SPEA-V-202

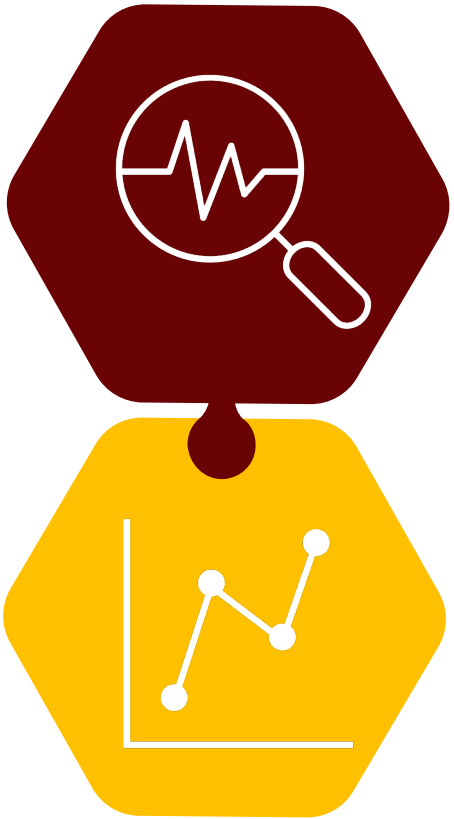
Contemporary Economic Issues in Public Affairs

Income Inequality and Poverty

Luis Navarro

INDIANA UNIVERSITY BLOOMINGTON

Outline for Today



Income Inequality and Poverty

- Definition
- Measurement
- Gini Coefficient & Poverty Line
- Economic Mobility

Empirical Evidence

- Regional Differences in the US
- Demographic Composition
- Historical Trends

Efficiency vs Equity

- So far, our discussion has been focused on **economic efficiency**: maximizing total surplus (minimizing DWL). This has to do with the allocation of resources in the economy.
- We also explored how market failures derive in deviations from economic efficiency (DWL > 0).
- Recall the example of wage gaps and discrimination in the labor market. Is discrimination a market failure?
- Sadly, no. In our framework, discrimination means that a firm's willingness to hire individuals systematically differs across some characteristic (e.g. gender, race) that does not necessarily reflect an individual's skills or preferences.
- Does this mean it is desirable? Obviously, no!
- It means that economic efficiency is not the right criterion to analyze this problem.
- Change of hats: to analyze **income inequality** we need to think about **equity.**

Introduction

In general, there are two ways to think about the distribution of income.

Relative Income Inequality
The amount of income the poor have relative to the rich.

↓

Equity in the income distribution

Absolute deprivation
The amount of income the poor have relative to some measure of minimally acceptable income.

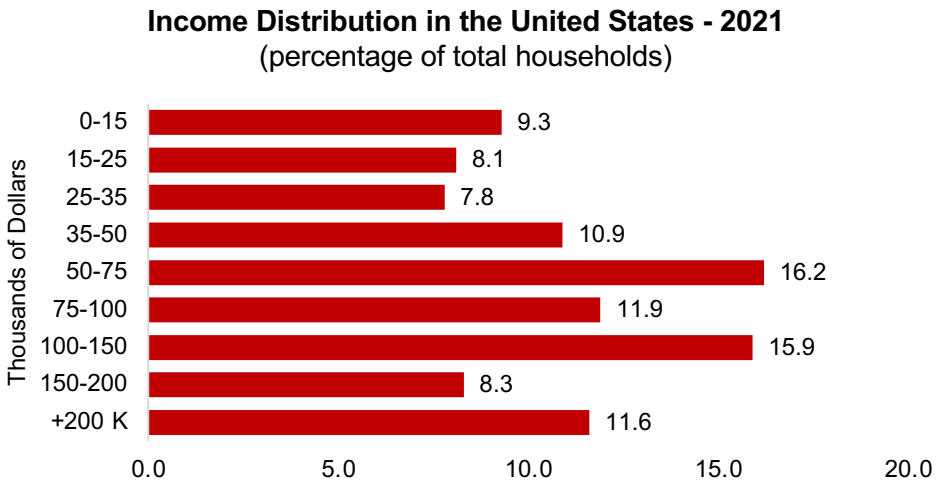
↓

Poverty Measurement

Income Distribution

- We have discussed how labor market outcomes determine an individual's income. Some occupations observe higher real wages relative to others.

