The Don'ts & Do's of Data Visualization

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About Me

- Senior at the University of Missouri – Columbia majoring in:

  - Economics

  - Mathematics

  - Statistics

- Researched health economics as McNair Scholar

- Researched affordable housing at SMU's "Data Science for Social Good" REU

- Now a research assistant for Dr. Brittany Street

What Is Data Visualization?

- A Tool for Understanding Information

- A Way to Examine Data Structures, Relationships, and Trends

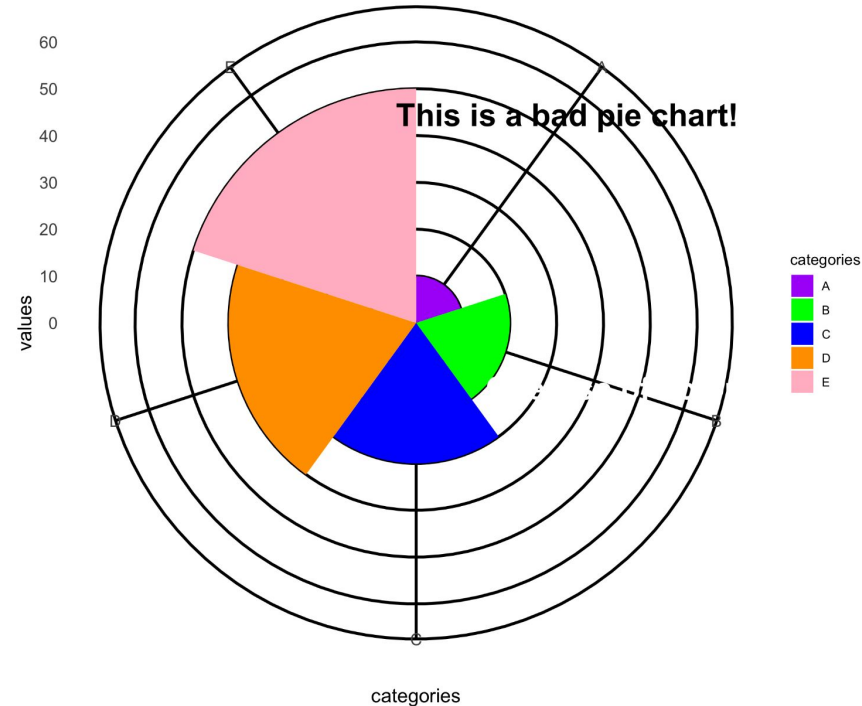- A Vital Lever for Telling the Story for Complex Problems

Exam Grades
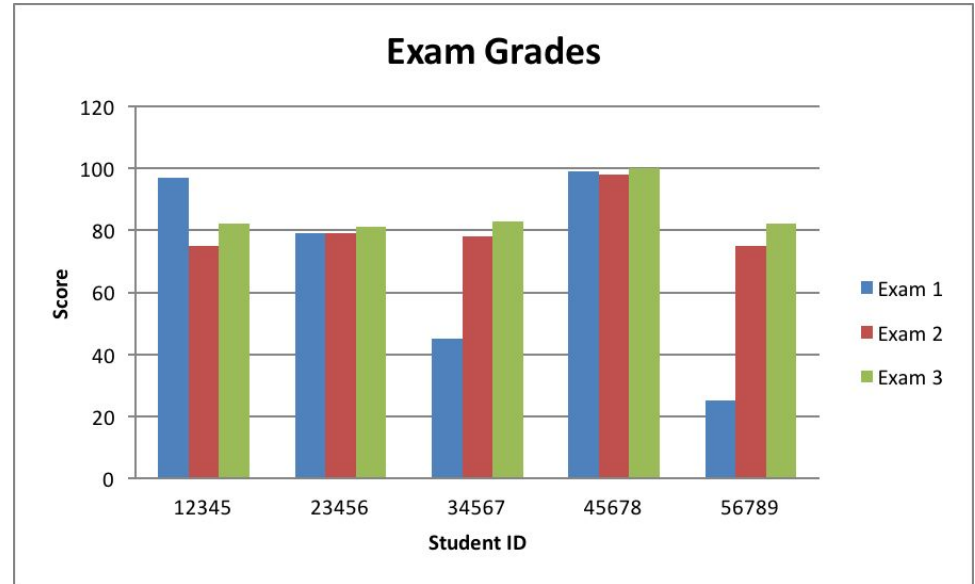
Why Should I Care?

