

Part I: Introduction to Labor Economics

David A. Díaz

UNC Chapel Hill

About Me (Less Fun)

- Economics PhD student at UNC
- Appalachian State University alumnus
 - Majors: Actuarial Science, Economics
 - Minors: Stats, Physics
- Research interests: Migration, development, labor, demography

About Me (More Fun)

- Fav. Music: Glass Animals, TØP, Misterwives, Two Door Cinema Club, Childish Gambino (allegedly “angsty”)
 - Current Anthem: Glass Animals - Youth
- Fav. TV: Rick & Morty, It's Always Sunny, Archer, Real Housewives of Atlanta
- Fav. Movies: Fantastic Mr. Fox , Kiss Kiss Bang Bang, The Social Network, No Country for Old Men

About Me (More Fun)

- Fav. Team: FC Barcelona
- Celebrity Crush: Kevin Spacey
- Bæs: Elizabeth (main) & Stella
- Likes: Beer, t-shirts, normal shoes, Tina Fey
- Dislikes: Gyms, loud chewing, open-toed shoes, students packing up early ~ shade emoji ~

Bæs



Figure: Stella Artois Díaz & Elizabeth

Class Details

- **Email:** diazda@live.unc.edu
- **Office:** Phillips Annex 103A
- **Office Hours:** Monday & Wednesday, 2:30-3:30PM
- **Website:** <https://sakai.unc.edu>
- **Prerequisites:** ECON 101 & ECON 310/410

Class Details

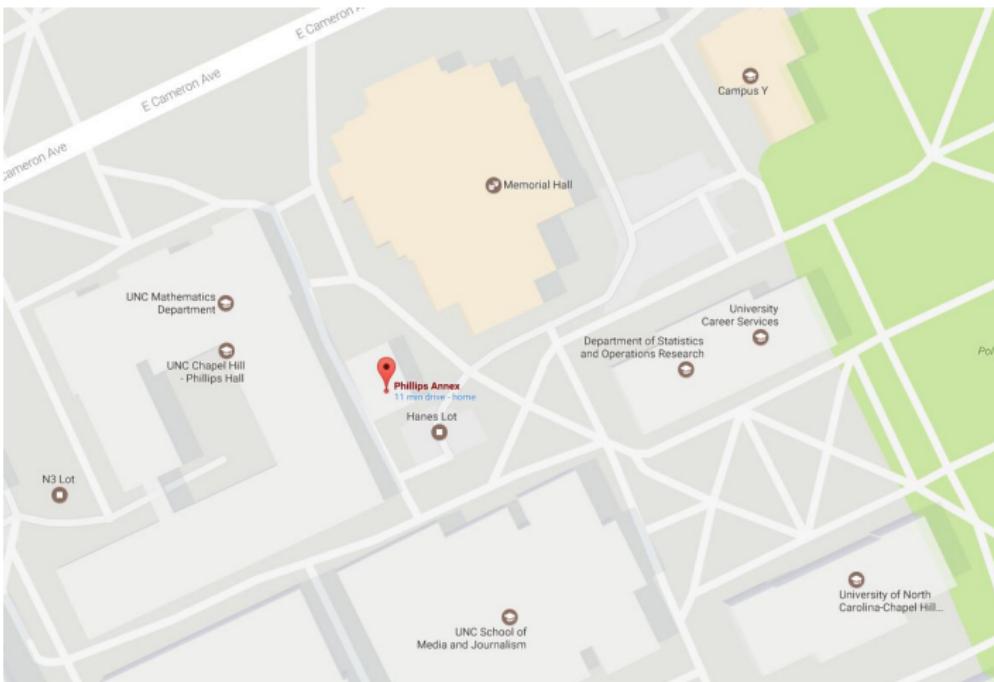


Figure: The Annex

Textbook

- George Borjas, *Labor Economics*, 8th edition
 - Note: Older editions should work fine, but it is your responsibility to match up content.
 - Any assigned readings from the text are fair game for exams unless told otherwise.
 - Any assigned readings outside the text or from homework are also fair game unless told otherwise.

Grading Scale

- The grading scale is as follows:

A : 93 – 100

A– : 90 – 92.99

B+ : 87 – 89.99

B : 83 – 86.99

B– : 80 – 82.99

C+ : 77 – 79.99

C : 73 – 76.99

C– : 70 – 72.99

D+ : 65 – 69.99

D : 60 – 64.99

F : < 60

- Grades will be regularly updated on Sakai. Please bring up any discrepancies in a timely manner (within 1 week).

Grade Components

- Homework: 25%
- Midterm 1: 20%
- Midterm 2: 20%
- Final Exam: 35%

Homework

- Six (potentially seven) homework assignments will be assigned throughout the semester.
- Homework is due by the end of class on the assigned date.
- You are encouraged to work together, but everyone should turn in an individual assignment.
- No late homework will be accepted without prior approval.

Exams

- Two in-class exams will take place during regular class hours. Each is worth 20% of the final grade.
- Dates for the in-class midterms will be determined at least a week ahead of time.
- The cumulative final exam is scheduled for 12PM on Monday December 11.
- All exams will be closed book/note. You will be allowed the use of a **non-graphing** calculator.

Policies & Expectations

- Regular attendance and participation is strongly encouraged. It is **your** responsibility to get any notes/announcements you may have missed from a classmate.
- Be respectful to both me and your classmates.
- Emails should be written in a professional manner.
 - Use your UNC email, as email from other clients may end up in spam.
 - I will do my best to respond to emails within 24 hours. If you have not heard back in 48 hours, please follow up to make sure your email was received.

Lectures

- Slides and the board will both be used to present material throughout the course.
 - Data and concepts will mostly be presented on slides.
 - Exposition, diagrams, and math will usually be done on the board.
- Slides will generally be posted at least 24 hours before the corresponding class meeting.

