

The Relationship Between State's Wellbeing and State's Housing Characteristics

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March 10th, 2020

GEOG 326 Mini Project

Introduction:

It is no longer thought that poverty is the result of one's own laziness or personal ineptitude, but rather the result of a multitude of factors that go beyond strictly economic reasons (Procoplo 70). The prevailing belief now is that a variety of sources that can be influential in causing poverty, including: Poor government infrastructure and ineffective federal programs aimed to improve social welfare, being born into disadvantageous situations outside the realm of an individual's control, and the rise of for-profit businesses that cannot simultaneously care for the wellbeing of the poor and the rich (Procoplo 70-74). I found the last point especially interesting as it accurately describes the current housing and economic state of metropolitan Seattle today: The economic growth of Seattle, which stems from the rise of large, for-profit companies such as Amazon and Microsoft, has resulted in visible changes in the housing characteristics and urban landscape. Furthermore, the economic growth has coincided with an increase in population that has difficulty making financial ends meet, particularly regarding home-ownership affordability. Seattle's economic growth has led to processes such as gentrification of historic neighborhoods, construction of new apartment buildings aimed to support Seattle's rising population, and an increase in homeless population through the recent years. Considering all these factors, it made me wonder to what degree does economic growth negatively affect societal health?

The purpose of this project is to determine if a relationship exists between a state's wellbeing and its housing characteristics. Specifically, we are aiming to answer the following research question: Are states with higher economic output more likely to include a lower percentage of their population under the poverty line? If so, how does this affect the state's housing characteristics? I will first examine the relationship between a state's economic output to its population below the poverty line to determine if economic output can be used as a measure a state's overall wellbeing. If the results are statistically significant, I will proceed to further analysis to determine how state wellbeing affects its housing characteristics. Finally, I will conclude by mentioning any implications this may have on large metropolitan areas, such as Seattle, moving forward.

This project is inspired to bring attention to difficulties amongst a subset of the population that can be categorized economically as the "working poor". The "working poor" was a term coined during the 1970s to describe people who work either full- or part-time, yet their total income falls below the poverty line (Glasmeir 66). Furthermore, when an individual making minimum wages must delegate a significant portion of their income to making rent payments, he or she could be described as suffering from rent burden, where they could be allocating more than a quarter of their monthly income of paying rent (Mitlin 62). In relation to Seattle, the increase in economic growth has ran parallel to increases in rent and home payments, and has made Seattle very expensive to live in for the working poor, who cannot afford to buy

a home and are more susceptible to falling under rent burden. This is important because people under rent burden are more vulnerable to unexpected shortcomings or changes in income or chance happenings that can negatively affect their livelihood, and possibly lead to a higher rate of eviction (Mitlin 146). Taking this into account, I aim to highlight the necessity that, despite increases in revenue and income for the state and a portion of its people, it is necessary to also maintain affordable and fair housing for all populations, and not just the top earners in the state. Failure to do so has the potential to drive state income inequalities wider, and may result in an increase in the percentage of population below the poverty line and an increase in the percentage of renters despite the prosperity of states economically.

Research Design and Data:

For this project, the observations used will include all 50 states and U.S. entities (the District of Columbia and Puerto Rico) for a total of 52 observations. 52 observations were chosen because this project focuses exclusively on the economic and housing profile in the United States rather than on a global scale. The dataset used to describe each U.S.-owned area's economic, social and housing profile was downloaded from the Canvas website, and was pre-determined to the year 1999. The variables used in this project to perform the three sets of analysis were: State's per capita income, state's percentage of population living below the poverty line, state's owner-occupied housing percentage, and state's renter-occupied housing percentage.

Rather than simply using income as the sole measurement of a state's wellbeing, I will first compare a state's per capita income to its percentage of population living below the poverty line to see if economic success correlates to social wellbeing. If a greater economic output results in a lower percentage of population below the poverty line, then I will feel comfortable using per capita income as a measure of social and economic wellbeing for my analysis in this project. Before performing any analysis, I hypothesize that state's with higher per capita income will feature a lower percentage of their total population that are living under the poverty line based on the idea that states with higher economic output are the result of greater access to resources that are deterrents of poverty, such as quality education, lower rates of unemployment, efficient government and public policy structure, etc. (Procopio 70-74)