- Credibility
    - Builds Trustworthiness/Ethos
- Communicability
    - Improves Scope of Impact
- Clarity
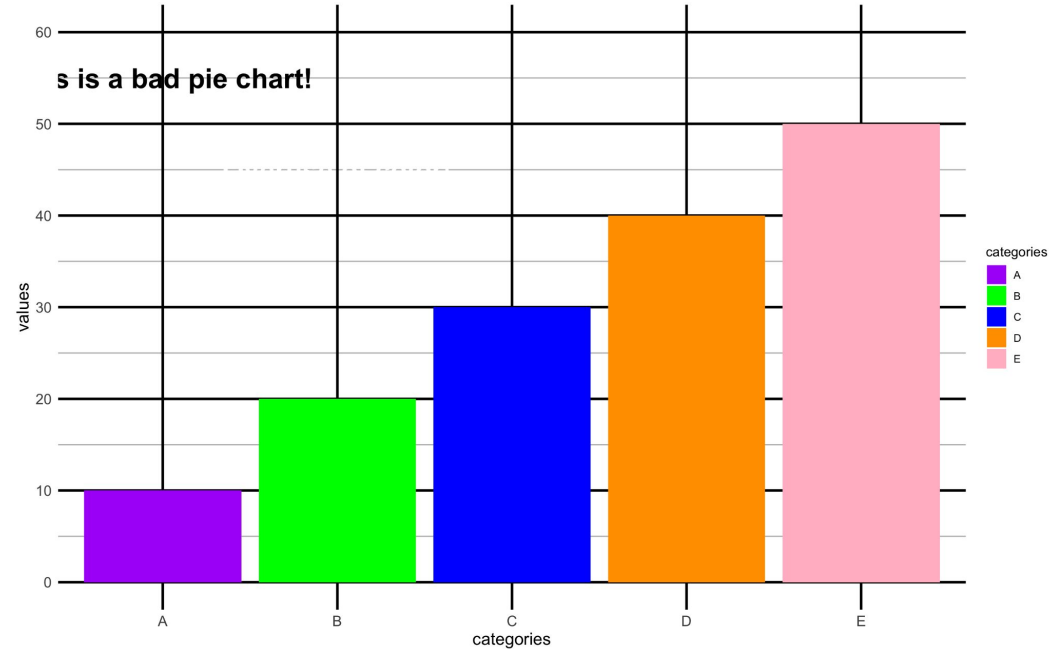   - Makes Results Tangible

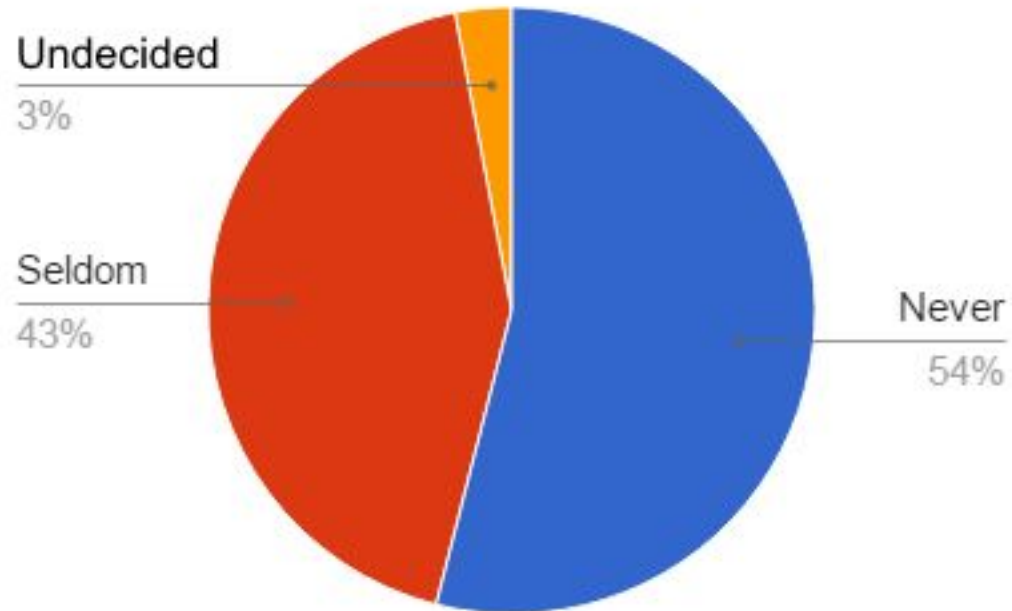# What Is **BAD** Data Visualization?

