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IMGIS
28 June 2021
Lab 4

Creating Qualitative and Quantitative Map Compositions

Objective: The purpose of this lab was to pratice representing both qualitative and quantitative data, joining spatial data between layers and displaying the information of those joined layers.

Figures:

Figure 1. (DiMaioG_Lab4_ Map-A). Major Cities of the Contiguous United States. This map highlights several major US cities of the lower 48 and uses different symbols to identify the National Capital, State Capitals, and other cities.

Figure 2. (DiMaioG_Lab4_ Map-B). Comparing Populations of Major Cities of the Contiguous United States. This map identifies the same cities as in Figure 1 using a black circle symbol in varying sizes to demonstrate different population sizes of each city.

Figure 3. (DiMaioG_Lab4_ Map-C). The Contiguous United States. This map identifies each of the lower 48 states of the US.

Figure 4. (DiMaioG_Lab4_ Map-D). Regions of the Contiguous United States. This map divides the lower 48 states in to four distinct geographic regions.

Figure 5. (DiMaioG_Lab4_ Map-E). 2012 US Presidential Election Results by State. This map reveals the winning presidential candidate by state with Democratic states in blue and Republican states in red.

Figure 6. (DiMaioG_Lab4_ Map-F). 2012 US Presidential Election Results by State Pie Charts. This map associates each state with a pie chart identifying the proportions of votes for each candidate in that state.

Figure 7. (DiMaioG_Lab4_ Map-G). 2012 US Presidential Election Results by State Population. This map reveals both the porportion of total votes in each state and proportion of votes attributed to each candidate.

Figure 8. (DiMaioG_Lab4_ Map-H). 2012 US Presidential Election Percentage State Votes for Obama. This map uses a gradient to reveal the percentage of the population in each state who voted for Obama with the darker the color corresponding to more votes.

Figure 9. (DiMaioG_Lab4_ Map-I). 2012 US Presidential Election Percentage State Votes for Romney. This map uses a gradient to reveal the percentage of the population in each state who voted for Romney with the darker the color corresponding to more votes.

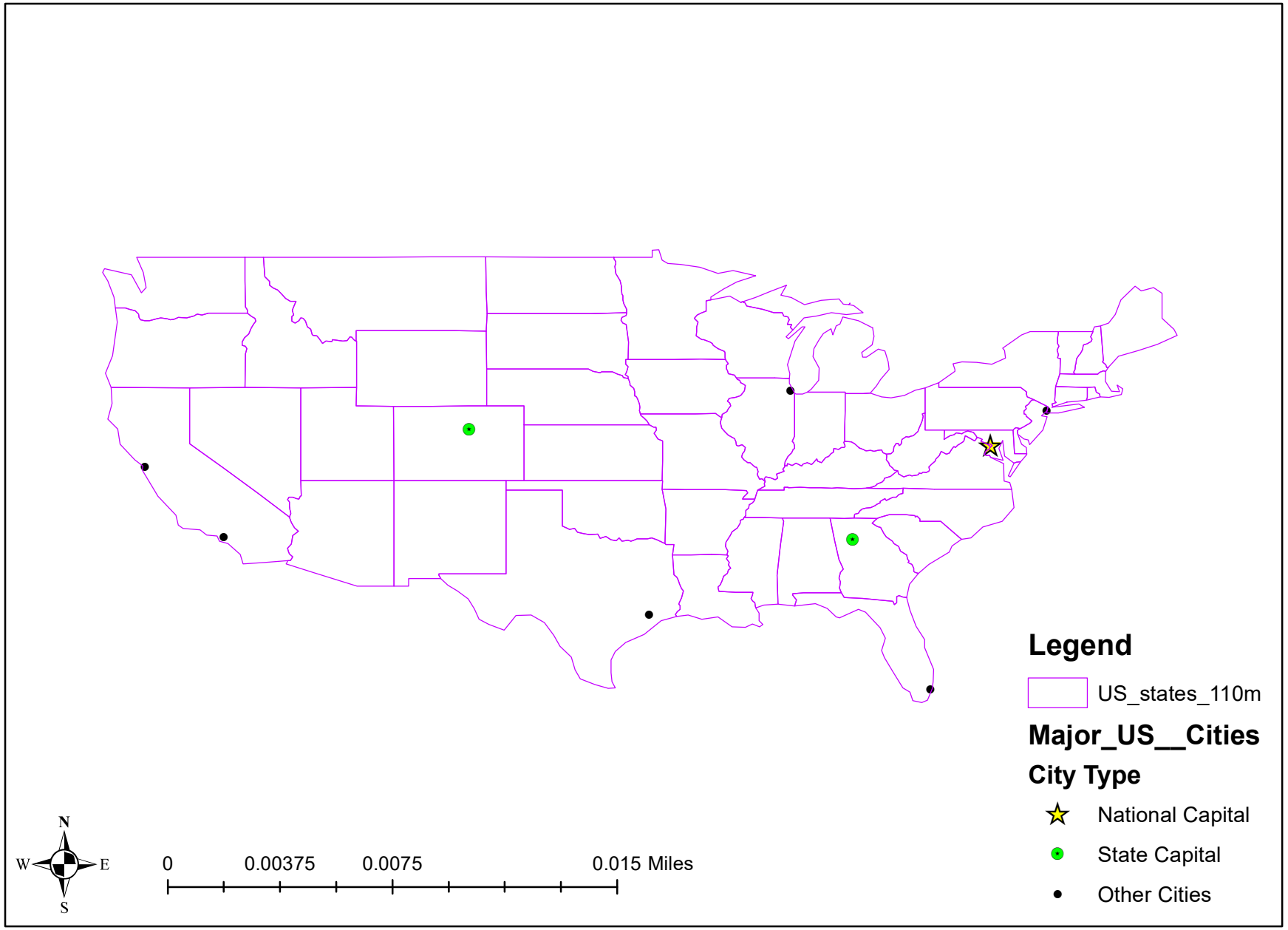
Questions:

1. Formatting symbology in ArcGIS can be done in a variety of ways which starts by right clicking on a particular layer of interest, selecting Properties, and opening up the Symbology tab. Features using the same symbol can be editted by showing an outline, solid fill, and changing colors – which can be used to highlight the United States and it's cities, etc. Different categories in a layer can also be formatting by changing the appearance of individual values – for example coloring Republican states red, and Democratic states blue. Quantities can also be represented when formatting symbology in a quantitative map by selecting a particular value (field) to focus on – such as when representing votes in an election or populations of a city. This can be represented as a gradient or in proportions and colors can be utilized here as well. Additionally, pie charts can be used to make comparisions of quantitative data in a particular area as well – comparing Democrat and Republican votes by state.

2. Map A represents qualitative data as it is showing major US cities and classifies them based on city type. Map B represents quantitive data as it points out major cites but more importantly represents their populations using different size symbols for each city. Map C is definitely qualitative as it assigns a different color to identify each of the lower 48 states. Map D is also qualitative as it divides the lower 48 into four different geographic regions. Map E is qualitative as it simply represents which presidential candidate won over each state in the 2012 election. Map F is quantitaive as each state is assinged a pie chart showing a rough proportion of votes for the two candidates in each state. Map G is quantitave as it shows proportions based both of the states total populations and proportion of candidate votes. Map H and Map I are also both quantiative as the show gradients of votes for each candidate in each state revealing what percentages of votes were for that particular candidate.

3. Each map definitely paints a different picture and each map is necessary to get an understanding of how the lower 48 states voted in the 2012 election. It reveals information about voting patterns in geographic regions and individual state populations as well – or more specifically total voter turnout in each state. In Map E which divides the red states and blue states it appears that the election was very close or almost evenly split. It also shows that the Northeast and Pacific Coast voted mainly democrat while the South and Midwest voted mainly Republican. However it does not give a great idea of population or proportion of votes like in Maps E – I. Map F showing the proportion of votes in each state that went towards each candidate by Map G more clearly represents which states contributed more votes than others. The gradients in Maps H and I are also very interesting as it shows percentages of votes for each candidate. Some states voted strongly for one side, while others appeared to not clearly favor one candidate over the other.

