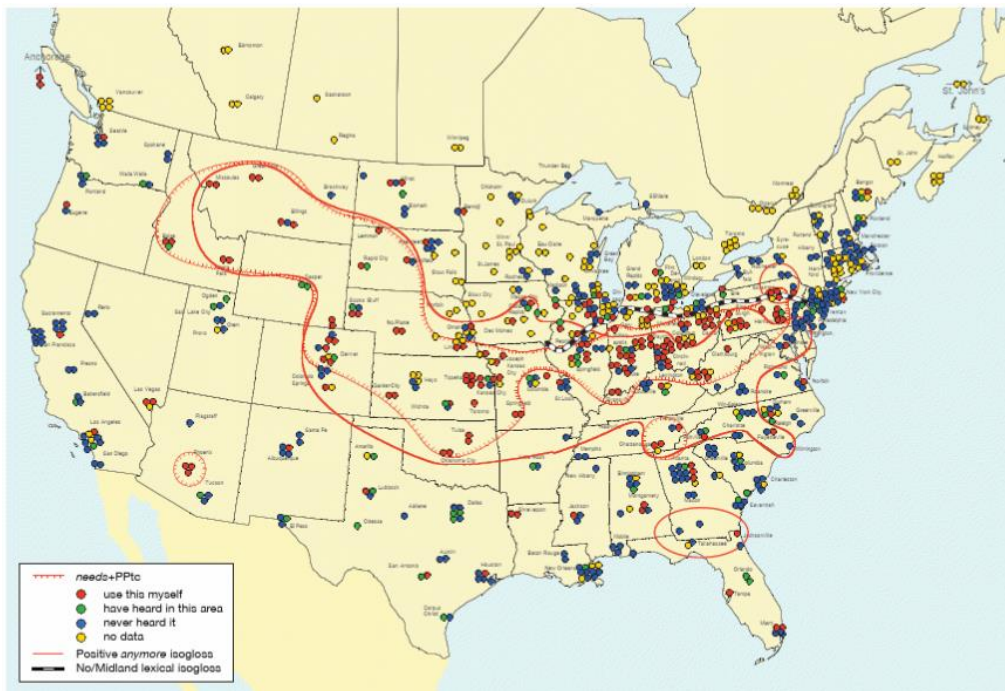
According to Murray et al., the *needs* + past participle type construction spread from the North Midlands dialect area to neighboring dialects. Speakers who judge the *needs* + past participle

³ See footnote 1 on page 2 for a definition of Standard American English

feature grammatical may judge the equivalent SAE *needs to be* and *needing* + past participle constructions as ungrammatical, often citing excessive formalness. Additionally, Murray and Simon (2002) suggest a hierarchy among *verb* + past participle constructions where *needs* is the most widely accepted verb in the construction, followed by *wants* and finally *likes*. This hierarchy also applies to speaker acceptability judgements: speakers who accept *likes* + past participle will accept *wants* + past participle, and by extension, accept *needs* + past participle.

Needs + past participle has spread considerably since its first appearance in the literature (Stanley 1959), and likely since Murray et al. (1996). Labov et al. (2006) shows *needs* + past participle extending westward through the central United States, through southern and central Montana into parts of Idaho. Although Labov et al. was published later, data collection was based on the Telesur surveys done in the mid-1990s and can be considered synchronous to Murray et al. The wider distribution in Labov et al. is likely due to a larger sampling area. There is anecdotal evidence for the use of *needs* + past participle in Montana based on previous studies using self-reported data. Living in Montana my whole life, I have heard the *needs* + past participle used infrequently in Montana by people who grew up in-state and out-of-state. Interestingly, I have heard my boss, who grew up in peninsular Washington, use not only *wants* and *likes* + past participle, but also *loves* + past participle (in the sentence, *that thing loves gunked up*), a yet unattested form in the literature.

Parker (1975) defines positive *anymore*, as in the sentence, *Ryan is getting fit, he works out anymore*, as an adverb equivalent to SAE *nowadays*, as in the sentence *Ryan is getting fit, he works out nowadays*. Parker dates the appearance of positive *anymore* to before 1930 and claims usage of positive *anymore* expanded geographically throughout the twentieth century. Youmans (1985) suggests that speaker acceptance of positive *anymore* depends on where the adverb appears in a clause. Youmans places clause final as the most accepted form, as in *Jim skis anymore*, and clause initial as the least accepted form, as in *anymore Jim skis*. Labov et al. shows positive *anymore* as having a similar geographic distribution as *needs* + past participle (map 4).