DON'T:
- ## Use Pie Charts
DO:
- ## Use Bar Charts

Exception

Pie charts should be used...
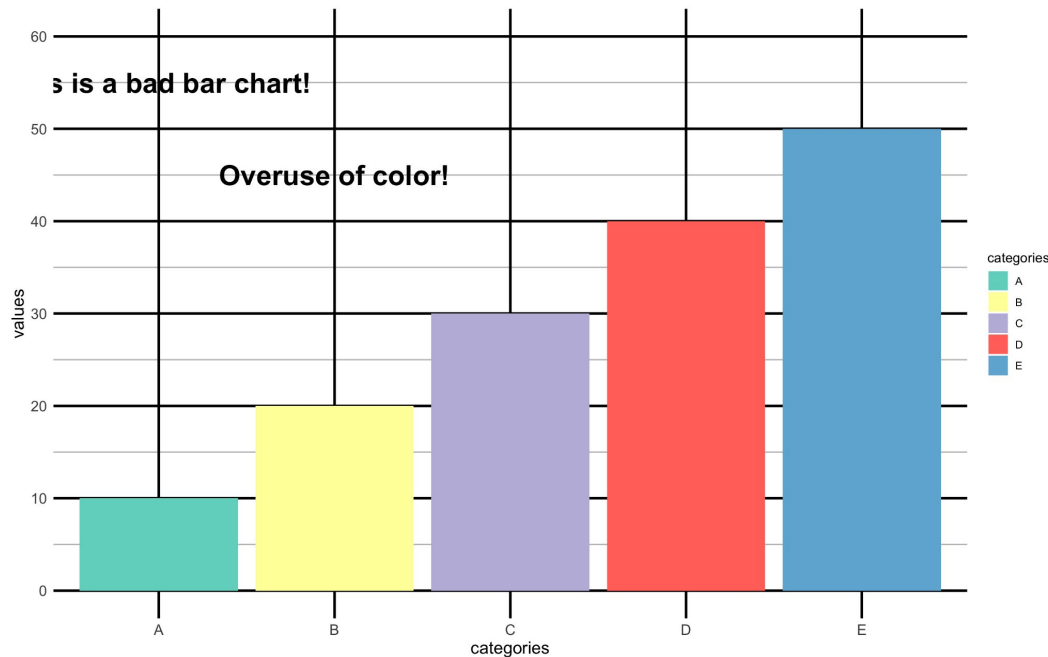
- Undecided 3%
- Seldom 43%
- Never 54%

Rules

DON'T:
- Choose Bad Colors

DO:
- Choose Good Colors

DON'T:
● Add unnecessary text
DO:
● Be minimal
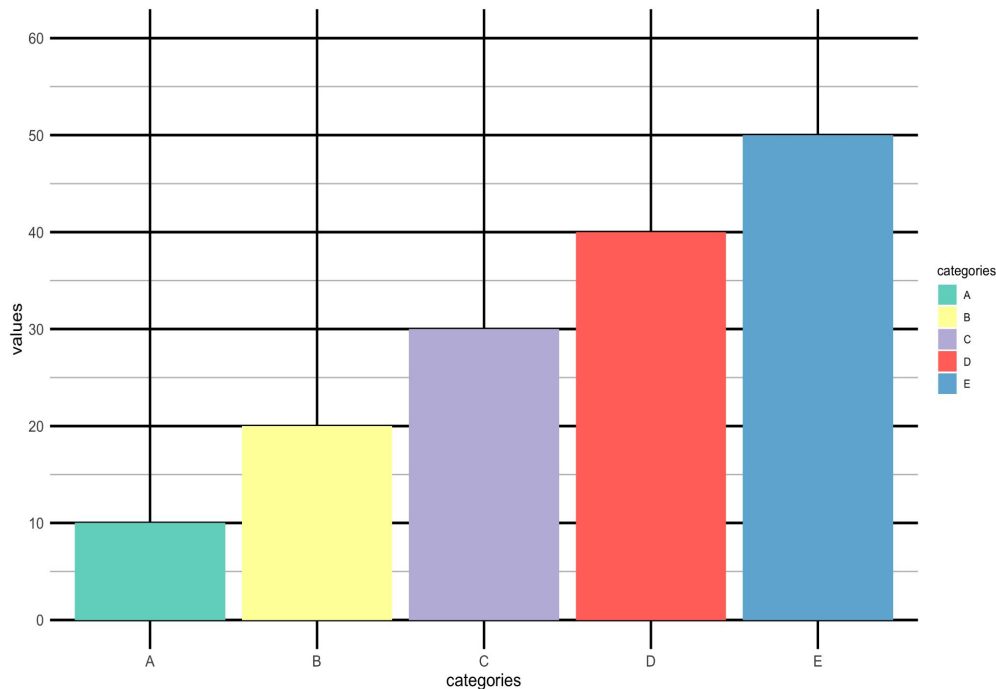
Exception

