Data Visualization in Political Science

PSC 202

Syracuse University

What is the Difference Between a Table and a Figure?

- A table is a set of data arranged in rows or columns. The data is usually numbers but can be text.

- A figure is any other type of illustration other than a table, including a chart, graph, photograph, drawing, or other depiction.

This is a good table. Why?

Table 1. Effects of Slavery on White Political Attitudes

	Proportion Democrat		Support for Affirmative Action	Racial Resentment	White-Black Thermometer Difference
	(1)	(2)	(3)	(4)	(5)
Proproportion slave, 1860	−.217**	−.127**	−.145**	.463**	36.125**
	(.023)	(.043)	(.036)	(.139)	(9.211)
Level	County	County	County	County	Individual
1860 covariates		√	√	√	
State fixed effects		√	√	√	√
State-year fixed effects					√
Clustered SEs					√
N	1,242	1,152	1,152	1,027	1,489
R^2	.065	.203	.101	.143	.183

Note. Models 1–4 are weighted least squares at the county level, with within-county sample sizes, adjusted by sampling weights, as weights. Model 5 is weighted least squares at the individual level with state-year fixed effects. Standard errors, in parentheses, are clustered at the county level in model 5. There are 50 counties in model 5.

** $p < .01$.

Table 1: Baseline models of factors that influence county-level per capita expenditures in five policy areas

	Agriculture[a]	Crime[b]	Defense[c]	Health[d]	Transportation[e]
$Benefits_{t-1}$	.791 (.001)	1.13 (.001)	.932 (.001)	1.01 (.001)	.554 (.001)
$HR\text{-}Com\text{-}Rep\text{-}Dem_{t-1}$	61.4 (.001)	-.83 (.353)	58.4 (.064)	-9.13 (.917)	6.25 (.479)
$HR\text{-}Com\text{-}Rep\text{-}GOP_{t-1}$	59.5 (.001)	2.94 (.003)	70.4 (.060)	95.5 (.393)	2.20 (.809)
$HR\text{-}Com\text{-}Rep\text{-}Dem_{t-1}$	-----	-----	------	175 (.101)	-----
$HR\text{-}Com\text{-}Rep\text{-}GOP_{t-1}$	-----	-----	------	-150 (.262)	-----
$SEN\text{-}Com\text{-}Rep\text{-}Dem_{t-1}$	95.6 (.001)	.491 (.253)	-15.6 (.345)	20.8 (.757)	21.0 (.123)
$SEN\text{-}Com\text{-}Rep\text{-}GOP_{t-1}$	25.7 (.001)	.029 (.945)	42.2 (.012)	-129 (.027)	11.0 (.317)
$SEN\text{-}Com\text{-}Rep\text{-}Dem_{t-1}$	-----	-----	------	51.1 (.302)	55.5 (.001)
$SEN\text{-}Com\text{-}Rep\text{-}GOP_{t-1}$	-----	-----	------	-176 (.002)	-.086 (.989)
Dem HR $delegation_{t-1}$	-49.2 (.001)	.004 (.991)	.987 (.966)	-118 (.018)	-7.76 (.145)
HR delegation $ideology_{t-1}$	-.507 (.001)	-.013 (.080)	-1.11 (.015)	-4.55 (.001)	-.478 (.001)
Dem Senate $delegation_{t-1}$	-20.0 (.001)	-.031 (.900)	48.7 (.003)	-45.9 (.235)	-4.31 (.209)
Senate delegation $ideology_{t-1}$	-1.10 (.001)	-.011 (.153)	.616 (.190)	-1.76 (.140)	-.193 (.088)
State Pop_t (millions)	-2.79 (.001)	-.011 (.688)	-5.88 (.001)	-11.8 (.002)	-2.24 (.001)
Constituency $factor_{t-1}$	205.3 (.01)	-23.0 (.001)	37.2 (.003)	284,998 (.001)	513.4 (.001)
Constituency $factor_{t-1}$	-----	126.7 (.001)	.043 (.001)	-8076 (.016)	-----
N	40,334	40,328	34,973	40,251	40,345
Adjusted R^2	.78	.57	.52	.51	.25

Note: Cell entries are unstandardized regression coefficients, two-tailed significance levels in parentheses. Models also include year dummy variables. The relevant committees and constituency characteristic variables are, in order:

a House Agriculture Committee, Senate Agriculture Committee, per capita earning from agriculture.

b House Judiciary Committee, Senate Judicial Committee, per capita offenses, per capita police employment.

c House Armed Services Committee, Senate Defense Committee, economic capacity in Gun Belt states, per capita income.

d House Commerce Committee, House Ways and Means Committee, Senate Labor Committee, Senate Finance Committee, doctors per capita, hospital beds per capita.

e House Public Works Committee, Senate Banking Committee, Senate Public Works Committee, per capita income from highway construction.

When Do You Use a Table?

- To show large amount of data in a small amount of space.
- To show exact numerical values when someone may want to look up a specific value.
- To arrange data in an orderly manner to allow for comparisons.