- **Income Distribution:** suppose you have data on the income observed by all individuals in the economy, so you can rank them across their income level.



- This graph shows the latest measure of income distribution in the US.

- How do we read this graph?

- It says that 9.3% of households in the US observed an annual income lower than 15K a year. 15.9% of total households earned between 100-150K.

- How do we know whether this income distribution is an "equitable" outcome?

Income Distribution

Suppose we are analyzing an economy comprised of 5 people with the following income levels.

Individual	Income	% of Total Income
Anne	100	33%
Bill	80	27%
Cady	60	20%
Dan	40	13%
Emily	20	7%
Total	300	100%

- Aggregated income (wealth) in the economy equals the sum of the income of everyone. In this case, $300.
- If we divide how much everyone has by the total amount of resources in the economy, we get how much each person has relative to the size of the economy.
- In this example, Anne has one-third of the total resources in the economy, while Emily only has 7%.

- How do we measure equity in the income distribution? A simplistic approach is to consider the scenario where everybody gets the same amount of money. In other words, **perfect income equality.**
- In this case, everybody gets $60 so everyone has an equal share (20%) of the total amount of resources in the economy. By definition, **there is no income inequality.**

Income Inequality

How can we measure inequality in the income distribution? Intuitively, we can do the following:

Individual	Observed Distribution		No Income Inequality		Deviation from Perfect Equality	
	Income	% Total Income	Income	% Total Income	Absolute Deviation	% Total Income
Anne	100	33%	60	20%	40	13%
Bill	80	27%	60	20%	20	7%
Cady	60	20%	60	20%	0	0%
Dan	40	13%	60	20%	20	7%
Emily	20	7%	60	20%	40	13%
Total	300	100%	300	100%	120	40%

- Take the absolute difference between the observed income and the theoretical income when there is no income inequality. Why the absolute difference? We want to consider deviations above and below perfect equity (i.e. whether you have more/less compared to the case without inequality).

- Then compare the sum of absolute deviations with the total resources in the economy. Result: the first distribution derives in 40% of the resources of the economy being assigned unequally.

- **Caveat:** don't take to seriously the formulation per-se. Keep the intuition of how inequality is measured as a deviation from perfect equality in the income distribution.

Income Inequality: Measurement

In practice, one of the most common ways to measure income inequality is the **Gini Coefficient.**

- The formulation is like the one used in the previous example but more complex (and accurate). If you are interested in how it is calculated, you can read this.

- In a nutshell, the Gini Coefficient takes the differences between the observed income distribution and the distribution with no income inequality and builds a variable that takes values from 0 to 1.

- If Gini = 0, then there is no income inequality. If Gini = 1, then it means perfect income inequality (e.g. one person holds all the resources in the economy).

Individual	Perfect Inequality (Gini = 1)		Perfect Equality (Gini = 0)	
	Income	% Total Income	Income	% Total Income
Anne	300	100%	60	20%
Bill	0	0%	60	20%
Cady	0	0%	60	20%
Dan	0	0%	60	20%
Emily	0	0%	60	20%
Total	300	100%	300	100%

Absolute Deprivation and Poverty

Absolute deprivation: the amount of income the poor have relative to some measure of minimally acceptable income.

- As we covered in class, the equilibrium wage is not necessarily enough to cover basic human needs. People observing low levels of income might lack access to key goods (i.e. housing, food).

- In the US the standard for measuring absolute deprivation is the **poverty line.** This measure was developed in the mid-1960s by **Mollie Orshansky**, a staff economist at the Social Security Administration.

