America the Beautiful

Examining State Attractiveness Based on Education, Employment, Income, Weather, and Happiness

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Abstract

Education, employment, and earnings now come with a suitable value tag, which is responsible for its significant statistical role in determining the attractiveness of each US state. However, this triple "E" threat is also influenced by subconscious subjective variables, such as climate and happiness. This project is designed to use geographic information systems choropleth mapping to overcome these objective-subjective challenges, and provide a comprehensive map that ranks each U.S. state by their attractive qualities. A comparison of these results with state population will determine if these qualities actually play a role in deciding where people live. Acquiring appropriate information for this study is more difficult than simply analyzing basic facts and figures from the US Census and previously published research. In order to generate the least biased outcome, every variable considered was relentlessly questioned for its purpose in the study. The results of this study indicate there is no clear pattern between state attractiveness and the most populated states.

Methodology

In this study, attractiveness was calculated by ranking each state between 1 and 50, where 1 is the optimal value and 50 is least favored, based on heavily researched data for five select categories; education rank, unemployment rates, income values, best weather, and most happiest states. Each variable was weighed the same. The overall result ranking, created in Microsoft Excel, was then joined as a table to a selected shapefile of the US states in ArcMap 10. Once the data was joined properly, creating a choropleth map simply involved selecting an appropriate classification and color scheme. For this study, I thought it was appropriate to use a quantile classification with 5 breaks, for this classification is optimal for ranked values. I also chose a light to dark color scheme for each map to clearly distinguish the five classes, and inverted the colors so the most ideal states would pop out, as the dark colors do. Also, the scale for the continental states and Hawaii, I manually set at 1:25,000,000. Yet in order to fit Alaska appropriately, I respectively changed the scale to 1:50,000,000.

Literature Review

Manipulating this data to persuade a specific target audience is exceptionally easy, yet should be avoided at all costs to refrain from scientific misconduct. (Avery, 2010) Unfortunately, there always be a slight bias within the results. First is bias created by human error, which is determined by the variables chosen to represent the greater category. For instance, ranking the US public school education system is unavoidably flawed due to biased outcome when variables are meticulously selected from an innumerable "bank" of variables. (Danitz, 2001) Second bias is created by misinterpretation of historical data. Another example, its imperative to understand that unemployment rates in the U.S. drastically increased in 2007, as a result of sudden economic decline, and have been exceptionally high ever since. (US Census data, 2010) Job loss causes the unemployed to relocate to areas with higher job availability to seek employment. (Pekkala and Tervo, 2002) However, job seekers will usually settle in a new location based on their similar socioeconomic status. (Mitchell, 2011)

Results and Discussion

Figure 1: Public School Education Rank

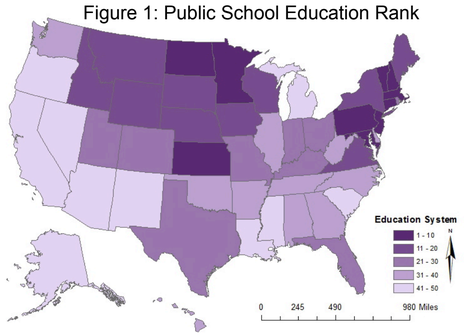

Figure 2: Unemployment Rank

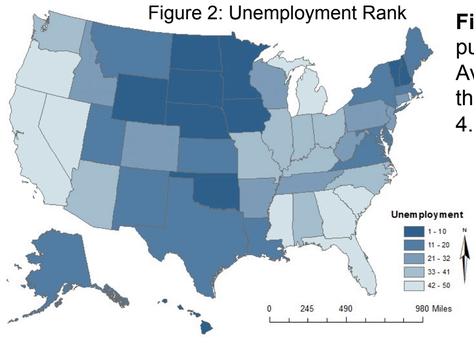

Figure 1 displays rankings of the public school education system for grades K-12 for each state. Education was the most complex factor to classify, for there were an innumerable amount of variables to choose from. The five selected were student-teacher ratio, average freshman graduation rate, dropout rate, chance for success, and achievement index. Note the areas with the highest ranked education system are in the northeast and midwest. Top ten: 1. New Jersey 2. New Hampshire 3. Vermont 4. North Dakota 5. Massachusetts 6. Pennsylvania 7. Minnesota 8. Maryland 9. Connecticut 10. Kansas

Figure 2 shows the unemployment rankings, derived directly from statistical data published by the Bureau of Labor Statistics in their Employment Status 2010 Annual Averages. The states with the lowest unemployment rates are shaded dark and located in the northeast and midwest regions. Top ten: 1. North Dakota 2. Nebraska 3. South Dakota 4. New Hampshire 5. Iowa 6. Vermont 7. Wyoming 8. Hawaii 9. Oklahoma 10. Minnesota

Figure 3: Income Rank

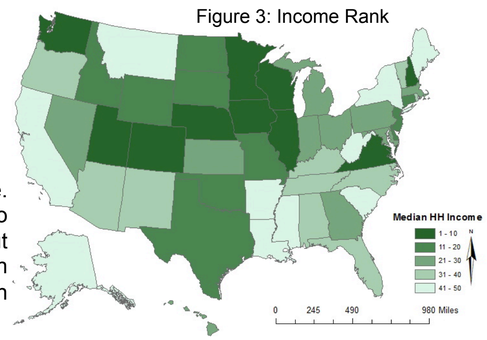

Figure 3 represents income rankings which were calculated by taking median household income data published by the US Census in 2010 and dividing it by the most up to date cost of living percentage per state. This weighted average creates purchasing power consistency from state to state. Top ten: 1. Utah 2. Virginia 3. Colorado 4. Nebraska 5. New Hampshire 6. Washington 7. Illinois 8. Iowa 9. Wisconsin 10. Minnesota

