

# Quantitative thinking

Easton White

Alan Hastings

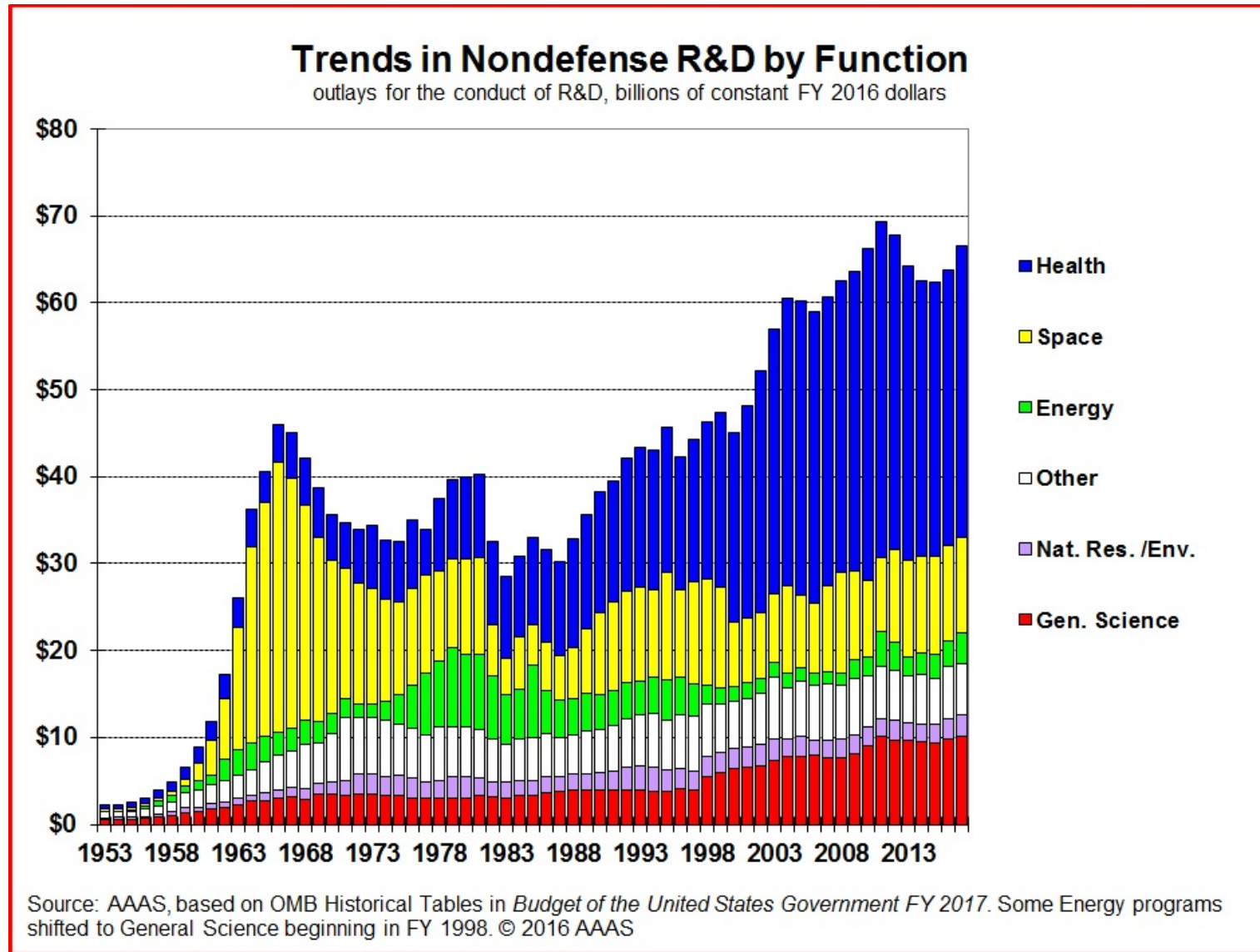
Winter 2018

# Learning objectives

By the end of today:


- Be able to evaluate common types of graphs
- Understand the basic idea of a Fermi calculation

