

Graphical Unexcellence

Data Viz Hall of Shame

(Professor Dave)²

The University of Austin

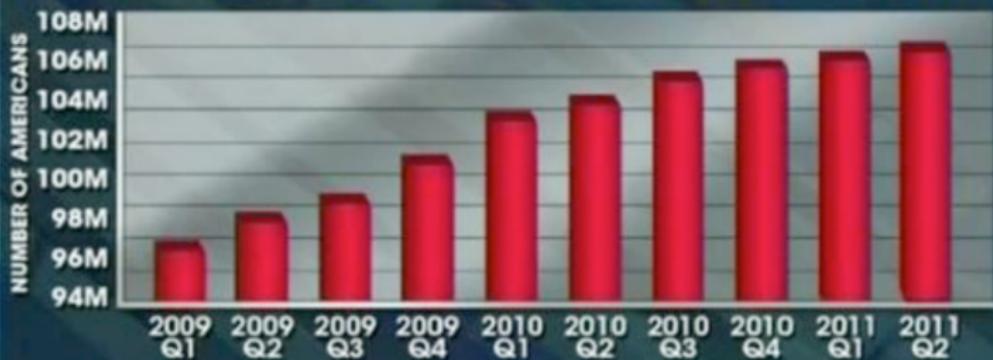
Outline

- Plotting pitfalls: Hall of shame
- Plot critiques
- The grammar of graphics
- The five most important plots
- Enriching plots (color, faceting, labels, etc)

Plotting pitfalls

- Axis trickery (a.k.a. “little y lies”)
- Violations of basic math
- Nearly content-free figures
- Gratuitous chartjunk
- Poorly chosen 3D graphics
- Bad design choices

FEDERAL WELFARE RECEIVED IN U.S.



FOX NEWS
.COM

SOURCE: U.S. CENSUS SURVEY

LIST TYLER HAMILTON OF HIS GOLD MEDAL FRO

NAS



6.61

DEMOCRATIC WOMEN RAISE LESS MONEY THAN DEMOCRATIC MEN

AVERAGE RAISED BY HOUSE PRIMARY WINNERS



SOURCE: CENTER FOR RESPONSIVE POLITICS

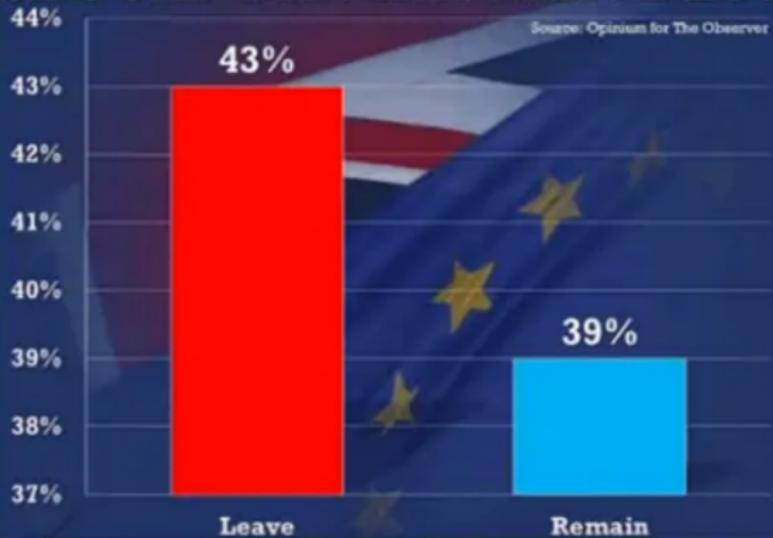
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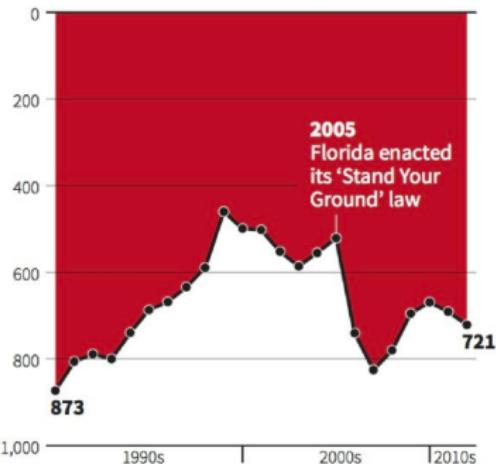
 MSNBC

SHOULD BRITAIN LEAVE EU?



Gun deaths in Florida

Number of murders committed using firearms



Source: Florida Department of Law Enforcement

And yet ...

