

Some notes on the *needs washed* construction

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Abstract

This paper describes the geographic and social factors that correlate with the acceptability of the *needs washed* construction, based on the results of recent survey data. After briefly describing the survey methods, we discuss several ways to analyze the geographic distribution of the construction, focusing on the distribution of “hot” and “cold” spots across different versions of the construction. We find certain core areas where the construction is highly accepted, as well as core areas where the construction is highly rejected. Our survey looks at the effect of verb (*need*, *want*, *like*, and *love*), tense/modality (finite verb, modal *would* and *would have*), and population density (urban, suburban, rural). Moreover, we present maps that show how our results line up with previously proposed dialect regions of American English.

Keywords

needs washed-construction — hot spot analysis — dialectology

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1. Introduction

In some, but not all varieties of English, the verb *need* can be immediately followed by a passive participle, resulting in a sentence like *The car needs washed*, with a meaning approximating the meaning of sentences like *The car needs to be washed* or *The car needs washing* in other varieties of English. Although *need* is not the only verb to occur in this construction, and *washed* is certainly not the only participle possible, we will refer to the overall construction as the *needs washed* construction. Although the *needs washed* construction has received a fair bit of attention over the years (Stabley 1959; Murray 1987a,b; Murray et al. 1996; Tenny 1998; Murray and Simon 1999, 2002; Kaschak and Glenberg 2004; Kaschak 2006; Ulrey 2009; Brassil 2010; Whitman 2010; Edelstein 2014; Soares et al. 2018; Duncan 2019, 2021; Bansky et al. 2020; Edelstein et al. 2020; Strelluf 2020; Bansky et al. 2020; Pan et al. 2021; Strelluf 2022) (see Maher and Wood 2011 for a broad overview), there are nevertheless many aspects of it that have yet to be investigated in sufficient detail.

In this paper, we present a fairly detailed overview of the results from surveys conducted by the Yale Grammatical Diversity Project, in order to examine some of the linguistic, geographic and social factors that affect the construction’s acceptability across speakers. The survey sentences we report on allow us to compare four different verbs—*need*, *want*, *like* and *love*—in distinct tense/mood/aspect frames (present tense, modal, and modal perfect). We analyze the geographic distribution of these sentences, as well as various social effects, including race and, quite strikingly, the distinction between urban, suburban and rural locations.

With respect to verbs, we find a markedness hierarchy that robustly supports previous claims that *like* is more marked than *want*, and it compatible with the claim that *want* is more marked than *need* (although we did not test this latter question in as much depth, and the apparent effect is not nearly as obvious as with *like* vs. *want*). Moreover, we find that *love* is

also possible—a novel finding, as far as we know—but even more marked than *like*.¹

Geographically, the patterns of markedness show a gradient but clear pattern of containment, where speakers from a central “core” area in the Midlands accept more variants of the construction than speakers from other areas, and we show how this pattern can be visualized in a map. We also show how the geographic patterns line up with previously proposed dialect regions, such as those proposed by Carver (1987). We then compare speakers from urban, suburban, and rural areas (as defined in the U.S. Census). While the geographic patterns are quite similar among all three groups, the pattern is for the most part far clearer, and prone to far less intra-regional variation, in rural areas than in urban areas, with suburban areas falling in between the two. Finally, we find an effect of race that is consistent with what has previously been noticed, which is that white speakers accept the *needs washed* construction more robustly than speakers of other races. The effect, however, is not as strong as one might have expected, and does not always reach statistical significance.

While these results are a step forward in our understanding of the *needs washed* construction, they also highlight the need to better understand this construction specifically, and more generally the effects of social factors like the urban/rural distinction on syntactic acceptability judgments, and the potential interaction of different social factors. More broadly, however, the paper highlights several methods for investigating these questions and visualizing the results, methods that can be applied to many other understudied constructions (including the ones that are included in the maps in Wood et al. (2020b)).

The paper is structured as follows. In section 2, we provide a brief overview of the methods we used for data collection and analysis. In section 3, we discuss the geographical distribution of the sentences, illustrating the markedness relations alluded to above as well as the “core” region where *needs washed* sentences are accepted. In section 4, we present our results in comparison to previously proposed dialect regions. In section 5, we discuss the effect of population density on the construction. In section 6, we briefly discuss the effect of race/ethnicity. Section 7 concludes.

2. Methods and Data

In this section, we provide a brief overview of the data that we analyze in this study. We discuss what kind of data was collected, how it was collected, and how it was analyzed. Much of the discussion here is quite abbreviated, and limited to the information the reader needs in order to understand the results presented in subsequent sections. For a much more detailed overview, see Zanuttini et al. (2018) and Wood et al. (2020b).

2.1 Survey Methods

The data presented here were collected in the form of online surveys which asked for acceptability judgments of sentences on a scale of 1 to 5. The survey instructions read as follows:

Informal, casual language can be different in different places. The goal of this survey is to find out about your language, and the language spoken where you live and where you grew up.

We are not interested in what is correct or proper English.

We are instead interested in what you consider to be an acceptable sentence in informal contexts. You will be presented with a sentence, or with a context plus a sentence. You will then judge the acceptability of that sentence on a scale of 1-5, with 1 being unacceptable and 5 being acceptable.

It may help to read each sentence aloud before giving your judgment.

Only the ends of the scale were labeled, where “1” was labeled as “Totally unacceptable, even in informal settings” and “5” was labeled as “Totally acceptable.”

The surveys consisted of about 45 sentences each, and about one-third of the sentences in each survey were controls. Each control sentence was intended to be grammatical or

¹See, however, Duncan (2021), who mentions our finding, but also provided attested examples with *love*, as well as *hate* and *deserve*. We have not yet investigated *hate* and *deserve*, or the other verbs that have occasionally been reported in the literature (see Strelluf 2022:42).

ungrammatical for all participants. The surveys of participants who failed the controls were not included in analysis. In addition to sentence acceptability judgments, participants provided demographic information, including information about where they grew up. We used this information for the geographic analysis discussed in this paper.

2.2 Data

Sentences with various versions of the *needs washed* construction were included on several surveys, and more specific details on each of these sentences can be found in Wood et al. (2020b). What is most relevant here is that three sentences in particular appeared repeatedly as pilot sentences:

- (F1049) Most babies like cuddled.
- (F1182) The baby wants picked up.
- (F1181) My car needs fixed.

In all, (F1049) was judged by 2479 participants, (F1182) by 1462 participants, and (F1181) by 912 participants. The rest of the sentences reported on in this paper were included in a single survey (listed as Survey 12 in Wood et al. 2020b), and each were judged by 551 participants.²

2.3 Geographic Analysis

In this section we describe the methods used in the geographical analysis below, including the software used, the tools used, and the parameters chosen. The software used to create maps detailing geographic distribution is ArcGIS Pro, a geographic information system used for analyzing and displaying data. In our case, we use ArcGIS Pro to map out the points and analyses related to acceptability judgements from our data. Once again, the discussion here is somewhat cursory, since we describe these methods in detail in other works, which are cited below. We focus here on the points that are different from those studies.

First, notice that many of the maps in this paper have various kinds of shading. This shading is based on an interpolation tool, which is a geostatistical method that estimates values for locations where no data has been collected. We use this tool to estimate acceptability ratings across the United States based on real acceptability ratings from our data. This is shown in our maps in various color schemes, where darker colors represent higher estimated acceptability ratings.