Major Cities of the Contiguous United States



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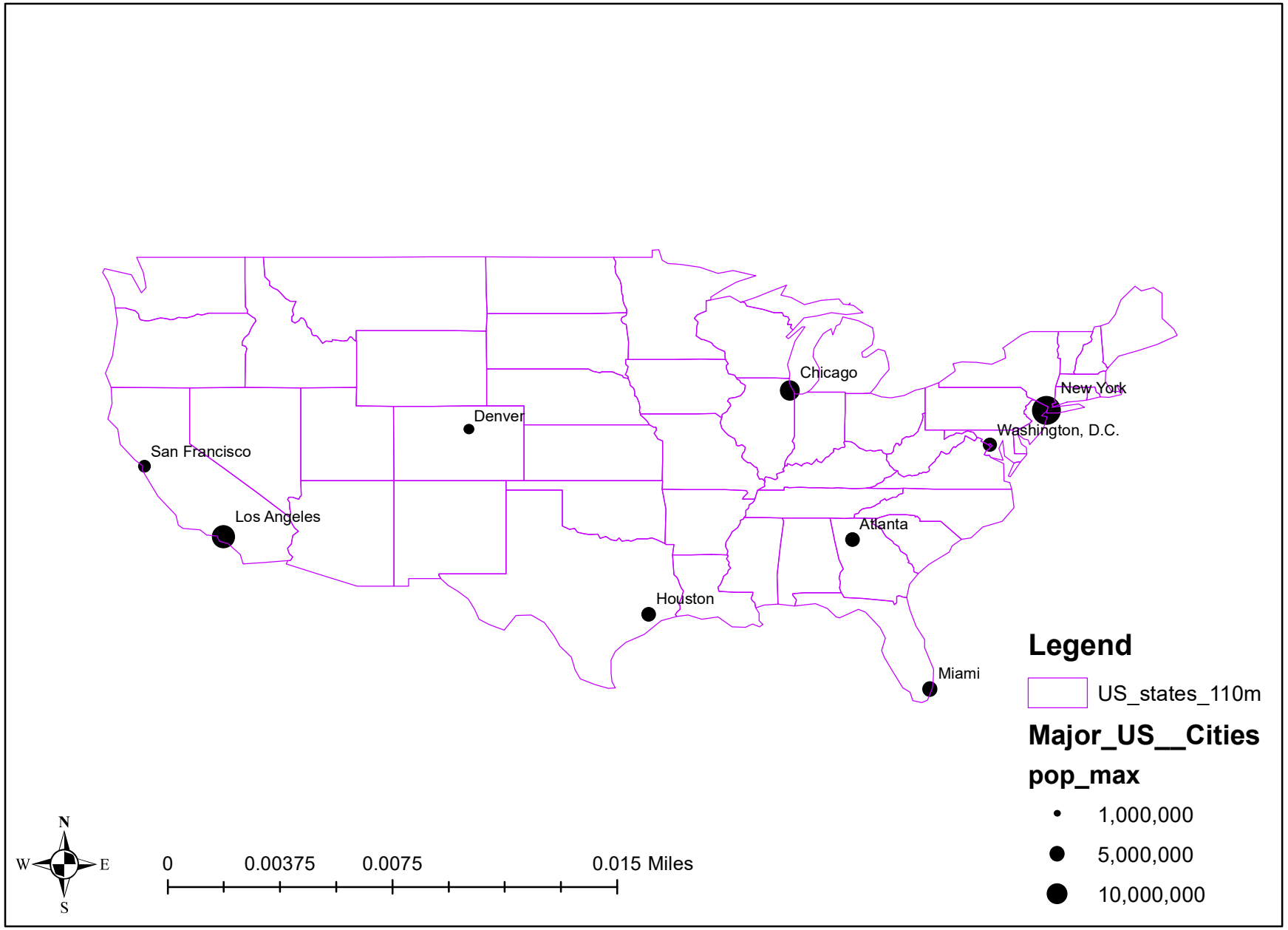
Comparing Populations of Major Cities of the Contiguous United States



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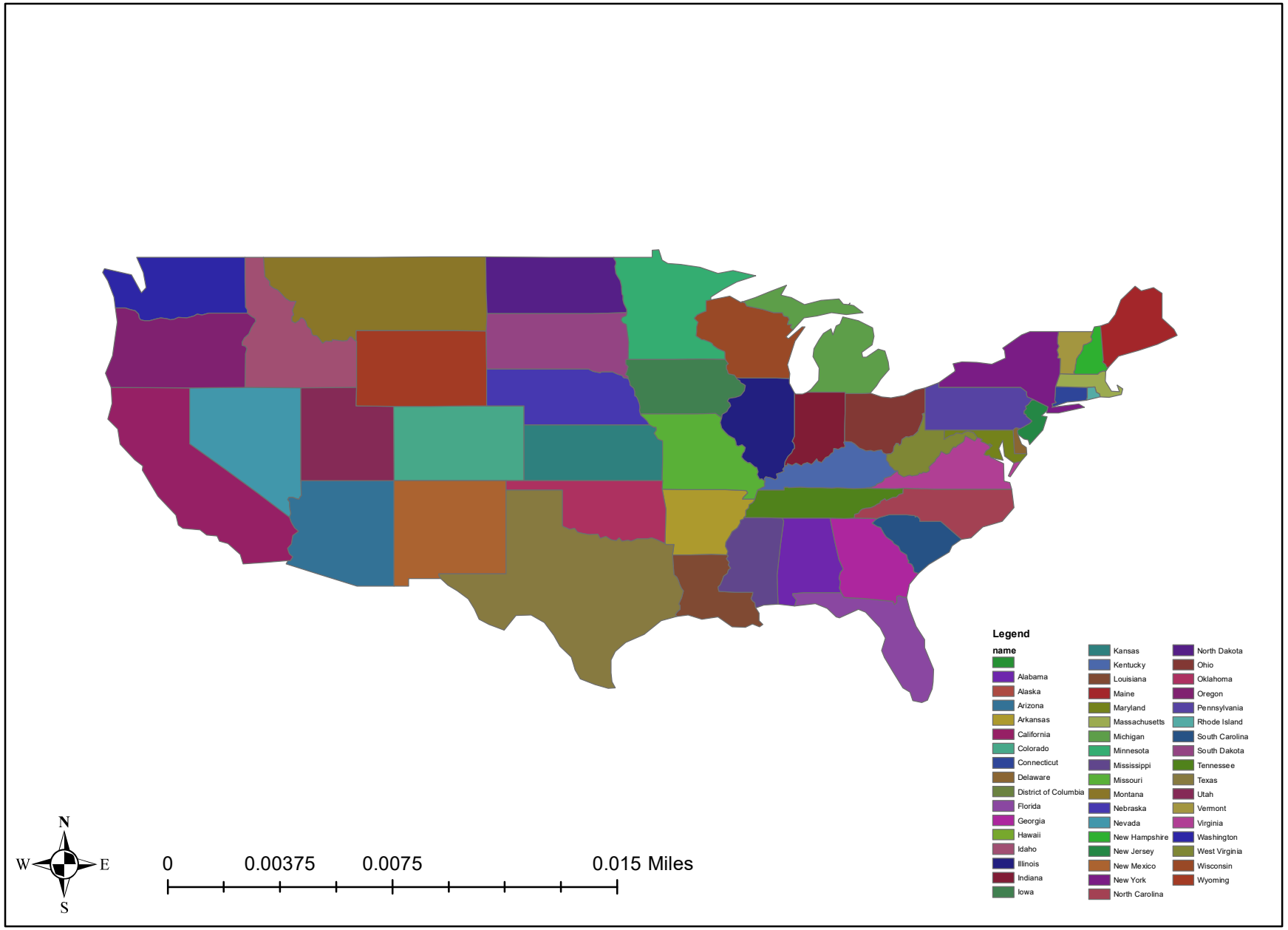
The Contiguous United States