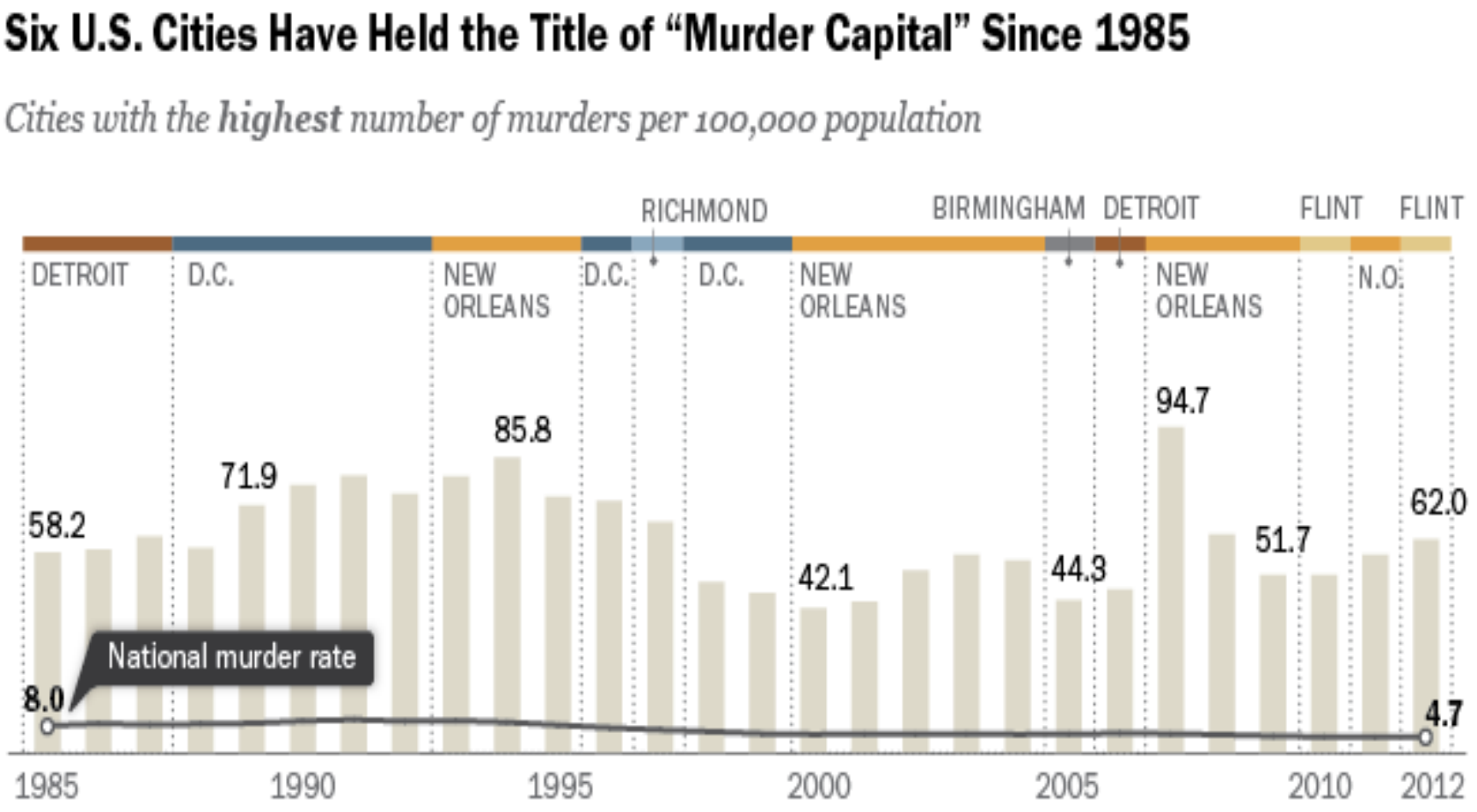
How Do You Prepare a Table?

- A table should have a substantive and descriptive title
- Number all tables with arabic numerals consecutively in a paper or chapter.
- Type the table number flush left.

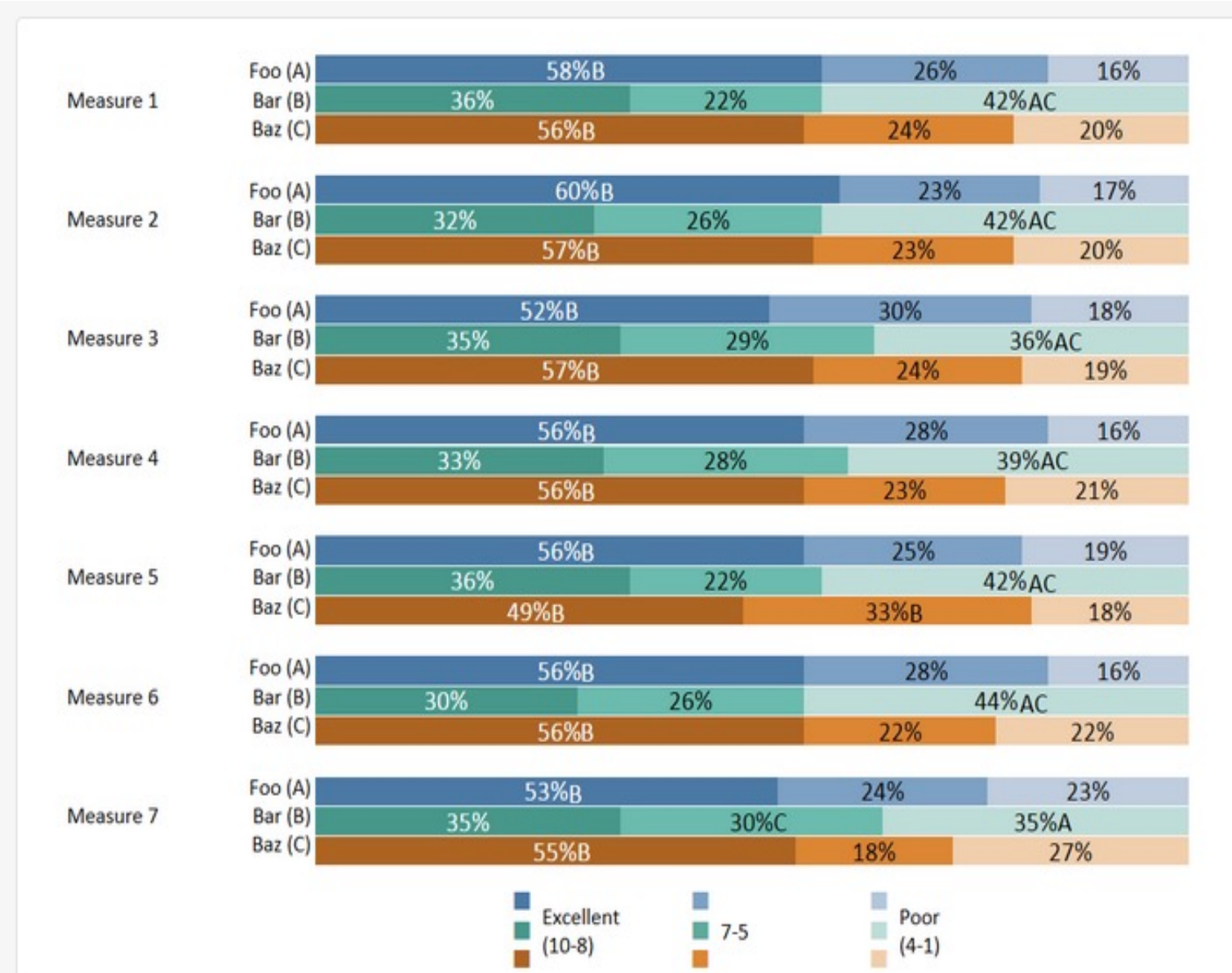
How Do You Integrate a Table Into Your Paper?