Second, some maps have red and blue borders drawn around the points in various regions. We refer to these as hot spot regions (for red) and cold spot regions (for blue). Hot spot regions show statistically significant clustering of high values, while cold spot regions show that of low values. We use hot spots analysis to determine which regions of the United States accept (or reject) a sentence or construction significantly more than other regions. The way the statistical test actually works is to test each point to see if it is a hot or cold spot. Then, we used various parameters to draw borders around contiguous sets of hot and cold spots, which we refer to as hot and cold spot regions.

The methods used to create the interpolation and hot spot regions in this paper are by and large the same as in Wood (2019), Wood et al. (2020a), Wood et al. (2020b), and Lioutikova (2021), with only a few minor differences. The main difference is that the parameters for drawing the hot spot regions were set differently, so we show the parameters we used explicitly on these maps. In addition, unlike in Wood et al. (2020b), we do not show three different borders for different statistical significance thresholds. Instead, we show one border, which is derived from the basic ArcGIS default threshold of $p < .1$. The overall result, however, is more or less the same, although the specific edges of the borders are of course slightly different.

Finally, the dots on the map represent the individual participants. The locations of the dots show the place that the participant reported as their primary childhood residence (where they grew up), and the color of the dot indicates the judgment they gave for the sentence in question (see the legends in the individual maps, since this varies somewhat across maps).

²Due to an error in the data, F1307 (*This baby would have really wanted carried*) was only judged by 550 participants.

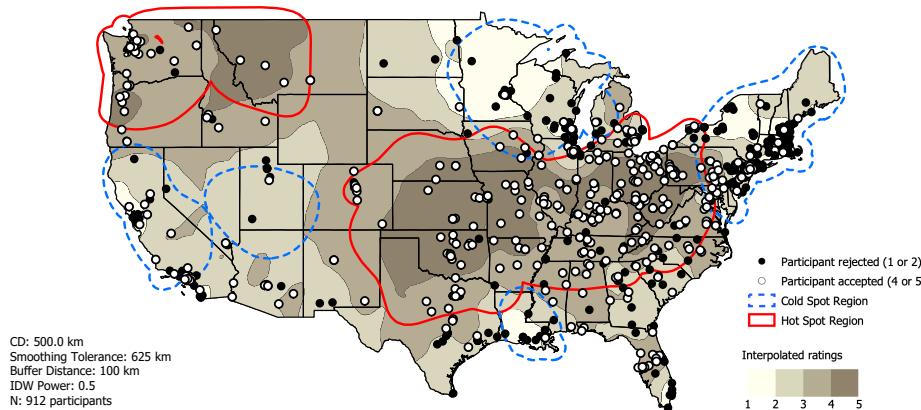
3. General Geographic Distribution

3.1 Hot Spot Region Overlap

The *car needs washed* and similar sentences are relatively common and well-attested versions of this construction. Sentence F1181, *My car needs fixed*, shows hot spots in the lower Midwest and upper South, as well as the Northwest. This sentence also exhibits cold spots in the Northeast, upper Midwest, California, and a small section of the lower South. This can be found in (1) below.³

- (1) F1181 My car needs fixed. (Hot and Cold Regions)

F1181: "My car needs fixed."



In this section, drawing inspiration from the methodology discussed in Lioutikova (2021), we present a way of looking at where the construction is most accepted across sentences. As discussed above, and shown in detail in the maps in Wood et al. (2020b), different *needs washed* sentences have statistically significant hot and cold spots in similar regions. But while the regions defined by contiguous hot and cold spots do overlap, they have different shapes, and the overlap is not perfect. In this section, we present some maps that show this overlap directly. This allows us to see what significant regions show up for only some of our sentences, and what regions show up for most or all of them.

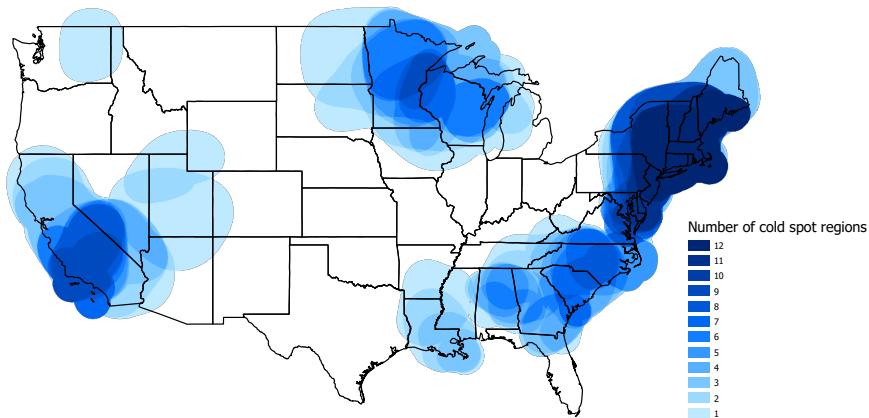
(2) shows the overlap of cold spot regions for each *needs washed* sentence.⁴ The “core” cold spot region for this construction appears in the Northeast, encompassing all of Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware, and Maryland, as well as large portions of Maine, New York, and Pennsylvania. The other main cold spot regions, in which multiple (but not all) cold spots overlap, lie in the Northern Midwest, the Lower South, and Southern California, with the faintest and smallest one in Washington. Conspicuously absent from the cold spot overlap is the regions sometimes referred to as the Midlands (see Murray and Simon 2006 for discussion), ranging from Western Pennsylvania in the East, and extending across Ohio, Indiana, Illinois, and beyond. (3) shows the overlap of hot spot regions for each *needs washed* sentence. Here we can see clearly that hot spot regions arise most commonly in the aforementioned Midland region, most of which was missing cold spots in the earlier maps. This map clearly has a lot of noise from overlapping hot spots in the central United States, areas where only one or two sentences were identified as part of hot spot regions.

³The hot spot regions on this map were generated using the False Discovery Rate (FDR) correction, to reduce the chances of false positives. See Wood et al. (2020b) for detailed discussion of the FDR.

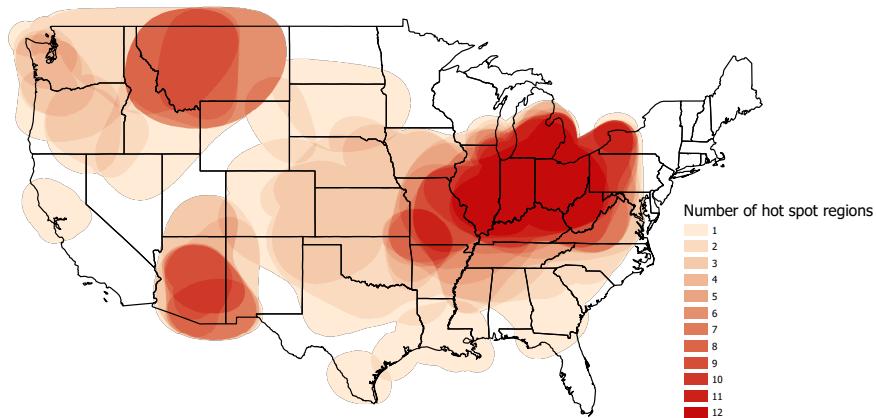
⁴This was created using the *Cell Statistics* feature, as described in more detail in Lioutikova (2021).