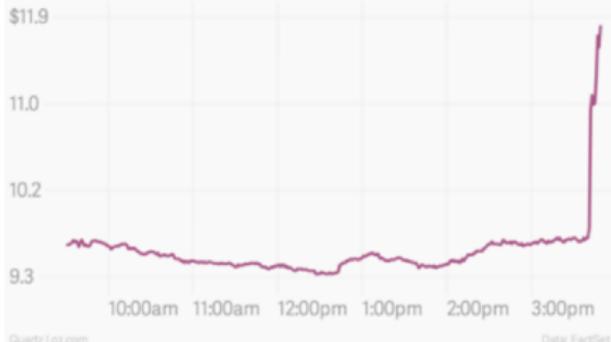


Quartz

@qz

Acquisition rumors light a fire under BlackBerry's stock.
qz.com/note/326942/

BlackBerry share price



Quartz | qz.com

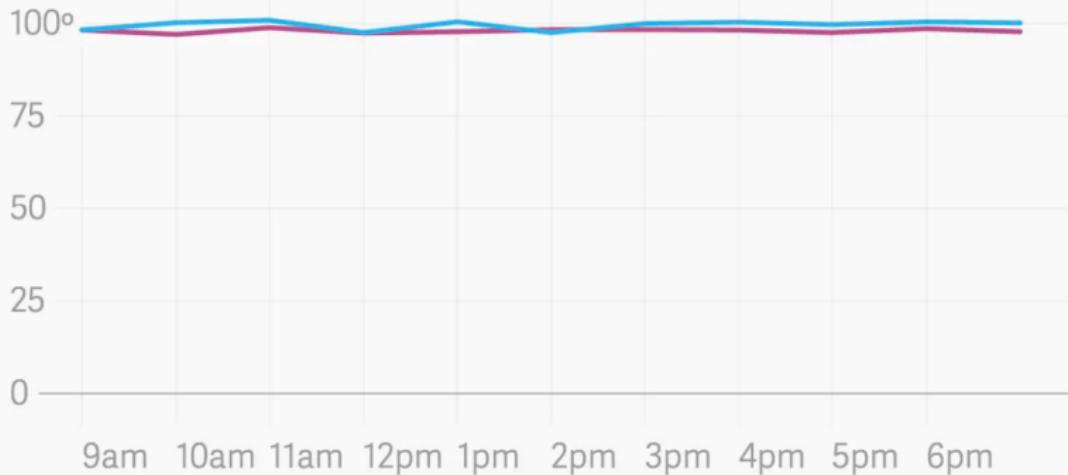
Data: FactSet

♡ 6 4:44 PM - Jan 14, 2015

10

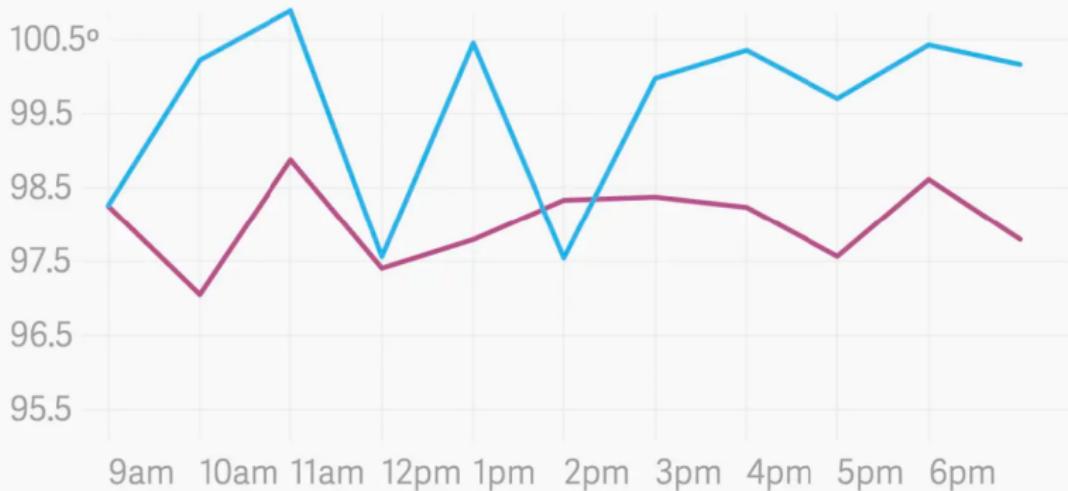
Oral temperature

■ Sara ■ Bob



Oral temperature

■ Sara ■ Bob



Truncating the vertical axis is sometimes ok

- When you're trying to emphasize change, rather than relative magnitude.
- When you're plotting data over time.
- When zero is not a sensible baseline for comparison.