General Advice

- This course does not use calculus, but you will be required to use algebra, including:
 - Setting up equations.
 - Solving equations.
 - Interpreting mathematical expressions.
 - Etc.
- Get in touch with me early if you are struggling with the material.
- Try each homework assignment on your own at least once before working through it with others.
- Ask questions if you have them! When? Any time - during lecture, before/after class, during office hours, or through email.

General Advice



Liked by **krisynoveezy** and **900 others**

legogradstudent Babbling incoherently in response to an undergrad's question, the grad student is alarmed to watch the class write everything down.

Introduction to Labor Economics

- We will study various aspects of labor markets. Our goal is to gain insight into labor market behavior by applying concepts from microeconomic theory.
- Throughout the course, we will apply what we learn to various real-world policy issues such as the minimum wage, immigration, and wage inequality.
- Though our focus will be on the U.S. labor market and applicable policies, we will also look at some labor market issues in developing nations for certain topics.

Actors in the Labor Market

- In their simplest form, labor markets have three actors:
 - Workers
 - Objective: Maximize utility by choosing education, labor force participation, effort level, occupation, etc.
 - Contribute to **labor supply**.
 - Firms
 - Objective: Maximize profits by employing labor and capital.
 - Contribute to **labor demand**.
 - Government
 - Sets regulatory structure of labor markets.
 - Enacts policies such as income tax, education subsidies, minimum wages, workplace safety regulations, etc.

Labor Economics: The ECON 101 Story

- Each point on the labor supply curve represents a worker's reservation price for selling labor.
 - Higher wage \Rightarrow more individuals willing to sell labor \Rightarrow higher quantity of labor supplied.
 - Thus, the labor supply curve slopes upward.
- Each point on the labor demand curve represents a firm's reservation price for purchasing labor.
 - Higher wage \Rightarrow fewer firms willing to purchase labor \Rightarrow lower quantity of labor demanded.
 - Thus, the labor demand curve slopes downward.

Labor Economics: The ECON 101 Story

- Labor markets can be analyzed just like any other market through the supply and demand framework.
- Implications:
 - Tax equivalence: Payroll tax on firms has the same effect as an income tax on workers.
 - Markets clear in the absence of regulation: No *involuntary* unemployment in the simplest framework.
 - Law of One Price holds: Market bears a sole equilibrium wage paid to all workers of a particular skill level.

Labor Economics in 380

- Real-world labor markets exhibit much richer (and interesting!) behavior such as:
 - Wage dispersion due to differences in job characteristics, education levels, demographics, bargaining, and willingness to “search” for better opportunities.
 - Market rigidities which prevent the market from clearing leading to significant levels of involuntary unemployment and a costly search and matching process between workers and firms.

Road Map

- Part I: Labor Market Basics and the U.S. Labor Market
 - Overview of the U.S. labor market.
 - How do we measure the labor force, employment, and unemployment?
 - Does the unemployment rate accurately reflect economic conditions?
 - What are the different types of unemployment?
- Part II: Neoclassical Labor Supply and Demand
 - Model of individual and firm labor market behavior.
 - How do firms and workers interact to drive market outcomes?
 - How do firms and workers respond to changes in their incentives (e.g., minimum wage policies)?

Road Map

- Part III: Human Capital

- How do workers choose their particular set of acquired skills that they offer employers?
- Why do firms value educated workers?
- What information is conveyed by our willingness to spend more time in school?

- Part IV: Wage Inequality

- What factors determine the shape of the wage distribution?
- Why is wage inequality rising?
- Why do some industries display exceptional wage dispersion?

Road Map

- Part V: Labor Market Discrimination
 - Why do different demographic groups earn different average wages?
 - What are the different ways in which discrimination can take place?
 - How can we measure the extent of discrimination in the labor market?
- Part VI: Selected Topics
 - Human capital: The supply side
 - Social interactions & social networks

Readings

- Borjas 1.1-1.3

Measuring the Labor Force

- What are we trying to measure?
 - Micro-level: Number of hours individuals are willing to work at a given wage rate.
 - Macro-level: Total amount of labor supplied in the economy.
 - Different ways to measure: total number of workers, proportion of the population who works, etc.
 - Today we will consider how to measure this in practice.

Measuring Labor Supply: CPS

- **Current Population Survey (CPS)** is conducted monthly by the Bureau of the Census for the **Bureau of Labor Statistics (BLS)**
 - ~ 60,000 households are questioned about their work activities during a particular week ("reference" week) of the month.
 - Goal: Elicit employment status of household members

Measuring Labor Supply: Working Population

- Most members of the population aged 16 or older make up the **working population (P)**.
- Excluded from **P** are
 - people living in institutions (e.g., jail, nursing homes)
 - those on active duty in the Armed Forces
- Individuals in **P** are further classified as either
 - ① in the labor force (**L**)
 - ② out of the labor force (**O**)

Measuring Labor Supply: The Labor Force

- An individual who is in **LF** is further categorized as either **Employed (E)** or **Unemployed (U)**
- To be classified as employed, an individual must have
 - worked at least one hour as a paid employee (including self-employment) OR
 - worked at least 15 hours in an unpaid role for a family business OR
 - a job but is on temporary leave due to illness, maternity leave, etc.

Measuring Labor Supply: The Labor Force

- To be classified as unemployed, an individual must
 - have had no employment during the reference week AND
 - be currently available for work AND
 - have actively looked for work in the four-week period prior to the reference week

Measuring Labor Supply: The Labor Force

- The out of the labor force group, **O**, includes:
 - Retirees
 - Students
 - Non-market laborers (e.g., stay at home parents)
 - “Off-the-books” laborers
 - Black market laborers
 - **Marginally attached workers:** Have searched for a job in the past 12 months, but not in the past 4 weeks regardless of the reason
 - **Discouraged workers:** Have searched for a job in the past 12 months, but not the past 4 weeks because they believe they won’t find a job in their line of work.

Measuring Labor Supply: The Labor Force

Example

Classify the labor force status of the following individuals (How the Government Measures Unemployment, BLS 2014).