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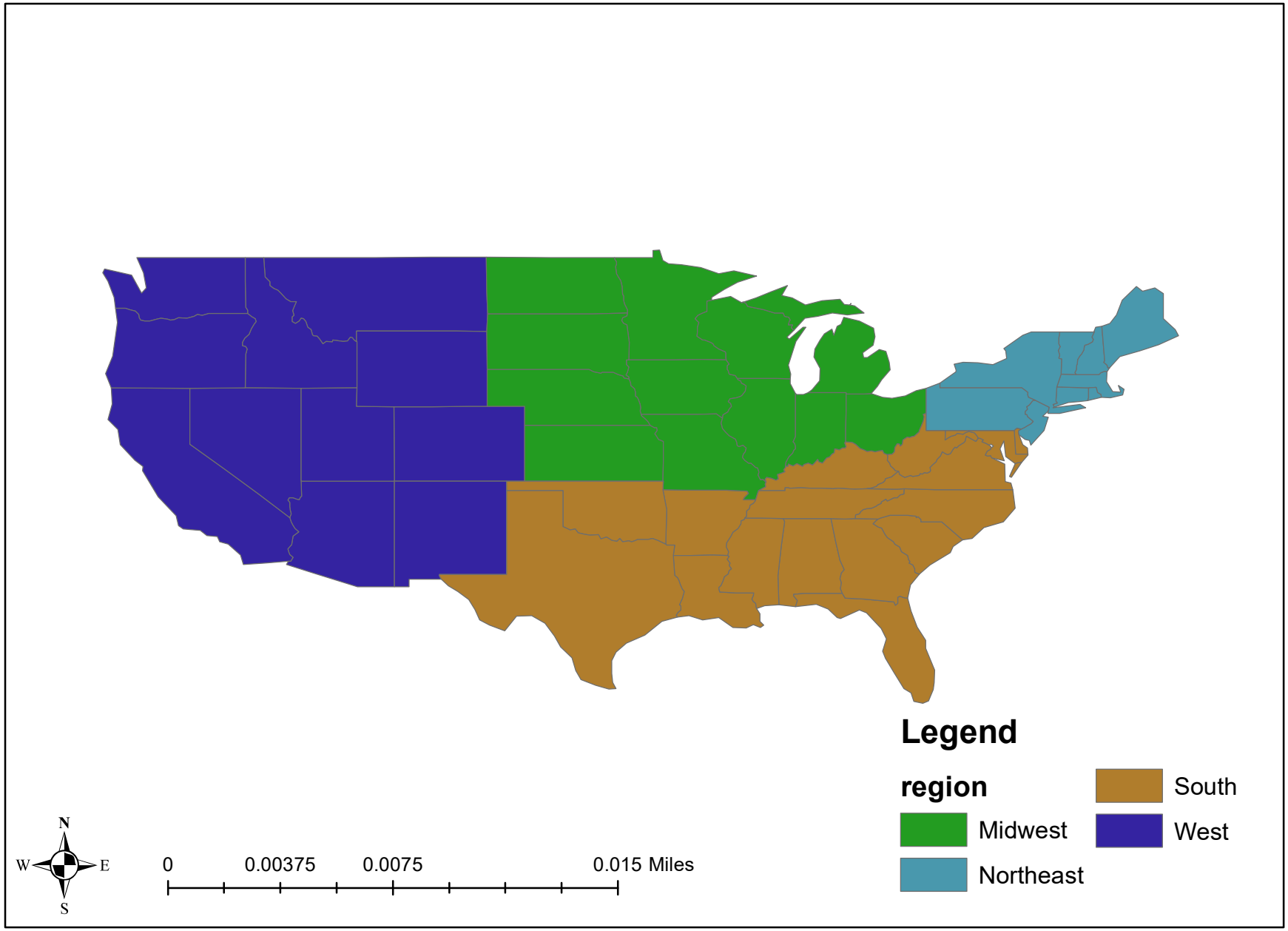
Regions of the Contiguous United States