Total federal government debt

The rise Don Jr finds notable

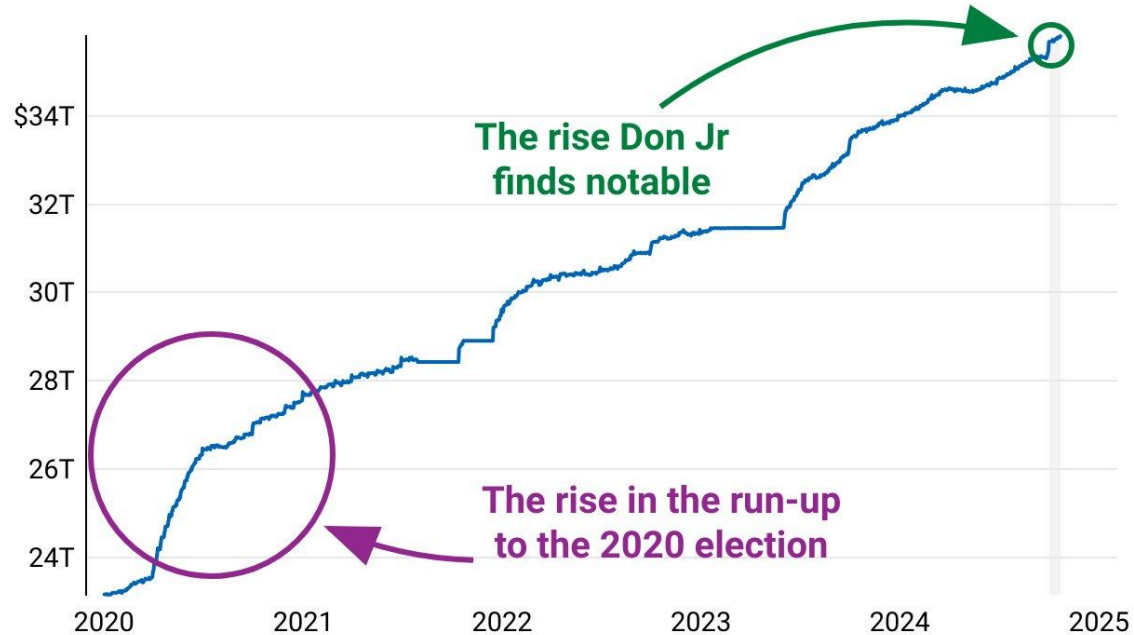The rise in the run-up to the 2020 election

Chart: @JustinWolfers • Source: U.S. Treasury "Debt to the Penny"