- Use a table to supplement text–especially the analysis section.
- In the text, refer to every table. Really explain your graphs, figures, and tables
  - What is the x-axis? What is the Y- axis? What does each number mean?
- Refer to the table specifically by number.
- Tell the reader what to look for (guided tour based upon supporting your theory and hypotheses).
- Discuss the highlights of the table (everything is not equally important).

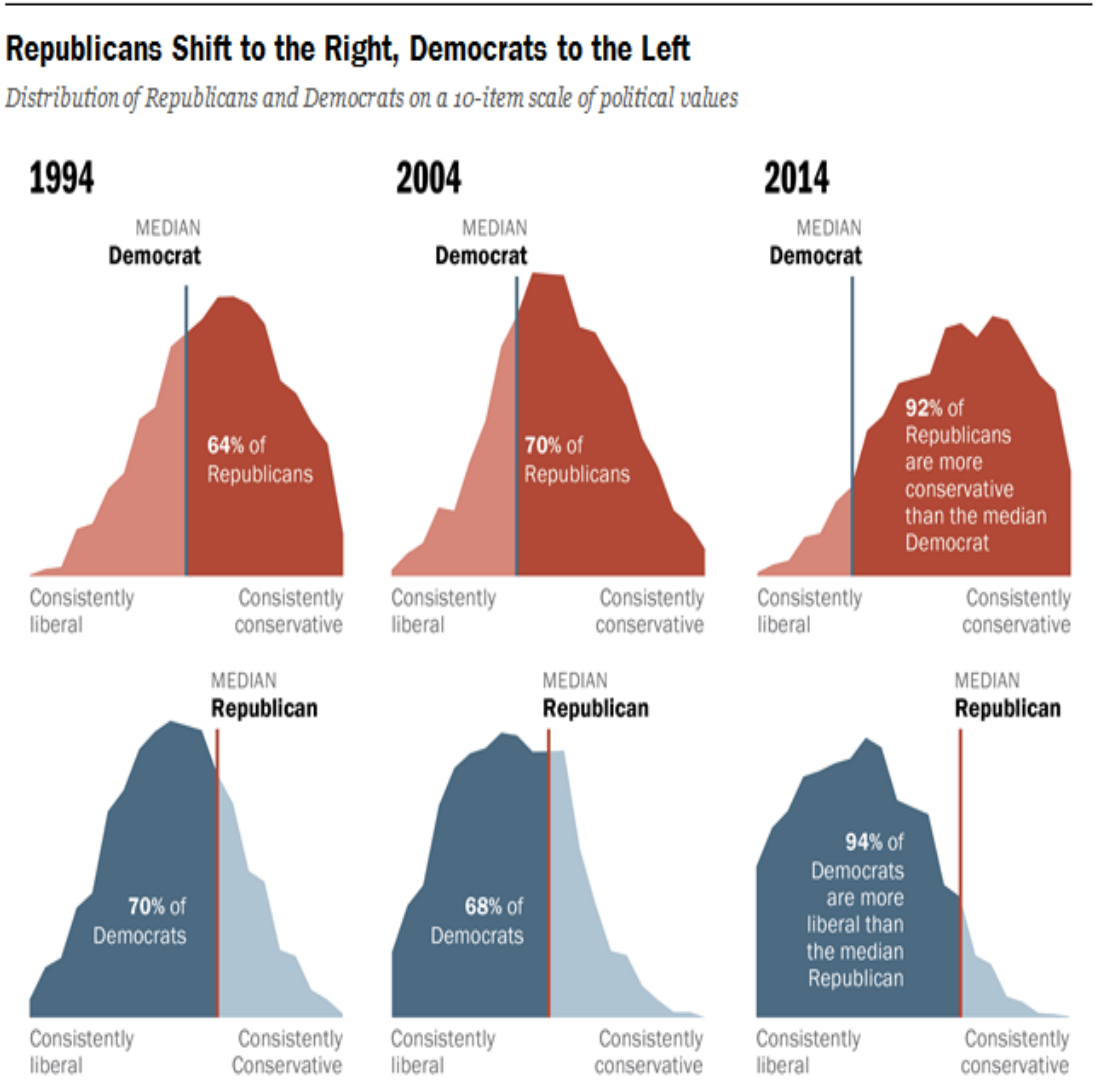
This a good figure. Why?

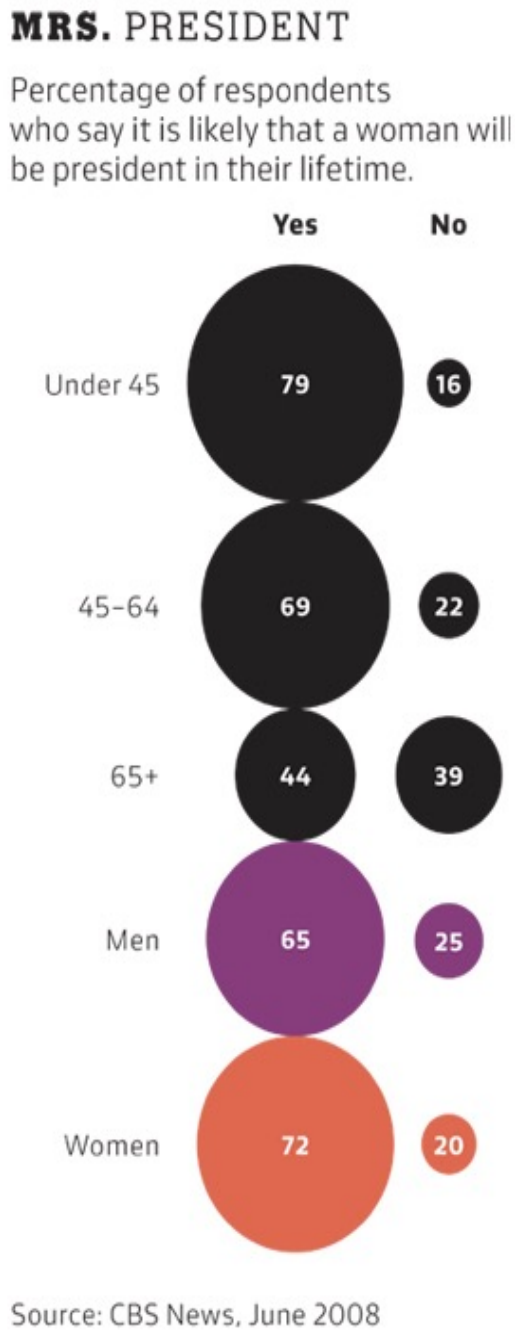


This is a really bad figure. Why?



