

MG-212 Course Final Project

TO: Professor Craig

FROM: Cole Schamber

Subject: Analysis of factors of Poverty

I am writing to inform you of potential factors of poverty in the United States and to analyze my findings.

Section 1: Introduction/Overview

Poverty in its essence has been a major problem within US society overtime. With the unexpected addition of the Coronavirus pandemic in 2020, poverty has risen exponentially within the United States. It is critical that concerned members of our society analyze the factors and trends of poverty with the intent of coming to a better understanding of its factors and how they potentially effect poverty rate. Ultimately, my paper as a whole attempts to answer the underlying question of what are contributing factors of poverty. After research, I have decided to centralize my paper around how unemployment and education affects poverty. This is for the reason that being after looking at numerous articles, I believe these two factors are the most significant. First, the paper takes the approach of answering how many people in the US are unemployed. To get a further understanding, I will ask the second question of how many people that are unemployed fall under the poverty line within the US. To get a more accurate response, I will test the age range of people within 25-29 years to eliminate people who are under the age of majority and those who are retired to eliminate the chance of outliers. To reiview another factor, I will test to see if education (having a college education) directly affects poverty within the

United States. To do so, we will look at US families with either a college degree or higher to determine if that contributes to poverty within the US.

Section 2: Statement of Hypotheses

By looking at the US Bureau of Labor statistics, talkpoverty.org, and nces.nsf.gov, these sources will give me the data necessary to analyze and observe the potential of these two factors contributing to poverty within the United States. Additionally, by having data from all 50 states for all variables gives us more data samples meaning we will have a more accurate result rather than just taking averages from the United States as a whole. To compare the two factors, we must look deeper into each of them to receive a better understanding of how one can impact the other without running data tests before we actually do. First we must look at the unemployment rate from the 2016 to 2020. To reinstate, I am going to select to study the age range from 25-29 years since people who are under the age of majority and retired will result in a skew in our data. Then, I will look at the data to of families with or with no college education and then that will help me determine whether it contributes to poverty. All of my numeric data to test our Hypotheses will be provided by the sources I provided above.

Hypotheses:

Null Hypothesis (H_0): There is no correlation between Unemployment and poverty rate within the United States between 2016-2020

Alternative Hypothesis (H_1): There is correlation between Unemployment and poverty rate within the United States between 2016-2020

Null Hypothesis (H_0): There is no correlation between Unemployment rate and having a college education between 2016-2020

Alternative Hypothesis (H_1): There is correlation between Unemployment rate and having a college education between 2016-2020

Section 3: Data and Analysis Methodology

As mentioned before, my data is provided by the US Bureau of Labor statistics, talkpoverty.org, and nces.nsf.gov and gives a breakdown of: 1) the unemployment rate between 2016-2020 of 25-29 year old in the United States. 2) The percent of adults with a college education between 2016-2020. And 3) the overall poverty rate in the US between 2016-2020. By looking at data provided by my 3 sources, I was able to gather data for each of my 3 variable topics: poverty, unemployment, and college educational attainment. Overall, it displays that within the United States, those who were unemployed aged from 25-29 from 2016-2020 ranged from 3.7% to 8.1% with the highest unemployment in 2020 and the lowest in 2019. When looking at educational attainment in the US, for those with a college education from 2016 to 2020 ranged from 33.13% to 37.1% with both having 2020 being the lowest and 2019 being the highest. When looking at the poverty rate in the United States from 2016-2020 similar results are displayed. The data ranged from 12% to 14% with the lowest in 2016 and the highest in 2020. Given this data, we can assume that the unemployment rate and education are related poverty and the higher the unemployment and the lower the education rate the higher poverty will be.

To test the hypotheses above, I will be conducting multiple regression tests and scatterplots to determine if the two factors have a direct correlation with poverty.