Figure 1 and **Figure 2** choropleth maps have similar shading, which can be explained by the socioeconomic status (SES) phenomena. In other words, research indicates that high SES areas tend to 1) have an abundance of quality teachers, which increases the quality of the education system, and 2) lack unemployment. (Mitchell, 2011)

Figure 4: Weather Rank

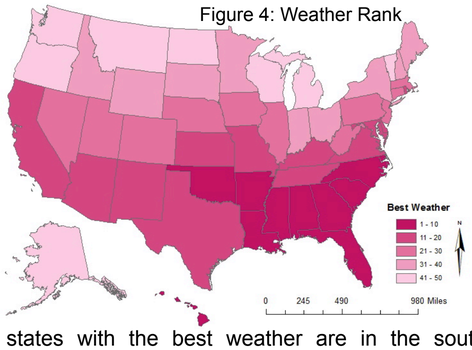

Figure 4 ranks weather in terms of total hours of sunlight per year, number of clear days per year, average annual temperature, and average total yearly precipitation. This component does not take weather extremes into account, therefore, it is not surprising the choropleth map indicates states with the best weather are in the southern region. Top results: 1. Florida 2. Georgia 3. Mississippi 4. Louisiana 5. Arkansas 6. South Carolina 7. Alabama 8. Hawaii 9. North Carolina 10. Oklahoma

Figure 5: Happiness Rank

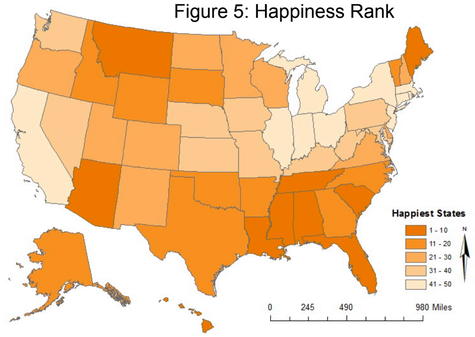

Figure 5 displays happiness, a rank proven accurate based on a life-satisfaction survey conducted by A. Oswald in 2009. Top ten: 1. Louisiana 2. Hawaii 3. Florida 4. Tennessee 5. Arizona 6. Mississippi 7. Montana 8. South Carolina 9. Alabama 10. Maine

Figure 4 and **Figure 5** choropleth maps show similarities in shading. This can be explained by weather subconsciously affecting our moods. The sun brings out happy feelings, whereas dark rainy days tend to depress our moods. (Hirshleifer and Shumway, 2003)

Figure 6: The Most Attractive States

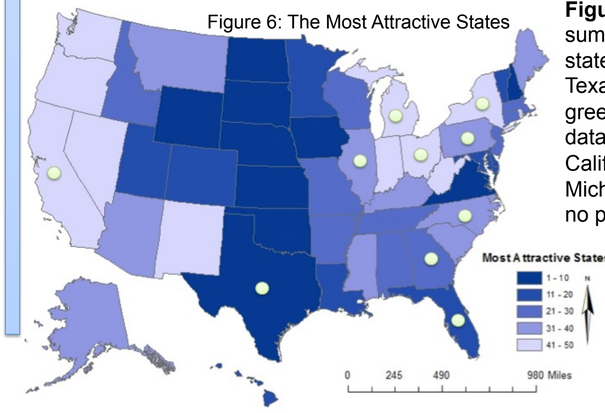

Figure 6 represents the most attractive states based on a non-weighted sum of all five factors depicted in Figures 1-5. The top ten most attractive states, in order, are Virginia, New Hampshire, South Dakota, Nebraska, Texas, Oklahoma, Wyoming, North Dakota, Iowa, and Kansas. The green dots identify the ten most populated states based off US Census data as of 2010. In order, the top ten most populated states are California, Texas, New York, Florida, Illinois, Pennsylvania, Ohio, Michigan, Georgia, and North Carolina. These results indicate there is no pattern between state attractiveness and the most populated states.

Conclusion and Future Research

The information gathered from this study revealed that there was no correlation between state attractiveness and its population numbers. This could be explained by 1) variables unaccounted for that heavily influence where people choose to reside, and 2) variables not weighted by their importance.

For future research, I would recommend expanding the variable selection to incorporate a wider variety of factors, including healthcare and poverty. I would also warn that there is much difficulty in qualifying subjective data, for instance, ideal weather, because each individual has a radically different view about what is the best. I would also recommend obtaining data that includes Washington D.C.'s statistics in this research, instead of completely neglecting its existence.

Data Sources

All maps created with ESRI ArcDesktop 10 software(2012)
Datum used: D North American 1983
Education map: http://nces.ed.gov/
Unemployment map: http://www.bls.gov/lau/table14full10.pdf
Income map: http://www.top50states.com/cost-of-living-by-state.html
http://www.census.gov/hhes/www/income/data/statistics/index.html
Weather map: http://www.currentresults.com/Weather/US
Population: http://www.census.gov/popest/
Happiness map:
http://www2.warwick.ac.uk/newsandevents/pressreleases/research_finds_the

References

1) Pekkala, S. and Tervo, H. (2002). Unemployment and Migration: Does Moving Help? *The Scandinavian Journal of Economics*. 104:621-639.
2) Mitchell, R. (2011). The Working Man, Unemployment, and Education. *Conservative Daily News.*
3) Avery, G. (2010) Scientific Misconduct: The Manipulation of Evidence for Political Advocacy in Health care and Climate Policy. *Cato Institute.*
4) Danitz, T. (2001, April 20). Experts Challenge State-By-State Education Rankings. *Stateline: State Policy & Politics*
5) Hirshleifer, D. and Shumway, T. (2003). Good Day Sunshine: Stock Returns and Weather. *The Journal of Finance.* 58(3) 1009 - 1032