Slide 1:

* Household Economic Mobility

Slide 2:

* The initial goal of this project was to examine the relationship between parent’s income as adults and their children’s adulthood income. I really wanted to challenge the idea that you can “pull yourself up by your bootstraps” so to speak. We also know that education is closely related to adulthood income and one of the biggest influences on one’s education is their parent's level of education. Answering this question could be a big step in putting all those pieces together.

Slide 3:

* The study began in 1968 with a nationally representative sample of over 18,000 individuals living in 5,000 families in the United States. Data on these families and their descendants has been collected continuously since then. Data covering employment, income, wealth, expenditures, health, marriage, childbearing, child development, philanthropy, education, and numerous other topics.
* Ideally this data would give us direct parent-to-child links with income and other variables, and we could perform a panel model regression to assess correlation.

Slide 4:

* However, there were some issues with the data. The first and most problematic issue with the data was that it was nearly impossible to make direct links between parents and their children. The data was set up so that each observation was a household over time. This forced us to change the question. Instead, we are going to look at what factors enforce a household’s ability to climb the economic ladder. This still gets at a similar idea of economic mobility in America.
* The 5 main variables we will look at besides the previous year’s income are (in reference to the head of household) race, gender, age, sex, and whether they have a college degree.

Slide 5:

* There were still problems with the data that needed to be addressed. First, we need to transform the data so that each row is a single household in a single year. Second, we need to remove NAs, this includes missing values and values that were recorded as NA (for instance an NA race value had the value of 9. Two other big problems we dealt with were that the variables were ordered differently in each year which made it a bit more cumbersome to label and transform. Across the years what different values represented also changed. For instance, from 1990-2004 a race value of 5 represented someone of Latino origin but in the 2004-2021 panels there is no Latino option and 5 is representative of native Hawaiians and Pacific Islanders. The workaround for this particular issue was to report all non-White or non-Black (since those two races were the only two kept consistent across time) races as “other”.

Slide 6:

* Here is the transformed data with each observation being a single household in a single year.

Slide 7:

* When we test to see if the time series for income is stationary, we see that two out of our three tests conclude that the data is stationary. When we examine the graph of the data, we definitely see some weird things happening but not much that would strongly go against our conclusion that our data is stationary.

Slide 8:

* We use the plm package because it is literally the “panel linear model”. It gives us some extra options to help handle panel data. We use state and time-fixed effects because of the nature of the data, with year and household as the factors. If we look at the age distribution and its relationship to income, we notice it has close to a quadratic distribution, so we transform it to a squared term. If we look at our initial outcome, we can see that age squared and sex are statistically significant, but race and the binary degree variable are not. This suggests that the older the head of a household is, the less economically mobile a household becomes. It also suggests that being a woman decreases economic mobility. Our interaction terms simply mean that the older a person is the more likely they are to have a college degree and that women are more likely than men to have a college degree.

**Background**:

The American dream is no less an idea than it is a motivation for the US systems of government and economics. Being able to “pull yourself up by your bootstraps” is a common mantra chanted by those who believe in such a dream. The *Oxford English Dictionary* [1] defines the American dream as “the ideal that every citizen of the United States should have an equal opportunity to achieve success and prosperity through hard work, determination, and initiative.” According to a 2009 PEW Charitable Trusts survey [4], around 75% of Americans strongly agreed that the American Dream entailed "being free to accomplish anything with hard work," and roughly 90% felt that having ambition and working hard were either necessary or highly crucial for advancing in life.

In the past century, however, the idea in the USA that nothing but an individual’s work ethic and determination will determine their economic success is not as warranted as most of the public believes it to be. Chetty *et al.* [2] used millions of anonymous income records consisting of US-born citizens born in 1980-1982 (income for these individuals was then measured 30 years later in 2011-2012) to measure intergenerational mobility. Intergenerational mobility being the ability of someone to move into a higher level of the income distribution in comparison to their parents. They first analyzed the time trends of parent-child income by ranking each parent within their generation and ranking each child in their generation. Their findings were an almost perfectly linear relationship. A child in the richest family ranked 34 percent higher on average than children of the poorest families. The analysis also found that while the chance of a child jumping up an income rank from their parents stayed consistent throughout the 1971 to 1993 generations, the difference in rank has increased significantly. The study also found that, in the lowest mobility areas of the United States, “fewer than 1 in 20 poor children reach the top quantile a rate that is lower than any developed country for which data have been analyzed to date”.

However, not all Americans are unaware of the below-advertised economic mobility. In 2020, Poverty Solutions’ Detroit Partnership for Economic Mobility team [5] found that nearly 50% of Detroit residents believed economic mobility to have worsened since 2000. Detroit is one of the poorest cities in the country, at the time of the study, 1 in 5 residents lived on less than $10,000 a year.

Corak [7] uses intergenerational elasticity (comparing only fathers and sons) as a measure of economic mobility in a nation. This is the percentage difference between the parent's generation's earnings and the child's generation's earnings. An intergenerational elasticity of wages of 0.6, for instance, indicates that if two fathers earn 100% more than one another, the high-income father's son will have an adult income that is 60% higher than the substantially lower-income father's son. With an elasticity of 0.2, the sons' differences would only be 20% as a result of the fathers' 100% difference. A society with greater mobility is one with less elasticity. The best evidence suggests that the US has an intergenerational elasticity of somewhere in the range of 0.4 to 0.6. In a comparison of 22 countries [8], the US ranked 15th with Denmark having the lowest at 0.15 and Peru bringing up the rear with an estimated rating of 0.67. Corak concluded that " the United States stands out as being among the least generationally mobile among the rich countries.”

**The question:**

There is strong evidence of poor economic mobility in the United States. So, this begs the question, what factors affect an individual household's ability to climb the economic ladder? Current income is a factor in estimating the household's future income. But how much do other factors affect it? In this analysis, we will look at the effects of

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