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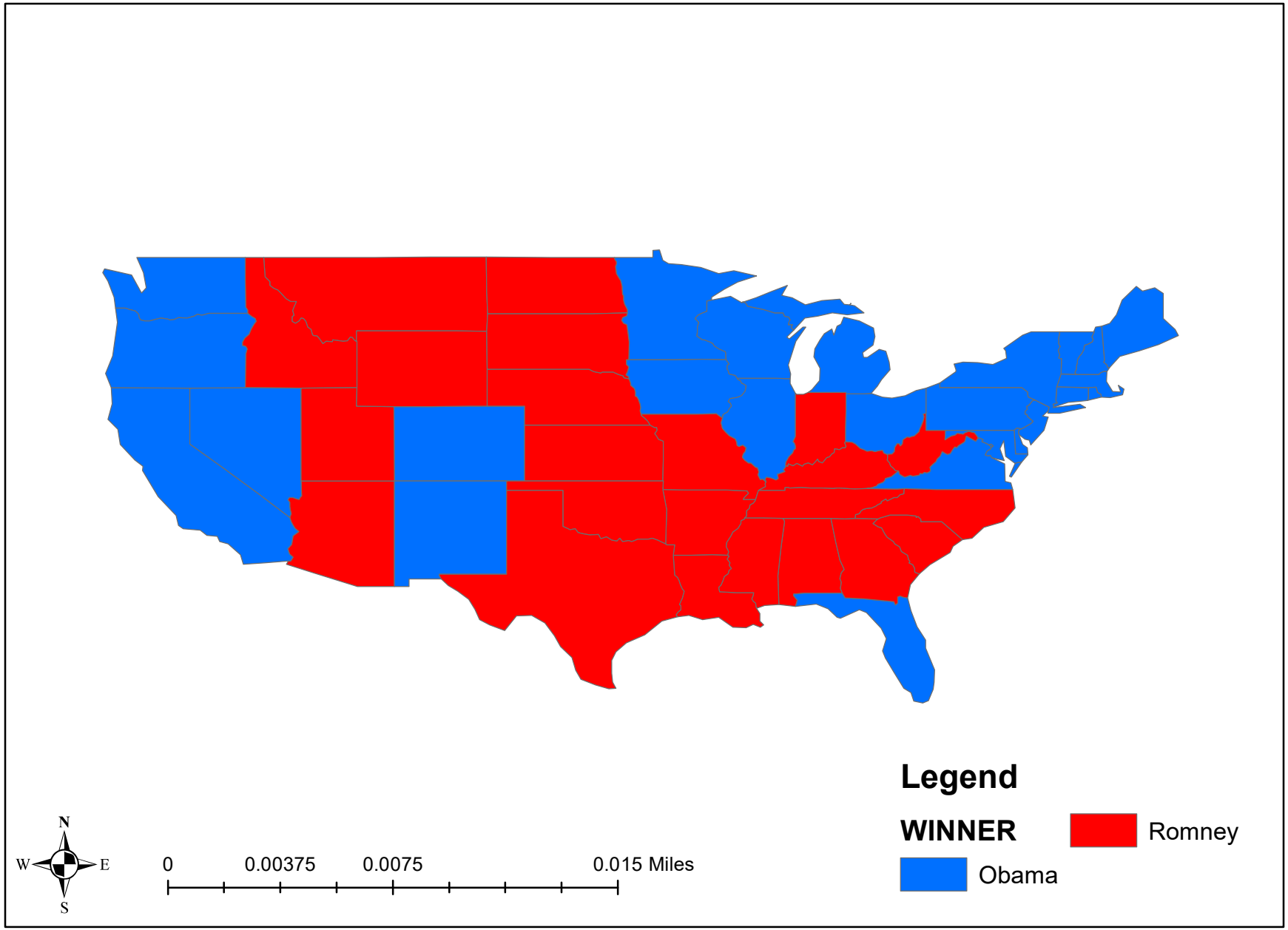
2012 US Presidental Election Results by State