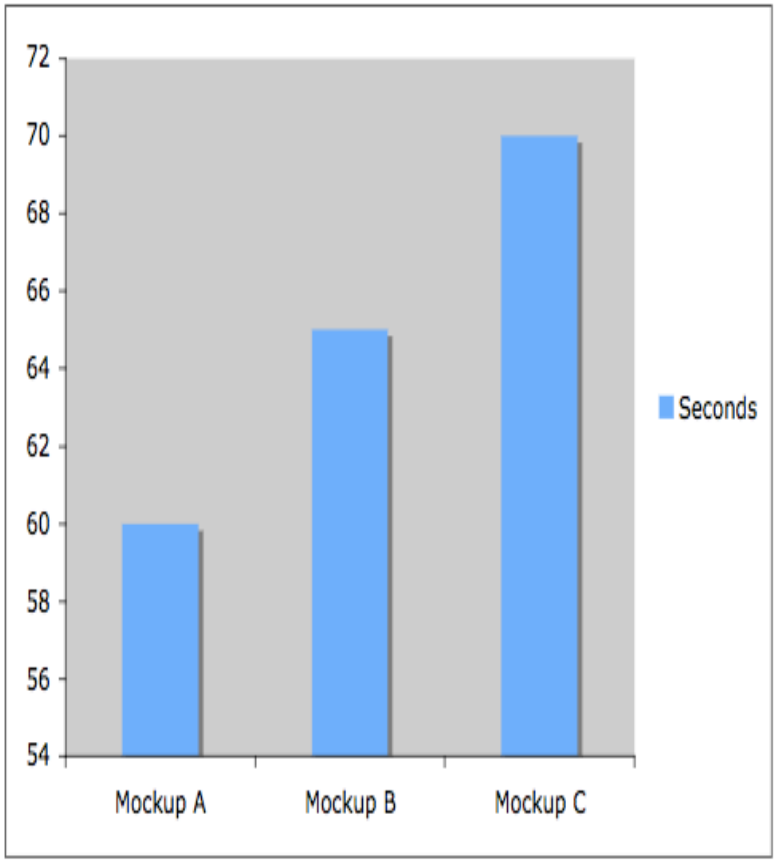
Here is another figure. Good or Bad?



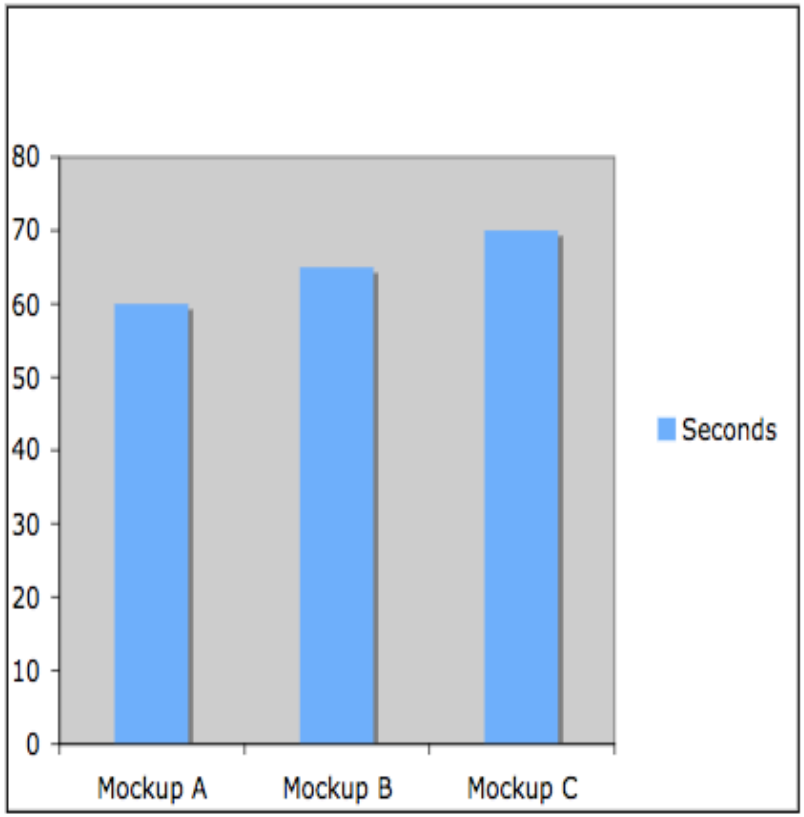


- Percentage of respondents who say a women president is likely
- This is poor way to represent differences of opinion.
- Why?

Example 20.8: Graph is misleading due to distorted scaling



Example 20.10: Graph presents data without distortion



When do you use a figure ?

- Use graphs to show relations in a set of data at a glance. Example: bar graph

- Use charts to show the relations between the part to the whole: Example: organizational chart

- Use charts to show the sequence of operations in a process. Example: flow chart.

When do you use a figure II?

- Use dot maps to show population density.
  - State map showing population trends.

- Use shaded maps to show averages or percentages.
  - State map showing rainfall totals.

When do you use a figure III?

- Use drawings to emphasize some aspect of an object.
  - Cut away view of a mechanical object.
- Use photographs to present a real-life image.
  - Changes in glacier size over time

How Do Your Prepare a Figure?

- For publication, follow the journal's requirements for submitting a computer file and/or a high quality laser print.

- Number all figures consecutively with arabic numerals throughout the article or chapter.

- Write a caption for each figure. This caption will serve as both an explanation of the figure and as the title.