- ① *Lisa spends most of her time taking care of her home and children, but she helps in her husband's computer software business all day Friday and Saturday.*
- ② *Ms. Jenkins tells the interviewer that her teenage daughter, Katherine Marie, was thinking about looking for work in the prior 4 weeks but knows of no specific efforts she has made.*
- ③ *Last week, Megan, who was working for a comic book store, went to a home electronics store on her lunch hour to be interviewed for a higher paying job.*
- ④ *Avery lost her full-time job at a book store on Wednesday of the survey reference week. She submitted several applications with other local retailers on Thursday and Friday but had not obtained a new job by the end of the week*

Measuring Labor Supply: The Labor Force

- The Labor Force trends upwards with population growth.

Series Id: LNS11000000
Seasonally Adjusted
Series title: (Seas) Civilian Labor Force Level
Labor force status: Civilian labor force
Type of data: Number in thousands
Age: 16 years and over

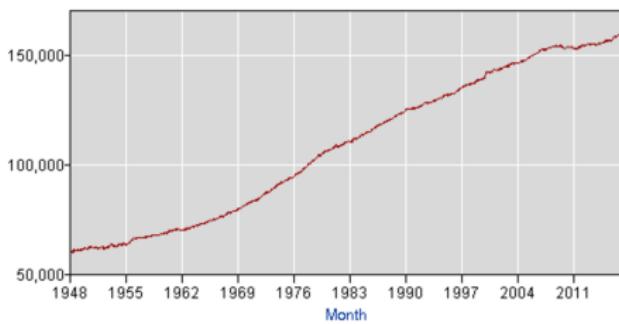


Figure: US Labor Force (thousands), 1948 - 2017

Measuring Labor Supply: The Labor Force

- Employed workers generally trend upwards with population growth, but dips during recessions.

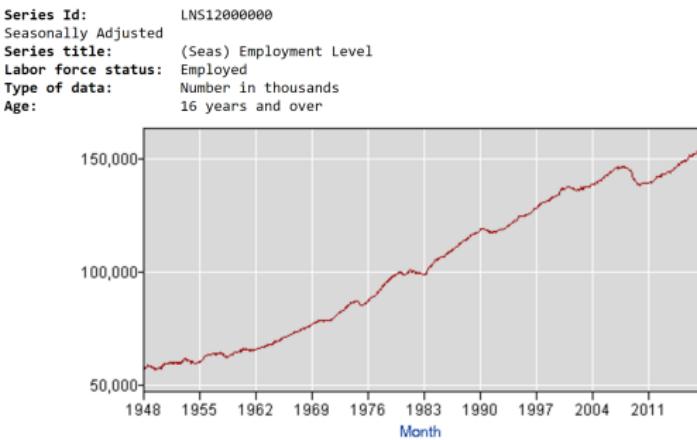


Figure: US Employed Workers (thousands), 1948 - 2017

Measuring Labor Supply: The Labor Force

- Unemployed workers spike during recessions.

Series Id: LNS13000000
Seasonally Adjusted
Series title: (Seas) Unemployment Level
Labor force status: Unemployed
Type of data: Number in thousands
Age: 16 years and over



Figure: US Unemployed Workers (thousands), 1948 - 2017

Levels or Rates?

- Tough to distinguish most of these trends from population growth.
- Labor force data generally makes more sense as a rate versus a level.
 - e.g., Texas had more unemployed workers than Michigan during the 2009 recession, but had a lower unemployment *rate*.

Measuring Labor Supply: The Labor Force

- **The Labor force Participation rate** measures the proportion of the working population who is in the labor force.

$$\text{LFPR} = \text{LF}/\text{P} = (\text{E}+\text{U})/(\text{E}+\text{U}+\text{O})$$

Example

A country has a population of 160 million. 30 million are under the age of 16, and 10% of the adult population is either in the military or institutionalized. If 70 million people have jobs and 5 million are looking for work, what is the labor force participation rate in this country?

Measuring Labor Supply: The Labor Force

Example

What effect do each of the following scenarios have on the labor force participation rate?

- ① *Sue lost her job and begins looking for a new one.*
- ② *Jon, a steelworker who has been out of work since his mill closed last year, becomes discouraged and gives up looking for work.*
- ③ *Sam, the sole earner in his family of 5, just lost his \$80,000 job as a research scientist. Immediately, he takes a part-time job at McDonald's until he can find another job in his field.*
- ④ *Robert comes out of retirement and begins working at a proctoring center.*

Measuring Labor Supply: The Labor Force

Series Id: LNS11300000
Seasonally Adjusted
Series title: (Seas) Labor Force Participation Rate
Labor force status: Civilian labor force participation rate
Type of data: Percent or rate
Age: 16 years and over

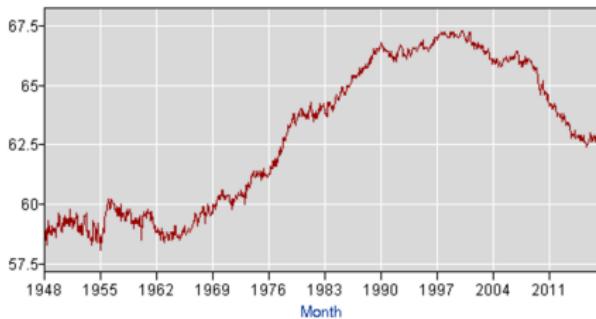


Figure: US Labor Force Participation Rate, 1948 - 2017

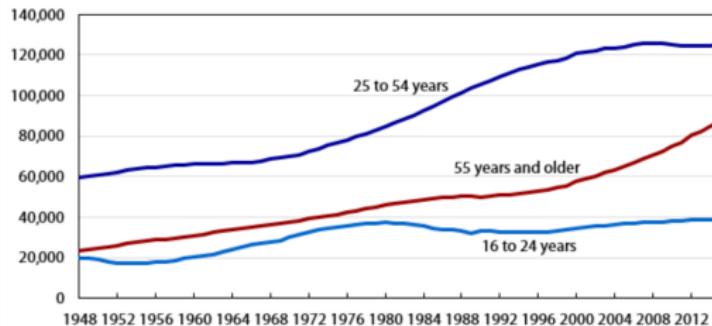
- Why has the LFPR fallen since 2000?