Map 4 showing the isoglosses of positive *anymore* and *needs* + past participle in Labov et al. (2006 p295)

Despite living in Montana my entire life, I never noticed positive *anymore* before beginning my dialect research and have only noticed it a few times since. However, Youmans suggests that positive *anymore* is not a very salient construction for many speakers, and that speakers may use it even if they do not self-report usage.

While not considered features of the West dialect area, the literature does show that positive *anymore* and *needs* + past participle constructions are present in the speech of Montanans. While Labov et al. did not use morphosyntactic features to define dialect areas, they report the positive *anymore* and *needs* + past participle constructions in the parts of the state included in the West dialect area, but not in the part of Montana included in the North Central transition area. However, Montana's place in the North Central Transition area is defined by a single speaker, so the lack of the positive *anymore* and *needs* + past participle constructions may be an idiolectal, rather than dialectal. The lack of widespread study of positive *anymore* and *needs* + past participle in Montana leaves a gap in the literature. Additionally, no one has explored the presence of *wants* and *likes* + past participle constructions in Montana.

4. Methodology

Primary data collection was conducted through an online questionnaire. The questionnaire was created with Qualtrics survey software and was circulated through social media and email with an anonymous link. Respondents self-selected by clicking the link and completing the questionnaire, although responses were discarded if they did not meet certain criteria. The questionnaire data are self-reported and do not include any acoustic data. The format of this questionnaire means data are focused on speaker perceptions of their own production, rather than acoustic production data. A small number of audio interviews were conducted in person and by webcall. However only five audio interviews were completed, not meeting an acceptable threshold for statistically significant analysis (Buchstaller and Khattab 2013). Audio interviews are thus used as supplementary anecdotal data and speaker perception data.

4.1 Questionnaire

The online questionnaire consisted of 45 questions focusing on respondent demographics, phonology, and morphosyntax (see appendix 1 for full questionnaire). Most questions included space for participants to leave comments. Demographic questions asked about a speaker's age, gender, where they were born, and places they lived during childhood. Individuals were allowed to leave questions blank, although if all phonology and morphosyntax questions were left blank, the questionnaire was not used in analysis.

Phonology questions asked respondents about their pronunciation of words indicative of the low back merger, the *pin-pen* merger, *bag* raising, and vowel lowering and laxing. The low-back and *pin-pen* merger questions asked if respondents pronounced the paired words *cot* and *caught*, *dawn* and *don*, and *pin* and *pen* the same or different. An option of *other* was given for one question (appendix 1 Q6.8), but only one respondent selected other. Phonological questions for the pronunciation of *root*, *creek*, and *Bitterroot* gave two possible pronunciations and allowed speakers to indicate if they pronounced words only one way, interchangeably both ways, if they used multiple pronunciations in complementary distribution, or if they pronounced the word differently from the given options. For example the question about the pronunciation of the vowel in *root* gave the possible answers of: *the oo in hoot*, *the u in hut*, *I say it both ways and they mean*

the same thing, I say it both ways but they mean different things (Please specify below), and I say it differently than the given options (appendix 1 Q6.6). Any response other than *the oo in hoot* was considered a non-SAE pronunciation. The question on *bag* raising allowed speakers to indicate if they pronounced *bag* with the same vowel as *sat*, *set*, or *say*. Speakers could select multiple answers, but the question did not ask if multiple pronunciations were context dependent or in free variation (appendix 1 question 6.16). Saying *bag* with any vowel(s) other than [æ] was considered a non-SAE pronunciation.