- **Orshansky's Idea:** define a consumption bundle C_m that has all the goods with the nutritional standards for a minimally acceptable diet. Multiply by the bundle's prices P_m to get an estimate of bundle's market value. In the 60s, Mollie estimated that the average household (3 or more persons) spent 1/3 of their after-tax income on food. Hence, she multiplied the bundle price by 3 to get the minimum income that allows individuals to purchase C_m in the market.

- For simplicity, we will say $C_m = 1$. So P_m is the price of the bundle that provides a minimally acceptable diet.

$$Poverty\ Line = 3P_m$$

Absolute Deprivation and Poverty

Recall the income distribution from our previous example.

Individual	Income	% of Total Income
Anne	100	33%
Bill	80	27%
Cady	60	20%
Dan	40	13%
Emily	20	7%
Total	300	100%

- Suppose $P_m = 15$. How many people are below the poverty line?

$$Poverty\ Line = 3P_m = 45$$

- Dan and Emily are below the poverty line.
- Note: strictly speaking, everyone has enough money to buy C_m, yet we have 2 people in poverty (40% poverty rate).
- Key takeaway: individuals spend money in several goods (housing, health care). Not only food.
- Orshanky's conception of poverty relates to satisfaction of nutritional needs.

Absolute Deprivation and Poverty

Example: suppose we experience an inflationary shock such that $P_m = 25$. Hence, the poverty line = 75.

Individual	Income
Anne	100
Bill	80
Cady	60
Dan	40
Emily	20
Total	300

- With the new prices, Cady's income is now below the poverty line.
- Now we have 3 people in poverty (poverty rate = 60%). Poverty rate is just the number of people in poverty divide by the total population.
- This shock derived in a poverty increase of 20 percentage points (pp).

Individual	Income 0	Income 1
Anne	100	120
Bill	80	100
Cady	60	80
Dan	40	60
Emily	20	40
Total	300	400

- **Government Response:** suppose the government implements a program that gives everyone a check for $20.
- After the policy Cady is pulled above the poverty line. She is no longer poor.
- This policy offset the inflationary shock and reduced the poverty rate in 20 percentage points (pp).

Absolute Deprivation and Poverty

Example: suppose the government implements a redistributional fiscal policy that taxes Anne with $20 and transfers $10 to Dan and Emily. Suppose $P_m = 15$ so the poverty line = 45.

Individual	Before the Policy			After the Policy		
	Income	Absolute Deviation	Abs Dev (% Income)	Income	Absolute Deviation	Abs Dev (% Income)
Anne	100	40	13%	80	20	7%
Bill	80	20	7%	80	20	7%
Cady	60	0	0%	60	0	0%
Dan	40	20	7%	50	10	3%
Emily	20	40	13%	30	30	10%
Total	300	120	40%	0%	80	27%

- This policy pulled Dan above the poverty line, but not Emily. It reduced poverty by 20 percentage points but did not eliminate it.

- **Moreover, this policy reduced income inequality!** The resources in the economy that were distributed unequally decreased by 13 pp. **Intuition:** progressivity in the tax system reduces income inequality.

Poverty Line

The poverty line remains the way the US government measures poverty. However, it has some shortcomings.

- **Bundle changes:** the share of food in family consumption has fallen over time relative to other goods like clothing, shelter, medical care. By 1998, the 33% estimated by Mollie was only 16%. Hence, multiplying by 3 seems to be inaccurate.

- **Regional differences are overlooked:** the poverty line is a nation-wide statistic. It takes the average across states. What is the inherent problem of this? Recall the Miami-Bloomington example. Prices differ!

- **Income definition is incomplete:** the poverty line only considers “cash-income”. It ignores non-cash transfers (e.g. Medicaid).

- There has been a long discussion about potential improvements to this measure. Currently, the Census Bureau measures poverty using **poverty thresholds.** It has also improved the way income is measured.