Measuring Labor Supply: Falling LFPR

- Aging population.
 - Perhaps most important factor.
 - “Baby-boomer” generation aging out of workforce.

Figure 2. Civilian noninstitutional population (total), by age, annual averages, 1948–2015

Number of people
(in thousands)



Source: U.S. Bureau of Labor Statistics, Current Population Survey.

Figure: LFPR and Demographics, 1948-2006

Measuring Labor Supply: Falling LFPR

- Education

- Decision to stay in or go back to school significant driver in decline of LFPR in 16-24 year old group.

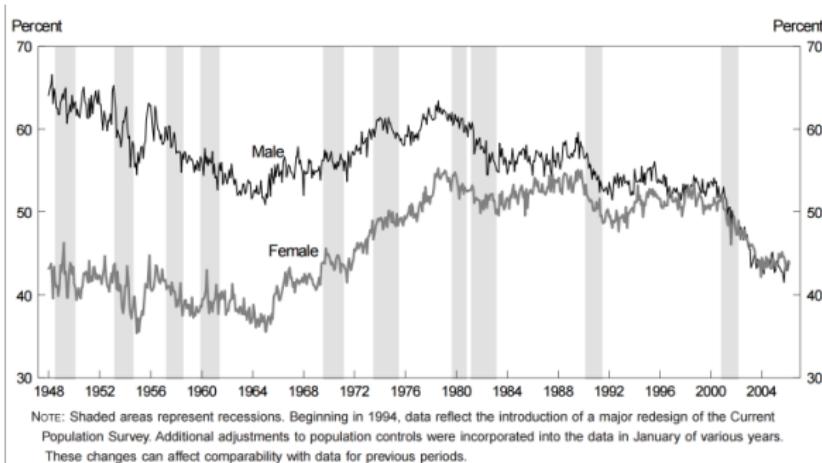
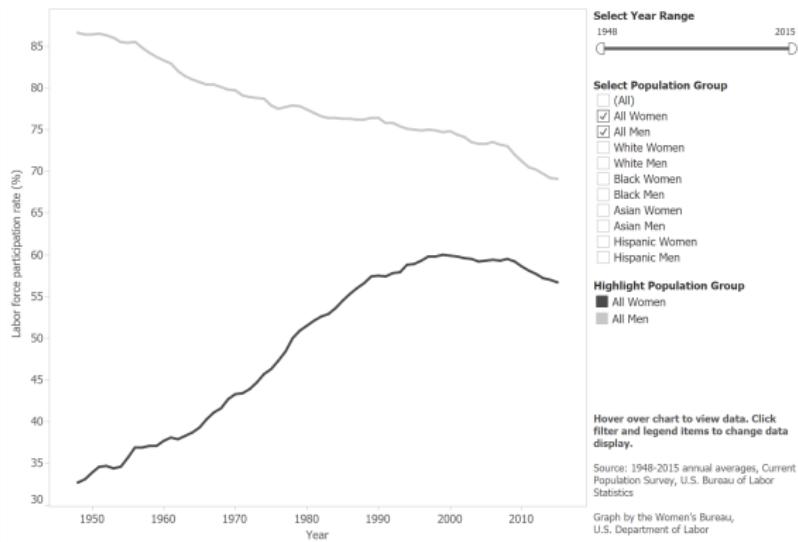


Figure: LFPR for 16-19 year olds, 1948-2006

Measuring Labor Supply: Falling LFPR

- Declining male participation since 1940s
- Declining female participation since ~2000



Notes: Represents the percentage of persons in the civilian noninstitutional population 16 years of age and older that are employed or actively looking for work. Estimates for the race groups will not sum to totals because data are not presented for all races. Data for the individual race groups do not include people of two or more races. Hispanics can be of any race. The comparability of historical data has been affected at various times by methodological and other changes in the Current Population Survey.

Figure: LFPR Males and Females, 1948-2006

Measuring Labor Supply: Falling LFPR

- Cyclical effects: Marginally attached/discouraged workers are much more prevalent during recession/recovery periods.

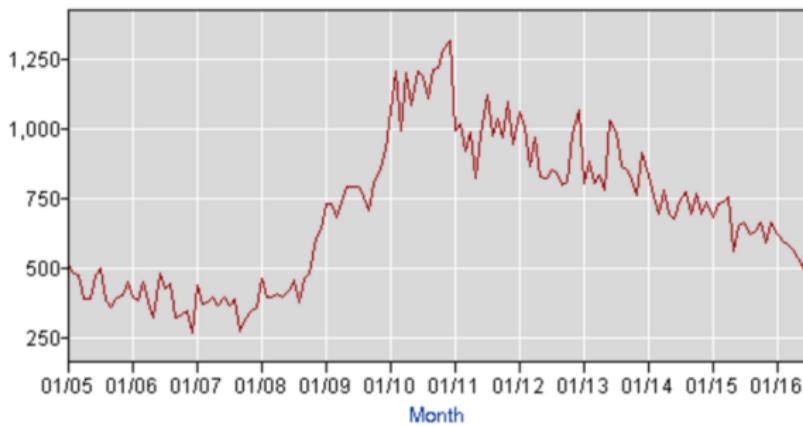
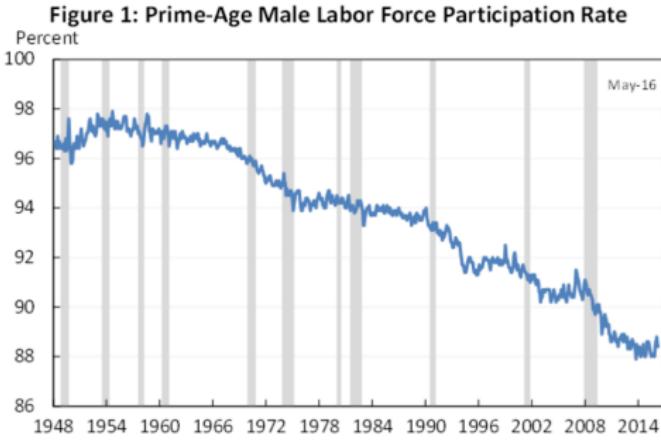


Figure: US Discouraged Workers (thousands), 2005 - 2016

Measuring Labor Supply: Trends

- Tough to explain fall in the LFPR among prime-age males.