Most morphosyntax questions presented the respondent with two or three example sentences and instructions to indicate the respondent's experience with similar sentences. For these questions, the respondent was given the possible answers of *I would say something like this, I've heard other Montanans say something like this, and I've never heard a sentence like this*. Respondents were able to select multiple answers for each sentence. The *verb + past participle* question had the example sentences *the car needs washed again, the baby wants fed now, and the dog likes walked every night* and the positive *anymore* question had the example sentences, *literacy is one the rise, everyone reads anymore* and *Literacy is on the rise, anymore everyone reads*. Questions included SAE sentence constructions like *needs to be washed, needs washing and nowadays* (appendix 1 Q7.3, Q7.5, and Q7.7). An additional question asked respondents to consider the meaning of positive *anymore*. Presented the three sentences (i) *my brother likes to ski nowadays*, (ii) *my brother likes to ski anymore*, and (iii) *my brother likes to ski still*, respondents were asked to select all sentences with the same meaning. However, the aspectual meanings of *likes to* (Comrie 1976) may have impacted the answers to this question did not form a pattern. As a result, the question on the meaning of *nowadays* is not included in the analysis.

Data from respondents who either (i) did not answer any of the phonological or morphosyntactic questions, (ii) moved to Montana at age 18 or later, or (iii) responded that they did consider themselves from Montana (appendix 1 Q4.3) were excluded. Data were sorted using Microsoft excel pivot tables which compared data from eastern and western Montanans (see subsection 4.4).

4.2 Respondents

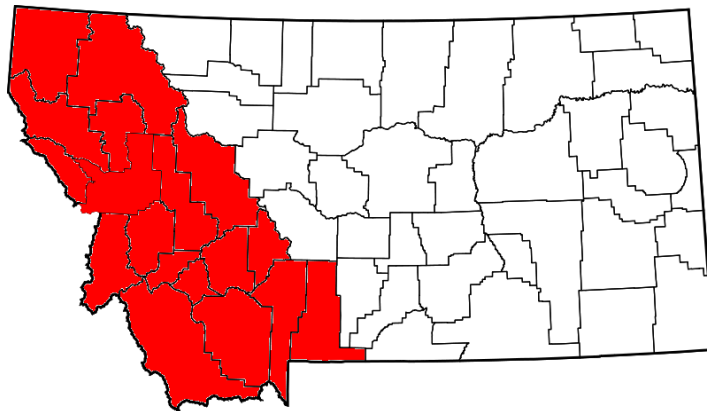
Respondents self-selected by using the questionnaire link. The questionnaire link was accompanied by a brief introduction that asked only those participants who live in Montana currently and for a significant period of time between ages 5 and 18 to complete the questionnaire. To be included in the analysis, respondents must have moved to Montana before age 18, not have spent a significant amount of time outside Montana between ages 5 and 18, and consider themselves from Montana (appendix 1 Q4.3). Additionally, respondents needed access to the internet to participate in the questionnaire. The questionnaire could be completed on a smart phone. Because the focus of this research is on gathering large amounts of data and achieving the best possible coverage of Montana, the questionnaire does not attempt to equalize for any demographic factors beyond speaker location and did not include questions on respondent gender, race, class, occupation, or level of education.

4.3 Dividing East and West

In testing east and west dialects, I opted to use an existing non-linguistic boundary and test if the selected boundary acted as a dialect boundary as well. This creates a boundary less sensitive to individual speaker variation. It is also ideal for my data set because respondents were self-selected and coverage of the state was middling. Because I am testing a preexisting boundary for linguistic relevance, there is still a need for research that uses feature isoglosses and random sampling to create boundaries based purely on linguistic data.

Eastern and western Montana lack a widely agreed upon boundary. The regions are salient to many Montanans (Bar-el et al. 2017), but the specific boundary can vary widely from speaker to speaker. Eastern and western Montana are differentiated by geography, population density, climate, and economic activities. Ordered from furthest west to furthest east, common geographic boundaries are the Continental Divide, the Rocky Mountain Front, and the Lewis and Absaroka Mountain ranges (Malone, Roeder, and Lang 1991).

Questionnaire respondents were asked whether in their view the place where they grew up and lived was considered western, central, eastern Montana or other (appendix 1 Q4.1). The boundary I used to categorize participants in this study was the Lewis and Absaroka mountain ranges, to the east of the Rocky Mountains. Map 5 shows counties west of the Lewis or Absaroka ranges in red, and east of the ranges in white. Using the Lewis and Absaroka ranges as a divider incorporates geographical features while keeping most questionnaire respondents in the region they considered themselves from. Respondents from Helena and Great Falls were split on whether the towns are in western or central Montana. The boundary of the Lewis and Absaroka ranges places Helena in western Montana and Great Falls in eastern Montana



Map 5 showing western counties in red and eastern counties in white.