Section 4: Results

Regression Analysis: Unemployment Rate vs Poverty Rate 2016

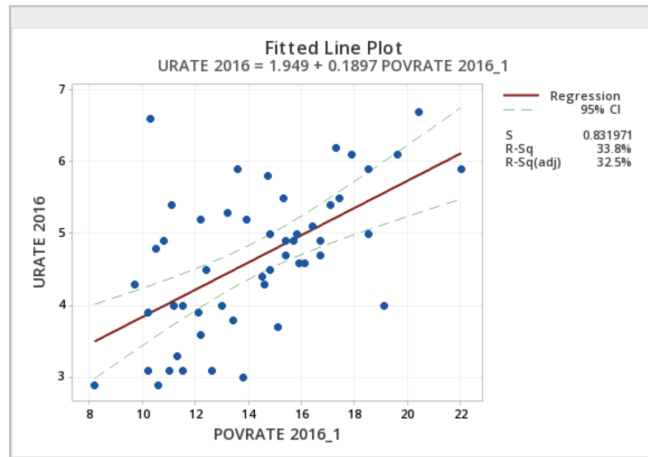


Figure 1

Regression Analysis: Unemployment Rate vs Poverty Rate 2017

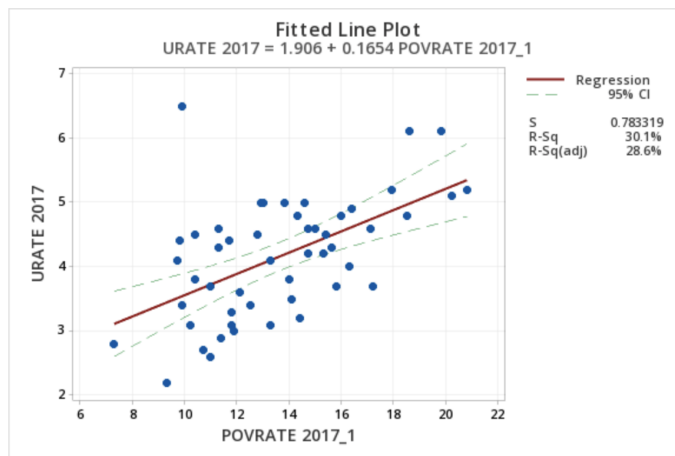


Figure 2

Regression Analysis: Unemployment Rate vs Poverty Rate 2018

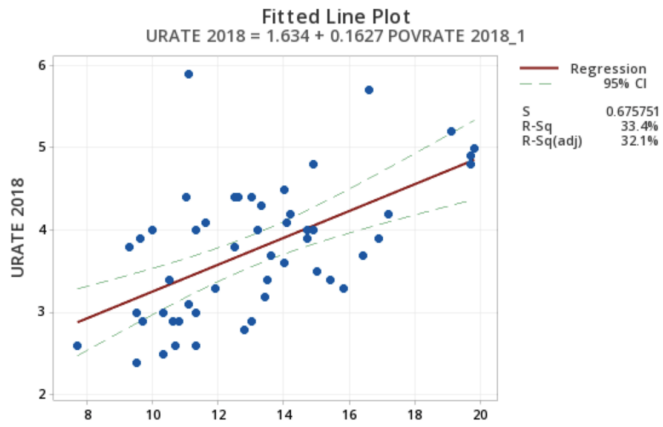


Figure 3

Regression Analysis: Unemployment Rate vs Poverty Rate 2019

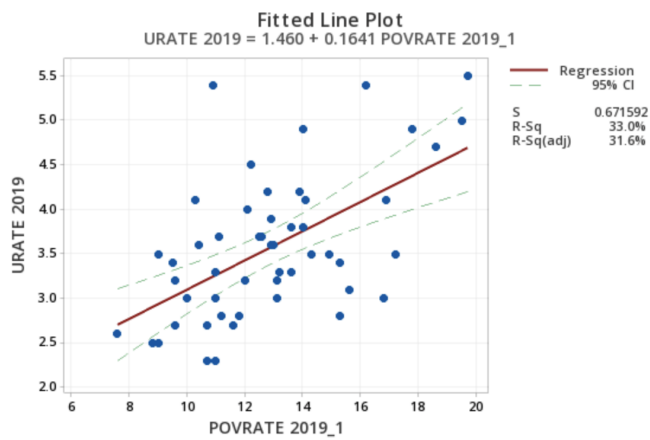


Figure 4

Regression Analysis: Unemployment Rate vs Poverty Rate 2020

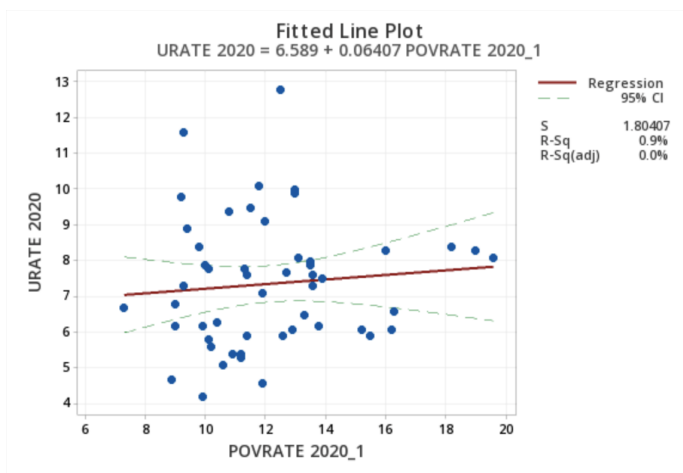


Figure 5

Regression Analysis: Educational Attainment Rate vs Poverty Rate 2016

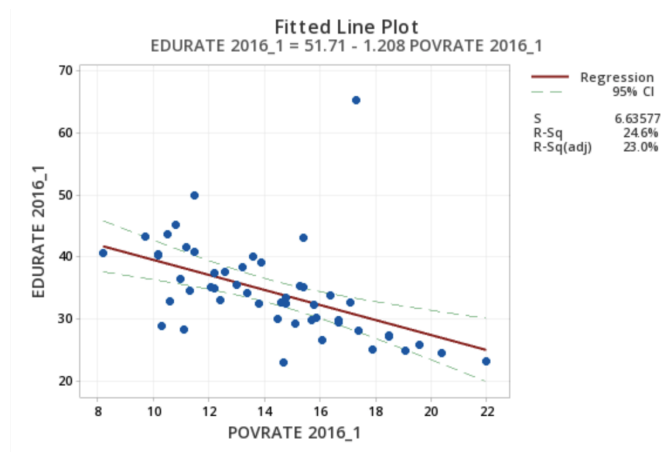


Figure 6

Regression Analysis: Educational Attainment Rate vs Poverty Rate 2017

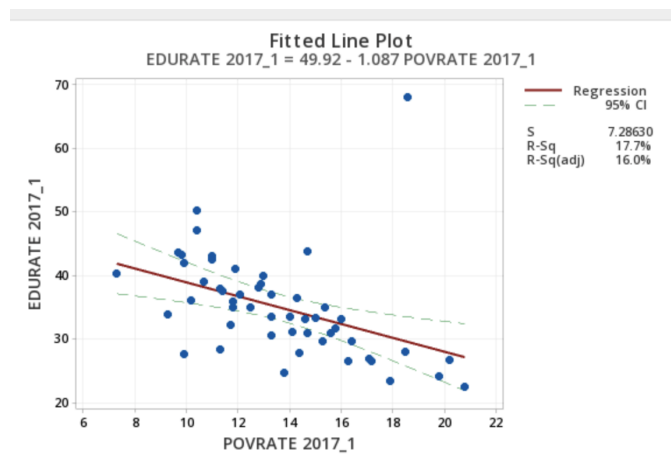


Figure 7

Regression Analysis: Educational Attainment Rate vs Poverty Rate 2018

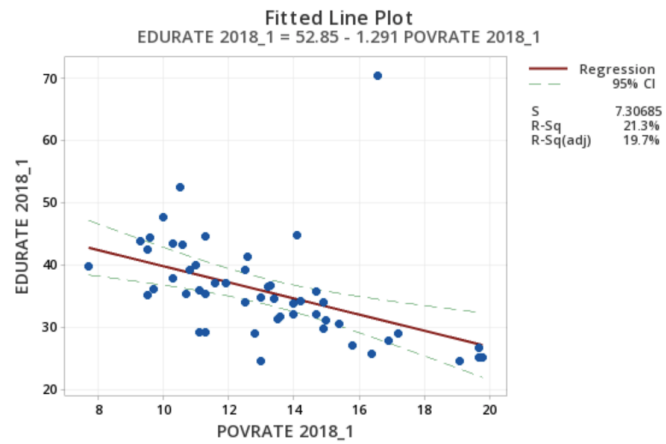


Figure 8

Regression Analysis: Educational Attainment Rate vs Poverty Rate 2019