(2) Overlap of *Needs Washed* Cold Spot Regions

The "Needs Washed" Construction

(3) Overlap of *Needs Washed* Hot Spot Regions

The "Needs Washed" Construction

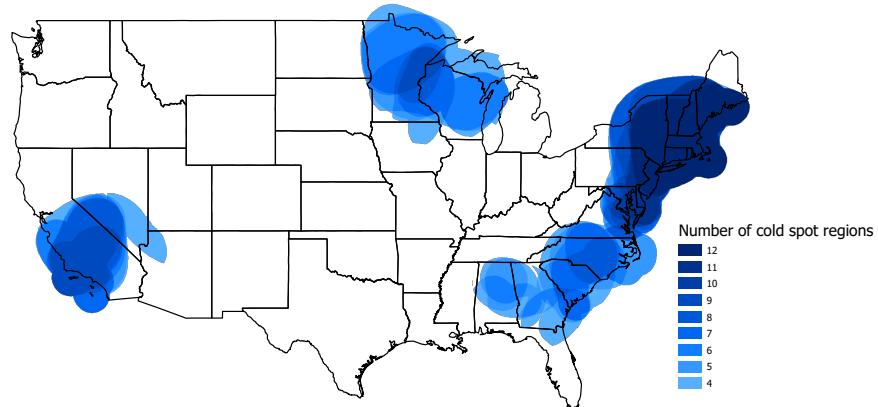


To allow for a clearer picture of the location of this construction's cold spot regions, (4) shows only the regions where four or more cold spots overlap, the number four being arbitrarily chosen. This condition eliminates the cold spot region in Washington, and shrinks the other main cold spot regions. The "core" cold spot region is still in the Northeast, and remains largely unshrunk when comparing between the original map and the focused one. (5) only shows regions in which four or more cold spots overlap, the number four once again chosen arbitrarily. From this map, we clearly identify the "core" hot spot region as encompassing most of the Midlands and the areas immediately around the Midlands. Specifically, this region encompasses almost all of Missouri, Illinois, Lower Michigan, Indiana, Kentucky, Tennessee, Ohio, and West Virginia. The other main hot spot regions are in the Northwest (Montana and Idaho) and the Southwest (Arizona). (6) combines the results of the two maps into one map. What is perhaps not immediately obvious is that the hot and cold spot regions overlap, where the hot spot regions are layered on top of the cold spot regions. So in reality, there is no sharp border between the hot spot regions and cold spot regions, even if it may appear this way visually. This reflects the fact that transition areas, for any given sentence, could end up in a hot spot region or a cold spot region.⁵

⁵Part of this has to do with how hot spot regions are constructed from individual data points, which does allow for some overlap; see Wood et al. (2020b). But we also believe that it does reflect a linguistic reality, where one place can be simultaneously part of two overlapping regions, if those regions are defined in different ways.

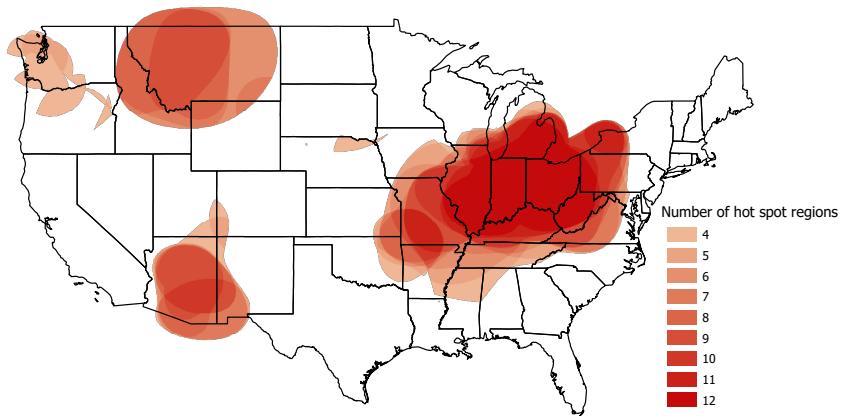
(4) A Focused Look at the Overlap of *Needs Washed* Cold Spot Regions

The "Needs Washed" Construction



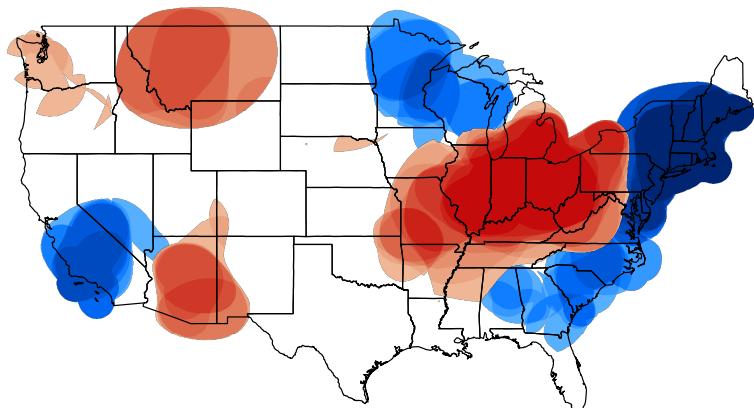
(5) A Focused Look at the Overlap of *Needs Washed* Hot Spot Regions

The "Needs Washed" Construction



(6) Overlap of *Needs Washed* Hot and Cold Spot Regions

The "Needs Washed" Construction



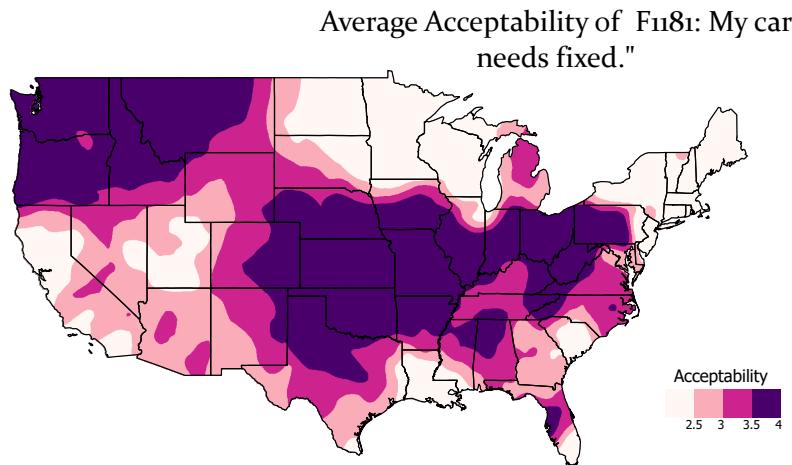
While maps of this sort naturally gloss over a lot of variation, they can serve as a very useful reference point, in a sense summarizing over a wide range of results to present a fairly coherent picture. Maps of this sort are useful because in this case, they visualize, essentially, results that were repeatedly replicated.

3.2 Interpolation overlap: Averaging by verb

One of the issues arising with this construction is what verbs, other than *need*, allow it. Murray and Simon (1999, 2002) identified the verbs *want* and *like*, which has been supported in later research. It has been claimed that there is an implicational hierarchy, such that speakers who accept *like* also accept *want*, and speakers who accept *want* also accept *need*, but that some speakers accept only *need* (and not *want* or *like*), and some accept only *need* and *want*, and not *like*. In our surveys, we also included sentences with the verb *love* in Survey 12. To see maps similar to (1) for each of the individual sentences we surveyed, see Wood et al. (2020b). In this paper, we go into the survey data in more detail, going beyond the results for single sentences.

In (7), we use interpolation to visualize the overall acceptability of *My car needs fixed* (see Wood et al. (2020a,b) for more discussion of interpolation).

- (7) F1181 My car needs fixed. (Average Acceptability)



This map shows that the areas that found (F1181) to be the most acceptable cover much of the Northwest and the Central United States, stretching into the Upper South and the Lower Midwest. The sentence was most rejected in New England and the Northeast in general, as well as in the Upper Midwest.