- Still, the current version follows the basic intuition of Orshansky’s poverty line.

Poverty Measurement in the US: Poverty Thresholds

The current methodology estimates different poverty lines (thresholds) that depend on household's characteristics like **family size and composition.** If a family's total income is less than the family's threshold, then the family is considered in poverty.

Poverty Thresholds by Size of Family and Number of Related Children Under 18 Years Old: 2021 (thousands of $)

Size of family unit	Related children under 18 years								
	None	One	Two	Three	Four	Five	Six	Seven	Eight or more
One person (unrelated individual):	-	-	-	-	-	-	-	-	-
....Under age 65	14.10	-	-	-	-	-	-	-	-
....Aged 65 and older	13.00	-	-	-	-	-	-	-	-
Two people:	-	-	-	-	-	-	-	-	-
....Householder under age 65	18.15	18.68	-	-	-	-	-	-	-
....Householder aged 65 and over	16.38	18.61	-	-	-	-	-	-	-
Three people	21.20	21.81	21.83	-	-	-	-	-	-
Four people	27.95	28.41	27.48	27.58	-	-	-	-	-
Five people	33.71	34.20	33.15	32.34	31.84	-	-	-	-
Six people	38.77	38.92	38.12	37.35	36.21	35.53	-	-	-
Seven people	44.61	44.89	43.93	43.26	42.01	40.55	38.96	-	-
Eight people	49.89	50.33	49.42	48.63	47.50	46.07	44.59	44.21	-
Nine or more people	60.01	60.30	59.50	58.83	57.72	56.20	54.83	54.49	52.39

- **Limitation:** thresholds do not vary geographically. However, they are updated yearly for inflation.

Source: US Census

Economic Mobility

The previous example shows how through policy people can move across the income distribution.

- **Economic Mobility** refers to the movement of people across the income distribution. This is particularly relevant from an intergenerational standpoint.

- **Intergenerational Mobility** refers to the probability of rising (climbing) the income distribution conditional on the income level to which you were born.

- Recall the so-called "American Dream". Let's see Oxford's Dictionary definition:

- **American Dream:** *the belief that America offers the opportunity to everyone of a good and successful life achieved through hard work*.

- The American Dream highlights a key concept in development economics: **equality of opportunity is not the same as equality of outcome.**

Equality of Opportunity vs Equality of Outcome

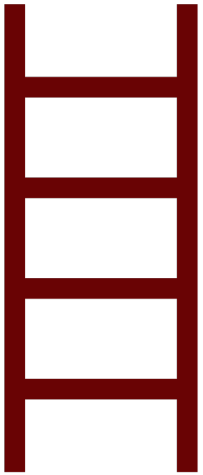
Two alternative views of income mobility:

- **Equality of Opportunity:** everybody has the same chance to climb the income ladder.
- **Equality of Outcome:** people's outcomes should be similar, regardless of their economic decisions.
- The **American Dream** refers to **equality of opportunity**, not outcome.
- Equality of opportunity, however, hinges on a strong implicit assumption. Which one?
- No systematic discrimination!

Economic Mobility and Income Inequality

Ex: suppose two identical babies are born (same skills) into identical families (parents have same income). The difference: one baby is born in a country with low-income inequality, while the second is born in a country with high inequality. If we measure the average income of these two people when they turn 40, who is likely to have a higher income?

- Think about the income distribution as a literal ladder. Each step is an income bracket. Climbing from 15K to 30K. Rising across quintiles (ranking).
  - **Note:** If there is high income inequality, it means the distance between the steps is larger.