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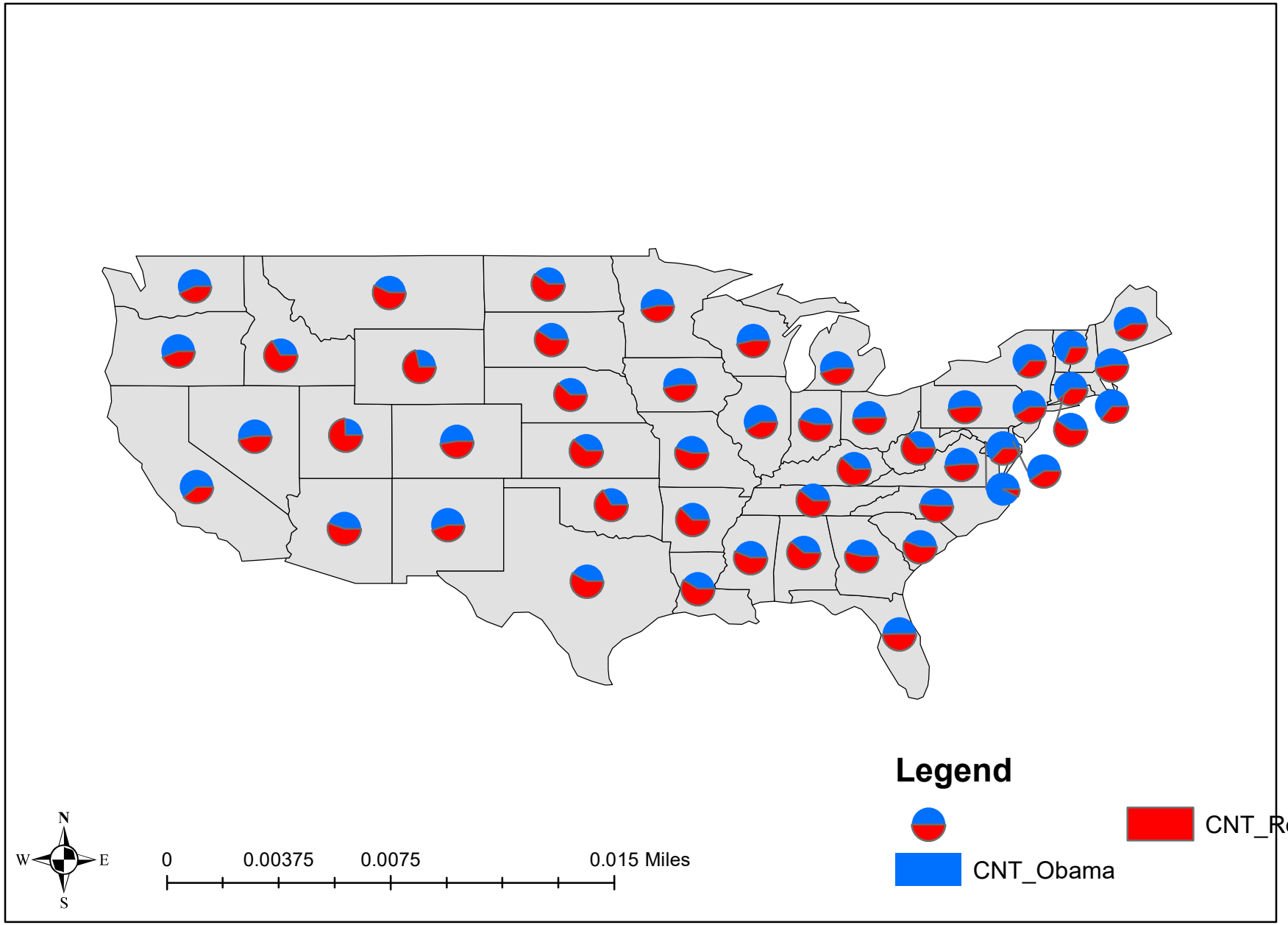
2012 US Presidental Election Results State Pie Charts