To compare the relative markedness of different verbs, we combined distinct interpolation maps of each of the verbs, averaging across them. The result is a map that shows the general distribution of the acceptability of the sentences for each of the verbs tested.⁶ Each map uses the same colors and ranges in its legend, to facilitate comparison of the verbs' markedness.

The average acceptability map for the construction when using *wants* is shown in (8). When using *want*, this construction is clearly more marked than with *need*. The region of greatest acceptance, again marked in dark purple, is now limited to Eastern Ohio and Western Pennsylvania. This area is surrounded by a region where speakers, on average, just the *want* sentences between a 3 and 3.5.⁷

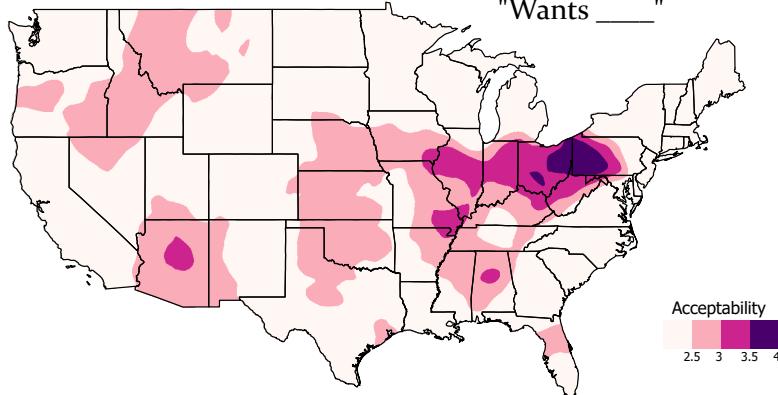
The use of *like* in this construction is even more marked, as we can see in the map in (9). There is no longer any dark purple present, meaning that across the entire United States, the average English speaker is unlikely to rate sentences using *like* as higher than a three. The area that accepts *like* the most is in magenta, mainly restricted to Ohio and Indiana. Similar to the previous maps, it has a small buffer region in the Lower Midwest.

⁶We created these maps using *Cell Statistics* to average predictions from the *IDW* tool. See Wood et al. (2020a) for more discussion of how this is done.

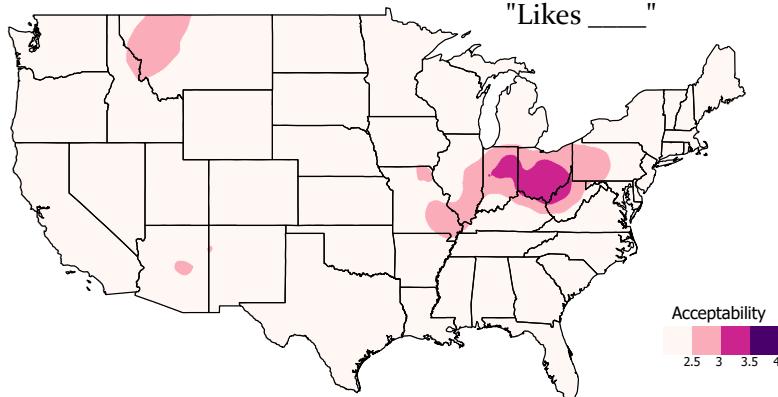
⁷We will see below, however, that the individual *want* sentences differ in their acceptability, which makes *want* in general seem more marked than it really is. Nevertheless, these differences are found across all of the *want*, *like* and *love* sentences, so the comparison across these verbs is still valid.

(8) *Needs Washed* Construction Using *Wants*. (Average Acceptability)

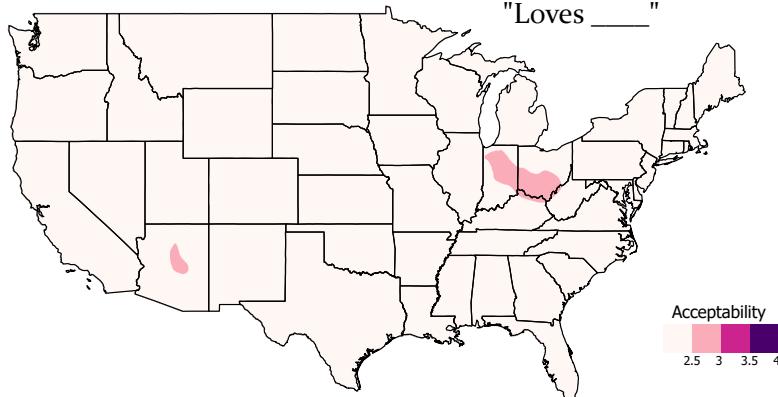
Average Acceptability of the "Needs Washed" Construction When Using
"Wants ____"

(9) *Needs Washed* Construction Using *Likes*. (Average Acceptability)

Average Acceptability of the "Needs Washed" Construction When Using
"Likes ____"

(10) *Needs Washed* Construction Using *Loves*. (Average Acceptability)

Average Acceptability of the "Needs Washed" Construction When Using
"Loves ____"



Finally, the use of *love* in this construction is the most marked of all, as we can see in the map in (10). This map is the lightest of all the verbs, meaning that it has the lowest average acceptance and is therefore the most marked. The highest average acceptance of the *love* sentences is between 2.5 and 3, and even this region is very small, only found in Indiana and Ohio, and possibly in Arizona. We will see, however, that there is nevertheless reason

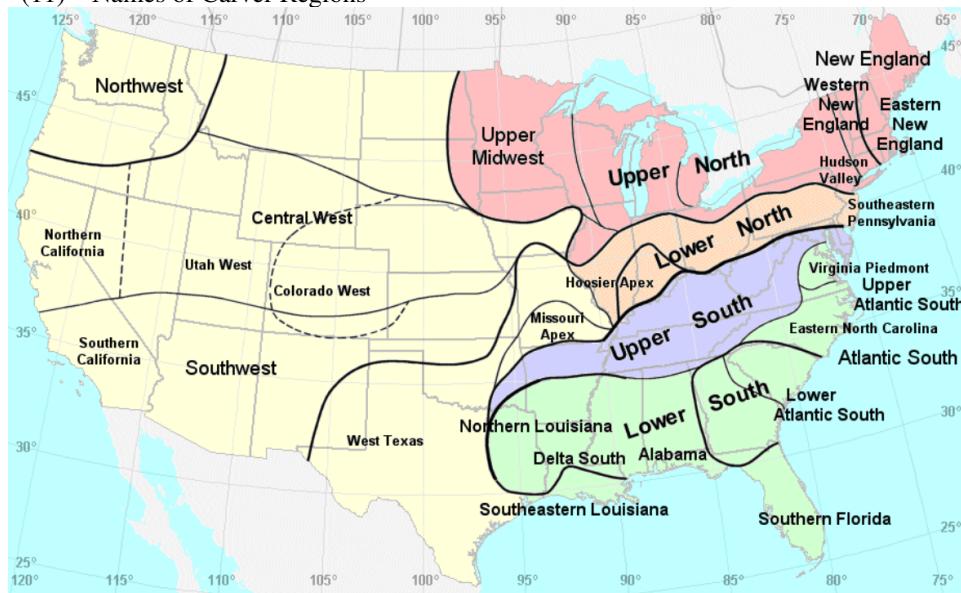
to believe that some speakers genuinely do accept *love* in this construction; but just as *like* is rarer and more marked than *need* and *want*, *love* is rarer and more marked than even *like*.⁸

Looking across these four maps, one can form general conclusions about the relative markedness of these verbs within the *needs washed* construction. Using the same legend on each map allows us to recognize that there is a clear progression of acceptance between verbs. In general, it seems that the hierarchy of acceptance is as follows: *need*>*want*>*like*>*love*. Additionally, the construction seems to exhibit a containment pattern; the region that most accepts each verb “zooms in” to the area highlighted on the *loves* map, finally focused in Indiana and Ohio. This suggests a core region where the construction is the most productive and accepted, with restrictions arising the further one gets away from this core region.