If the correlation between the two variables is found to be statistically significant, we will move on to perform a second set of analysis that compares the wellbeing of each state to its housing characteristics. In this set of analysis, we will be comparing state's per capita income to its percentage of housing that is occupied by renters. Likewise, we will also run a similar set of analysis that compares each state's per capita income to its percentage of housing that is owner-occupied. Doing so will allow us to gain a more complete understanding of the housing profile of each state, and to determine if a correlation is found

between each state's wellbeing and housing data. Before running this analysis, my hypothesis is that states with higher per capita income will feature a higher proportion of their population that are owners of their housing units, and a lower percentage of their population that are renters. This hypothesis is based on the idea that as the income per person is greater, more people are able to afford and allocate a greater amount of money towards purchasing a private home, whereas if the income per person were lower, then less money would be available for home-purchasing purposes.

All the states that were found in the dataset were pre-determined to be matched pairs corresponding to their economic, social, and housing profile. Therefore, we are to assume a linear relationship exists between the 4 variables used in our analysis. Because we are assuming a linear relationship does exist and are interested in the absolute values of each variable rather than their rank, I believe that using Pearson's correlation is most suitable for the purposes of this project. Finally, we will set the significance level to 0.05 with a degree of freedom of 50, and will be using a two-tailed test to see if either a positive or negative effect exists.

Analysis and Major Findings:

The results of my findings after performing the three sets of previously described are summarized in Table 1. Setting the significance level to 0.05 and the degrees of freedom to 50, the critical value for each method of analysis was set to either greater than/equal to .273 or less than/equal to -.273.

When analyzing per capita income vs. percentage of population living below poverty in each state, we determined a Pearson's correlation of $-.65577$. Since the Pearson's correlation is less than the critical value of $-.273$, we can say that the relationship between the two variables is statistically significant. Based on this analysis, we can conclude that there is a moderately negative, linear relationship between a state's economic output and its social well-being, meaning that as the per capita income in each state increases, the percentage of population living below the poverty line in the same state tends to decrease (Figure 1). Based on the result, we will conclude that per capita income is an indicator of a state's wellbeing, and will use this metric to proceed with further analysis.

When analyzing per capita income vs. state's owner-occupied housing percentage, I calculated a Pearson's correlation of $-.50248$, which also indicated a moderately negative linear relationship between the two variables that was statistically significant. This means that there is a negatively inverse relationship between a state's economic output and its percentage of population that are homeowners: As per capita income of a state increases, the percentage of the state's population that are homeowners is shown to decrease slightly (Figure 2 and 3).

Finally, performing our third set of analysis between per capita income vs. state's renter-occupied housing percentage reveals a Pearson's correlation of .502476, which indicates a moderately positive linear relationship between the two variables. The findings of this analysis indicate that an increase in a state's per capita income also results in an increase in the percentage of population that are renters (Figure 4 and 5).

Conclusion and Discussion:

The purpose of this project was to determine if there existed a relationship between a State's wellbeing and its housing characteristics. To determine this relationship, we performed 3 sets of analysis between the following variables:

- Per Capita Income vs. Population Below Poverty Line
- Per Capita Income vs. State's Owner-Occupied Housing Percentage
- Per Capita Income vs. State's Renter-Occupied Housing Percentage

Before performing the analysis, I created hypothesis for each of the three sets of analysis. First, I hypothesized that states with higher per capita income would feature a lower percentage of their population below the poverty line because states with higher economic output are a result of having greater access to resources that deter poverty from forming. The findings of my analysis supported my hypothesis and for the purposes of this project, it could be used to support the notion that a state's economic output also influences its social wellbeing as well.

Next, I hypothesized that a state's wellbeing has a relationship between its housing characteristics, specifically mentioning that state's with higher per capita income would feature a greater percentage of its population as homeowners rather than renters. However, the findings of my analysis have indicated the opposite relationship between the two variables: As economic output of a state increases, the percentage of housing occupants that are homeowners actually decreases slightly, and instead, the percentage of housing occupants that are renters increases.

One potential explanation that can explain this finding is that more variables may be in play that influence whether people choose to either rent or buy a home outside of strictly higher Per Capita Income. An example of a variable relevant to the greater Seattle region that can explain the differences in housing characteristics is population growth. Economic growth produced by large, for-profit businesses has made Seattle an attractive, potential destination for out-of-state residents. As such, if workers from other states relocate to Seattle to obtain jobs at these large corporations for more economic opportunities, they may choose to rent rather than purchase a home for the first few years that they are in Seattle because they are

unsure if they will be long-term residents of Seattle. Another possible explanation to explain the rise in percentage of renters may be that as per capita income increased, so too has cost of living in each State, which includes housing costs. Therefore, the increased cost of living and the increase in home ownership costs can act as a deterrent in encouraging people to buy homes, and instead may act as an incentive to rent instead.