DON'T:
- ## Add unnecessary gridlines

DO:
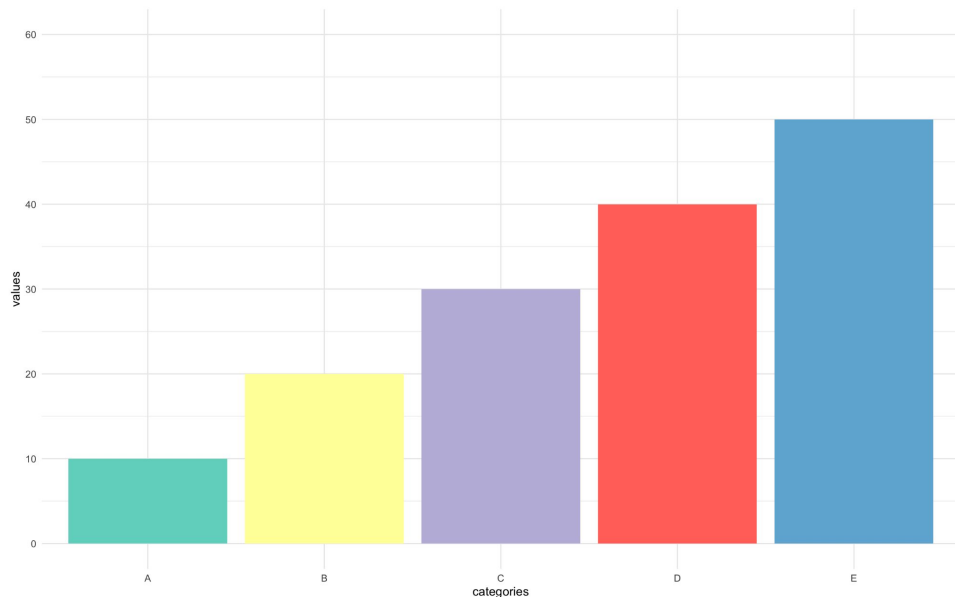- ## BE MINIMAL

Exception
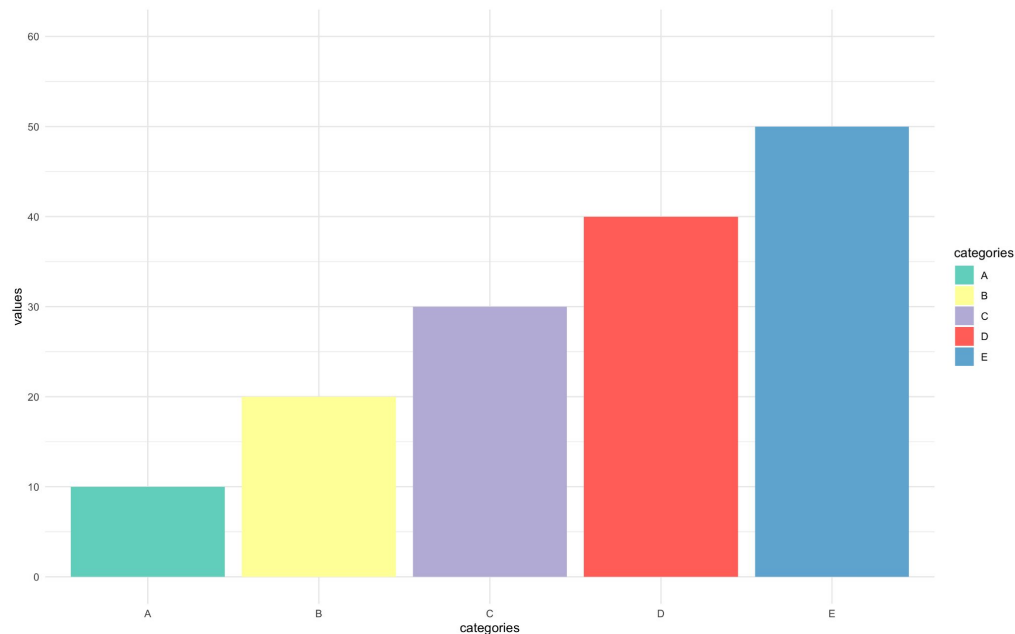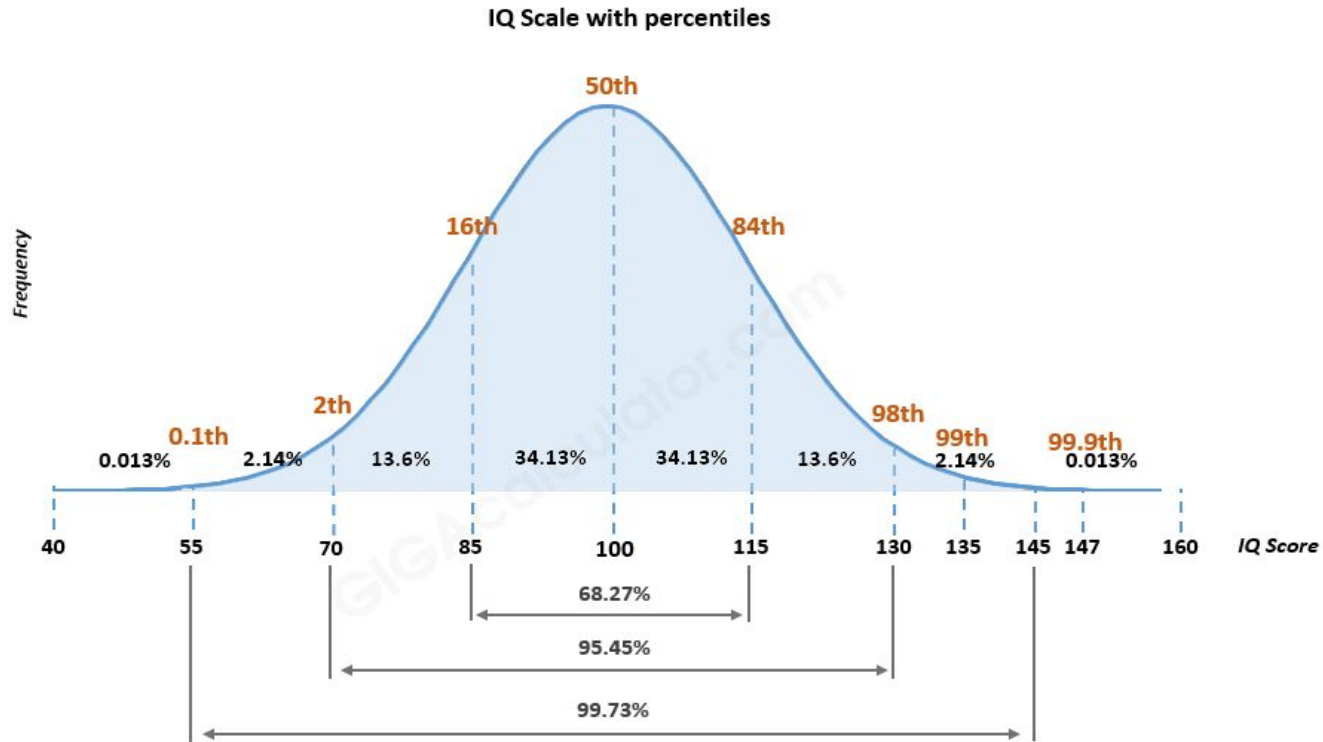
IQ Scale with percentiles