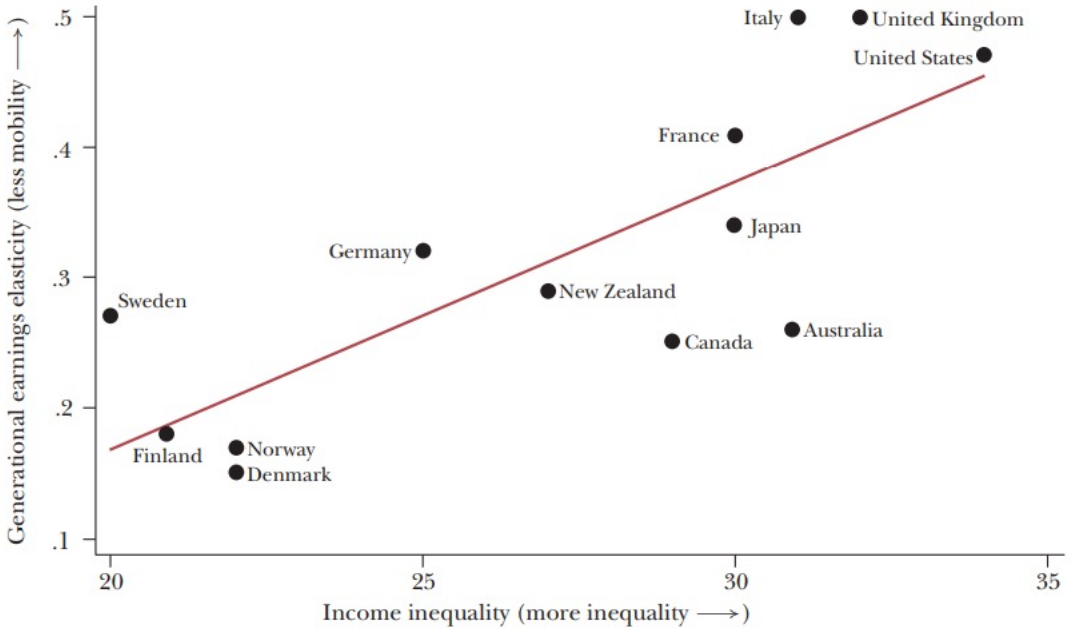


Income Ranking	Distribution 1			Distribution 2		
	Income	Step	Abs Dev (% Income)	Income	Step	Abs Dev (% Income)
Top 20%	100	20	13%	120	40	20%
2nd quintile	80	20	7%	80	30	7%
3rd quintile	60	20	0%	50	20	3%
4th quintile	40	20	7%	30	10	10%
Bottom 20%	20		13%	20		13%
Total	300		40%	300		53%

Economic Mobility and Income Inequality

Figure 1

The Great Gatsby Curve: More Inequality is Associated with Less Mobility across the Generations



Source: Corak (2013) and OECD.

Corak (2013) estimated an intergenerational income elasticity. (the effect your parent's income has on your expected income) and compared it with the Gini coefficient, across a panel of several countries.

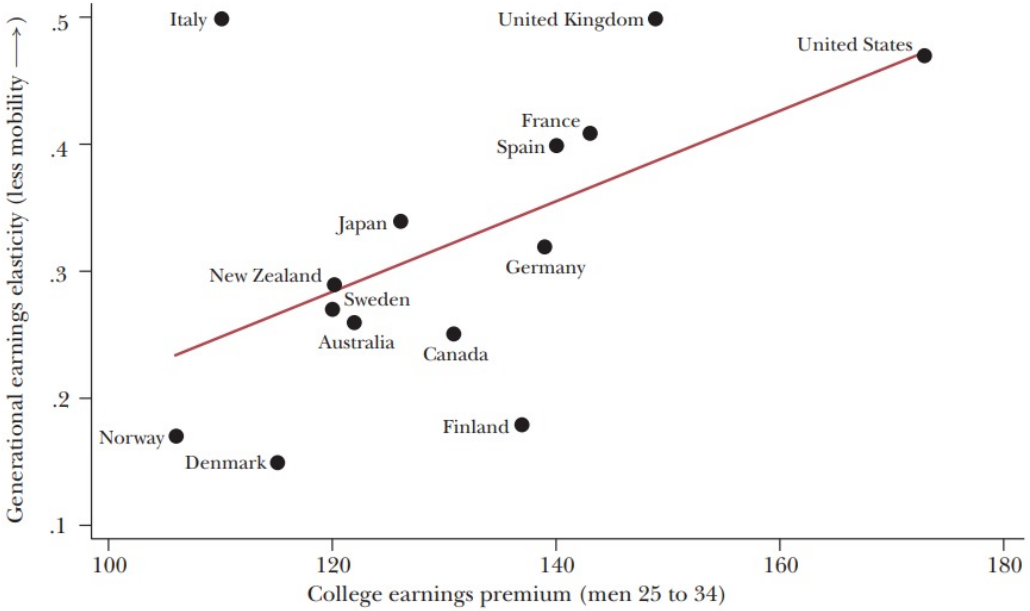
His study finds that more inequality is associated with less mobility across the generations.