I did not include a central region in my analysis. In the questionnaire this region was less salient to those living in the eastern-central portion of the state and respondent variation on the location of the central-eastern boundary was much higher than with the central-western boundary. Additionally, the central and eastern regions lack the cultural, economic, and geographic distinctions of western and eastern Montana (Malone et al. 1991).

Questionnaire responses further support the Lewis and Absaroka Mountain ranges as an east-west boundary as the responses largely correspond with the two regions. For analysis, respondent region was selected based on the county where the respondent attended Kindergarten through eighth grade, referred to as their home county. For respondents who attended school in multiple counties, the county where they had spent more time was used as their home county. In

Using the Lewis and Absaroka range as an east-west boundary resulted in 86 (77%) respondents in western Montana and 26 (23%) in eastern Montana. In the questionnaire, 88 (79%) self-reported as being from western Montana, and 12 each (11%) reported being from Eastern and Central Montana. With the exception of Central Montana, which was merged with Eastern Montana for reasons described in section 4.3. Only four respondents were placed in a different region that they considered themselves from. 26 of the 56 counties in Montana had responses to the questionnaire and 14 counties had just one respondent. The county with the highest number of respondents was Deer Lodge with 34, followed by Silver Bow with 26, and Missoula with 10.

All of the respondents in the final sample were born in Montana or moved to Montana before age 14. 97 respondents (87%) were born in Montana, nine moved to Montana before age six, three moved to Montana before age ten, and three moved to Montana before age 14. Most respondents were over the age of 35, 51 (46%) being 45 or older, 31 (28%) were between 35 and 45, 18 (16%) were between 25 and 35, and 12 (11%) were between 18 and 25.

5.1 Phonology

Responses to phonology questions showed no statistically significant differences between eastern and western Montana. A summary of the appearance of phonological features of interest in the east and west, as well as the p-value for the variation between the two groups, is shown in table 1.

	West	East	P-value
Low back merger	90%	88%	0.7152
<i>Pin-pen</i> merger	16%	19%	0.7785
[ɛ] or [e] in <i>bag</i>	72%	58%	0.2268
[ɪ] in <i>creek</i>	66%	50%	0.2297
[ʊ] in <i>root</i>	15%	12%	0.5589
[ʊ] in <i>Bitterroot</i>	31%	46%	0.1624

Table 1 Responses to phonology questions

The appearance of features of interest is unsurprising given the literature. The low back merger is widely attested in Montana by both Labov et al. (2006) and Bar-el et al. (2017). Bar-el et al. also shows some presence of a *pin-pen* merger in Montana. Because there is no acoustic data from the questionnaire, I cannot determine if the *pin-pen* merger in my data is along the F1 values, like the southern *pin-pen* merger in Labov et al. or along the F2 values like the Montana *pin-pen* merger in Bar-el et al. The raising of [æ] in *bag* is widespread, as is the laxing and lowering of [i] in *creek*. Vowel laxing and lowering is considerably less present in *root*, which may suggest this is a separate process from *creek*. Vowel laxing and lowering occurs more than twice as often in *Bitterroot* than *root*. The difference in vowel laxing and lowering in *root* and *Bitterroot* is statistically significant, with a p-value of 0.0008. Respondent comments offered several motivations for the lowering and laxing of [u] in *Bitterroot*. Several speakers commented that [bitəʊt] is a flower from the genus *Lewisia* and [bitəɹʊt] refers to the valley or river in Montana. One speaker asserted that [bitəɹʊt] is an informal pronunciation.