Bottom line ... use your judgment; don't mislead people; watch out for "little y lies."

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RASMUSSEN REPORTS POLL

Did scientists falsify research to support their own theories on Global Warming?

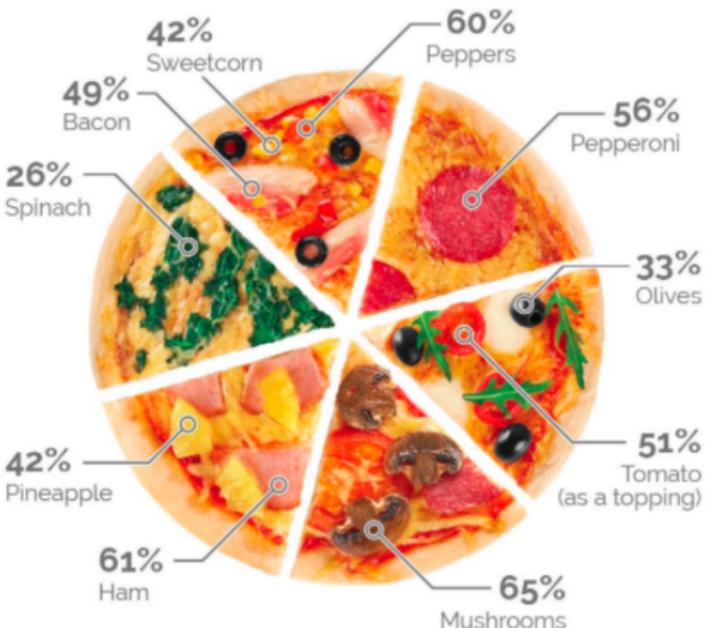
59% **SOMEWHAT LIKELY**

35% **VERY LIKELY**

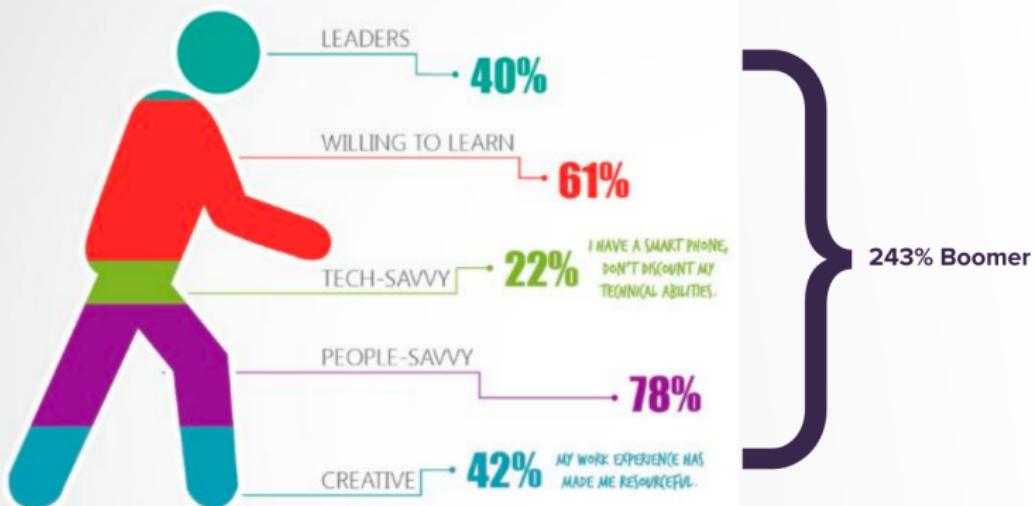
26% **NOT VERY LIKELY**



CLIMATE CHANGE RESEARCH // FOX NEWS // GOP S NHL TOR 6 COB 3



HOW BABY BOOMERS DESCRIBE THEMSELVES



UNEMPLOYMENT RATE UNDER PRESIDENT OBAMA



2011

SOURCE: BUREAU OF LABOR STATISTICS

8.6 > 8.8?