DON'T:
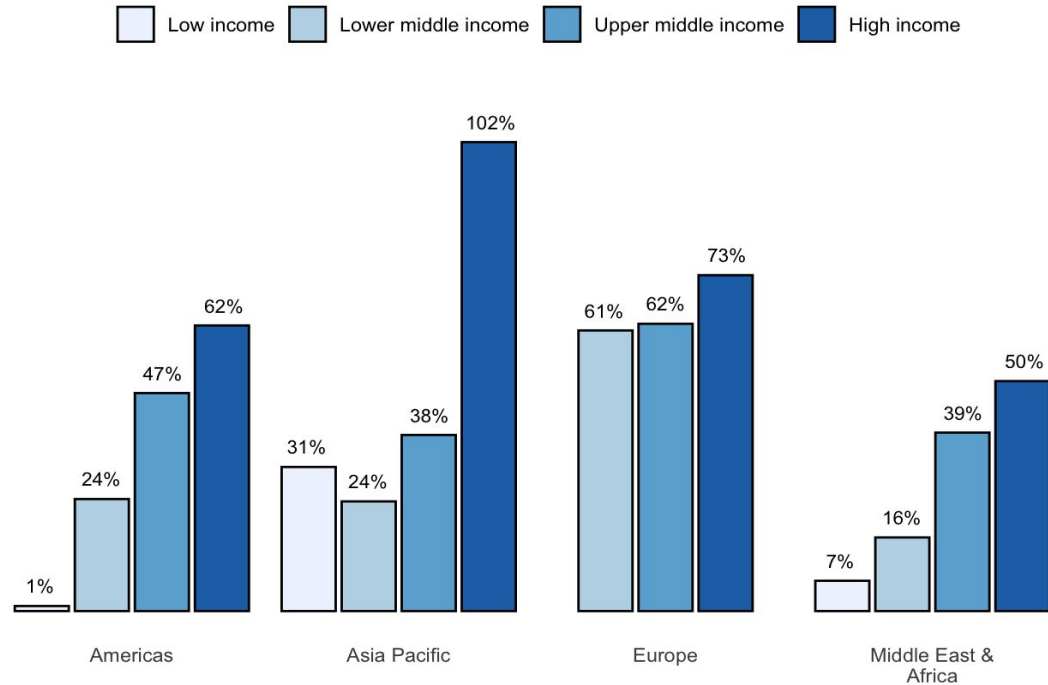● Have redundant legends

DO:
● Consider what is the value-added

Exception

Higher income countries tend to have higher college participation rates

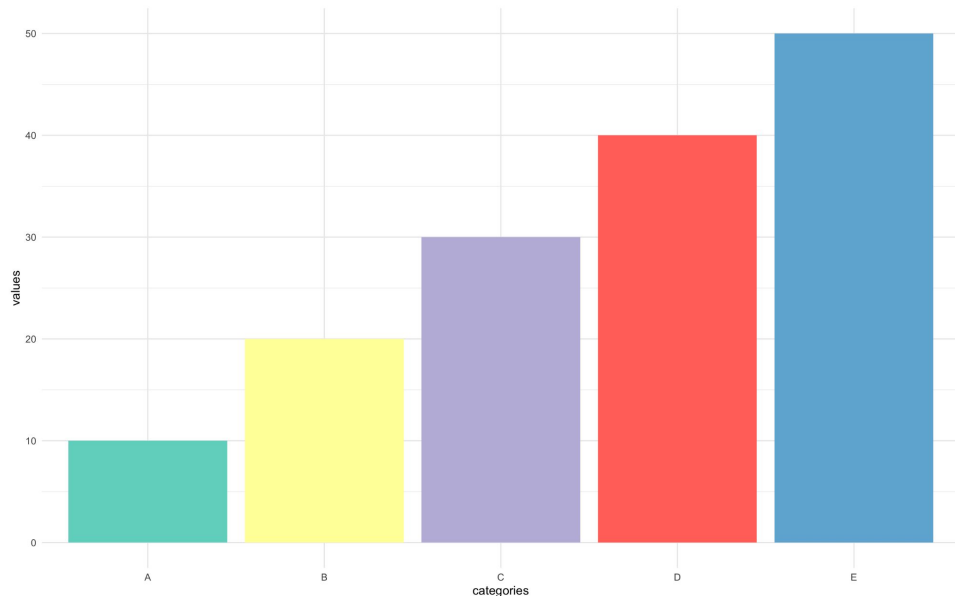Average college participation by income level and world region in 2020

□ Low income   □ Lower middle income   ■ Upper middle income   ■ High income

Americas: 1%, 24%, 47%, 62%
Asia Pacific: 31%, 24%, 38%, 102%
Europe: 61%, 62%, 73%
Middle East & Africa: 7%, 16%, 39%, 50%

DON'T:
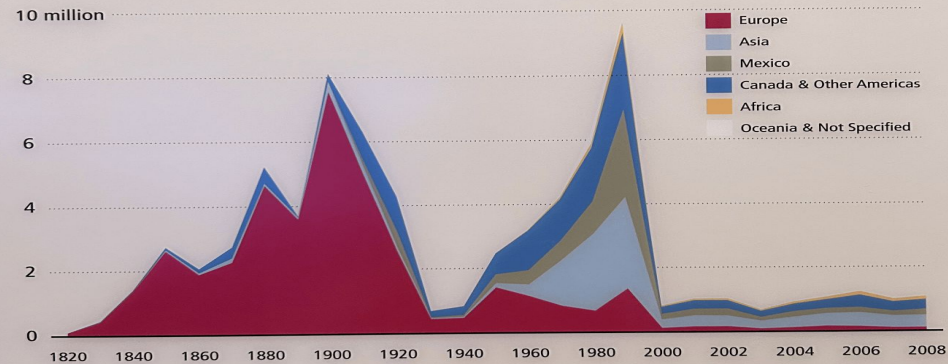- ## Have inconsistent ranges

DO:
- ## Ensure visual cannot mislead

President George W. Bush,
The Oval Office, May 15, 2006

Immigration to the United States
From 1820 through 2008, over 74 million people immigrated to the U.S.