5.2 Morphosyntax

Some respondents left morphosyntax questions blank. Blank answers are not included in analysis. Some respondents left questions blank but answered following questions. The number of responses to the morphosyntax questions ranged from 94 responses (appendix 1 Q7.7) to 103 responses (appendix 1 Q7.1). The data show that *needs*, *likes* and *wants* + past participle constructions are present in Montana. *Needs* + past participle is present to a lesser degree than in Labov et al.'s limited sample. The hierarchy of different verbs in *verb* + past participle construction suggested in Murray and Simon (2002) is shown with Montanans who use the constructions. Montanans who report hearing but not using *wants* + past participle violate Murray and Simon's hierarchy. There is statistically significant variation between east and west Montana with more respondents reporting never having heard *wants* + past participle in western Montana, but there is no statistically significant variation in respondents who report hearing or using *wants* + past participle. Response to the *verb* + past participle questions are summarized in table 2.

	West	East	P-value
Use <i>needs</i> + past participle	33%	38%	0.6631
Use <i>wants</i> + past participle	20%	24%	0.5996
Use <i>likes</i> + past participle	15%	15%	1
Heard but do not use <i>needs</i> + past participle	40%	32%	0.6365
Heard but do not use <i>wants</i> + past participle	37%	48%	0.3573
Heard but do not use <i>likes</i> + past participle	24%	28%	0.7905
Never heard <i>needs</i> + past participle	24%	16%	0.8347
Never heard <i>wants</i> + past participle	42%	21%	0.0681
Never heard <i>likes</i> + past participle,	58%	52%	0.6262

Table 2 responses to *needs*, *wants*, and *likes* + past participle questions (appendix 1 Q7.1)

Responses show that positive *anymore* is present in the speech of Montanans, although only nominally, at a much lower rate than reported by Labov et al. There are no statistically significant differences between the use of positive *anymore* in eastern and western Montana. Additionally, the hierarchy of *anymore* clause position reported in Youmans (1986) does not appear in the Montana data. Responses to positive *anymore* questions are summarized in table 3.

	West	East	P-value
Use positive <i>anymore</i> clause finally	10%	14%	0.5083
Use positive <i>anymore</i> clause initially	14%	12%	1
Heard but do not use positive <i>anymore</i> clause finally	21%	24%	0.7807
Heard but do not use positive <i>anymore</i> clause initially	24%	21%	1
Never heard positive <i>anymore</i> finally	68%	54%	0.1749
Never heard positive <i>anymore</i> clause initially	59%	62%	1

Table 3 showing responses to positive *anymore* questions (appendix 1 Q7.7)

6. Data Generalization Summary

The data show no statistically significant differences in the phonology of eastern and western Montanans. There is one statistically significant difference in the morphosyntax where there is a higher number of respondents in western Montana who reported never hearing *wants* + past participle constructions. The p-value of this difference was 0.0681 which is significant at a 90% confidence level. However, there is no statistically significant difference in usage between eastern and western Montana, suggesting that the difference in speakers who reported hearing *wants* + past participle is not based on the prevalence of the construction in different regions of the state.

Vowel lowering and laxing in Montana does not appear to be a single process and is at least somewhat determined by the lexical item. Vowel lowering and laxing occurs more frequently in *creek* than in *root* or *Bitterroot*. It is unclear if this is because of phonological properties of the high front vowel [i] or whether the process is restricted to certain lexical items. The rate of vowel lowering and laxing of [u] was different to a statistically significant degree on the lexical items *root* and *Bitterroot*. 84% of respondents pronounce *root* only as [ɹut], while 63% of respondent pronounce *Bitterroot* only as [bitəɹut]. The p-value for the difference in vowel lowering and laxing between *root* and *Bitterroot* is 0.0008, which is significant with over 99% confidence. Speaker comments suggest that the [bitəɹot] pronunciation is either restricted to the lexical item referring to the river and valley, or a phonological process where [u] is lowered and laxed in informal speech.

Despite the lack of statistically significant difference between eastern and western Montana, most speakers in audio interviews considered eastern and western Montana dialects distinct. The belief that eastern Montana English is distinct was higher among the speakers from eastern Montana, who claimed non-SAE features were more widespread in eastern Montana. Eastern Montanan speakers highlighted the more widespread vowel lowering and laxing in *root* and *roof* and slower or more rhythmic sentence prosody as occurring more frequently in eastern Montana.

Earlier studies of Montana English have shown that *needs* + past participle and positive *anymore* are present to a large degree (Labov et al. 2006). However, there is no published data about the presence of *wants* + past participle and *likes* + past participle in Montana. This study shows that both *wants* and *likes* + past participle are at least minimally present in Montana English, however there is a lower presence of *needs* + past participle and positive *anymore* than Labov et al. report.