WHAT IS YOUR FAVORITE SEASON? @FCNMIKE

53%



FALL

SUMMER

WINTER

SPRING



75°

6:51

FIRST COAST
6 NEWS

#KATIESCOMMUTERS

DEADLY CRASH

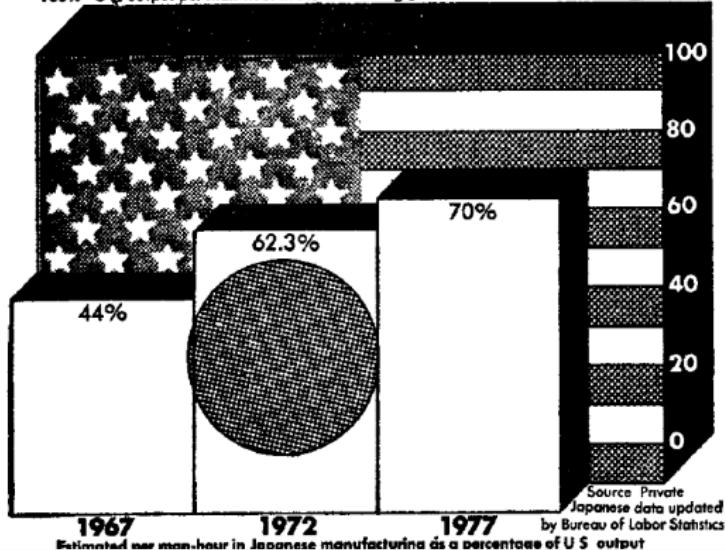
DEADLY HOME INVASION

Plotting pitfalls

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Labor Productivity: U.S. vs Japan

100% = U.S. output per man-hour in manufacturing



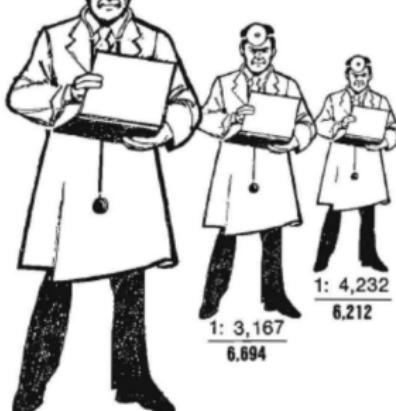
Estimated output in Japanese manufacturing as a percentage of U.S. output