In relation to the social implications, the findings of this project encourage a multi-faceted approach when trying to find a relationship between economic output and housing characteristics amongst U.S. states. Statistics have shown that since the 1980s, economic growth in the United States has also resulted in an increase in income inequality as well (Glasmeir 1). From a business perspective, it makes sense to raise home and rental prices in response to an increase in Per Capita Income to maximize profits. However, it is also important to keep in mind that not all populations have experienced equal increases in Per Capita Income over the years. Instead, I would argue that the main beneficiaries of the increase in Per Capita Income over the years have been those least susceptible to falling below the poverty line in the first place. Should housing affordability continue to rise in response to an increase in per capita income, then I would suspect the percentage of renters and population below the poverty line will only increase, and that the overall wellbeing of states will decrease despite more economic growth. Should any unforeseen financial difficulties or burdens arrive, then I believe that these groups of people will be the most vulnerable to these events.

For a more complete picture, future projects that undertake similar ventures as this project should search for relationships between variables outside of purely economic measurements that potentially influence the housing characteristics of a state, such as population size. Furthermore, data that includes a more recent time scale, as well as change over time, could be utilized to gain a better understanding of the variables that affect the housing characteristics of a state in the present day.

Literature Cited:

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Mitlin, Diana, and David Satterthwaite. "Urban Poverty in the Global South." *Google Books*, Google, books.google.com/books?hl=en&lr=&id=GYdeNdKrp8sC&oi=fnd&pg=PP2&dq=poverty%2Band%2Brenting%2Busa&ots=jrwz8s_7DG&sig=ilJeiNXpjeSzO3Q5JEYEjnvXP1M#v=onepage&q=rent&f=false.

Procoplo, Mariellen, and Frederick Perella. "Poverty Profile USA." *ERIC*, 30 Nov. 1975, eric.ed.gov/?id=ED137421.