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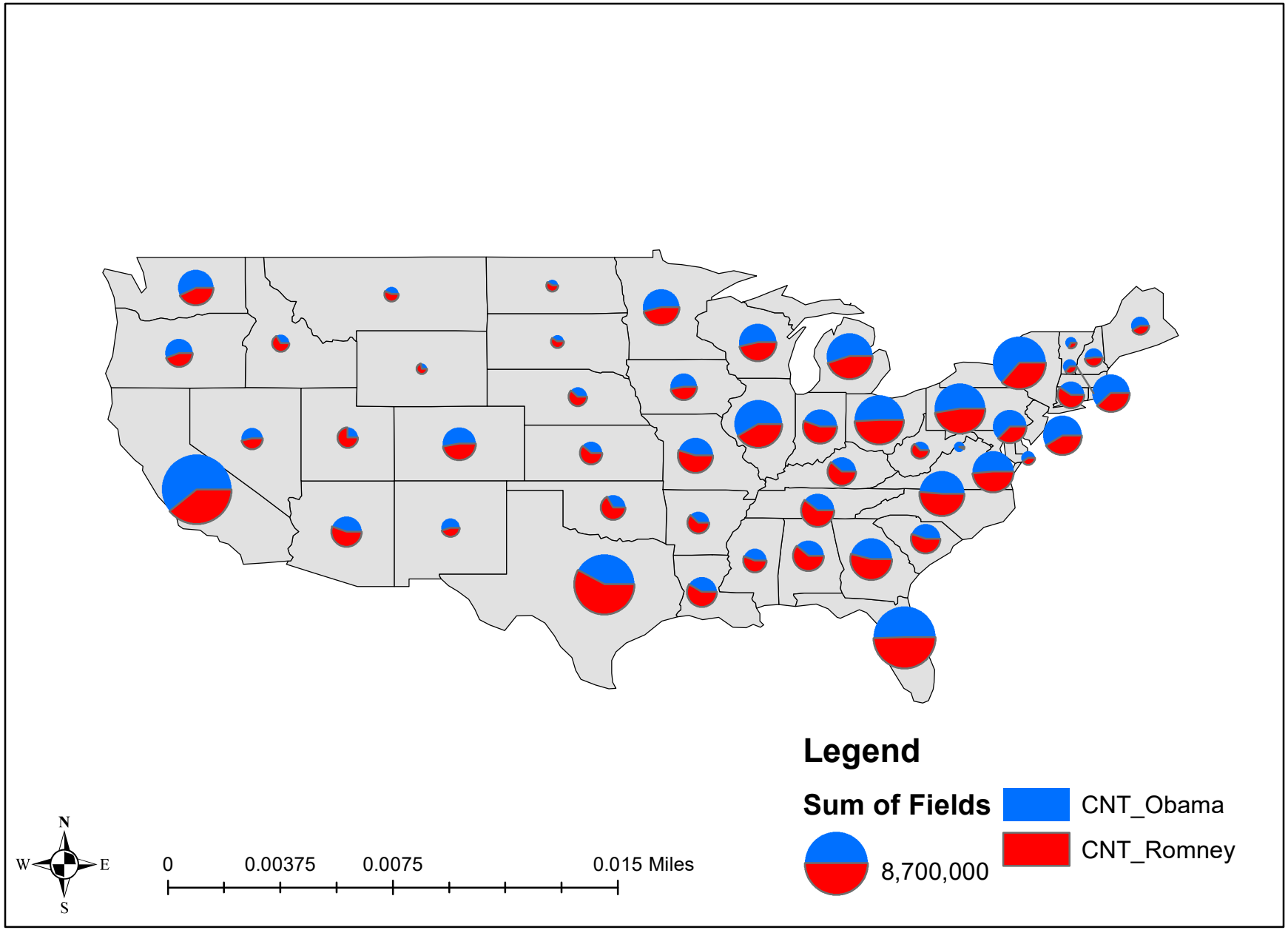
2012 US Presidental Election Results by State Populations



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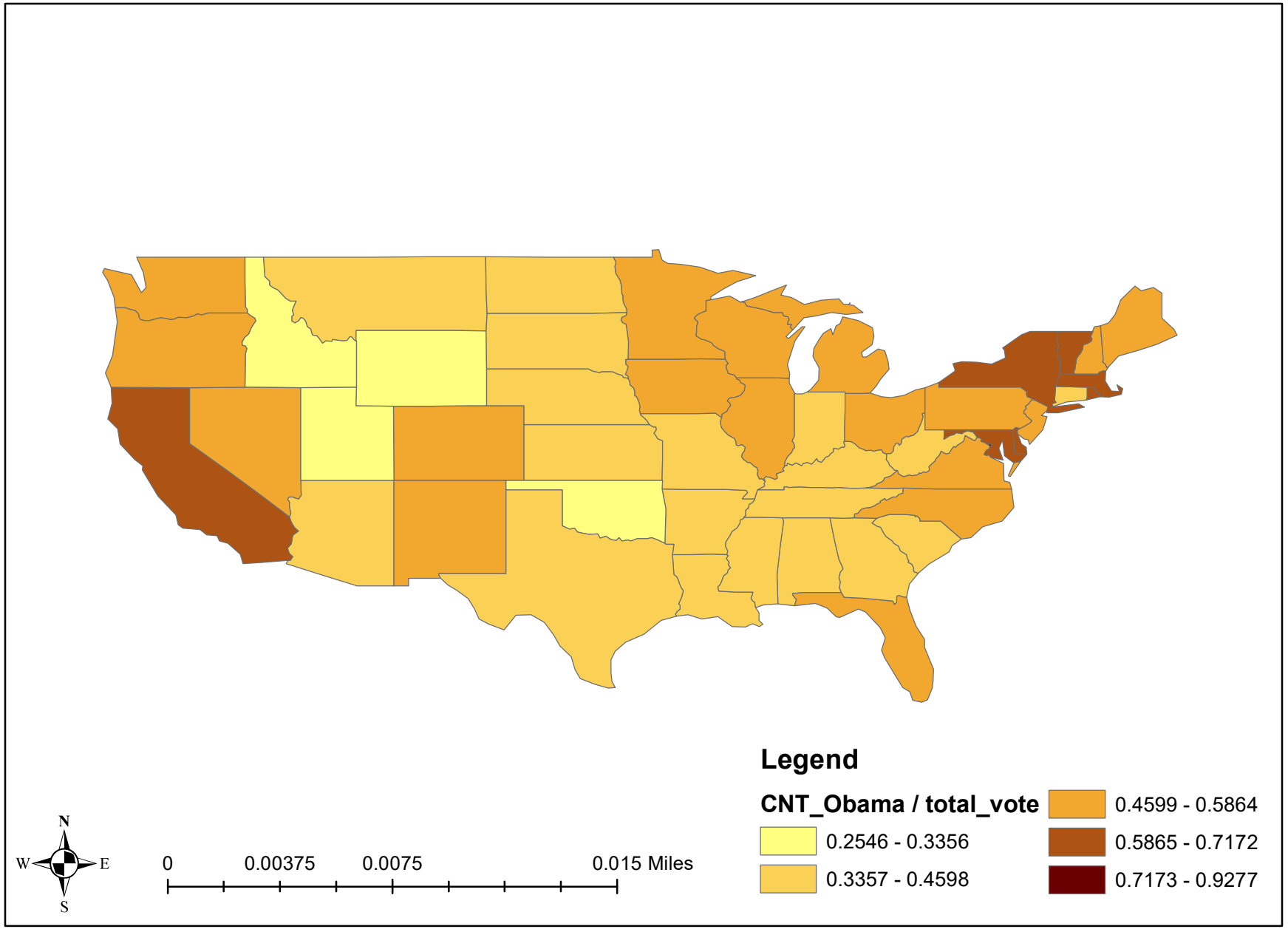
2012 US Presidental Election Percentage State Votes for Obama