Corak, Miles. 2013. "Income Inequality, Equality of Opportunity, and Intergenerational Mobility." *Journal of Economic Perspectives*, 27 (3): 79-102

Economic Mobility and Returns to Schooling

Figure 4

Higher Returns to Schooling are Associated with Lower Intergenerational Earnings Mobility



Source: Author using data from OECD (2011b, table A8.1), and Corak (2013).

Corak (2013) also finds that countries with higher returns to schooling (i.e the incremental effect of college on the average income) are associated with lower intergenerational mobility.

In other words, going to college helps you “climb the ladder”.

.3. "Income Inequality, Equality of Opportunity, and Intergenerational
l of Economic Perspectives, 27 (3): 79-102

Other relevant aspects of poverty measurement

Each country has different standards to measure poverty. Although, there is agreement on using income-based measures.

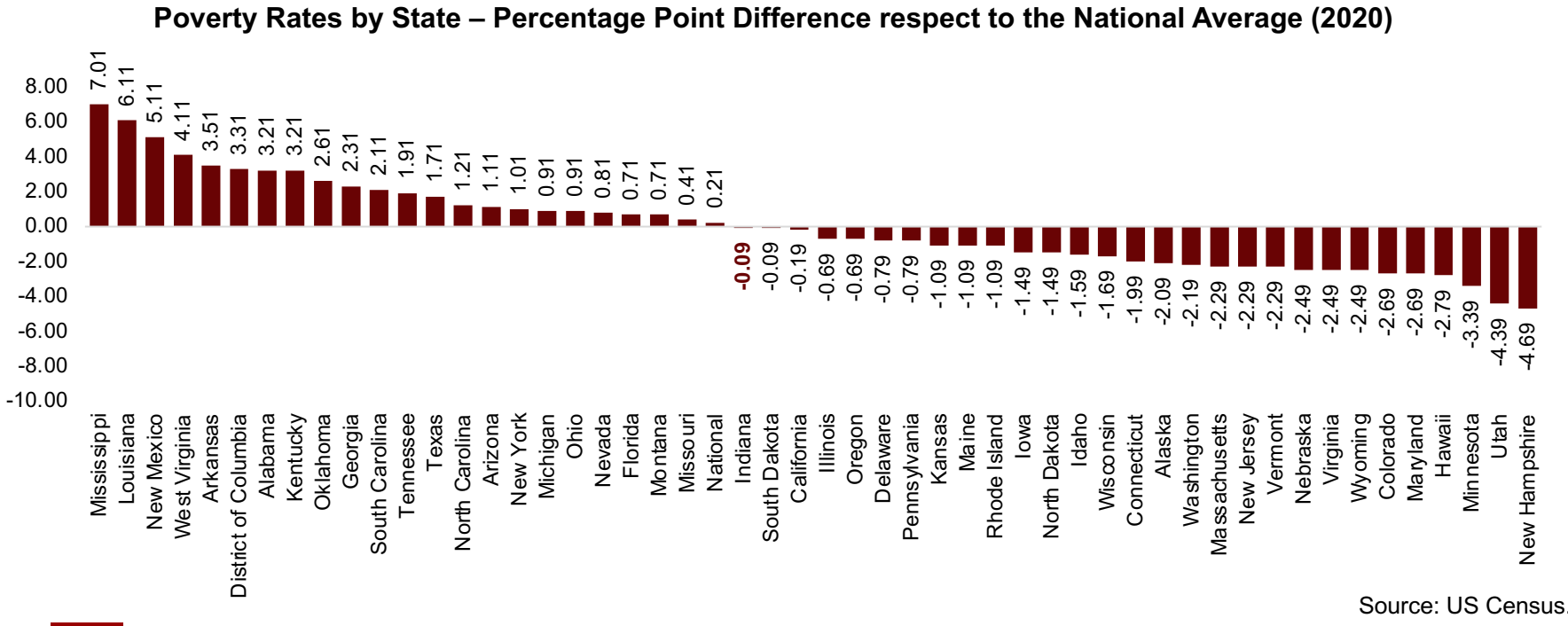
- For instance, some differences stem from the characteristics of the bundle C_m across countries. It depends on the public goods provided by the government (e.g. countries with free healthcare).