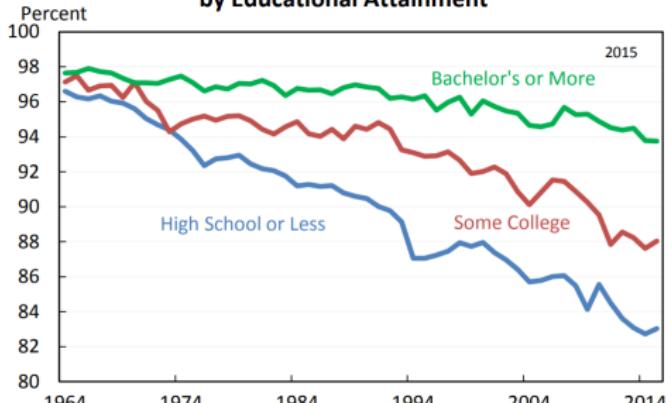


Source: Bureau of Labor Statistics, Current Population Survey; CEA calculations.

Figure: Prime-Age Male LFPR, 1948-2014

Measuring Labor Supply: Trends

Figure 9: Prime-Age Male Labor Force Participation by Educational Attainment

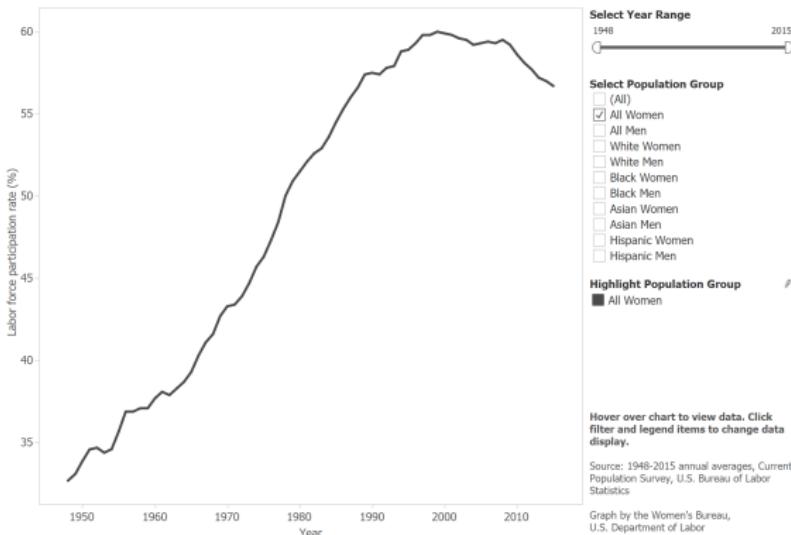


Source: Bureau of Labor Statistics, Current Population Survey (Annual Social and Economic Supplement); CEA calculations.

Figure: Prime-Age Male LFPR by Education, 1948-2014

Measuring Labor Supply: Trends

- Tremendous rise in labor force participation of women since 1950s



Notes: Represents the percentage of persons in the civilian noninstitutional population 16 years of age and older that are employed or actively looking for work. Estimates for the race groups will not sum to totals because data are not presented for all races. Data for the individual race groups do not include people of two or more races. Hispanics can be of any race. The comparability of historical data has been affected at various times by methodological and other changes in the Current Population Survey.

Figure: Female LFPR 1948-2015

Measuring Labor Supply: Trends

- Labor force participation increased both within and across birth cohorts
 - Women within cohorts participated more as they aged
 - More recent cohorts have larger participation rates
- Key determinants?
 - Rising real wages
 - Lower fertility rates
 - Technological advances in household production
 - Cultural and legal changes

Measuring Labor Supply: Trends

Source: Jacob Mincer, "Intercountry Comparisons of Labor Force Trends and of Related Developments: An Overview," *Journal of Labor Economics* 3 (January 1985, Part 2): S2, S6.



Measuring Labor Supply: Trends

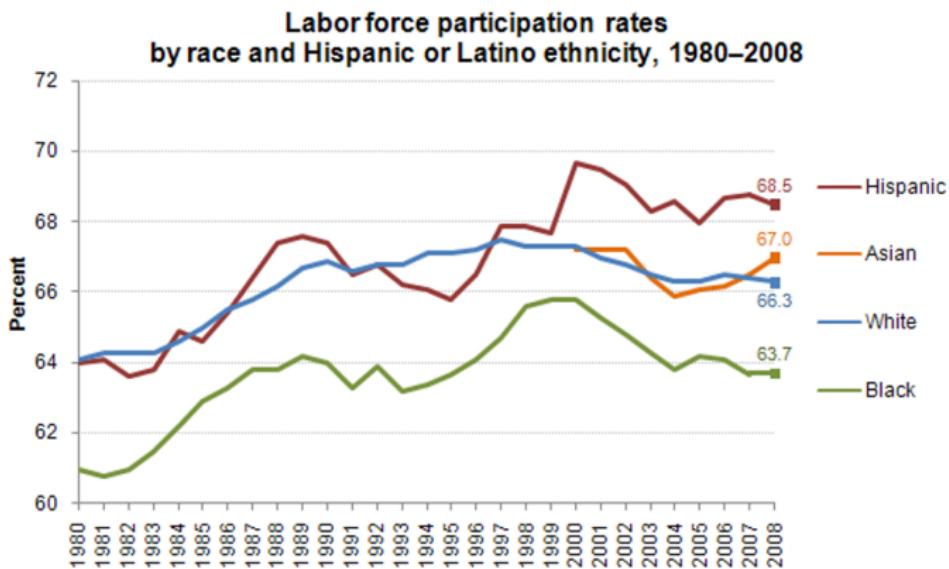


Figure: LFPR by Race/Ethnicity, 1980-2008

Readings

- Borjas 2.1-2.2; 2.9
- Toossi, Mitra (2012). Projections of the labor force to 2050: A Visual Essay. *Monthly Labor Review*.
- US Bureau of Labor Statistics (2014). How the Government Measures Unemployment.