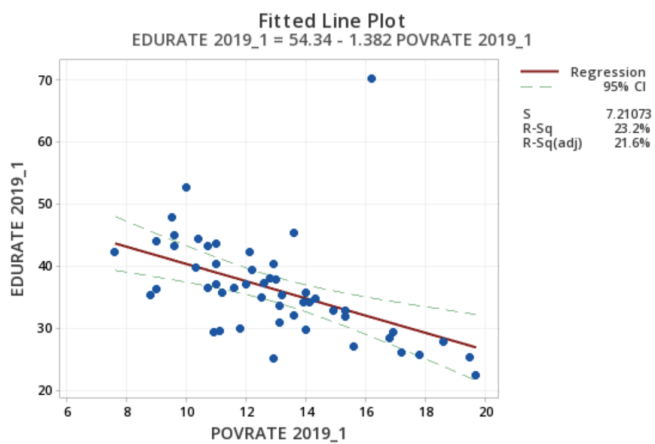


Figure 9

Regression Analysis: Educational Attainment Rate vs Poverty Rate 2020

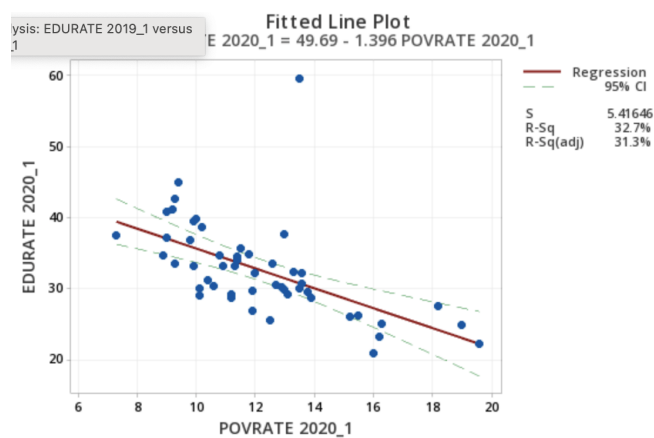


Figure 10

Analysis of Figures:

1. While looking at figure 1 in the regression analysis of unemployment vs poverty rate in 2016, we can determine that there is a weak positive correlation. $R\text{-squared} = 33.8\%$ meaning we are 33.8% sure we can accept the null hypothesis that these two factors are dependent on each other and 33.8% confident that as poverty increases so does unemployment. Additionally, we concur that this information is 95% confident due to the confidence interval.
2. While looking at figure 2 in the regression analysis of unemployment vs poverty rate in 2017, we can determine that there is a weak positive correlation. $R\text{-squared} = 30.1\%$ meaning we are 30.1% sure we can accept the null hypothesis that these two factors are dependent on each other and 30.1% confident that as poverty increases so does unemployment. Additionally, we concur that this information is 95% confident due to the confidence interval.
3. While looking at figure 3 in the regression analysis of unemployment vs poverty rate in 2018, we can determine that there is a weak positive correlation. $R\text{-squared} = 33.4\%$ meaning we are 33.4% sure we can accept the null hypothesis that these two factors are dependent on each other and 33.4% confident that as poverty increases so does unemployment. Additionally, we concur that this information is 95% confident due to the confidence interval.
4. While looking at figure 4 in the regression analysis of unemployment vs poverty rate in 2019, we can determine that there is a weak positive correlation. $R\text{-squared} = 33\%$ meaning we are 33% sure we can accept the null hypothesis that these two factors are dependent on each other and 33% confident that as poverty increases so does

unemployment. Additionally, we concur that this information is 95% confident due to the confidence interval.