Source: 2008 Yearbook of Immigration Statistics, Office of Immigration Statistics, Department of Homeland Security
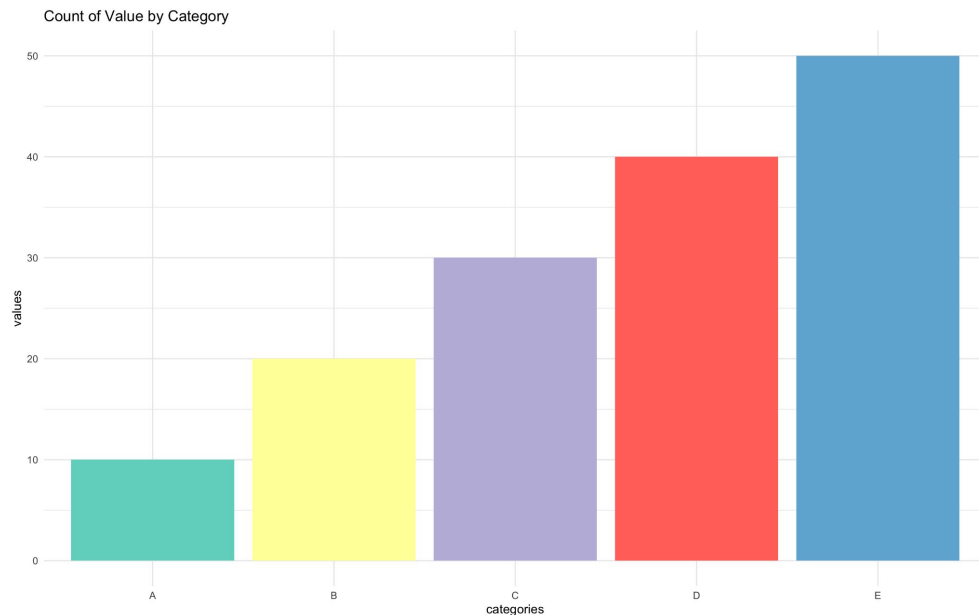
T IMMIGRATION PLAN