Regional Support for Same-Sex Marriage

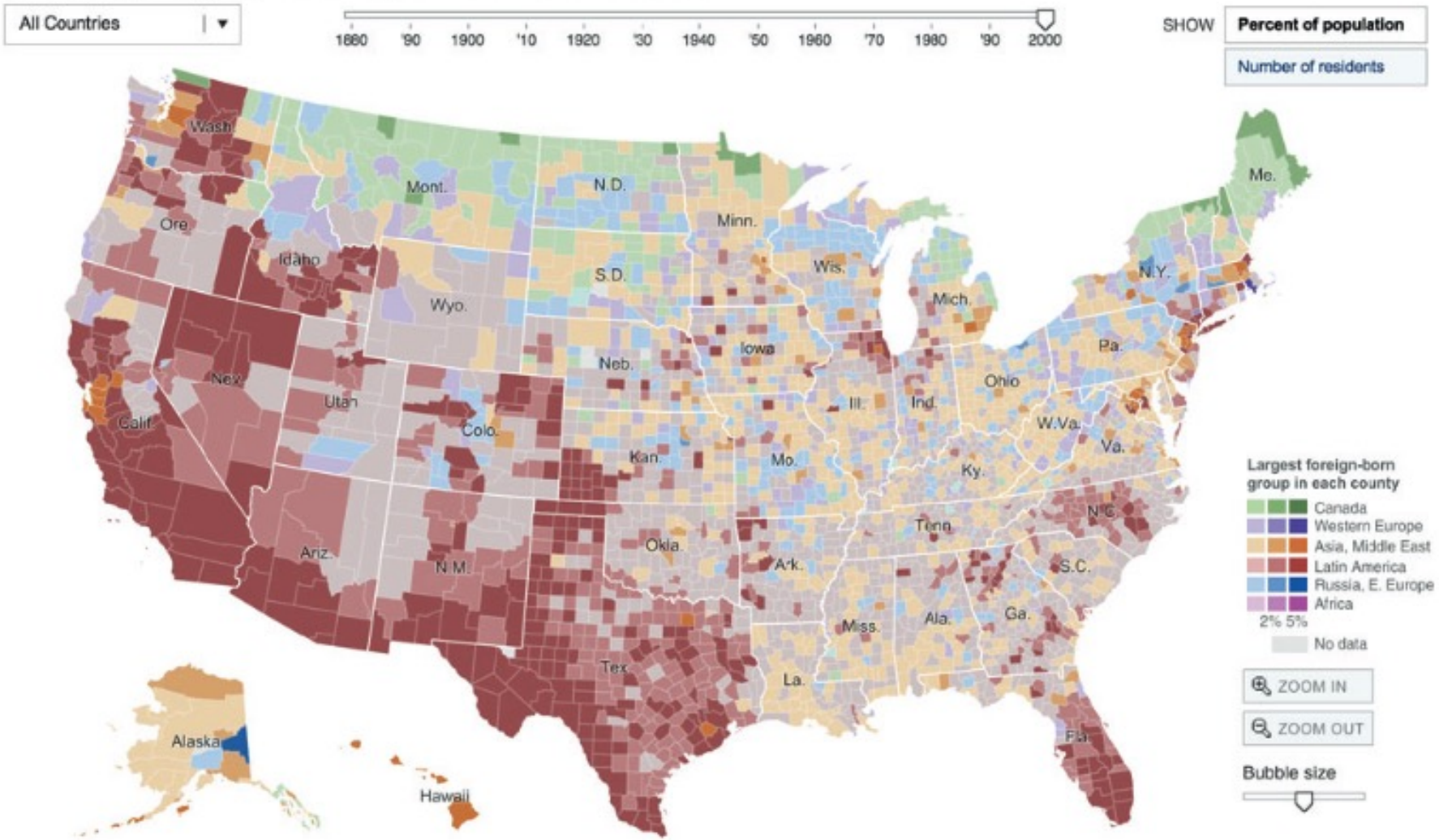
% favoring same-sex marriage, 2003-2014

Note: Regional breakdowns are based on the U.S. Census regions and divisions, with three exceptions. Maryland, Delaware and D.C. are grouped in the mid-Atlantic with New York, New Jersey and Pennsylvania, instead of in the South Atlantic. The census divisions of East South Central and West South Central are combined into a single South Central designation.

PEW RESEARCH CENTER

Immigration Explorer

Select a foreign-born group to see how they settled across the United States.



Note: Due to limitations in the Census data, foreign-born populations are not available in all areas for all years.