THE SHRINKING FAMILY DOCTOR

In California

Percentage of Doctors Devoted Solely to Family Practice

1964	1975	1990
27 %	16.0 %	12.0 %



TRUMP TWEETS MENTIONING MUELLER BY NAME

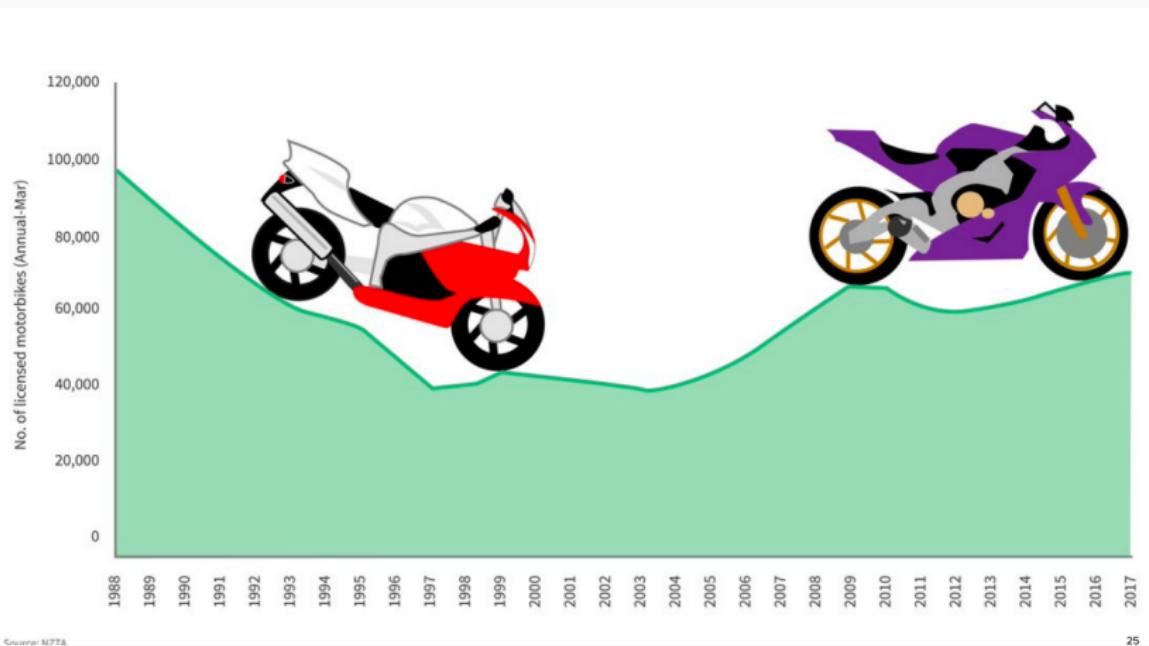


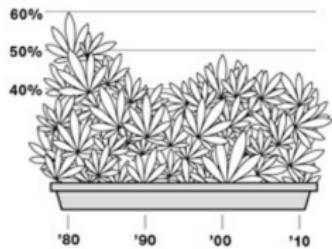
LIVE

 MSNBC

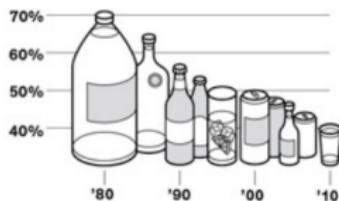
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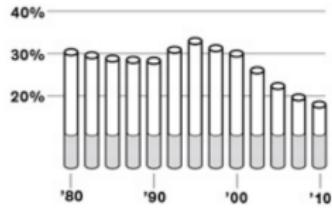




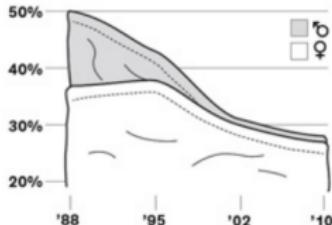
▲ Percentage of high-school seniors
who have ever tried pot.



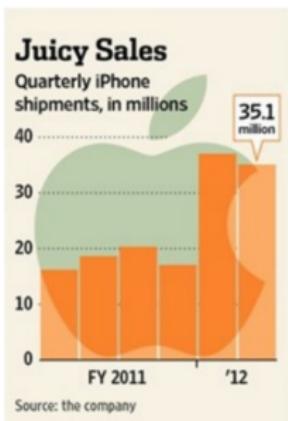
○ Alcohol use by high-school
seniors over time.



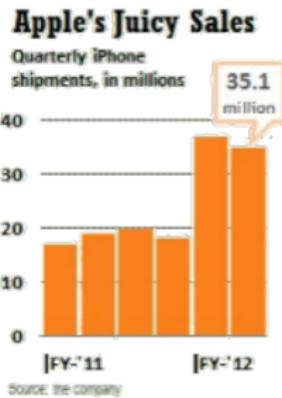
■ Smoking habits of high-school
seniors over time.



△ Percentage of 15-to-17-year-olds
who have had sex.



"Be clear first and clever second. If you have to throw one of those out, throw out clever.
— Jason Fried



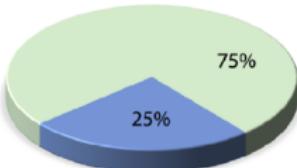
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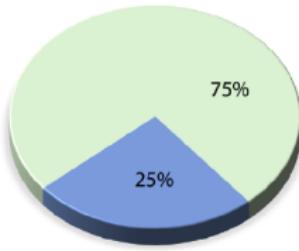
a