Unemployment: Measuring the Unemployed

- **Unemployed:** A person that had no employment in the reference week AND has “actively looked for work” in the past four weeks.
- The **unemployment rate (UR)** is the proportion of individuals who are in the labor force, but are unemployed.

$$\text{UR} = \frac{U}{LF} = \frac{U}{(E + U)}$$

Unemployment: Trends

Series Id: LNS13000000
Seasonally Adjusted
Series title: (Seas) Unemployment Level
Labor force status: Unemployed
Type of data: Number in thousands
Age: 16 years and over



Figure: US Unemployed Workers (thousands), 1948 - 2017

Unemployment: Measuring the Unemployed

Example

What effect do each of the following scenarios have on the unemployment rate?

- ① *Sue lost her job and begins looking for a new one.*
- ② *Jon, a steelworker who has been out of work since his mill closed last year, becomes discouraged and gives up looking for work.*
- ③ *Sam, the sole earner in his family of 5, just lost his \$80,000 job as a research scientist. Immediately, he takes a part-time job at McDonald's until he can find another job in his field.*
- ④ *Robert comes out of retirement and begins working at a proctoring center.*

Measuring Labor Supply: Unemployment

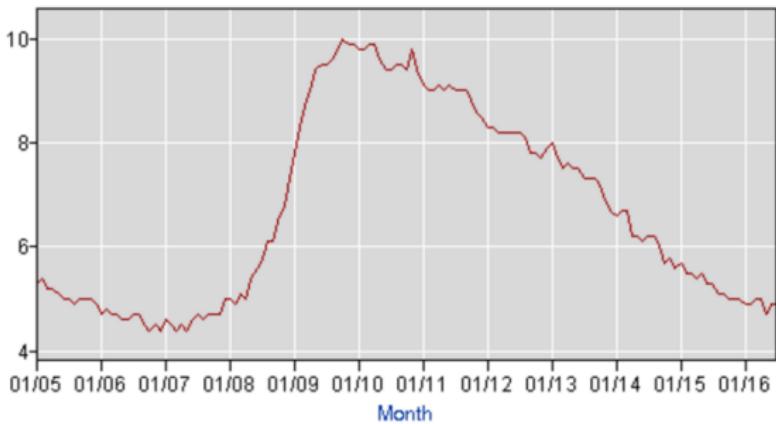
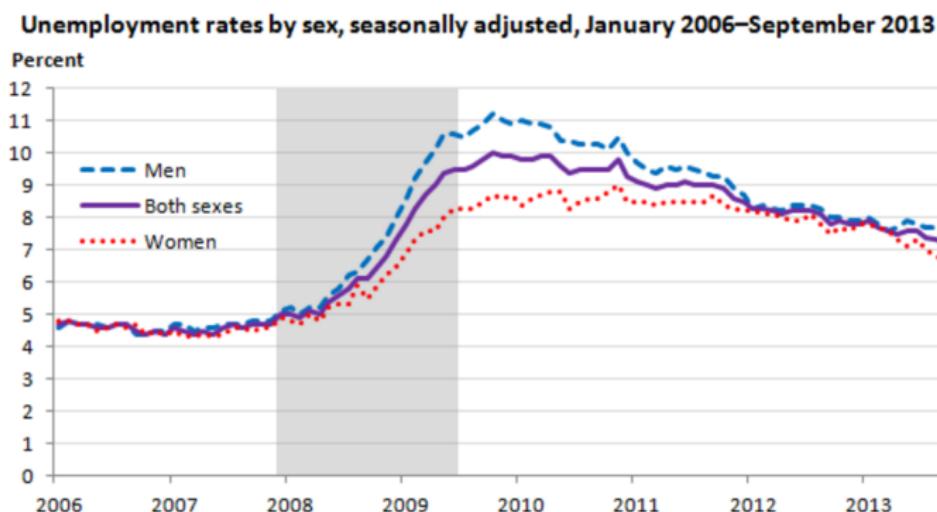