4. Comparison with Carver's Dialect Regions

In this section we present another way to look at the distribution of the construction across various dimensions. Instead of averaging across all the judgments in all the locations, we plot the distribution of speakers who judged all of the sentences of a particular sort at a score of at least 3. In order to understand the results, we have plotted them on maps that contain the borders for dialect regions proposed by Carver (1987). The names of these regions are shown in the map in (11). Of particular importance for use will be the Lower North and the regions around it, in particular the Upper North and Upper South. Our results will be consistent with Carver's claim that the border between the Upper South and Lower North is stronger and more fundamental than many of the other borders (which is reflected in Carver's “layering” approach to dialect mapping).

(11) Names of Carver Regions



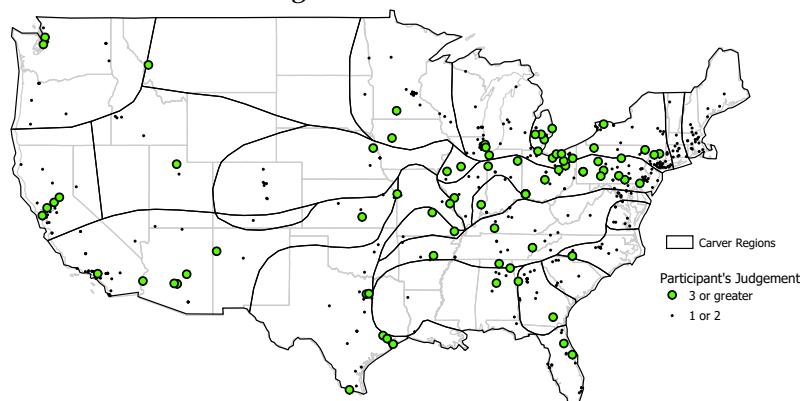
⁸Duncan (2021) speculated that this might be the case, and suggests that *hate* might be on par with *love* (or somewhere on the low end of the hierarchy). However, he also speculates that *deserve* might have a different status, since he himself accepts *deserve*, but rejects *like*, *love* and *hate*.

4.1 Maps by verb

Maps showing the distribution of participants who judged *needs washed* sentences headed by *want*, *like* and *love* are shown in (12), (13) and (14), respectively. In all of these maps, we see a clustering of participants in the Lower North and to some extent the Upper North as well. However, we also see gradually fewer speakers, overall, as we would expect. But crucial to the present point, there are still many speakers in the Lower North and Upper North regions who judge *needs washed* sentences with *love* as a 3 or above. So even though the average we saw earlier for *love* was quite low, this was because many people rejected it with very low judgments, a result that obscured the fact that many people do accept such sentences.

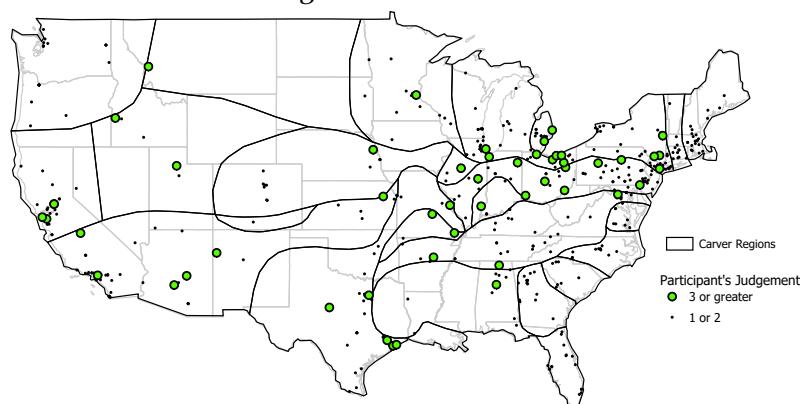
(12) Survey 12 Judging *Wants*: Carver Regions

Survey 12 Participants Who Judged "Needs Washed"
Sentences Using "Wants" as Three or Greater



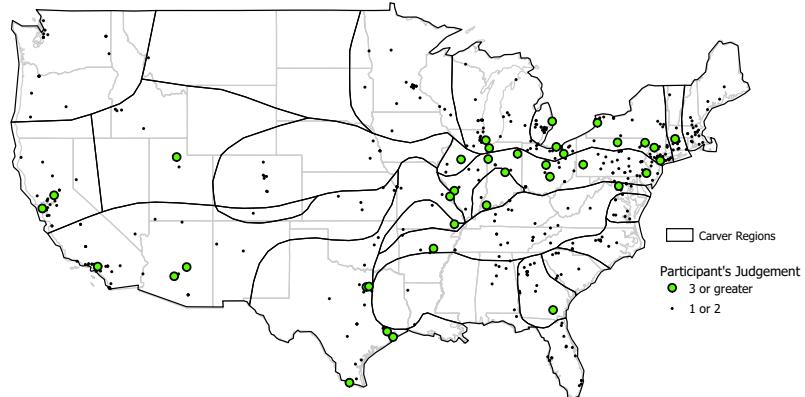
(13) Survey 12 Judging *Likes*: Carver Regions

Survey 12 Participants Who Judged All "Needs Washed"
Sentences Using "Likes" as Three or Greater



- (14) Survey 12 Judging *Loves*: Carver Regions

Survey 12 Participants Who Judged All "Needs Washed"
Sentences Using "Loves" as Three or Greater

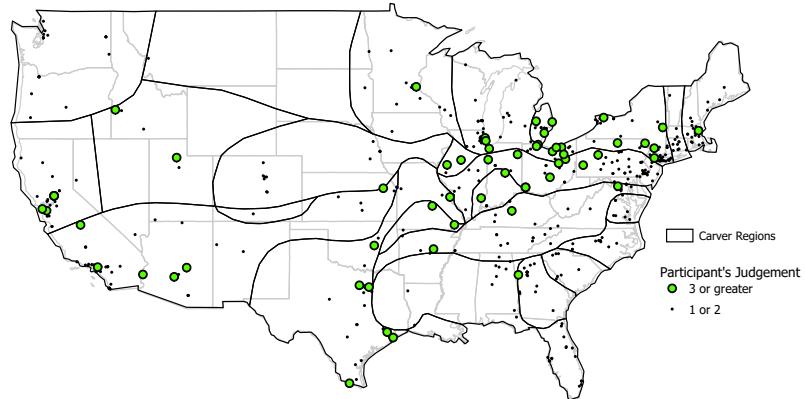


4.2 Maps by Tense and Modality

(15) shows the distribution of participants who judged present-tense *needs washed* sentences as three or higher. As we saw above, they are mostly in the Lower North and Upper North, with a large cluster in Northeastern Ohio. (16) shows the distribution of participants who accepted modal *needs washed* as three or greater. They are focused in the Lower North and Upper North. Again, in other regions those who accept these sentences are quite absent. (17) shows the distribution of participants who accepted counterfactual *needs washed* as three or greater. There are fewer such participants overall, especially outside of the regions where the construction is primarily found.