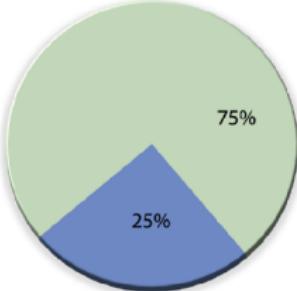
b



c



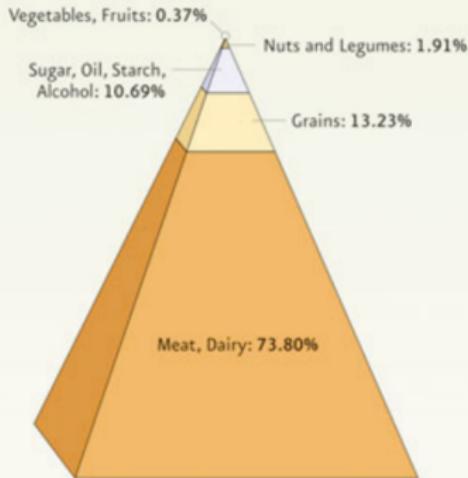
d



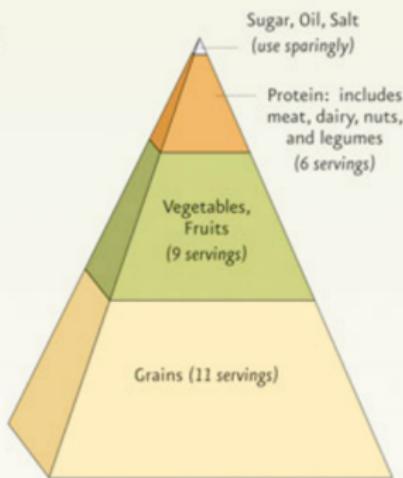
Same chart, four angles

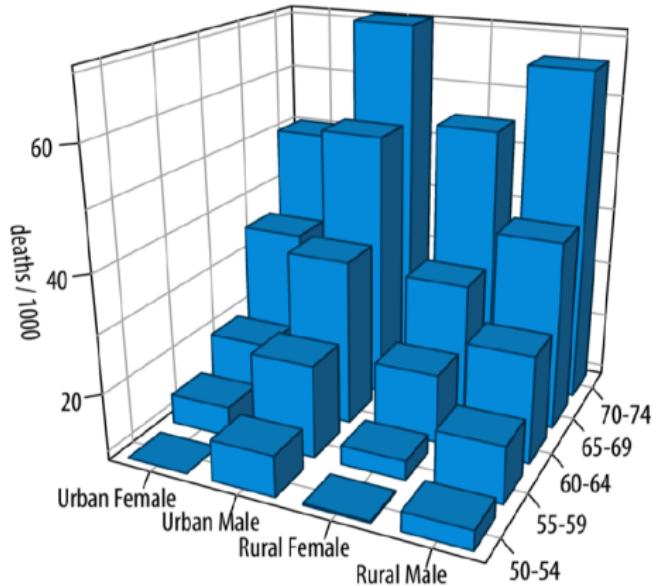
Why Does a Salad Cost More Than a Big Mac?

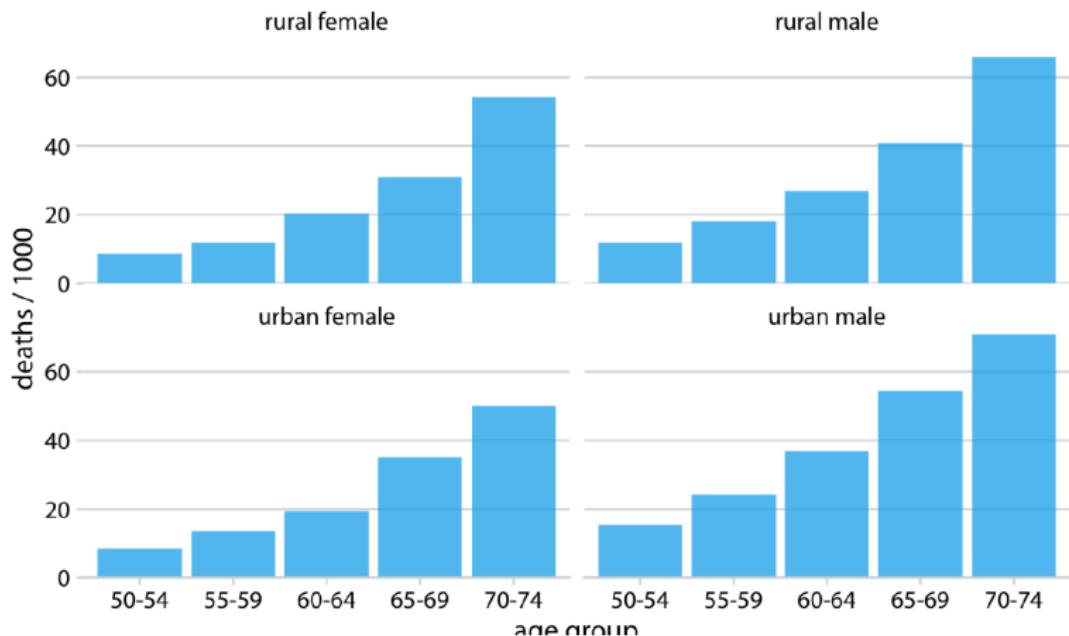
Federal Subsidies for Food Production, 1995-2005[®]