# Science spending in the US



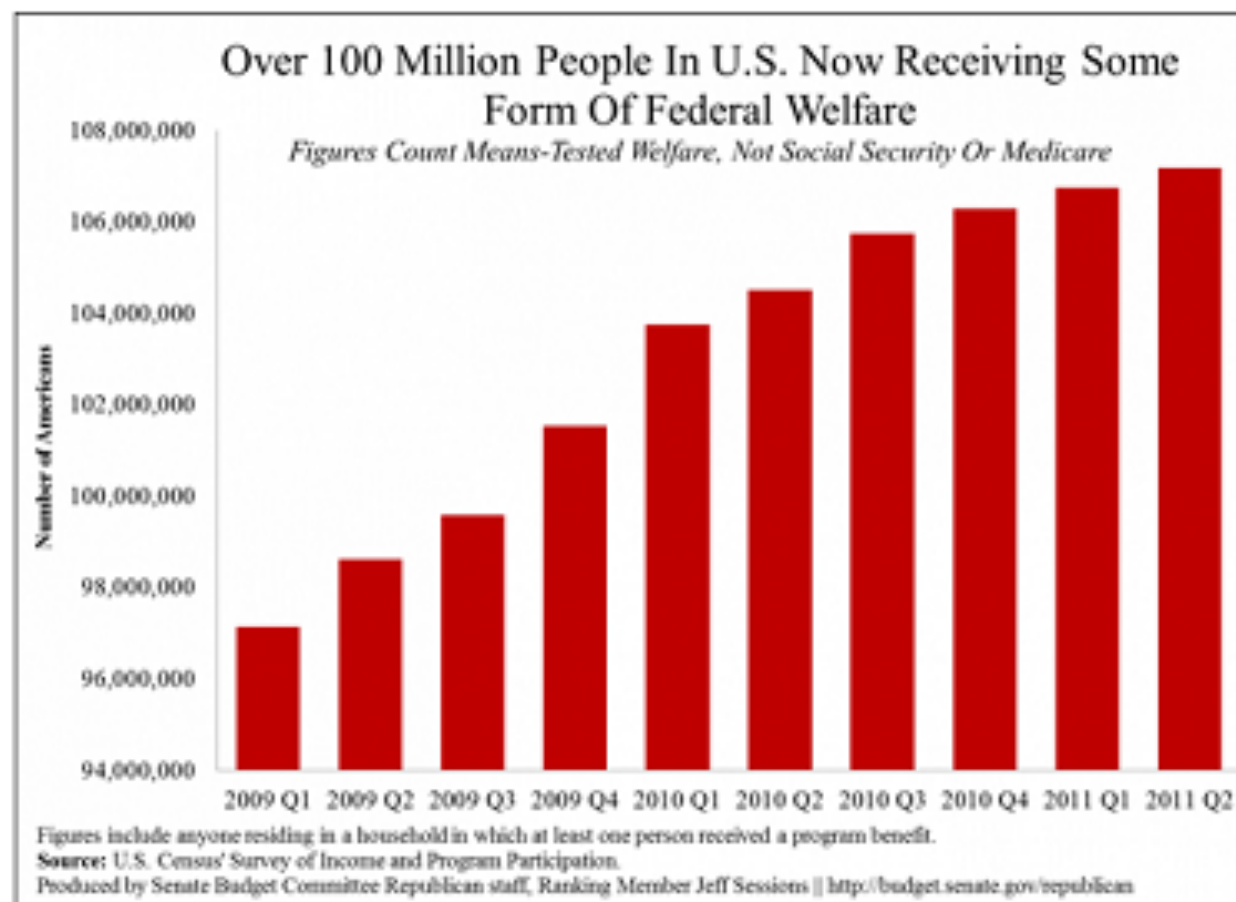
Let's look at a few graphs

## Over 100 Million Now Receiving Federal Welfare

2:40 PM, AUG 8, 2012 • BY [DANIEL HALPER](#) 