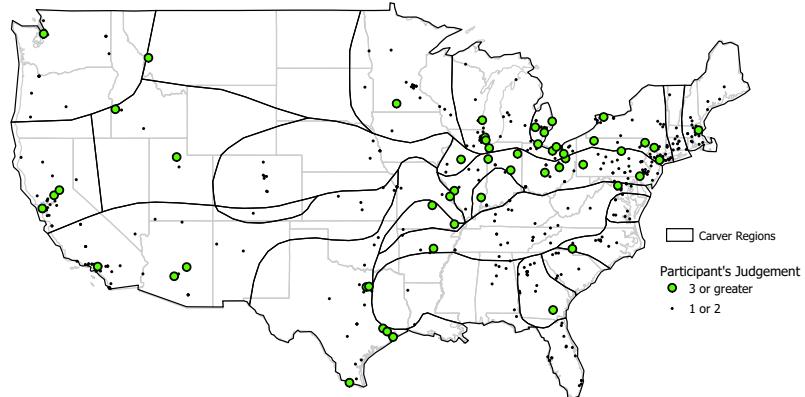
- (15) Survey 12 Judging Present Tense Sentences: Carver Regions

Survey 12 Participants Who Judged Present Tense
"Needs Washed" Sentences as Three or Greater



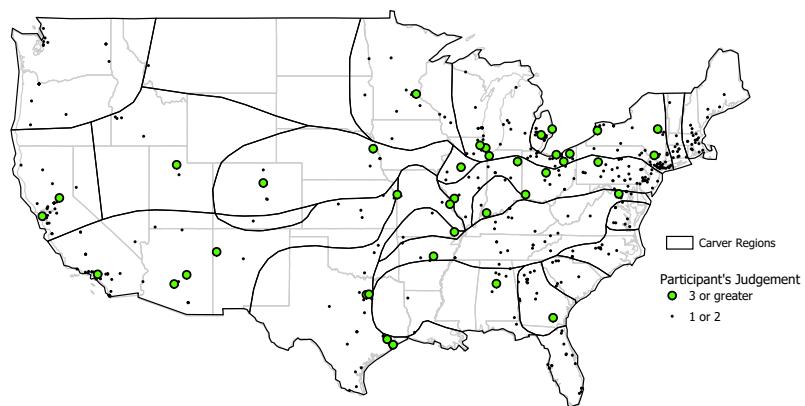
(16) Survey 12 Judging Modal Sentences: Carver Regions

Survey 12 Participants Who Judged Modal "Needs Washed" Sentences as Three or Greater



(17) Survey 12 Judging Counterfactual Sentences: Carver Regions

Survey 12 Participants Who Judged Counterfactual "Needs Washed" Sentences as Three or Greater



5. Urban, Suburban, Rural

One of the most striking results of the survey was the effect of population density. We conducted separate analyses of participant judgments on the basis of whether they were from an area that the census classified as rural, suburban, or urban. The overall result shows that while the regional patterns are broadly similar in all cases, they are the sharpest, with the least amount of intra-regional variation, in the rural areas, followed by the suburban areas, which are followed by the urban areas.

Consider the maps in (18)–(20), which show the results for sentence (F1181) *My car needs fixed*. In the map of the rural participants in (18), we see a clear hotspot region centering on the central midlands, as we have seen elsewhere in our results. What is striking, however, is that there are no exceptional participants within the hotspot region—none who reject the sentence. We also see the darkest shade of the interpolation in that region, indicating the highest acceptability ratings among those participants. Similarly, within the two cold spot regions there are very few who accept the sentence.⁹ In the map of the suburban participants in (19), we see somewhat more variation, as reflected in both the participants displayed on the map and the lighter interpolation pattern. Finally, we see the most variation in the map of the urban participants in (20), again reflected in the mixture of black and white dots and in the lighter and patchier interpolation pattern.¹⁰ Notice that even in areas where we do not see many participants who reject the sentence, the interpolation is still lighter and patchier, indicating that there is more variation in the area.

We see essentially the same pattern in the maps of (F1182) *The baby wants picked up* in (21)–(23), and (F1049) *Most babies like cuddled* in (24)–(26), except that the overall markedness of *want* and especially *like* is reflected in the overall lighter interpolation patterns and, in the case of *like*, more variation, even among rural participants. Admittedly, the distinction between rural and suburban participants is not always as sharp in these two sentences, particularly in the center of the region where the sentences are accepted most. Participants in Ohio, which stands at the center of the hot spot region in (21) and the rightmost hotspot region in (19), for example, seem to fully accept the sentence whether they are rural or suburban. But even in Ohio, we see more variation in the map of urban participants in (20). And if one looks overall across all regions, there is far more “interspersing” of black and white dots, and a far patchier interpolation pattern, as we go from rural to suburban to urban, indicating a sharper and more robust regional pattern in the rural areas, followed by suburban areas and then urban areas. It is perhaps worth emphasizing that this effect of population density is not the same in all places; it is not as though the construction is simply accepted in rural areas, regardless of region. The consistency of the rejection in the cold spot areas is also greater in the rural areas, showing that the effect of population density is less variation, whether that means an area is closer to universal acceptance or universal rejection.

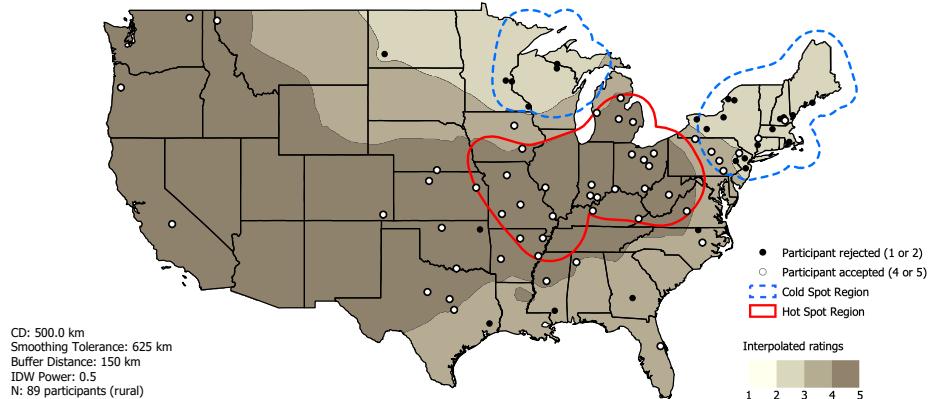
There is not much to say about the maps of (F1049) *Most babies like cuddled* in (24)–(26) that go beyond this, except that there is of course more rejection overall (as we have already noted), leading to a lighter and patchier interpolation and more variation in all regions. Factoring these things out, if we focus on the interspersing of black and white dots (which are more clustered and less interspersed in the rural map, but less clustered and more interspersed in the urban map), the uniformity vs. patchiness of the interpolation pattern (more uniform and less patchy in the rural map, less uniform and more patchy in the urban map), it is clear that we find essentially the same results here: the regional pattern is sharpest among the rural participants, followed by the suburban participants, followed by the urban participants.

⁹It would be reasonable to consider the acceptances in Pennsylvania and Northern New Jersey to not really be part of the cold spot region per se; they fall into that region only because of the spillover effect of the way the region is calculated. Notice, for example, how the hot and cold spot regions overlap in the map in (20). Put another way, they do not reflect variation within the core of that region; they reflect either a transition zone or are really part of the hot spot region.