Figure 1: Per Capita Income vs. % of Population Below Poverty Line, 1999

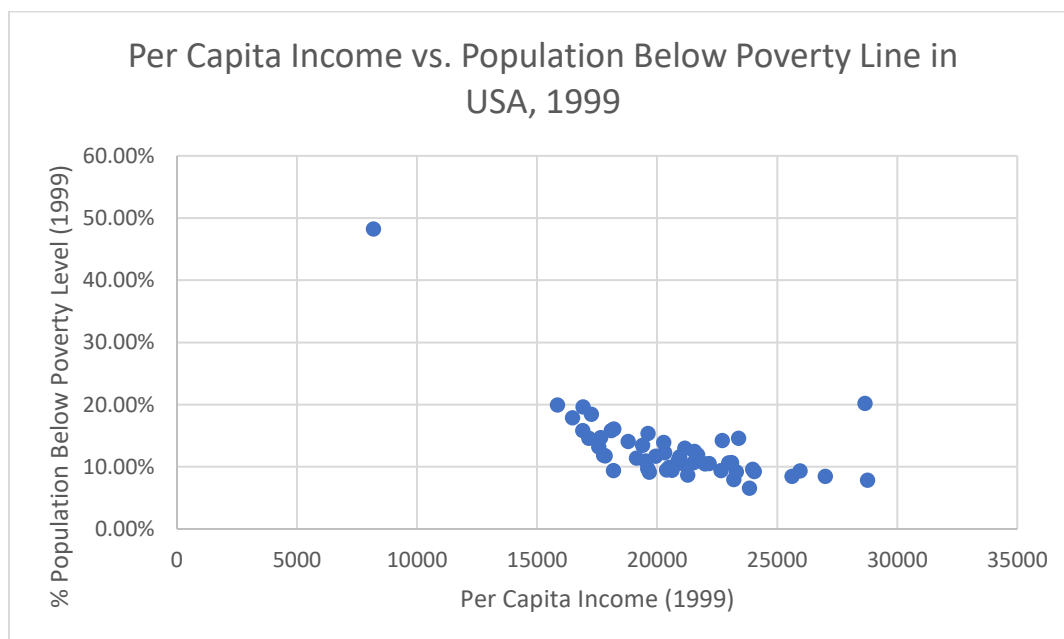


Figure 2: Per Capita Income vs. % Housing Owner-Occupied, 1999

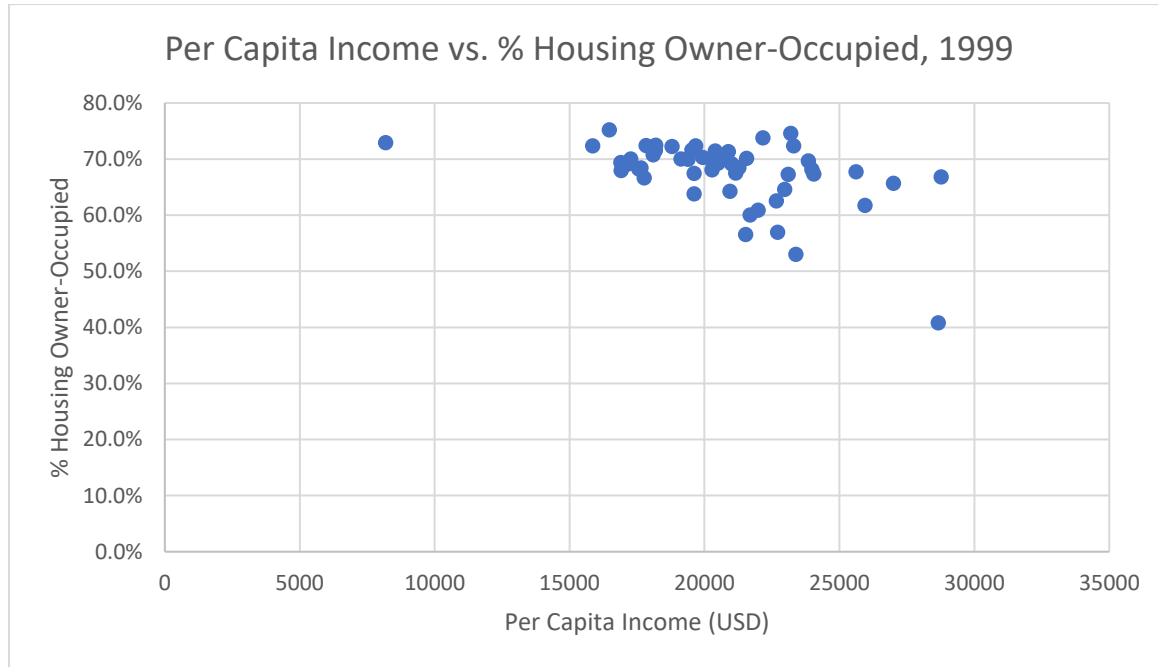


Figure 3: Per Capita Income vs. % Housing Owner-Occupied Rank, 1999

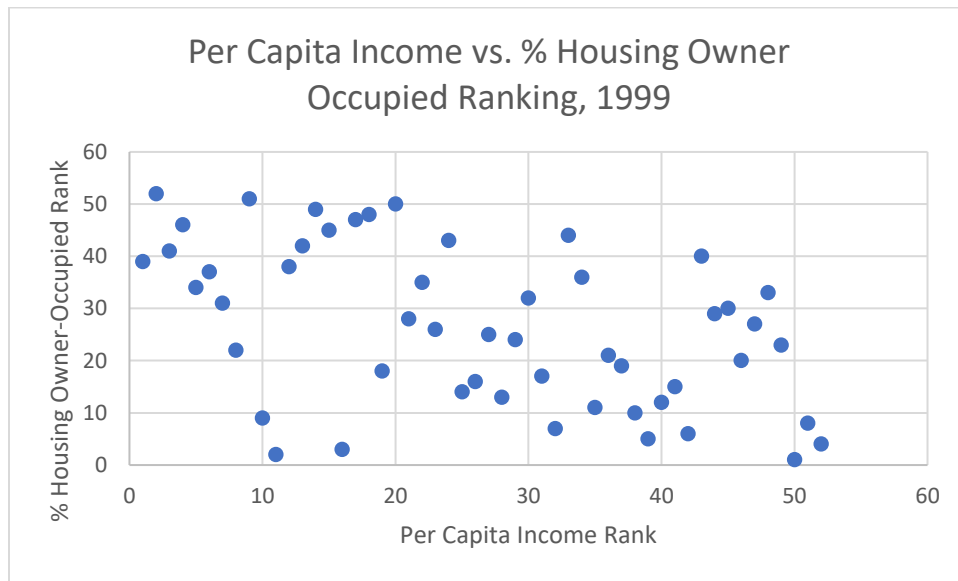


Figure 4: Per Capita Income vs. % Housing Renter-Occupied, 1999

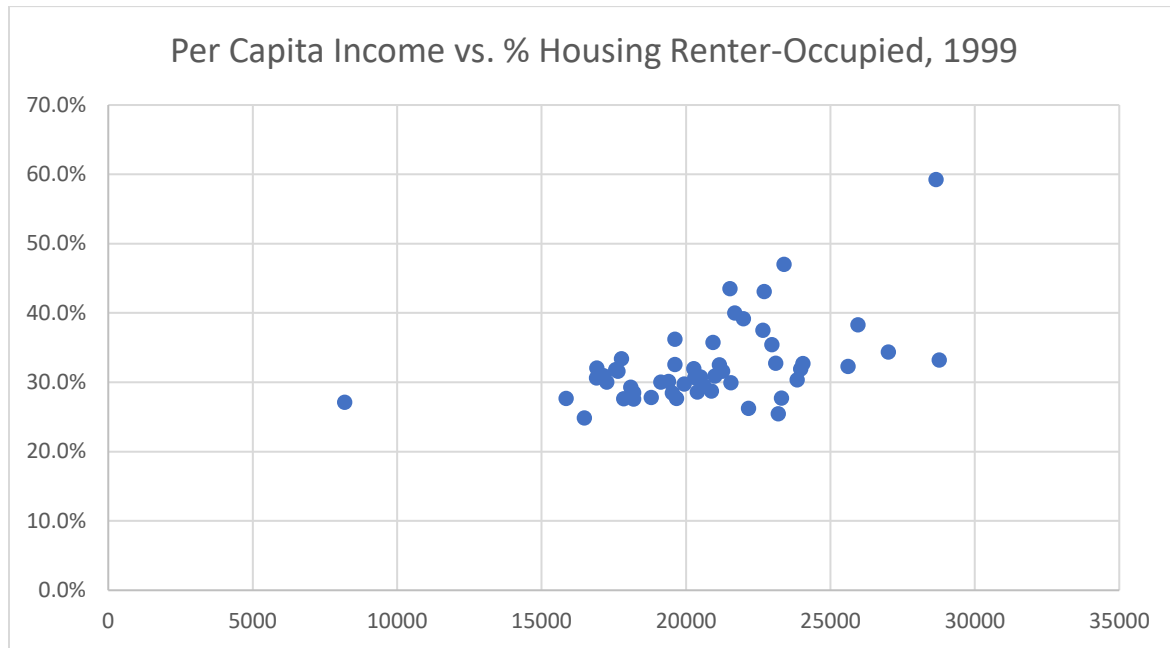


Figure 5: Per Capita Income vs. % Housing Renter-Occupied Rank, 1999

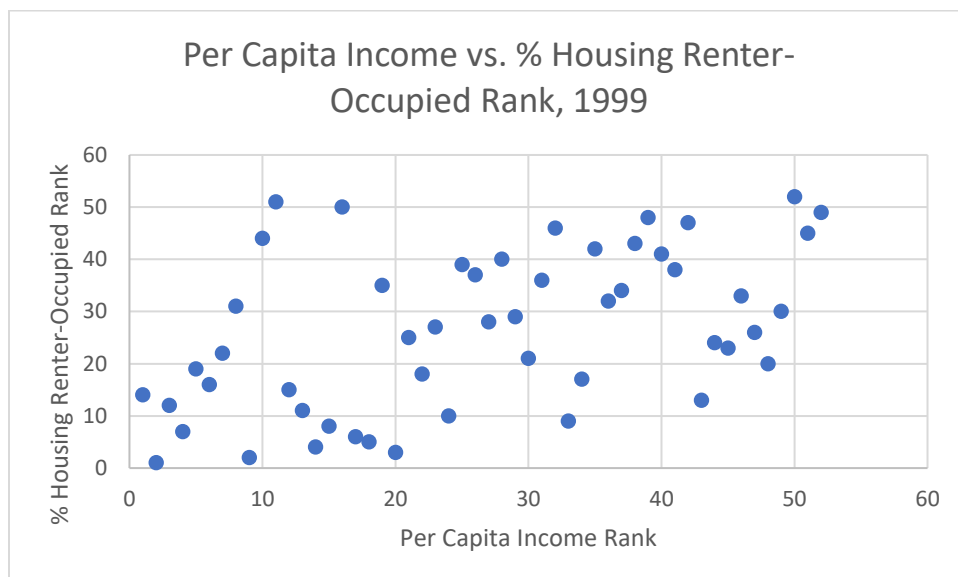


Table 1: Analysis Findings

	Per Capita Income vs. % Pop. Below Poverty	Per Capita Income vs. % Owner Occupied	Per Capita Income vs. % Renter Occupied
Pearson's Correlation:	-.65577	-.50248	.502476
Correlation Strength:	Moderate Negative	Moderate Negative	Moderate Positive
Linear Relationship?	Yes	Yes	Yes
Significance:	$-.65577 < -.273 =$ Statistically Significant	$-.50247 < -.273 =$ Statistically Significant	$.502476 > .273 =$ Statistically Significant