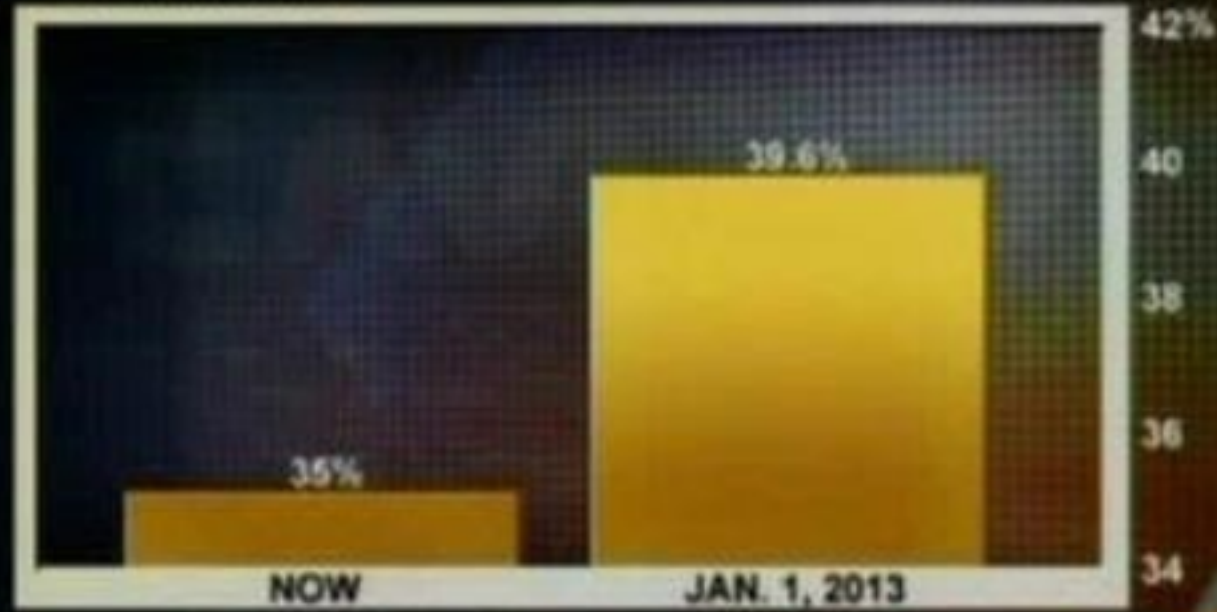
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A new chart set to be released later today by the Republican side of the Senate Budget Committee details a startling statistic: "Over 100 Million People in U.S. Now Receiving Some Form Of Federal Welfare."