Figure: US Unemployment Rate, 2005 - 2016

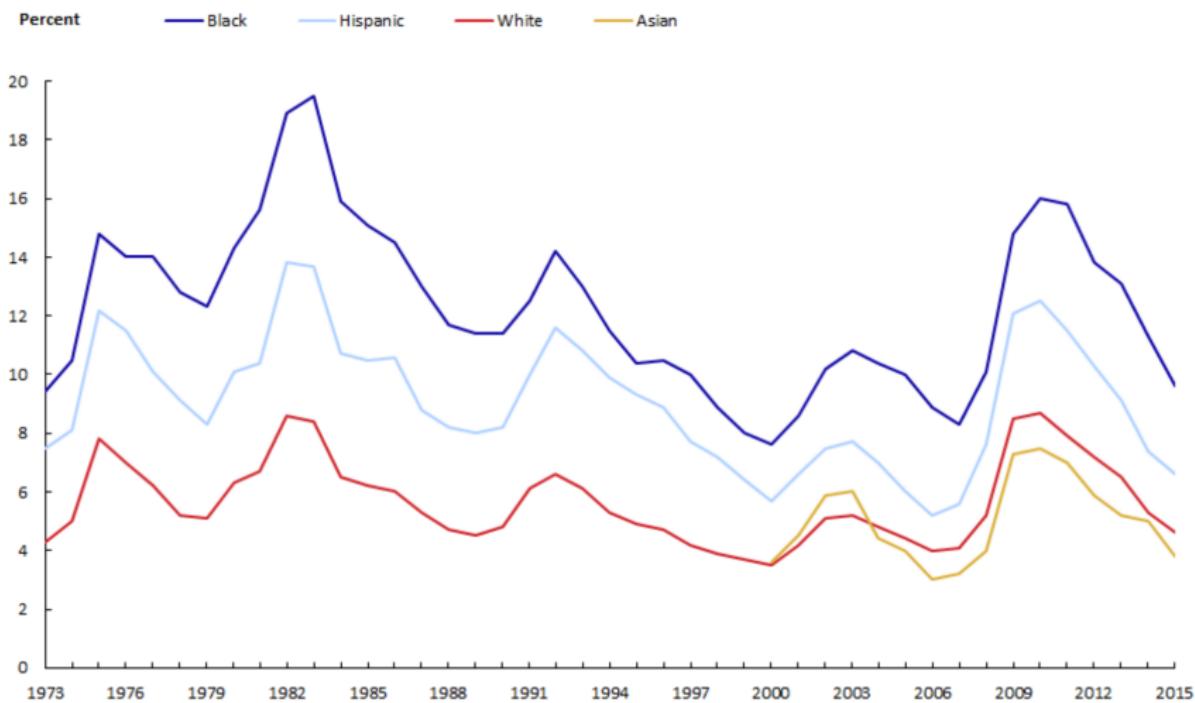
Unemployment: Trends



Note: Shaded area indicates 2007–2009 recession, as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

Figure: Unemployment Rate by Sex, 2006-2013

Unemployment: Trends



Unemployment: Trends

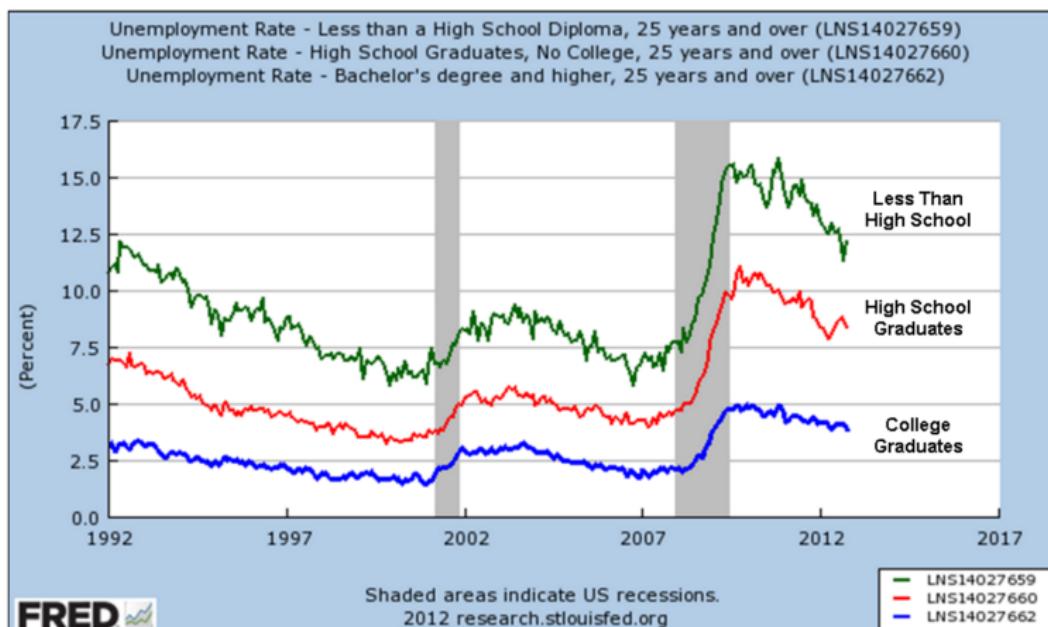


Figure: Unemployment Rate by Education, 1992-2012

The Unemployment Rate: Issues

- Is the unemployment rate a good measure of joblessness?
What's missing?



*"I've stopped looking for work, which, I believe,
helps the economic numbers."*

The Unemployment Rate: Issues

- Discouraged/marginally attached workers are considered out of the labor force

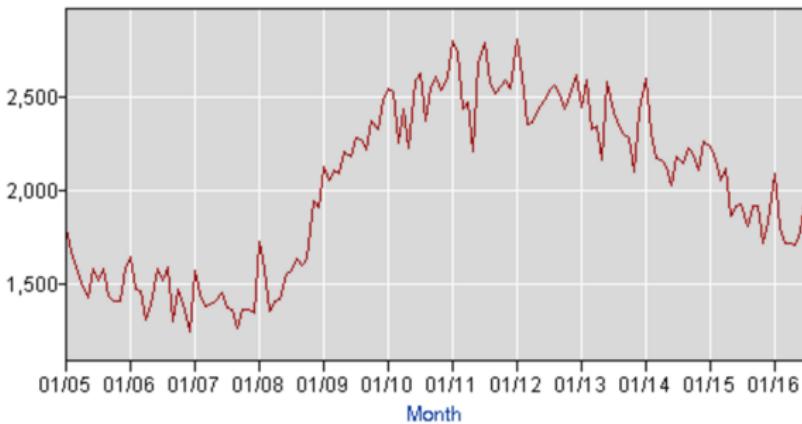
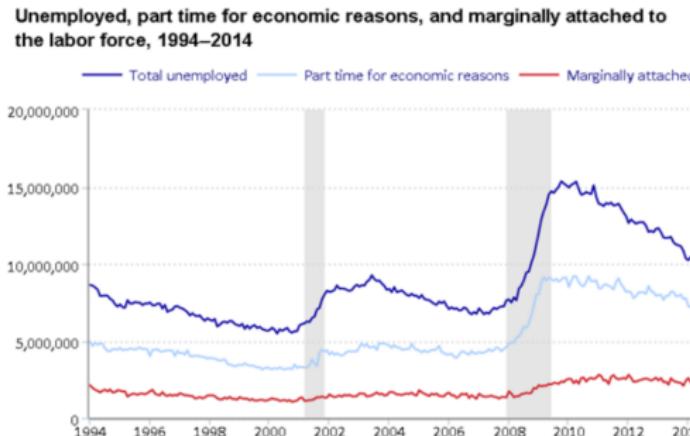


Figure: Marginally Attached Workers (thousands), 2005-2016

The Unemployment Rate: Issues

- Underemployment is not taken into account
 - Highly skilled workers in low paying jobs
 - Highly skilled workers in low skill jobs
 - Part-time workers who would prefer to be full time.