Table 2: Collection of Data Used

Geography	Per capita income in 1999 (US\$)	% Population below poverty level 1999	Occupied housing units: Owner occupied	Occupied housing units: Renter occupied
Alabama	18189	16.10%	72.5%	27.5%
Alaska	22660	9.40%	62.5%	37.5%
Arizona	20275	13.91%	68.0%	32.0%
Arkansas	16904	15.84%	69.4%	30.6%
California	22711	14.22%	56.9%	43.1%
Colorado	24049	9.26%	67.3%	32.7%
Connecticut	28766	7.86%	66.8%	33.2%
Delaware	23305	9.21%	72.3%	27.7%
District of Columbia	28659	20.22%	40.8%	59.2%
Florida	21557	12.51%	70.1%	29.9%
Georgia	21154	12.99%	67.5%	32.5%
Hawaii	21525	10.70%	56.5%	43.5%
Idaho	17841	11.77%	72.4%	27.6%
Illinois	23104	10.68%	67.3%	32.7%
Indiana	20397	9.49%	71.4%	28.6%
Iowa	19674	9.13%	72.3%	27.7%
Kansas	20506	9.90%	69.2%	30.8%
Kentucky	18093	15.82%	70.8%	29.2%
Louisiana	16912	19.64%	67.9%	32.1%
Maine	19533	10.92%	71.6%	28.4%

Maryland	25614	8.49%	67.7%	32.3%
Massachusetts	25952	9.34%	61.7%	38.3%
Michigan	22168	10.53%	73.8%	26.2%