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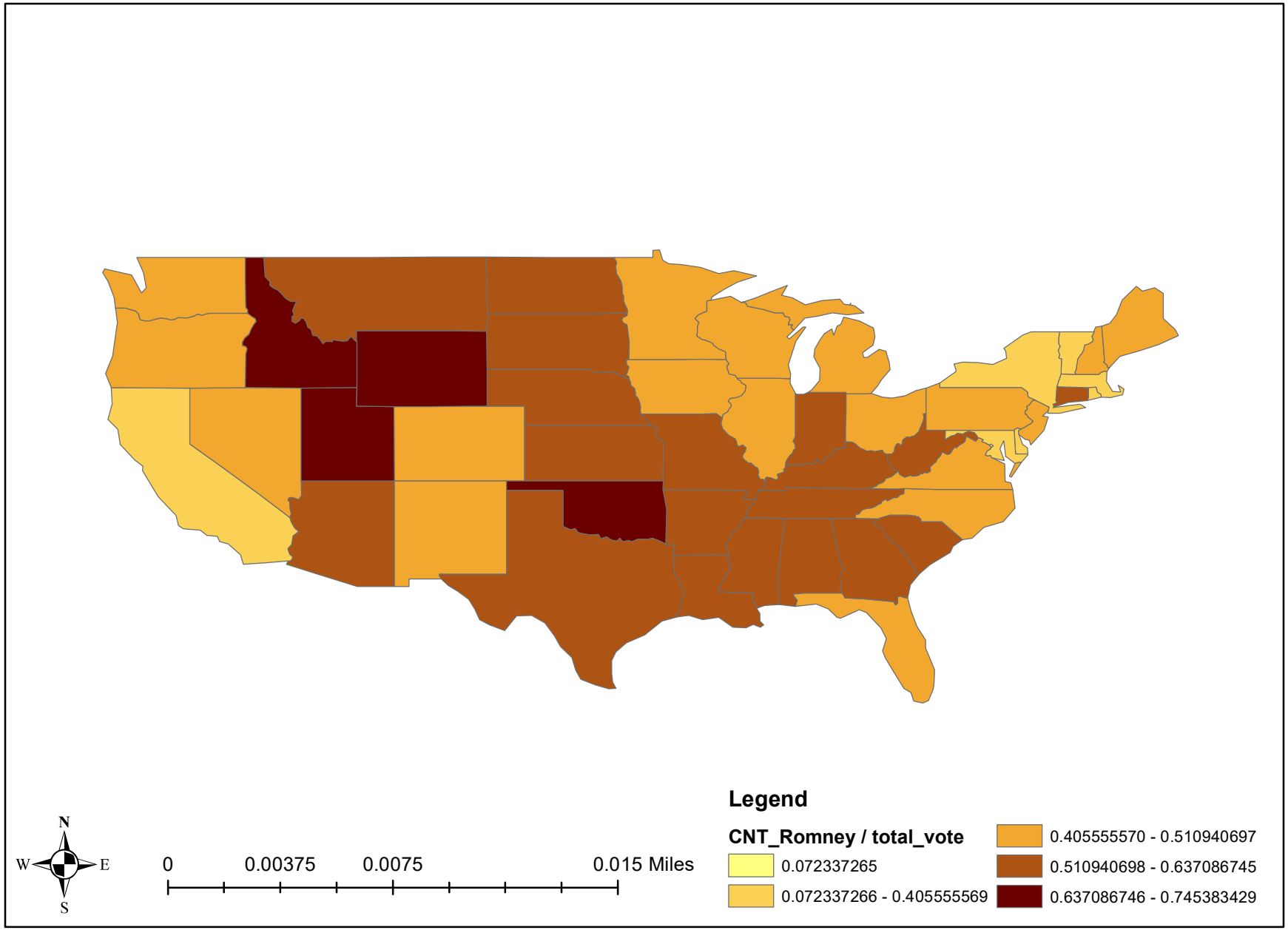
2012 US Presidental Election Percentage State Votes for Romney



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