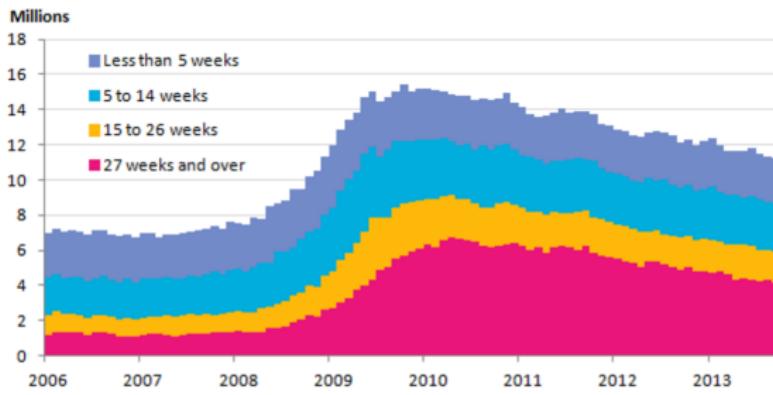


Note: Data for marginally attached are not seasonally adjusted. Shaded areas represent recessions as designated by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

The Unemployment Rate: Issues

- Length of unemployment not taken into account
 - Short spells indicate labor market fluidity
 - Long spells indicate more serious issues

Number of unemployed persons by duration of unemployment, seasonally adjusted, January 2006–September 2013



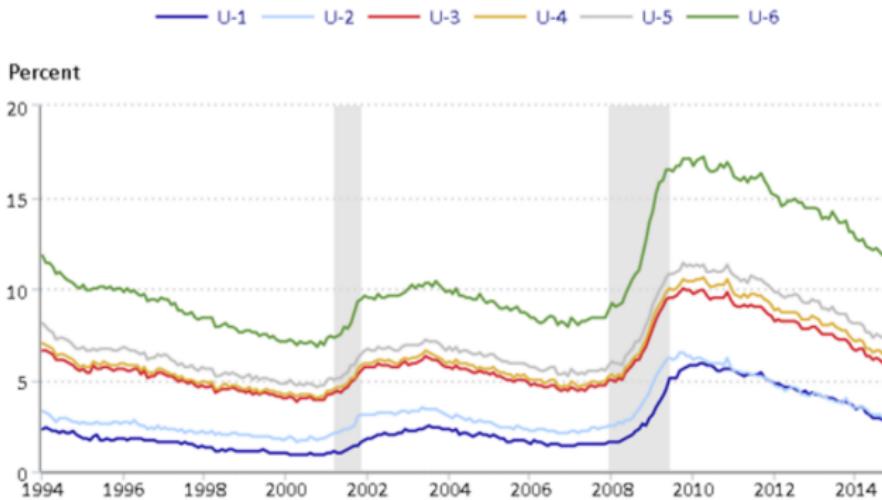
Source: U.S. Bureau of Labor Statistics.

The Unemployment Rate: Issues

- These factors are more severe during recessions
- Official **U3** unemployment rate may understate the depths of recessions and state of economic hardship
- Alternative measures of labor underutilization:
 - U4 unemployment rate: Essentially classifies discouraged workers (previously in **O**) as unemployed
 - U5 unemployment rate: Classifies marginally attached workers (previously in **O**) as unemployed
 - U6 unemployment rate: Classifies both marginally attached (previously in **O**) and part-time workers for economic reasons (previously in **E**) as unemployed

The Unemployment Rate: Issues

Alternative measures of labor underutilization, seasonally adjusted,
1994–2014



Note: Shaded areas represent recessions as designated by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

Figure: Alternative Measures of Unemployment, 1994–2015

Unemployment Types

- Frictional unemployment
 - Arises due to the time it takes for workers and firms to match
 - Generally leads to short unemployment spells
- Seasonal unemployment

Unemployment Types

- Cyclical unemployment
 - Structural imbalance between the number of workers looking for jobs and the number of jobs available
 - There is an excess supply of workers and the market does not clear because the wage is sticky and cannot adjust downward
- Structural unemployment
 - Can arise because of a mismatch between the skills that workers are supplying and the skills that firms are demanding
 - May result because of long-lasting shocks to permanent features of an economy

Unemployment Types

- Natural unemployment rate
 - The average level of unemployment that is expected to prevail in an economy
 - Combination of frictional and structural unemployment

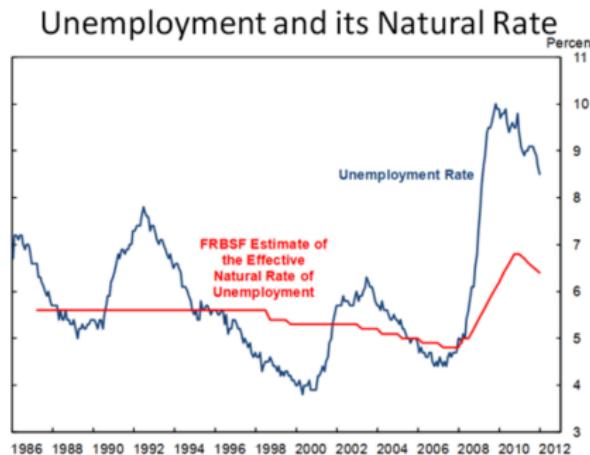


Figure: Natural Unemployment Rate, 1985-2012

Readings

- Borjas 12.1-12.2
- Brundage, Vernon (2014). Trends in unemployment and other labor market difficulties. *Beyond the Numbers*, US Bureau of Labor Statistics.