7. Research Implications

Analysis did not show any significant differences between eastern and western Montana, suggesting that how Montanans report their own speech does not vary across the state. However, Bar-el et al. (2017) showed many Montanans consider English in the eastern and western parts of the state to be separate dialects. This suggest that the perceptual dialect is based less on linguistic differences and possibly on cultural or geographical differences. Future acoustic analysis will reveal whether there are actual speech differences in Montana. If actual speech differences are present, then it may be the possible that Montanans observe these differences more keenly in others than themselves.

Despite a lack of significant differences in the speech of eastern and western Montanans based on the questionnaire data, audio interview participants from eastern Montana described eastern Montana English as having more widespread non-SAE phonological and morphological features than western Montana. The overreporting of non-SAE features suggests lower linguistic

security among eastern Montanans (Niedzielski and Preston 2010). Linguistic differences were framed in the context of eastern Montana being different from western Montana and not eastern Montana being different from other states, e.g. “Eastern Montanans say ... more.” Eastern Montanans often cited eastern Montana speech as like neighboring states such as North and South Dakota and the Midwest region. These anecdotal data suggest a possible trend for further investigation.

Earlier research claims that Montanans have high linguistic security when comparing Montana to other states (Bar-el et al. 2017) which may cause respondents to underreport phonological and morphosyntactic features in their idiolect (Niedzielski and Preston 2010). Labov et al. (2006) showed seven out of eight Montanans pronounced *roof* as [ɹʊf], a significantly higher percentage than the Montanans who self-report using the lowered lax vowel for *root* (16%) or *Bitterroot* (37%). It is possible that *roof* has a different phonological environment which is more conducive to the vowel laxing and lower and determining this requires further inquiry.

Lastly, the multiple pronunciations of the proper noun *Bitterroot* in Montana, [bitəɹʊt] and [bitəɹʊt] occur at a much different rate from the common noun *root*. Respondent comments suggest that the multiple pronunciations of *Bitterroot* are due to either a lexical contrast or a phonological process. Respondent comments on the multiple pronunciations of *root* do not suggest the same processes. Only one participant left a comment on different pronunciations of *root*, suggesting [ɹʊt] was a rural Montana form, although the data do not support vowel lowering and laxing in *root* being an urban-rural distinction. The distinction between the different pronunciations of *Bitterroot* were not present with the word *root*. This difference shows the importance of including proper nouns in dialect research, as they may show variation not present in common nouns. It also shows that speaker comments can offer possible motivations for processes resulting in dialect variation. However, speaker comments should not be used as sole evidence of underlying processes, rather speaker comments should function as a starting point for further empirical research.

8. Questions for Further Research

My research shows that the Lewis and Absaroka mountain ranges do not act as an east-west dialect boundary in Montanans’ perceptions of their own speech. The English spoken on both sides of the mountain ranges exhibit very similar phonology and morphosyntax according to respondent’s self-reported data. Using different data collection or analysis methods may reveal a dialect division in the state. Research using random sampling and achieving better coverage of the state could construct feature isoglosses which could reveal a dialect boundary at any point in the state, not just the single boundary I tested. Collecting acoustic data could reveal acoustic speech differences in various parts of the state. Further acoustic data collection could also reveal if Montanans’ self-reported data differs from acoustic data.

Modern dialectology is increasingly concerned with collecting natural or connected speech (Bailey 2018). This presents an opportunity for Montana dialect research based on sociolinguistic interviews lasting 20 minutes or longer. Natural speech is less conservative than careful speech (Labov et al. 2006) and an analysis of natural speech among Montanans could show variations not present in careful speech analysis. Additionally, longer interviews have the possibility of recording non-SAE morphosyntactic constructions like *needs* + past participle and positive *anymore*.

Anecdotal evidence from my interviews showed eastern Montanans exhibiting lower linguistic security and a belief that eastern Montana speech is distinct from western Montana. The

map tasks in Bar-el et. al. were conducted in western Montana, and likely gathered more responses from western Montanans. There is a need of a perceptual dialect study using similar map tasks to be conducted in eastern Montana. Such a study could reveal if eastern Montanans exhibit different linguistic ideologies than their western counterparts, such as greater belief in a regional accent (Niedzielski and Preston 2010).

