

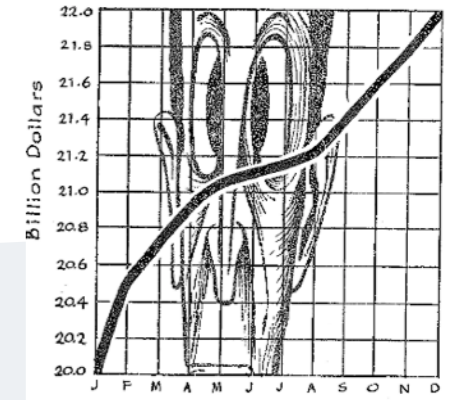
# Uni Studies 3: How to lie with Infographics

Assoc. Professor Donald J. Patterson  
Uni Stu 3 Fall 2012

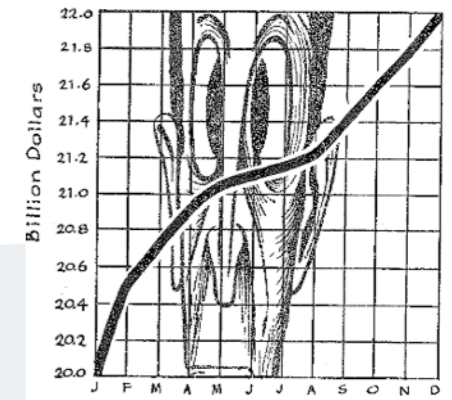


- First time
  - Sample Bias
  - Self-report bias
  - Mean, median and mode
    - The importance of looking at variation also
  - The importance of sample size
  - The importance of labeling graphs
  - Making sure that the statistics are important
    - “Much Ado About Nothing”
  - The importance of 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



*According to repeated nationwide surveys,*

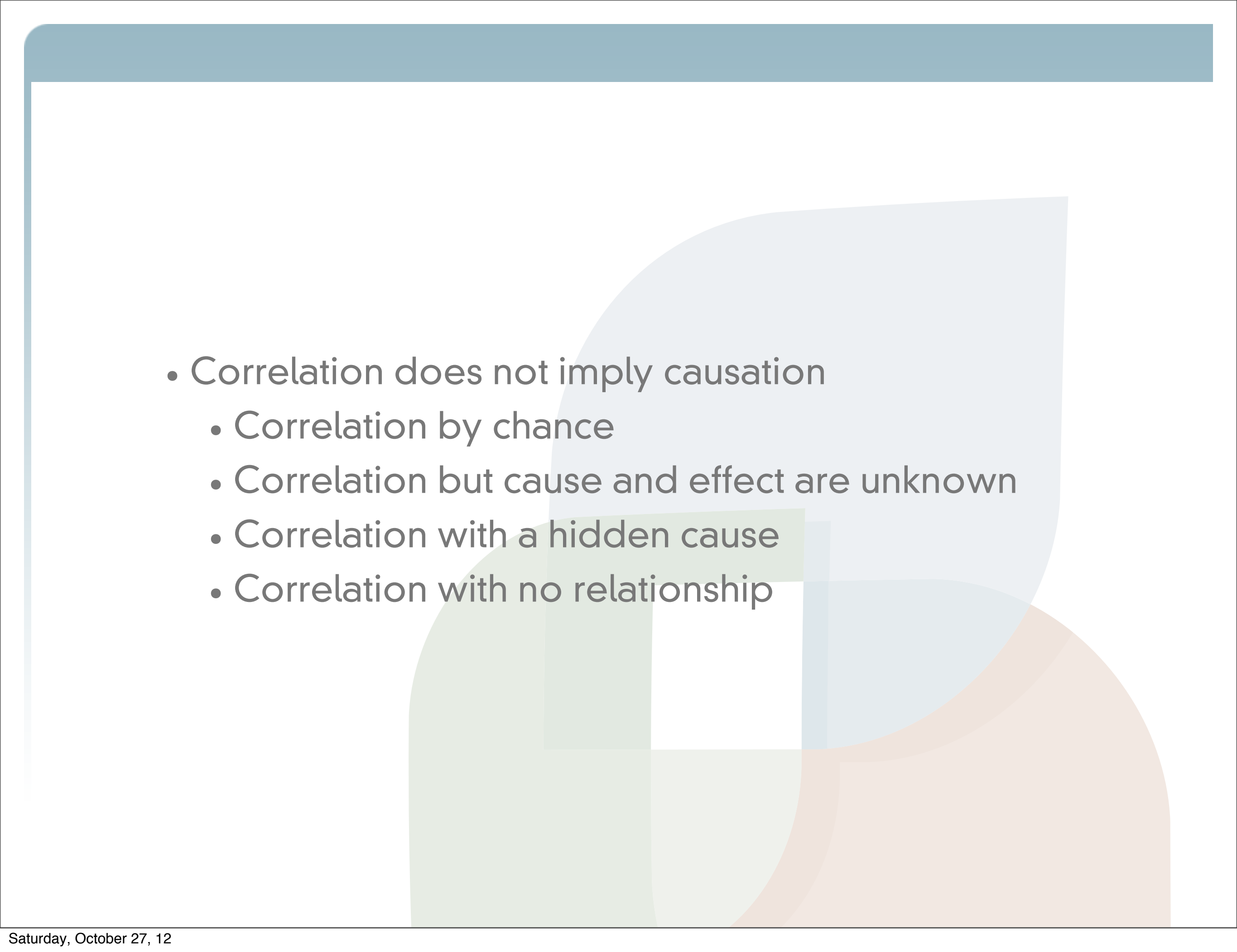
## More Doctors Smoke **CAMELS** than any other cigarette!