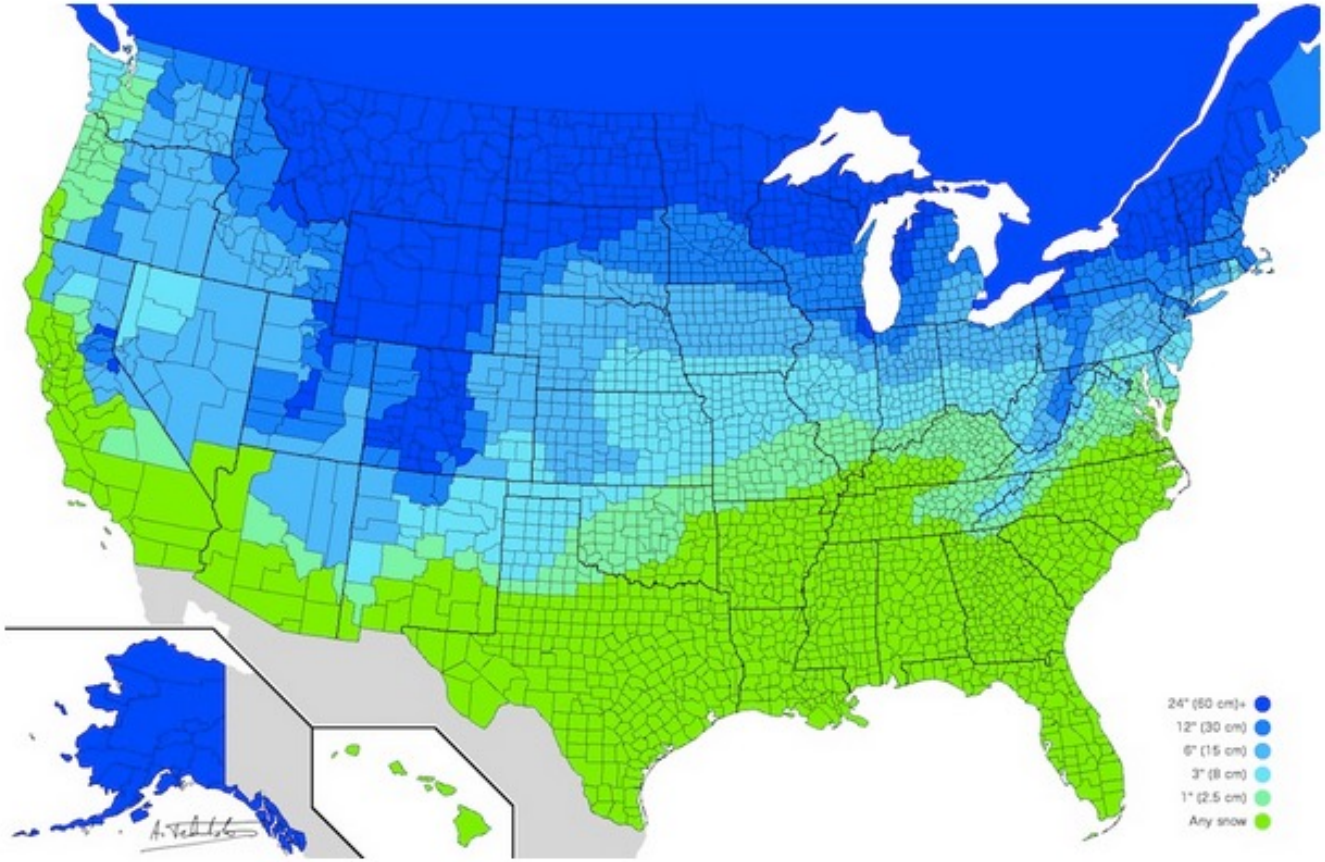
Sources: Social Explorer, www.socialexplorer.com; Minnesota Population Center; U.S. Census Bureau

Matthew Bloch and Robert Gebeloff/The New York Times

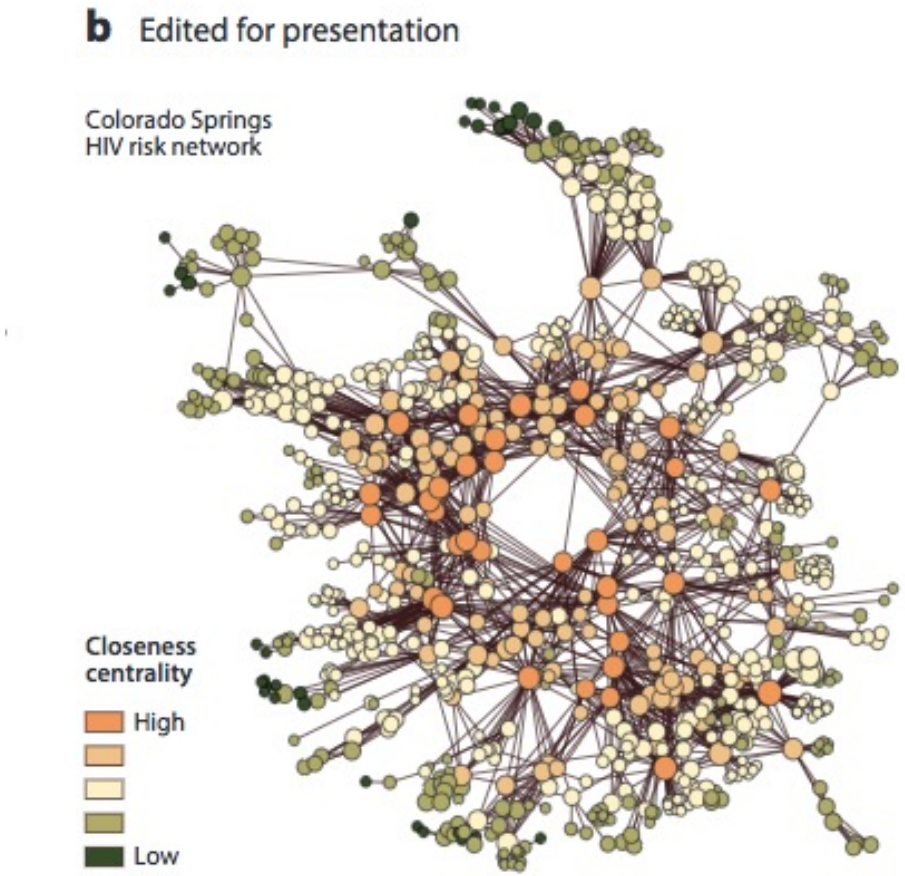
How Much Snow Before America Cancels School?

A map shows how many inches it takes before various regions call it off.