The lowering of the final vowel in *Bitterroot* raises several questions. Labov et al. (2006) showed 7 out of 8 respondents pronouncing *roof* as [ɪɔf], a much higher rate than respondents who pronounced *root* as [ɪɔt] in my data. This difference may be because of Labov et al.'s lower number of speakers, a difference in data collection methods, i.e. acoustic analysis versus self-reporting, or a difference in the lexical or phonological environments of *roof* and *root*. Additionally, does *creek* being pronounced as [kɪk] increase in common nouns in the same fashion as *root*? i.e. would vowel lowering and laxing occur at higher rate in a place name like *Deer Creek*?

The lack of reported differences between eastern and western Montana in my data and the presence of the perceptual dialect in Bar-el et al. suggests that Montanans are either under- or overreporting features of their own speech at high rates in some parts of the state, or that the perceptual dialects in Bar-el et al. (2017) are not based on phonological or morphosyntactic differences. If the latter, then what forms the basis of the perceptual dialects? Perceptual differences may be based on one or more of the factors that separate eastern and western Montana such as culture and economy. Speakers may assume people speak differently in more distant regions. Further research will show whether there are regional speech varieties in the state. However, my data suggest that even if acoustic differences are present in Montana, they are not perceptually salient to a speaker. Ultimately regional dialects in Montana may be based partly, or entirely, on cultural or geographical differences.

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Appendix 1: Sample of Online Questionnaire

Q1.1 The purpose of this survey is to learn about the English spoken in Montana. The survey starts with questions about your age and places you have lived, then asks about how you say certain words and sentences. This anonymous survey should take approximately 10-20 minutes. Participation in this survey is entirely voluntary and you may stop at any time. If you don't wish

to answer any question, you may leave it blank. There is space for additional comments after each question and a space at the end of the survey for any general comments or questions.

Submission of the survey will be interpreted as your informed consent to participate and that you affirm that you are at least 18 years of age.

If you have any question, concerns, or comments, please contact Noah.Rummel-Lindig@umconnect.umt.edu or the faculty advisor, Dr. Leora Bar-el, at leora.bar-el@mso.umt.edu.

Q2.1 What is your current age?

- 18-25
 - 25-35
 - 35-45
 - Over 45
-

Q2.2 Do you live in Montana currently?

- Yes
 - No
-

*Display This Question:
If Do you live in Montana currently? = No*

Q2.3 Current State of Residence:

Q2.4 Were you born in Montana?

- Yes
- No

Q3.1 At what age did you move to Montana?

- 0-5
- 6-9
- 10-13
- 14-18
- 18+

Q4.1 What city or town were you born? If you were born outside of Montana, Please include the state.

Q4.2 In which city or town did you attend primary school (k-8)? List as many as apply, please include the number of years spent in each city/town.

Q4.3 Which region of Montana do you consider yourself to be from?

- Western MT
 - Eastern MT
 - Central MT
 - I am not from MT
 - Other (Please Explain)
-

Q4.4 Comments

Q4.5 Did you live outside of Montana for more than 5 years between the ages of 5 and 18?

- Yes
- No

Q5.1 In what states other than MT did you live in and for how long in each state?

Q6.1 The following questions ask about the way you say certain words. For these questions, I'm interested in how you say the words, not how you think the words should be said. Saying the words aloud can help answer these questions.

Optional comment boxes are provided if you would like to expand on your answer or if the answer you would like to give is not offered as an option.

Q6.2 Do the words *cot* and *caught* sound the same or different when you say them?

- Same
- Different
- Other (please comment)

Q6.3 Comments:

Q6.4 Do the words *pen* and *pin* sound the same or different when you say them?

- Different
- Same
- Other (please comment)

Q6.5 Comments:

Q6.6 Does the vowel in the word *root* sound more like the vowel in the word *hoot* or the vowel in the word *hut*?