¹⁰It is worth pointing out here that the hot and cold spot regions are larger in the urban map than in the others. This does not indicate that the construction is more widespread among urban participants. In fact, because the construction is rejected by more participants in the urban dataset, the threshold for an area to be “above average”—statistically higher than the rest of the mean—is lower. So in a sense, it is “easier” for an area to be a hotspot when there are more participants who reject a sentence.

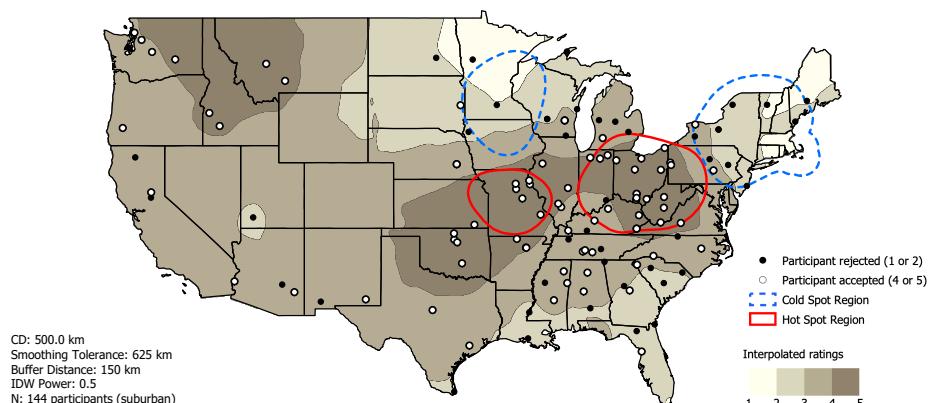
(18) F1181 My car needs fixed. (Rural Participants)

F1181: "My car needs fixed."



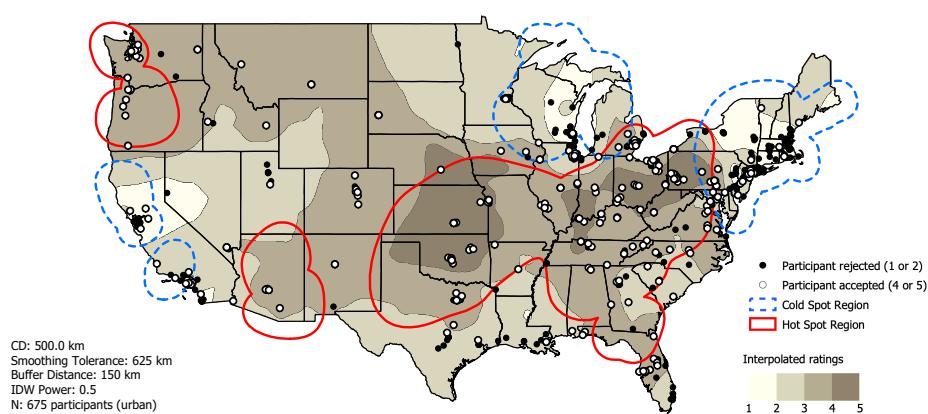
(19) F1181 My car needs fixed. (Suburban Participants)

F1181: "My car needs fixed."



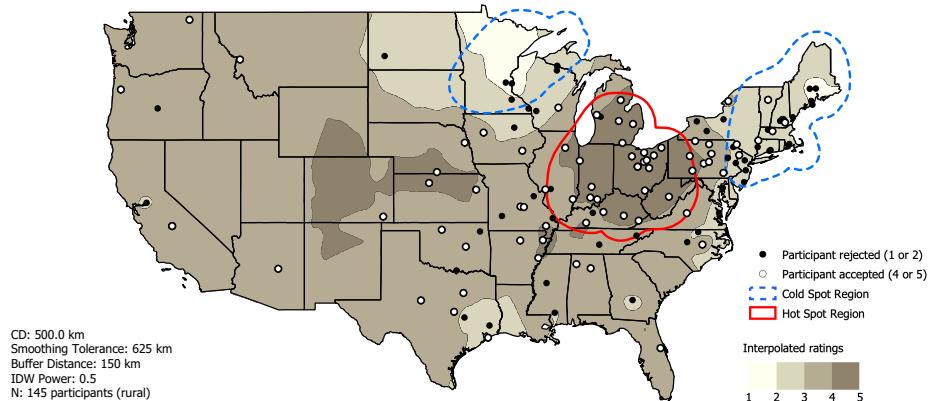
(20) F1181 My car needs fixed. (Urban Participants)

F1181: "My car needs fixed."



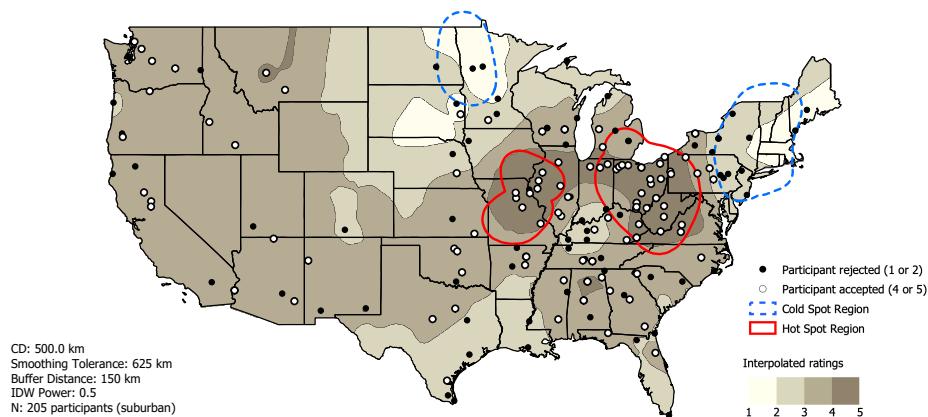
(21) F1182 The baby wants picked up. (Rural Participants)

F1182: "The baby wants picked up."



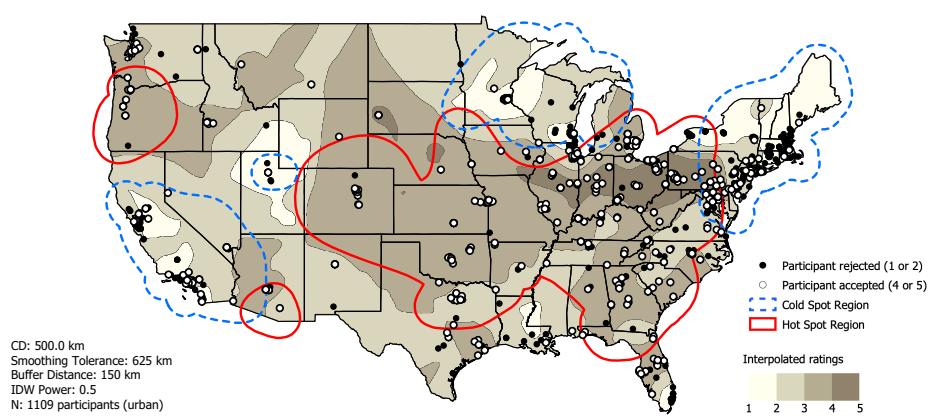
(22) F1182 The baby wants picked up. (Suburban Participants)

F1182: "The baby wants picked up."