- Cross-country comparisons requite adjusting for differentials in the price of C_m (avoid the Miami-Bloomington problem at the macro level). **Purchasing power parity.**

- The composition of poor people in the United States varies across states, ages, and several characteristics.

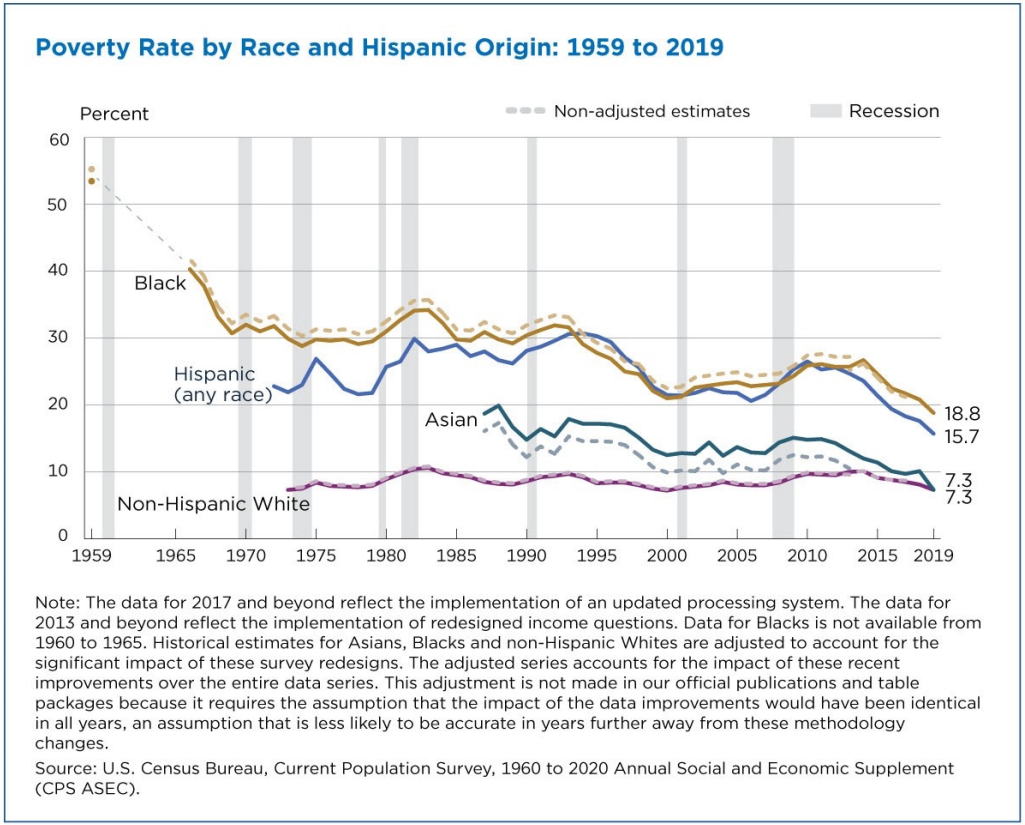
Poverty Across States

The following graph shows differences in the poverty rate observed at each state, relative to the national average. In sum, states with positive bars are poorer than the average.