# IF BUSH TAX CUTS EXPIRE

TOP TAX RATE



8:01p ET

**FOX**  
BUSINESS

TOP STORIES

TECHNOLOGY

CONSUMER

WITH THE JUSTICE DEPARTMENT AND ACQUIRES FULL T

DOW 13008.68 ▼ 64.33

S&P 1379.32 ▼ 5.98

NASDAQ 2939.52 ▼ 6.32



# UNEMPLOYMENT RATE

UNDER PRESIDENT OBAMA



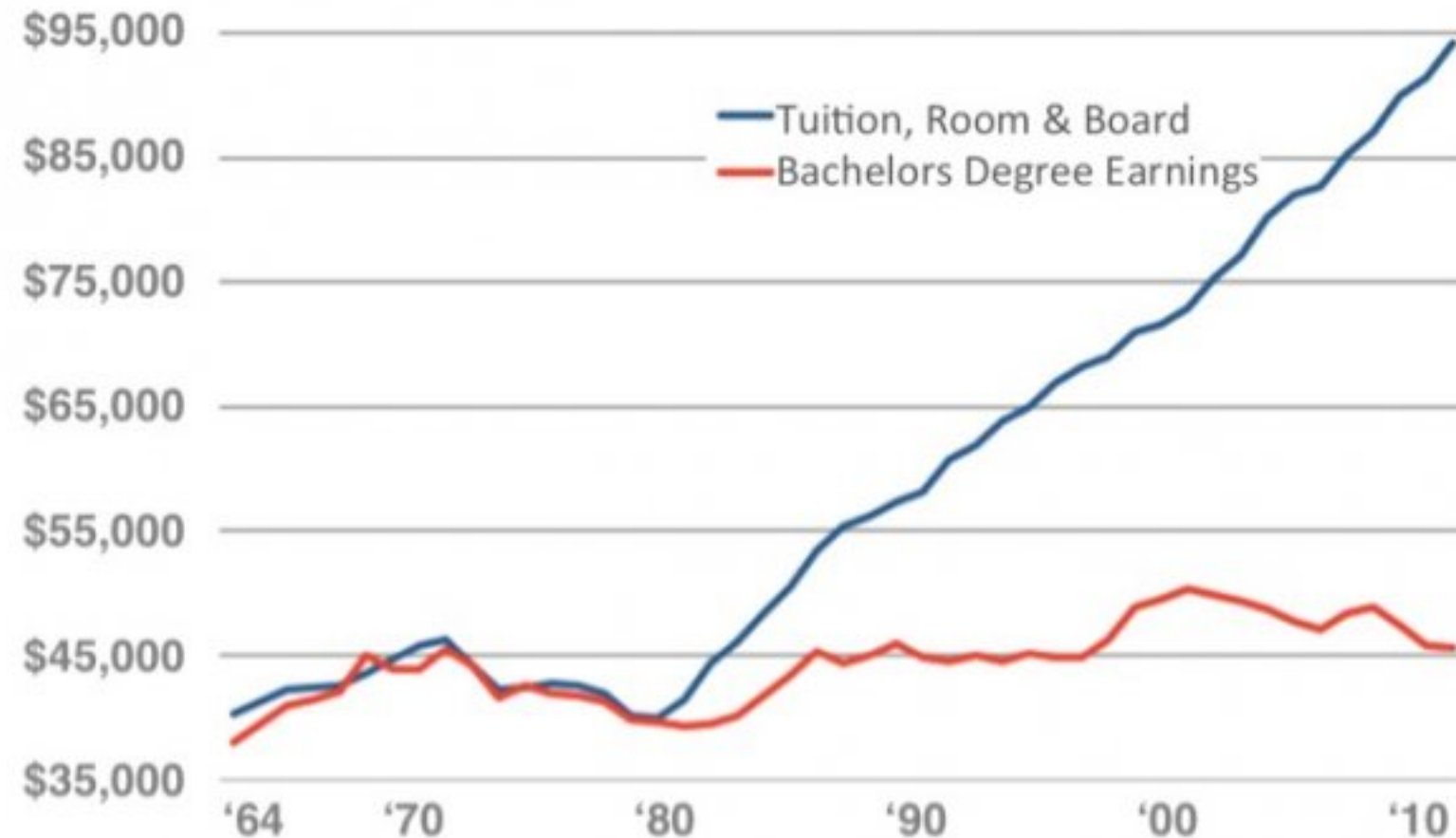
2011

SOURCE: BUREAU OF LABOR STATISTICS

AR WAR AND A TROOP WITHDRAWAL AT THE E NAS FUT 2,292.50

## The diminishing financial return of higher education

Costs of 4-yr degree vs. earnings of 4-yr degree



Source: Source: U.S. Census Data & NCES Table 345.

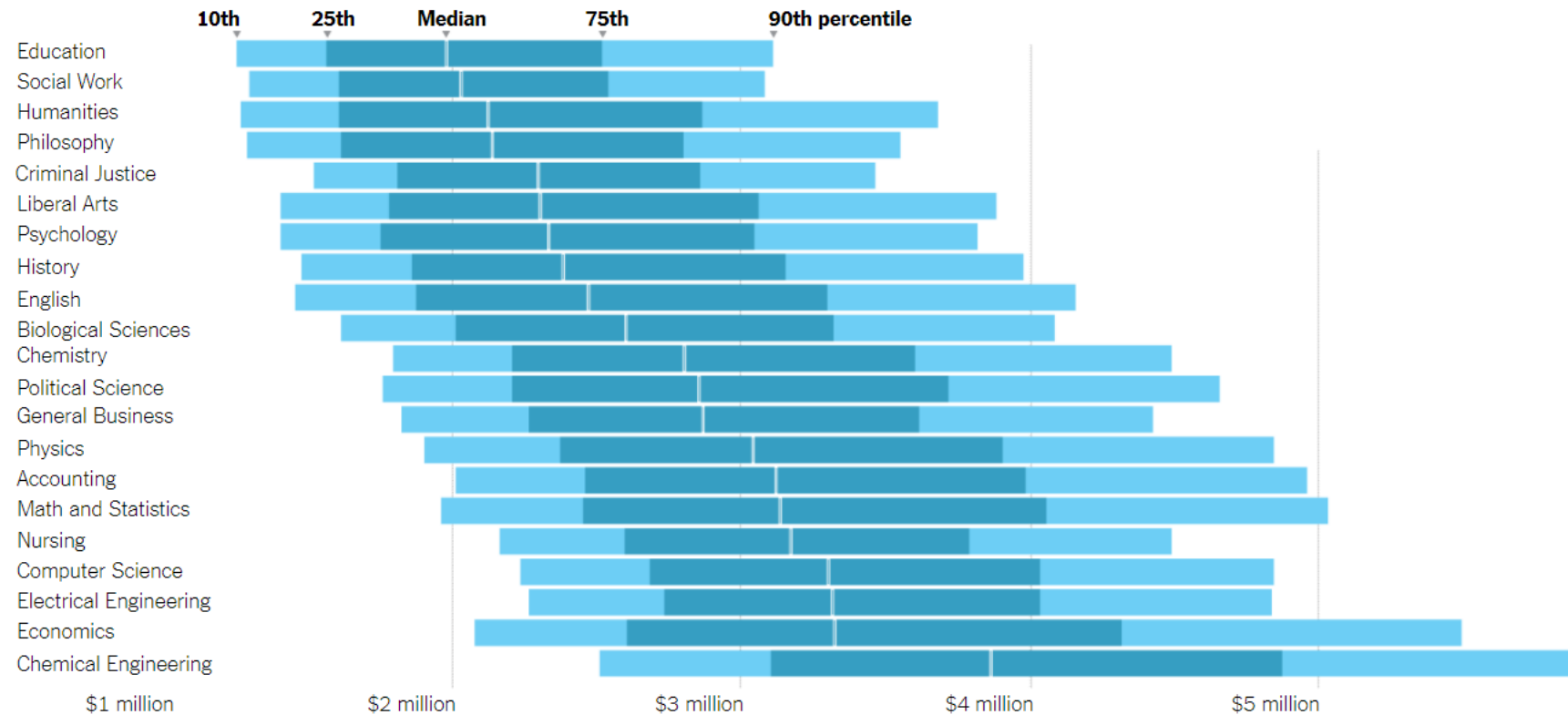
Notes: All figures have been adjusted to 2010 dollars using the Consumer Price Index from the BLS.