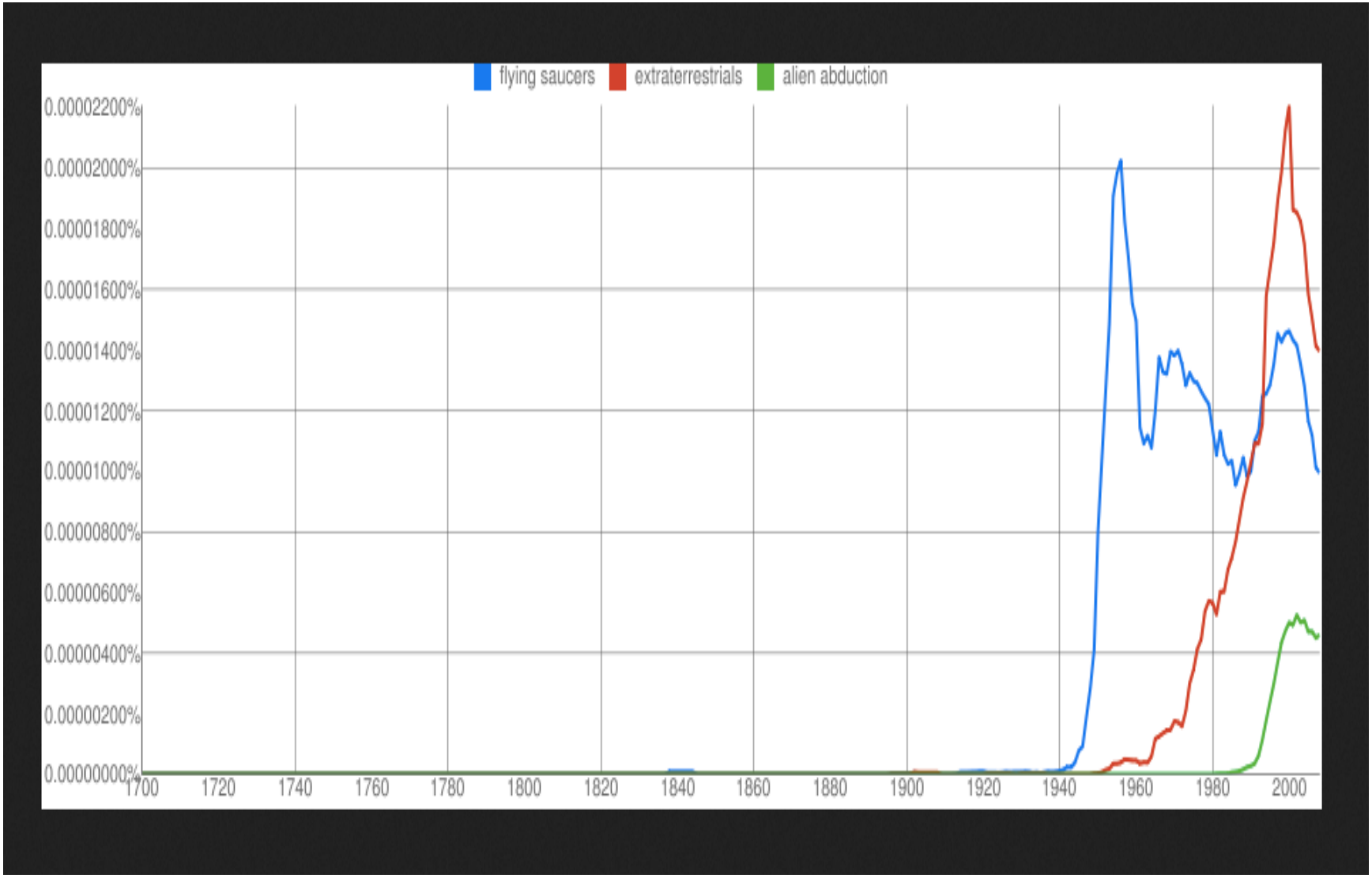
By Eric Randall | Boston Daily | February 3, 2014, 11:10 a.m.



An Example of Social Network Analysis



Here is another figure. Good or Bad?



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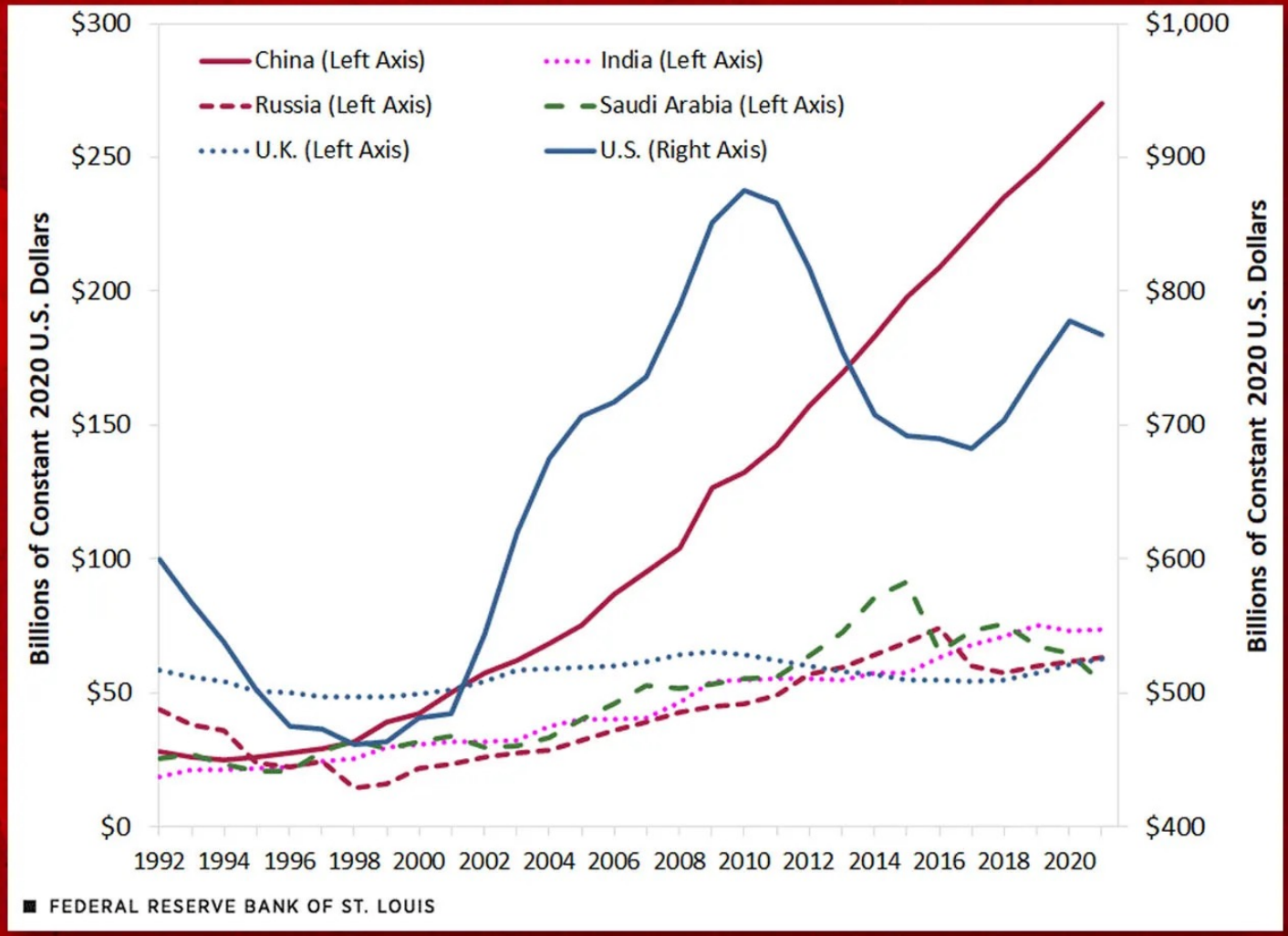


Pie Charts are usually bad….