Federal Nutrition Recommendations

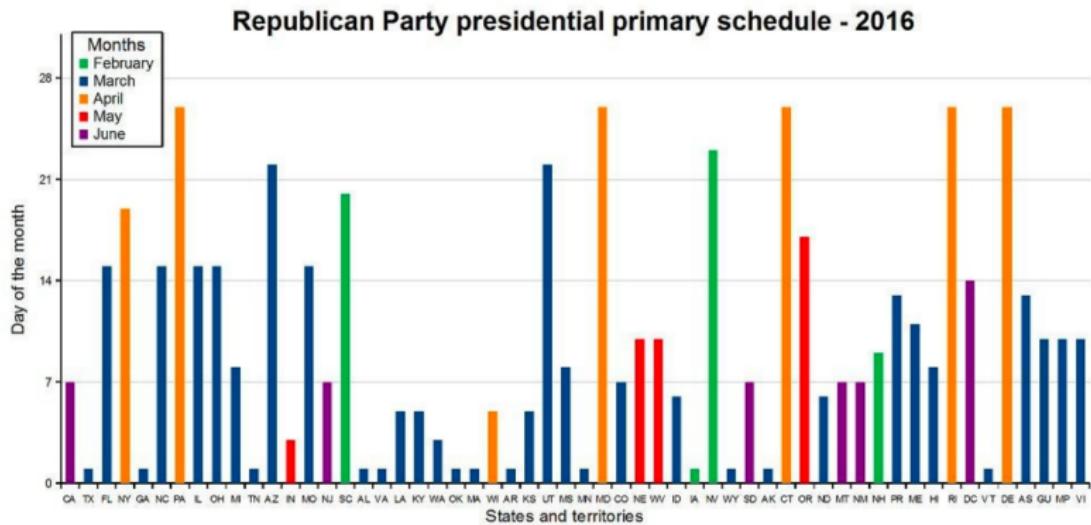






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Mav we suggest... a calendar?

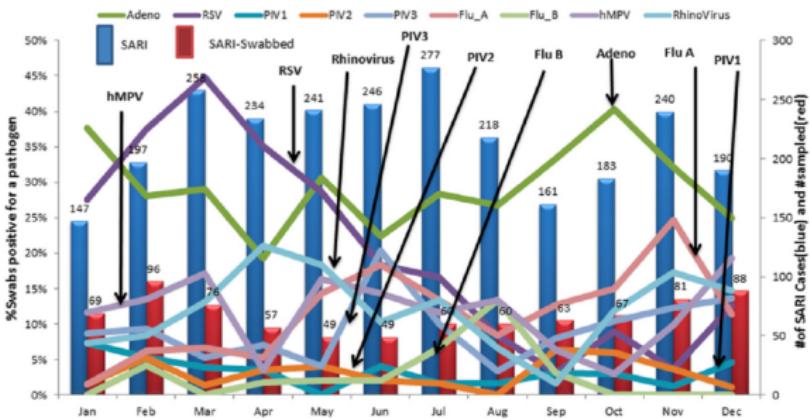
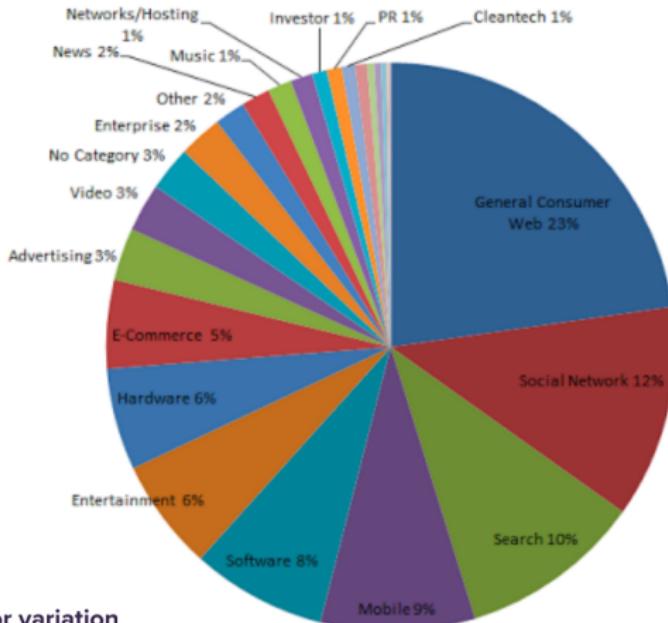
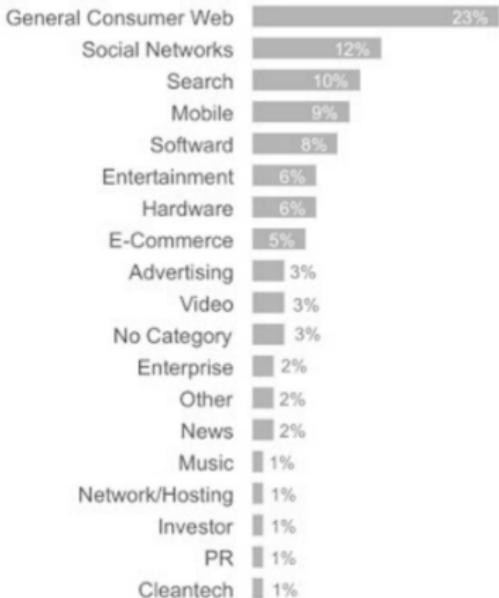