Minnesota	23198	7.94%	74.6%	25.4%
Mississippi	15853	19.93%	72.3%	27.7%
Missouri	19936	11.74%	70.3%	29.7%
Montana	17151	14.61%	69.1%	30.9%
Nebraska	19613	9.71%	67.4%	32.6%
Nevada	21989	10.48%	60.9%	39.1%
New Hampshire	23844	6.55%	69.7%	30.3%
New Jersey	27006	8.50%	65.6%	34.4%
New Mexico	17261	18.44%	70.0%	30.0%
New York	23389	14.59%	53.0%	47.0%
North Carolina	20307	12.28%	69.4%	30.6%
North Dakota	17769	11.86%	66.6%	33.4%
Ohio	21003	10.60%	69.1%	30.9%
Oklahoma	17646	14.72%	68.4%	31.6%
Oregon	20940	11.61%	64.3%	35.7%
Pennsylvania	20880	10.98%	71.3%	28.7%
Rhode Island	21688	11.94%	60.0%	40.0%
South Carolina	18795	14.11%	72.2%	27.8%
South Dakota	17562	13.18%	68.2%	31.8%
Tennessee	19393	13.48%	69.9%	30.1%
Texas	19617	15.37%	63.8%	36.2%
Utah	18185	9.40%	71.5%	28.5%
Vermont	20625	9.44%	70.6%	29.4%
Virginia	23975	9.59%	68.1%	31.9%
Washington	22973	10.62%	64.6%	35.4%
West Virginia	16477	17.90%	75.2%	24.8%
Wisconsin	21271	8.66%	68.4%	31.6%
Wyoming	19134	11.42%	70.0%	30.0%
Puerto Rico	8185	48.24%	72.9%	27.1%