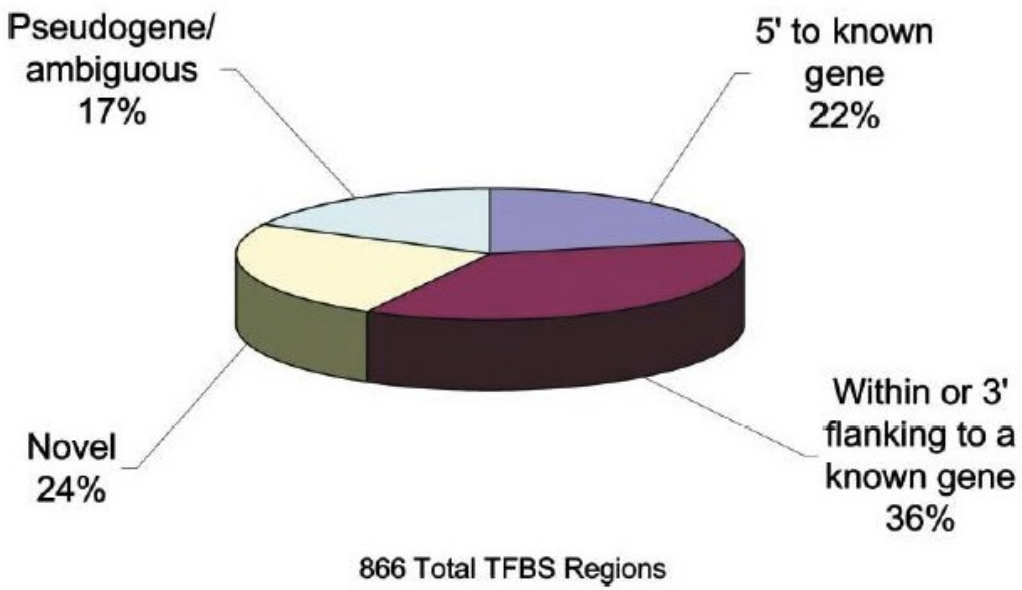
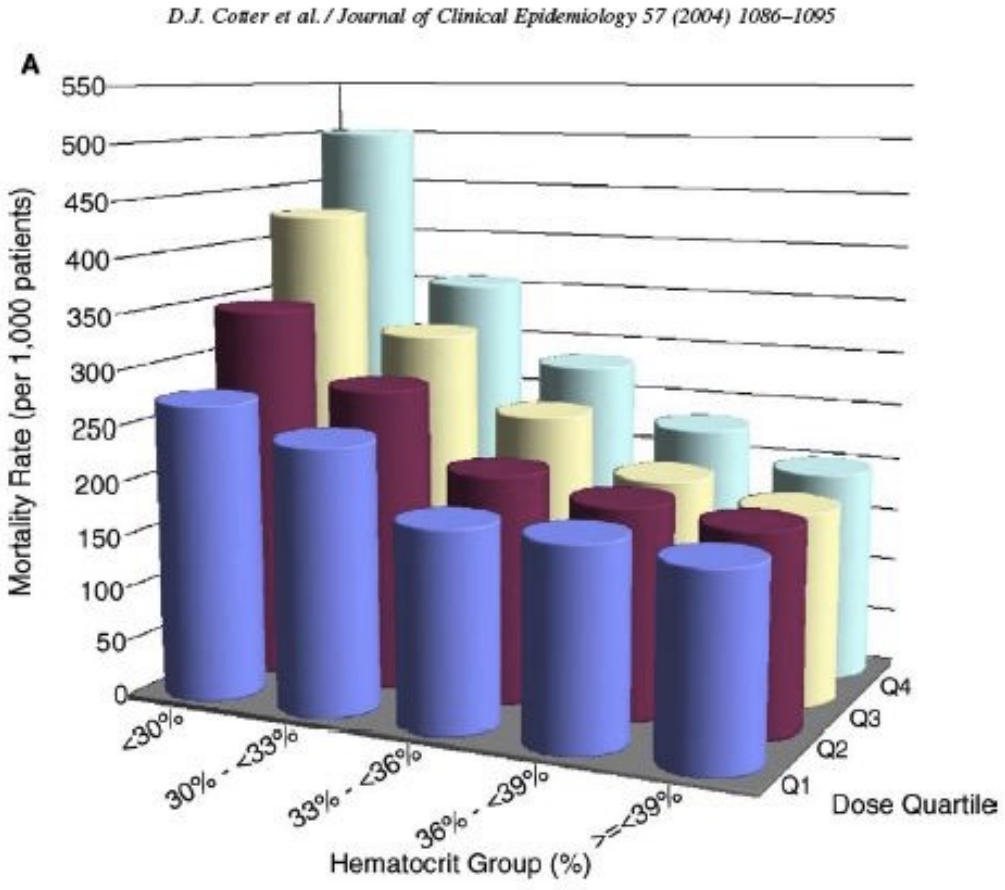


Figure 1. Classification of TFBS Regions

TFBS regions for Sp1, cMyc, and p53 were classified based upon proximity to annotations (RefSeq, Sanger hand-curated annotations, GenBank full-length mRNAs, and Ensembl predicted genes). The proximity was calculated from the center of each TFBS region. TFBS regions were classified as follows: within 5 kb of the 5′ most exon of a gene, within 5 kb of the 3′ terminal exon, or within a gene, novel or outside of any annotation, and pseudogene/ambiguous (TFBS overlapping or flanking pseudogene annotations, limited to chromosome 22, or TFBS regions falling into more than one of the above categories).

Only good pie chart…

Try to Avoid 3D graphs….



Can the Table or Figure be Understood on Its Own?

- Remember:
  - Some readers look only at the illustrations.
  - Most readers remember content in illustrations more readily that content in the text
- Therefore:
  - Give a table a **clear** title and headings. Explain all abbreviations.
  - Give a figure a caption that makes clear what you want to the reader to notice in the figure.
  - Create tables and graphs only for the important arguments and analysis