Source: US Census.

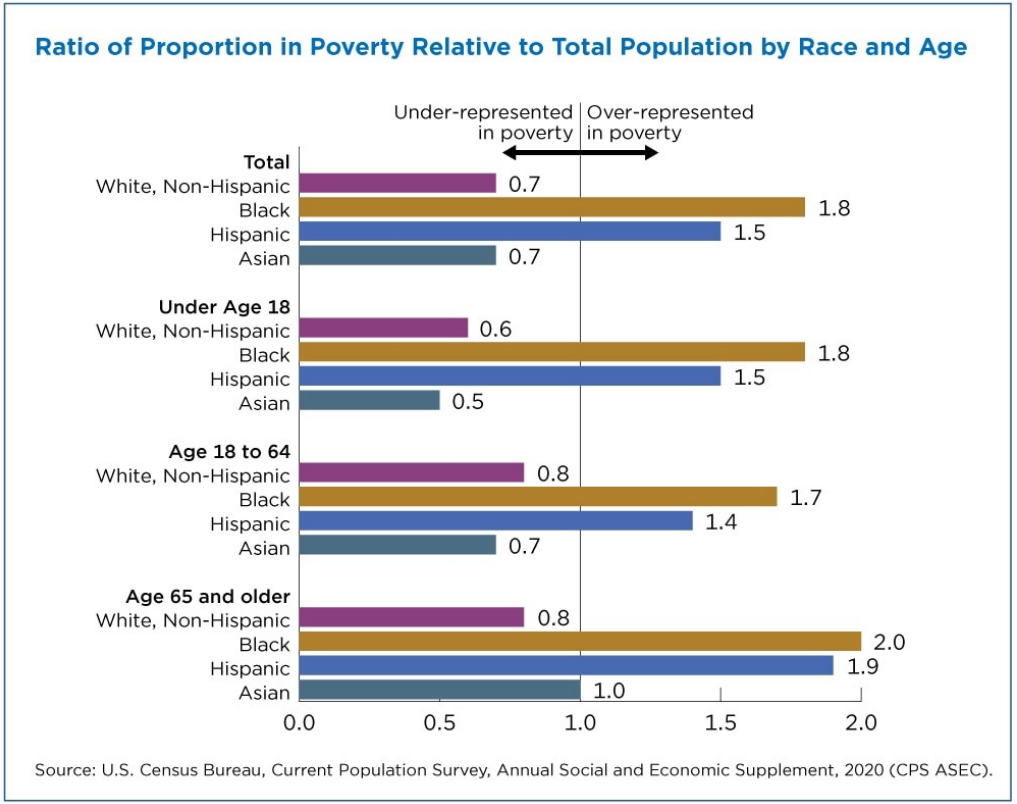
Poverty by Race and Age



- Poverty rates had decreased significantly over time across Black, Hispanic, and Asian population.
- However, inequalities across race and age persist in the United States.

Source: US Census.

Poverty by Race and Age



- This figure shows the ratio of people in poverty by race or Hispanic origin group to each group's share of the total population.
- If the poverty population is perfectly proportional to the total population, the ratio equals 1.
- If a group is over-represented in poverty, the ratio will be greater than 1.0. If the ratio is less than 1.0, the group is under-represented in poverty.

Source: US Census.

For Next Class

- **Next class:** Transfer Programs
- **Readings:** Mankiw Ch 20. Stiglitz & Rosengard Ch 15. Gruber Ch 17.

SPEA-V-202

Contemporary Economic Issues in Public Affairs

Income Inequality and Poverty

Luis Navarro

INDIANA UNIVERSITY BLOOMINGTON