Doctors in every branch of medicine were asked, "When cigarette do you smoke?" The brand named most was Camel!

You'll enjoy Camels for the same reason as more doctors enjoy them. Camels have more real tobacco, pack after pack, and a filter guaranteed to stay with your cigarette. Make this wonderful new brand only Camels for 30 days and you'll know why doctors prefer them. You'll find they're just what you need. You'll see how much better a cigarette can be!

**THE DOCTORS' CHOICE IS AMERICA'S CHOICE!**

For 30 days, test Camels in your "I-Zone" (I for Throat, I for Taste). [www.StrangeCosmos.com](http://www.StrangeCosmos.com)

- 
- 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

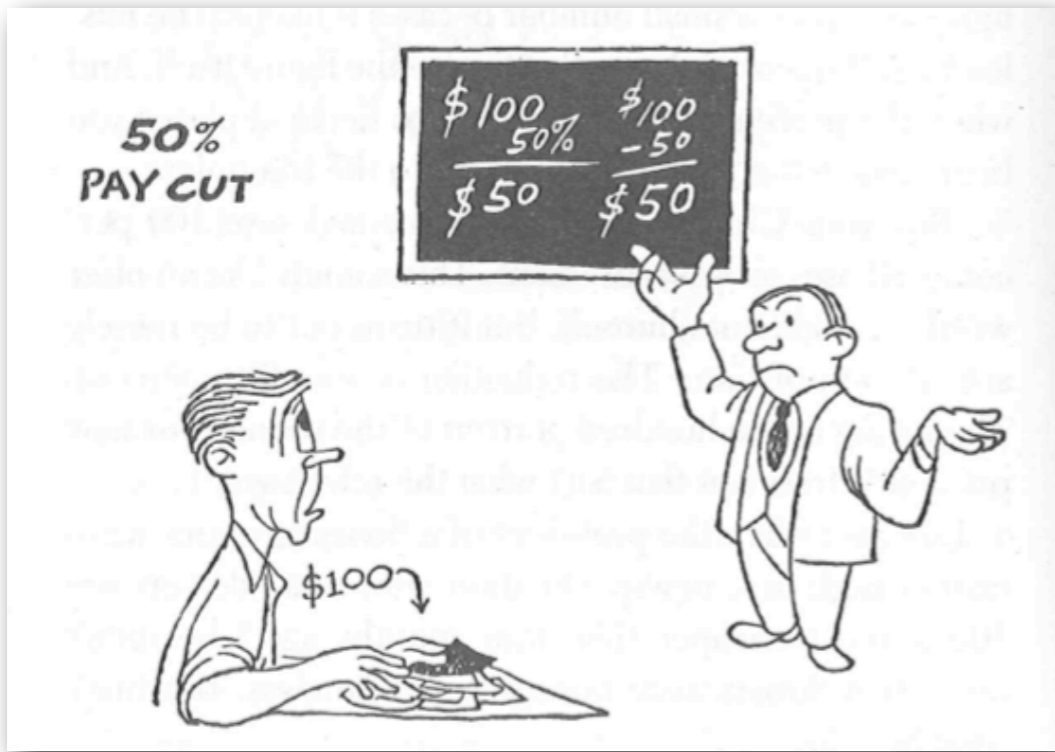
(Western Style)