DON'T:
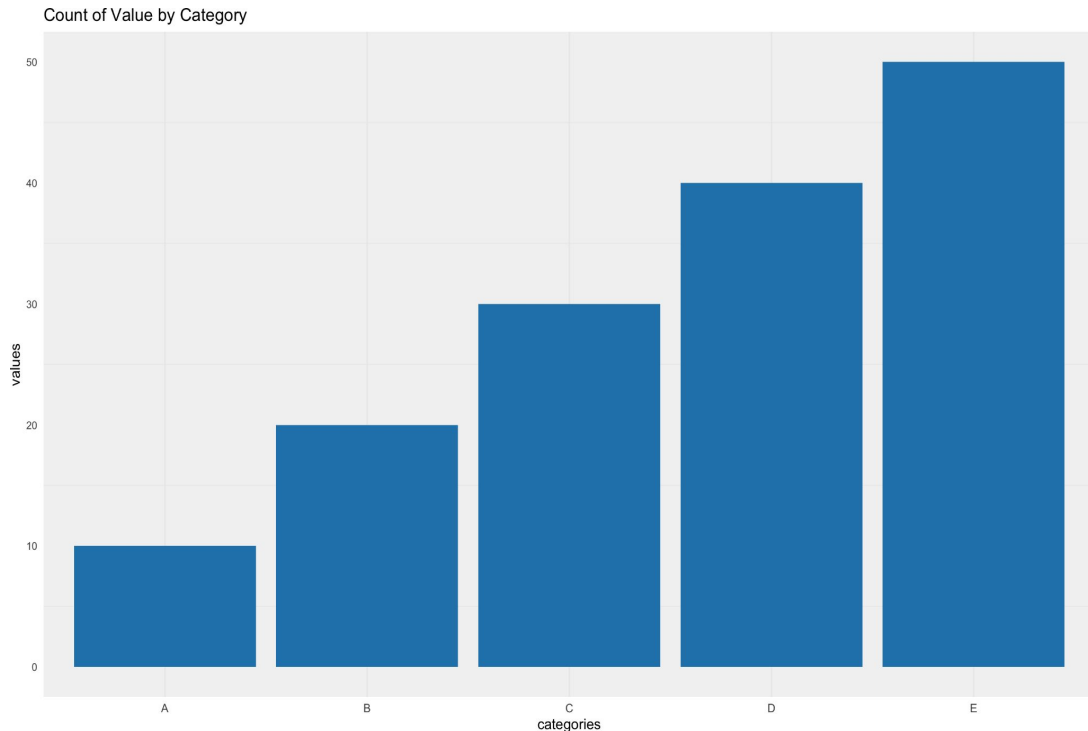● Exclude information

DO:
● Add a title or footnote if needed

Count of Value by Category
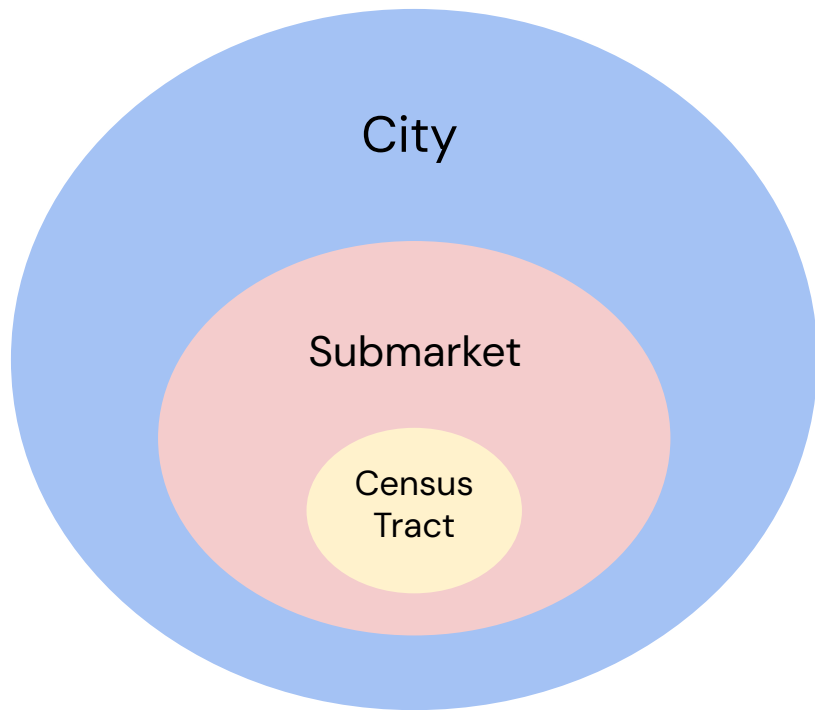
DON'T:
● Use color without purpose

DO:
● Use color sparingly but intentionally
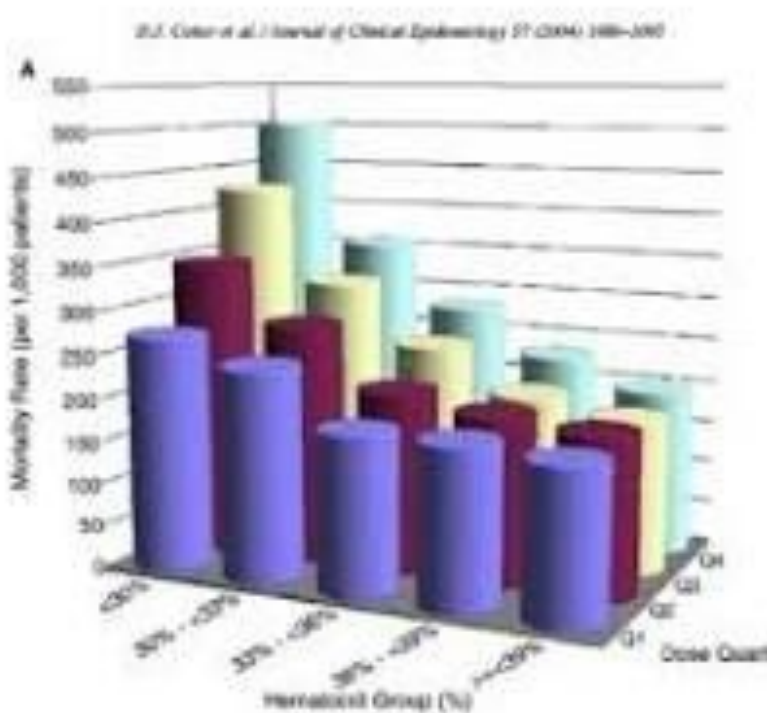
Count of Value by Category

Non-Data Data Visualization

Data Structure

- We CAN use a visual to better understand the structure and purpose of our data

One Last Don't...

NEVER Make a 3D Chart

- It looks overly complicated
- It makes you look unprofessional
- It is no better than a 2D Chart

Make charts as **concise** as possible such that every aspect of the chart has a **tangible and information-based** reason to be included. Your data is meant to tell a **story**.