# What's Going On in This Graph? (NY Times)

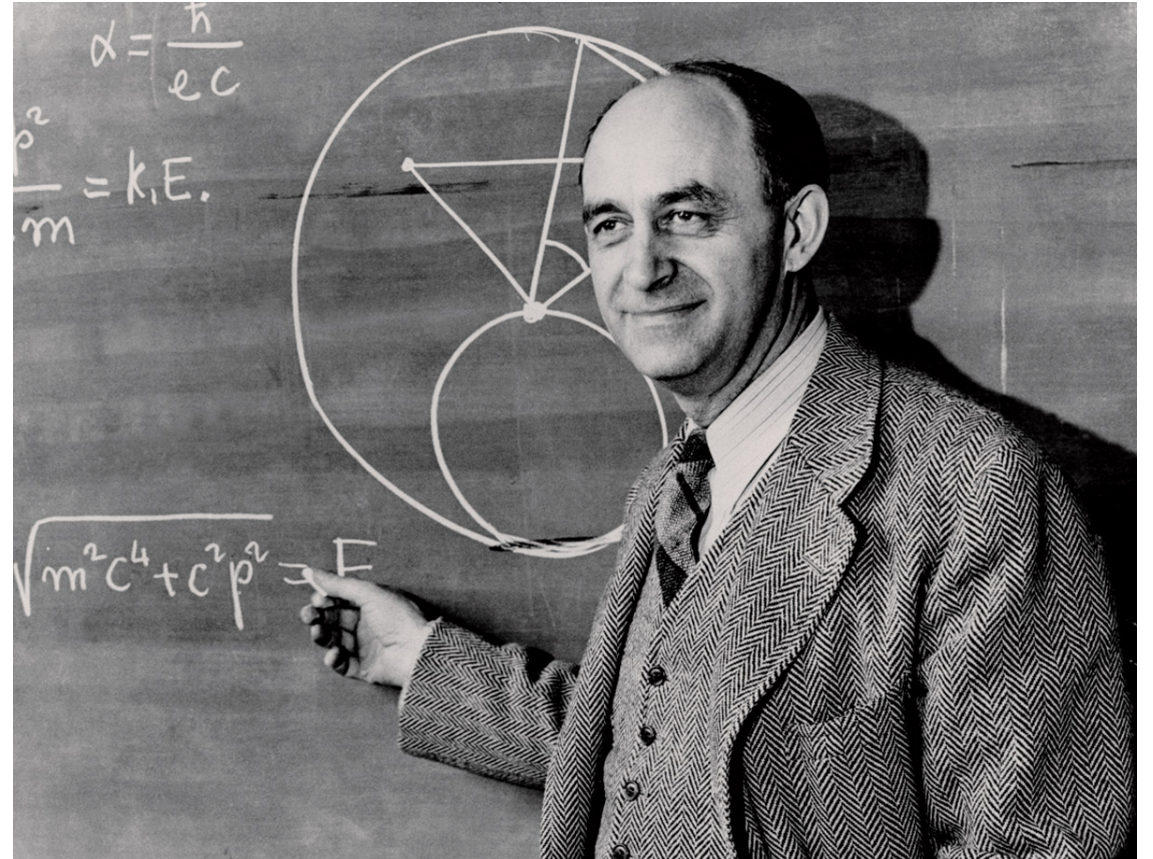
- What do you notice?  
What might it imply?
- What do you wonder?
- What's going on in this graph? (What is the deeper meaning?)

Projected career earnings for college graduates in ...



# Fermi estimations

- Italian-American physicist who worked on the Manhattan Project
- Was present at Trinity nuclear test



Enrico Fermi (1901–1954)



Example problem

What is the circumference of the Earth?

Your turn – work in pairs

Your turn – work in pairs

How much does California spend on K-12 education each year?

No homework for next week