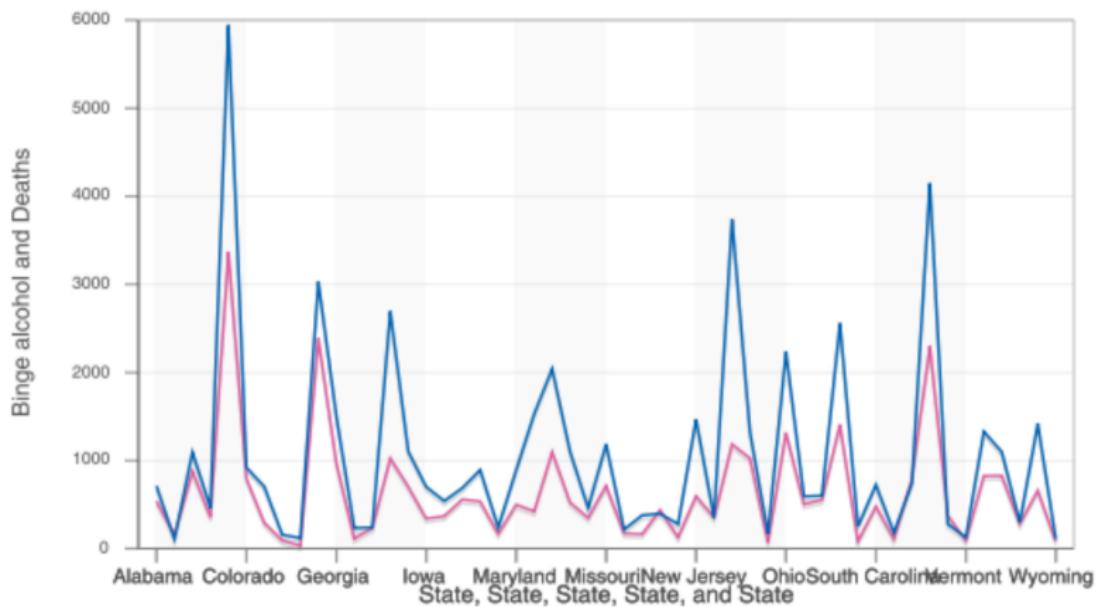
Figure 1 Monthly (aggregate) distribution of viral pathogens, March 1, 2007-Feb 28, 2011.



Meaningless color variation



As a bar plot



Alcohol poisoning deaths vary by state

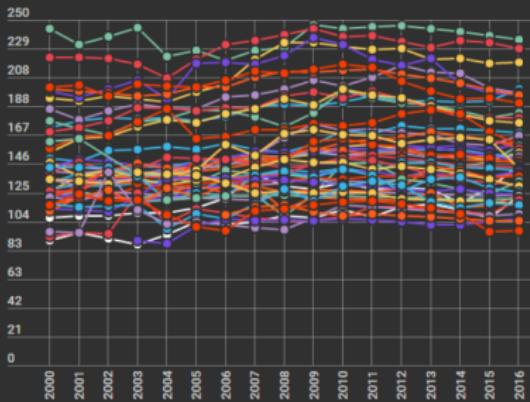


SOURCE: National Center for Health Statistics Mortality Multiple Cause Files, 2010-2012.

Your turn!

- Break in the groups of 2-3 and answer the following questions about the next figure:
 1. What is this figure trying to convey, and is it successful or not?
 2. If successful, what features make it so? If unsuccessful, what would you change to make it the best graphic ever?

Canada's most heavily-policed cities (x per 100,000)



Legend:

- Victoria, Montreal, Halifax, Thunder Bay, Winnipeg
- Vancouver, Windsor, Toronto, Edmonton, Regina, Saskatoon
- Calgary, St. John's, Greater Sudbury, Barrie, Lethbridge Region
- Red Deer, Niagara Region, Kingston, Chatham-Kent, Hamilton
- London, Guelph, Abbotsford, Surrey, Peel Region, Delta
- Waterloo Region, Laval, York Region, Kelowna, Saanich
- Quebec City, Durham Region, Ottawa, Codiac, Halton Region
- Sherbrooke, Langley Township, Coquitlam, Saguenay, Terrebonne
- Trois-Rivières, Burnaby, Roussillon, Levis, Richelieu Saint-Laurent
- Richmond