Educational Inequity

# **Michelle Rice DSC680 Fall 2021 https://github.com/mlrice/DSC680**

# Which Domain?

This project will be within the domain of Education.

References:

<https://en.wikipedia.org/wiki/Educational_inequality_in_the_United_States> Provides a brief overview of what educational inequality is, history of it and contributing factors

<https://nces.ed.gov/pubs2020/2020144.pdf> The condition of Education 2020 – this provides a VERY large and detailed amount of data and analysis about the education system a whole including enrollment, finances, teacher information, assessments, completion rates, economic outcomes, population and characteristics of schools (public, charter, private).

<https://www.childrensdefense.org/policy/resources/soac-2020-education/> Discusses income in education inequality along with other factors such as race, disabilities, state spending, and home life.

<https://hechingerreport.org/a-decade-of-research-on-the-rich-poor-divide-in-education/> Focuses specifically on the impact of income inequality on education

<https://www.edweek.org/leadership/opinion-growing-income-inequality-threatens-american-education/2014/03#:~:text=Most%20distressingly%2C%20increasing%20gaps%20in,differences%20in%20college%20graduation%20rates>. A discussion about how growing income inequality impacts education

<https://equitablegrowth.org/income-inequality-affects-our-childrens-educational-opportunities/> This looks at the education achievement gap over time

<https://www.usnews.com/news/education-news/articles/2018-05-28/income-inequality-exacerbates-the-achievement-gap> This article talks about how the achievement gap grows even more when school is not in session due to activities and programs that wealthy students participate in that less wealthy students do not.

<https://www.epi.org/publication/education-inequalities-at-the-school-starting-gate/> This summarizes a study that was done on education inequality, the data that was used, how it was analyzed and what the findings were

<https://cepa.stanford.edu/news/can-big-data-help-us-solve-inequality-education> An interview with Sean Reardon, professor of poverty and inequality at Stanford University where he discusses his project to analyze achievement gaps and his results showing that economic segregation is the key driver of inequality

<https://www.americanprogress.org/issues/education-k-12/reports/2017/05/31/433014/isolated-and-segregated/> A discussion of school economic segregation, what it means, examples, and how and why we should focus on integration

# Which Data?

The data that I will be using comes from the USDA Economic Research Service website. I will be joining two sets of data, the first shows the percentage of residents who completed college, some college, high school or less than high school for every county of every state for the years 1970, 1980, 1990, 2000 and 2015-2019. The state percentages are also broken down by Total, Urban and Rural.

The second data set contains the median household income and unemployment rates for every county in every state. At this time, I do not anticipate using the unemployment rate so will just add the income column to the first dataset.

The links to the datasets are here and can be downloaded to Excel which is what I will be doing:

<https://data.ers.usda.gov/reports.aspx?ID=17829>

<https://data.ers.usda.gov/reports.aspx?ID=17828>

# Research Questions? Benefits? Why analyze these data?

I will be analyzing how income level and place of residence impact education level. Questions I will be answering:

Does living in an area with lower average incomes make a person less likely to complete high school, to go to college or to finish college?

Are education levels clearly clustered above or below any certain income levels?

Does urban or rural residence have an impact on education level?

Does state or region of the country have an impact on education level?

If state and/or urban or rural residence has an impact, is that true regardless of income and is that more or less influential than income?

The answers to these questions could be very valuable to help us understand where there are gaps in our education system and to make changes and implement strategies to focus on bringing up the numbers among groups that are at the lower levels. This could guide where and how funding should be spent to provide more resources where they are needed. Colleges can also use this information in their student recruitment.

# What Method?

I will initially be doing some exploratory analysis and graphical analysis. Doing some basic plotting of income and education level should give me an idea if there are any clear and definite trends or any outliers. Since I’m looking at a numeric value of income level as it relates to percentages, I plan to use a linear regression model to analyze the impact of income. This should tell me how strongly income level is correlated to education level.

To analyze place of residence as it relates to education level, will potentially use KNN or logistic regression. This will tell me what correlation exists and which variables have a stronger correlation. I can also put the income into ranges and use income as a predictor variable in the same model with residence variables such as urban or rural or state.

# Potential Issues?

To obtain the county level data for each state, from what I can tell I have to manually open that state and download each one individually, so if I want this data for all 50 states for both datasets, I will have to do 100 downloads and have 100 different spreadsheets unless I can figure out a better way to handle this. I feel this will get messy, but also feel it’s important to have that amount of data to really do a valid analysis.

# Concluding Remarks

The United States prides itself on being the land of equal opportunity. However, there could be unintended inequality when it comes to education that results from the students coming from different income levels, different states or a rural vs. urban setting. My analysis will evaluate these factors and determine which (if any) have the most impact on educational achievement. This information can be used by education authorities to plan and create strategies to attempt to close the gap, by schools to plan programs and curriculum for students based on their income level, or by colleges to know which students are likely to attend and succeed and provide more outreach to students how might not otherwise attend.