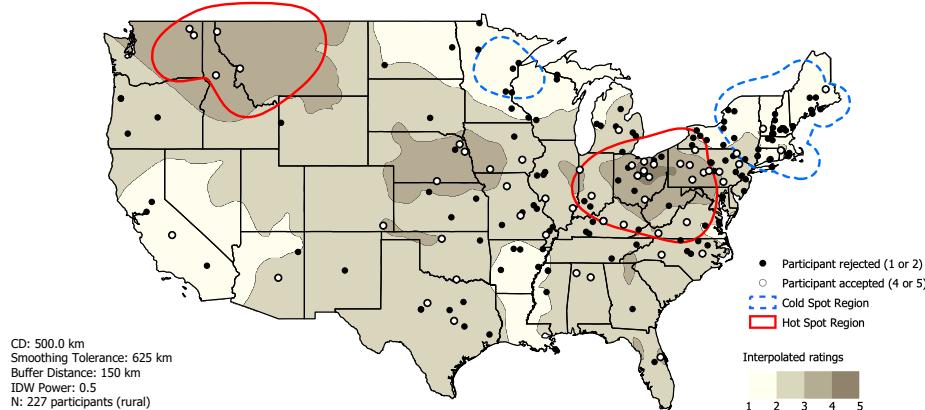
(23) F1182 The baby wants picked up. (Urban Participants)

F1182: "The baby wants picked up."



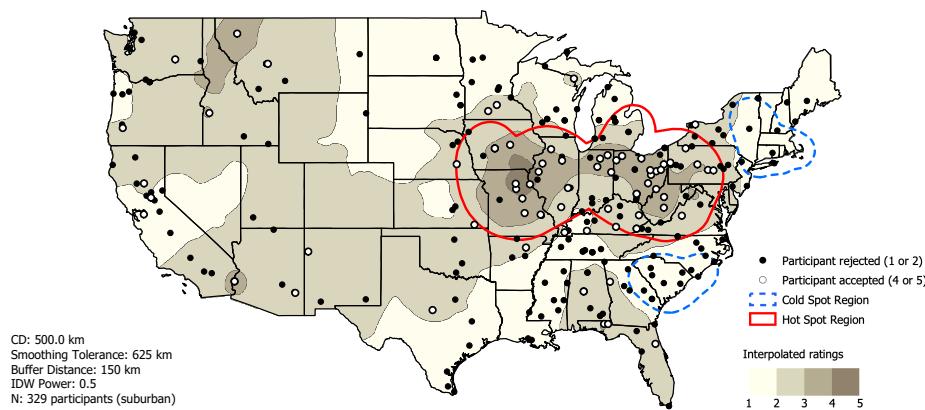
(24) F1049 Most babies like cuddled. (Rural Participants)

F1049: "Most babies like cuddled."



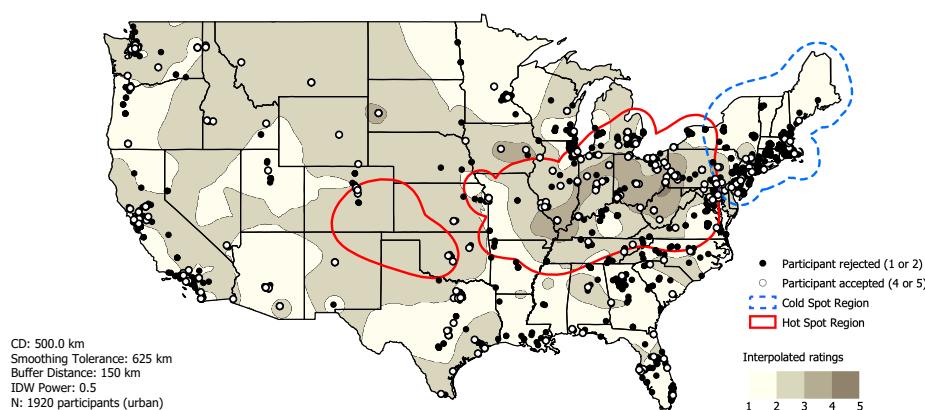
(25) F1049 Most babies like cuddled. (Suburban Participants)

F1049: "Most babies like cuddled."



(26) F1049 Most babies like cuddled. (Urban Participants)

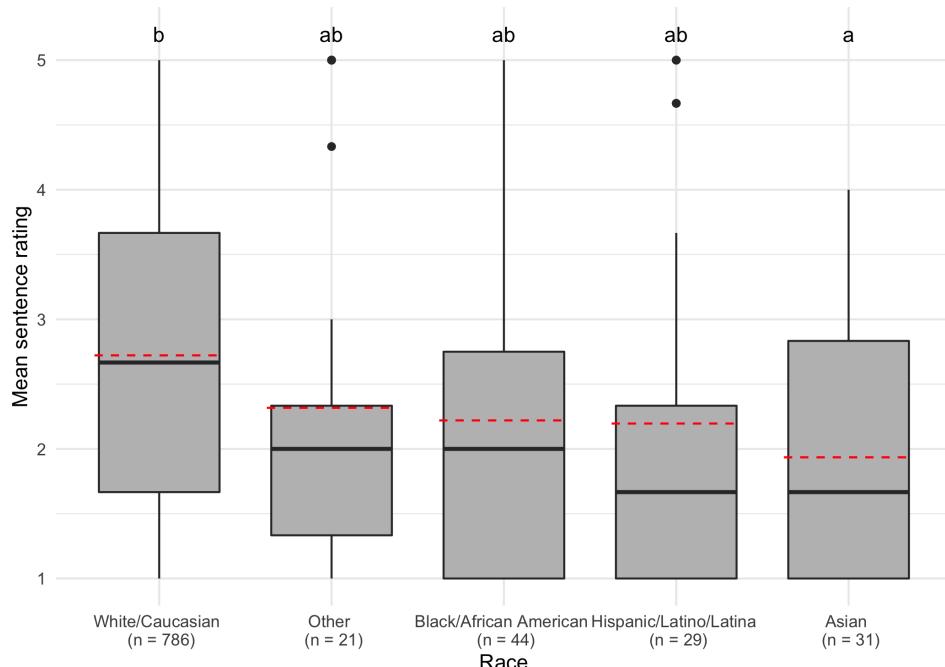
F1049: "Most babies like cuddled."



6. Race

In general, we do not have enough data from people who identify as races/ethnicities other than white to draw maps that depict any possible connection between race and geographical region. In this section we say just a few things about the effect of race on the acceptability of the construction on its own. Murray and Simon (1999, 2002) found that white speakers accept the *needs washed* construction with *want* and *like* more than those of other races, specifically Black speakers. (27) shows the average acceptance of F1181 and F1182 for each race/ethnicity for which we had sufficient data. This graph shows that white speakers accept these sentences more than speakers from any other race, which is consistent with the claims in Murray and Simon (1999, 2002). However, it is worth pointing out that the result is not categorical, and some speakers identifying as black do accept some of these sentences.

(27) Average Judgement of F1181 and F1182 by Race: Box and Whisker Plot



7. Conclusion

In this paper, we have presented several novel findings concerning the distribution of the *needs washed* construction across dialects of the U.S. First, by mapping the overlapping of hot and cold spots, we have provided a more precise characterization of where the construction is found and—just as importantly—where it is rejected. Second, we have shown how our results are consistent with previous results of the markedness relation between *need*, *want*, and *like*, but have also added *love* to the mix, showing that while it is the most marked of all, it is well attested in the core area of the construction. Third, we have shown that the areas where it is most accepted correspond closely to Carver's "Lower North" region and areas immediately surrounding that region to the North, but not nearly as much to the South. This is consistent with Carver's contention that the border between the Upper South and the Lower North is stronger or more fundamental than the other borders in that area. Fourth, we have shown that there is a strong effect of population density on the construction, where the regional patterns are the sharpest among rural participants. Finally, we briefly discussed the result showing that white speakers accept the construction more than speakers of other races, but that this result is not categorical.

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