- The oo in *hoot*
- The u in *hut*
- I say it both ways and they mean the same thing
- I say it both ways but they mean different things (Please specify below)
- I say it differently than the given options

Q6.7 Comments:

Q6.8 Do the words *dawn* and *Don* sound the same or different when you say them?

- same
- different
- Other (please comment)

Q6.9 Comments:

Q6.10 Does the vowel in the word *creek* sound more like the vowel in the word *lick* or the vowel in the word *leek*?

- The i in *lick*
 - The ee in *leek*
 - I say it both ways and they mean the same thing
 - I say it both ways but they mean different things (please specify below)
 - I say it differently than the options given
-

Q6.11 Comments:

Q6.12 Does the final vowel in the word *Bitterroot* sound more like the vowel in the word *hoot* or the vowel in the word *hut*?

- The oo in *hoot*
 - The u in *hut*
 - I say it both ways and they mean the same thing
 - I say it both ways but they mean different things (Please specify below)
 - I say it differently than the options given
-

Q6.13 Comments:

Q6.14 The vowel in the word *bag* sound most like which of the following? Select as many as apply.

- The vowel in *say* (1)
- The vowel in *sat* (2)
- The vowel in *set* (3)
- None of the above (5)

Q6.15 Comments:

Q6.16 Does the vowel in the word *boot* sound the same as the vowel in the word *loot*?

- The same (1)
- Slightly different (2)
- Different (3)
- Not sure (4)

Q6.17 Comments

Q7.1 For the following sentences, select the column that best represents your experience. Select as many answers as apply.

	I would say something like this (1)	I've heard other Montanans say something like this (2)	I've never heard a sentence like this before. (3)
The car needs washed again. (1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The baby wants fed now. (2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The dog likes walked every night. (3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q7.2 Comments:

Q7.3 For the following sentences, select the column that best represents your experience. Select as many answers as apply.

	I would say something like this (1)	I've heard other Montanans say something like this (2)	I've never heard a sentence like this before (3)
the car needs to be washed again. (1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The baby wants to be fed now. (2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The dog likes to be walked every night. (3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q7.4 Comments

Q7.5 For the following sentences, select the column that best represents your experience. Select as many answers as apply.

	I would say something like this (1)	I've heard other Montanans say something like this (2)	I've never heard a sentence like this before (3)
The car needs washing again. (1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The baby wants feeding now. (2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The dog likes walking every night. (3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q7.6 Comments:

Q7.7 For the following sentences, select the column that best represents your experience. Select as many answers as apply.

	I would say something like this (1)	I've heard other Montanans say something like this (2)	I've never heard a sentence like this before (3)
Literacy is on the rise, everybody reads anymore. (1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Literacy is on the rise, anymore everybody reads. (2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q7.8 Comments:

Q7.9 For the following sentences, select the column that best represents your experience. Select as many answers as apply.

	I would say something like this (1)	I've heard other Montanans say something like this (2)	I've never heard a sentence like this. before (3)
Literacy is on the rise, everybody reads nowadays. (1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Literacy is on the rise, nowadays everybody reads. (2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q7.10 Comments

Q7.11 Select all of the following sentences that mean the same thing.

- My brother likes to ski still. (1)
 - My brother likes to ski nowadays. (2)
 - My brother likes to ski anymore. (3)
-

Q7.12 Comments

Q7.13 Imagine you are telling a friend about a trip you will take from Missoula to Ravalli County. Which of the following sentences are you most likely to use?

- I'm going up to the Bitterroot (1)
 - I'm going down to the Bitterroot (2)
 - I use both sentences interchangeably (3)
 - Neither (please comment) (4)
 - I am not familiar with the places listed in the question (5)
-

Q7.14 Comments:

Q8.1 Thank you for participating in this survey! If you have any other comments or feedback, please leave them here.

Appendix 2: Sample of Wordlist for Audio Interviews

Wordlist

- | | | |
|---------|----------|----------------|
| 1. Cot | 8. Sat | 15. Boot |
| 2. Rut | 9. Loot | 16. Bitterroot |
| 3. Don | 10. Say | 17. Caught |
| 4. Root | 11. But | 18. Set |
| 5. Hock | 12. Dawn | 19. Out |
| 6. Pen | 13. Bag | 20. Hawk |
| 7. Book | 14. Pin | 21. Crayon |