Uni Studies 3:
How to lie with Infographics

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• First time
  • Sample Bias
  • Self-report bias
  • Mean, median and mode
    • The importance of looking at variation also
  • The importance of sample size
  • The importance of labeling graphs
  • Making sure that the statistics are important
    • "Much Ado About Nothing"
  • The importance of thinking about motivations
  • The importance of paying close attention to the words
• Second time
  • Drawing graphs fairly
  • Saying one thing to prove another
• Second time
  • Drawing graphs fairly
  • Saying one thing to prove another
Correlation does not imply causation
- Correlation by chance
- Correlation but cause and effect are unknown
- Correlation with a hidden cause
- Correlation with no relationship
• Correlation does not imply causation
THE DARKENING SHADOW

(Western Style)
prices up

Bread

Milk

Last year

This year
prices down

Milk

Bread

Last year

This year
• How to talk back to a statistic
  • Who says so?
  • How does he or she know?
  • What’s missing?
  • Did somebody change the subject?
  • Does it make sense?
• Who says so?
  • How funded the study/data/graphic?
  • Is there a conscious bias?
  • Is there an unconscious bias?
  • Look for the “O.K. name”?
• How does he or she know?
  • Was it a survey?
    • Who was asked?
    • Who responded?
  • Was it a self-report?
  • Is the study size large enough?
• What is missing?
  • When you get a statistic, think about what “normal” would be?
  • If you get a percentage, what are the absolute values?
  • If you get an index, ask what the base is?
  • Ask what the hidden factor might be.
• Did somebody change the subject?
  • Watch the change from raw statistic to conclusion.
  • Is something “reported” or actual?
  • Did the definition change?
  • Did the source of the information change?
  • Is this just a sensationalistic anomaly?
  • “The hottest June 2nd since 2005”
• Does it make sense?
  • Does this pass the sniff test?
  • Is the number too precise for what it claims?
  • Is the extrapolation justified?
To celebrate National Pizza Month, California Pizza Kitchen surveyed 1000 Americans about their pizza preference and political leanings. Results showed that likely voters for both candidates - Barack Obama or Mitt Romney - have unique pizza habits and preferences.

Barack Obama voters are more likely than Romney voters to...

- Enjoy pizza for lunch
- Order take-out or delivery
- Warm those slices up
- Drink soda with their pizza

Mitt Romney voters are more likely than Obama voters to...

- Eating pizza for either lunch or dinner
- Eating pizza at home
- Eating left-over pizza
- Washing their pizza down with a cold beverage

What America likes...

Enjoy pizza for dinner
Make home-made pizza
Enjoy the pizza cold, right out of the refrigerator

Enjoy a pint of beer or glass or wine with your pizza?
You are equally likely to vote for either Mitt Romney or Barack Obama.
Average Wireless Speeds
Coast to Coast

3G
WINNER: T-MOBILE
↓ Download (mbps)
AT&T 0.59 Sprint 2.62 T-Mobile 3.84 Verizon 1.05
WINNER: T-MOBILE
↑ Upload (mbps)
AT&T 0.85 Sprint 0.56 T-Mobile 1.44 Verizon 0.75

4G
WINNER: AT&T
↓ Download (mbps)
AT&T 2.81 Sprint 5.53 T-Mobile 7.35 Verizon 4.91
WINNER: VERIZON
↑ Upload (mbps)
AT&T 0.97 Sprint 1.32 T-Mobile 5.86 Verizon

CHART NOTES: mbps = megabits per second; higher is better. AT&T doesn’t offer 4G service in Denver or Seattle, so its 4G numbers reflect data from 11 cities, rather than 13. Also, Sprint does not offer 4G WiMax service in New Orleans, so its 4G numbers
Over the Decades, How States Have Shifted

Recent elections have placed a heavy emphasis on "swing states" — Ohio, Florida, and a handful of other states most-easily swayed from one party to the other. Yet in the past, many more states shifted between the Democratic and Republican parties. A look at how the states stack up in the current FiveThirtyEight forecast and how they have shifted over past elections.

FiveThirtyEight 2012 Forecast

The latest FiveThirtyEight forecast shows many states shifting to the right. Florida, North Carolina and Indiana are more likely than not to shift back to Republicans.

As Goes Ohio

Ohio, which has voted for the winner in every election since 1964, provided the decisive electoral votes in 2004, and it is the state likeliest to play that role again this year, according to the FiveThirtyEight model.

Incumbent Stability

When an incumbent runs for re-election, fewer states typically change party affiliation: only three states shifted from 2000 to 2004, and five from 1992 to 1996. Yet incumbency is no guarantee of victory. Bill Clinton defeated the first President George Bush by winning 22 previously Republican states.