5. While looking at figure 5 in the regression analysis of unemployment vs poverty rate in 2020, we can determine that there is a weak to no correlation. $R\text{-squared} = 0.9\%$ meaning we are 0.9% confident that as poverty increases so does unemployment which is extremely unconfident that the two relate to each other. Additionally, we concur that this information is 95% confident due to the confidence interval.
6. While looking at figure 6 in the regression analysis of unemployment vs poverty rate in 2016, we can determine that there is a weak negative correlation. $R\text{-squared} = 24.6\%$ meaning we are 24.6% sure we can accept the null hypothesis that these two factors are dependent on each other and 24.6% confident that as poverty increases education decreases. Additionally, we concur that this information is 95% confident due to the confidence interval.
7. While looking at figure 7 in the regression analysis of unemployment vs poverty rate in 2017, we can determine that there is a weak negative correlation. $R\text{-squared} = 17.7\%$ meaning we are 17.7% sure we can accept the null hypothesis that these two factors are dependent on each other and 17.7% confident that as poverty increases education decreases. Additionally, we concur that this information is 95% confident due to the confidence interval.
8. While looking at figure 8 in the regression analysis of unemployment vs poverty rate in 2018, we can determine that there is a weak negative correlation. $R\text{-squared} = 21.3\%$ meaning we are 21.3% sure we can accept the null hypothesis that these two factors are dependent on each other and 21.3% confident that as poverty increases education

decreases. Additionally, we concur that this information is 95% confident due to the confidence interval.

9. While looking at figure 9 in the regression analysis of unemployment vs poverty rate in 2019, we can determine that there is a weak negative correlation. R-squared = 23.2% meaning we are 23.2% sure we can accept the null hypothesis that these two factors are dependent on each other and 23.2% confident that as poverty increases education decreases. Additionally, we concur that this information is 95% confident due to the confidence interval.
10. While looking at figure 10 in the regression analysis of unemployment vs poverty rate in 2020, we can determine that there is a weak negative correlation. R-squared = 32.7% meaning we are 32.7% sure we can accept the null hypothesis that these two factors are dependent on each other and 32.7% confident that as poverty increases education decreases. Additionally, we concur that this information is 95% confident due to the confidence interval.

Section 5: Discussion and Conclusion

The problem of unemployment and low educational attainment has been a problem for decades, but after my experiment, we can not be entirely sure that it directly relates to poverty in the United States. Prior to running the regression tests, I collected unemployment rate, educational attainment (college degree), and poverty rate for 2016-2020 by state. After running the regression tests on the factors, we can determine that over the span of 2016-2019 we are overall somewhat confident that poverty rate is dependent on the factors of receiving a college education (education) and unemployment rate. For the unemployment rate, the r-squared value ranged from .9% to 33.8% with the highest in 2016 and the lowest in 2020 with a majority of the data being

weak positive correlations. For education, the data ranged from 17.7% to 32.7% with the highest being in 2020 and the lowest being in 2017. After piecing together the data and making an attempt to draw conclusions from them, it seemed that the year of 2020 provides quite interesting information for both factors. For unemployment, they had almost no correlation from the r-squared value meaning they had almost no dependence on each other. The conclusion I was able to draw from this data was the coronavirus and its distribution of stimulus checks from the government. What this means is that people who were unemployed or fell into the poverty category were given stimulus checks which basically gave them more money than they would have by just being unemployed, thus resulting in a lower poverty rate as unemployment was high. On the contrary for education in the year of 2020, there was the highest correlation between poverty and unemployment. The conclusion I can draw from this is that when jobs were scarce within the United States during the peak of the pandemic, there were only a few jobs available and I assume employers hired more educationally qualified people to carry out essential jobs in society rather than jobs that aren't as essential like jobs that do not require as much educational qualifications. All in all, we have learned that unemployment and educational attainment have not been significantly correlated with poverty rate over the last 5 years in the United States, but coronavirus significantly affected the dependence of the factors to poverty for the likely reasons stated above.

Works Cited

“Unemployment Rates for States.” *U.S. Bureau of Labor Statistics*, U.S. Bureau of Labor Statistics, 3 Mar. 2021, <https://www.bls.gov/lau/lastrk16.htm>.

“Poverty Data State by State.” *Talk Poverty*,
https://talkpoverty.org/poverty/?filter_year=2020.

“Science & Engineering State Indicators.” *Bachelor's Degree Holders among Individuals 25–44 Years Old | State Indicators | National Science Foundation - State Indicators*,
<https://nces.nsf.gov/indicators/states/indicator/bachelors-degree-holders-per-25-44-year-olds>.