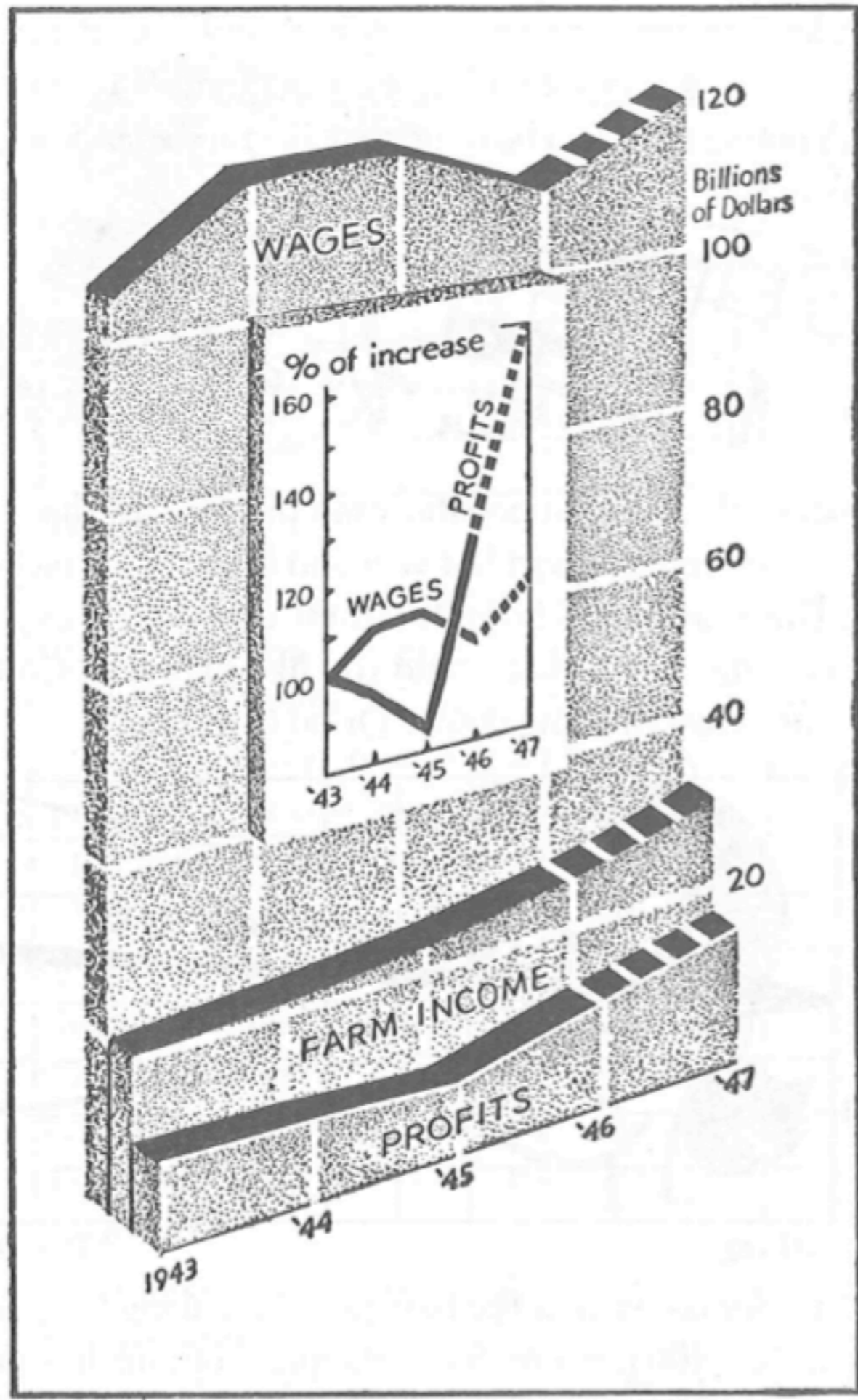


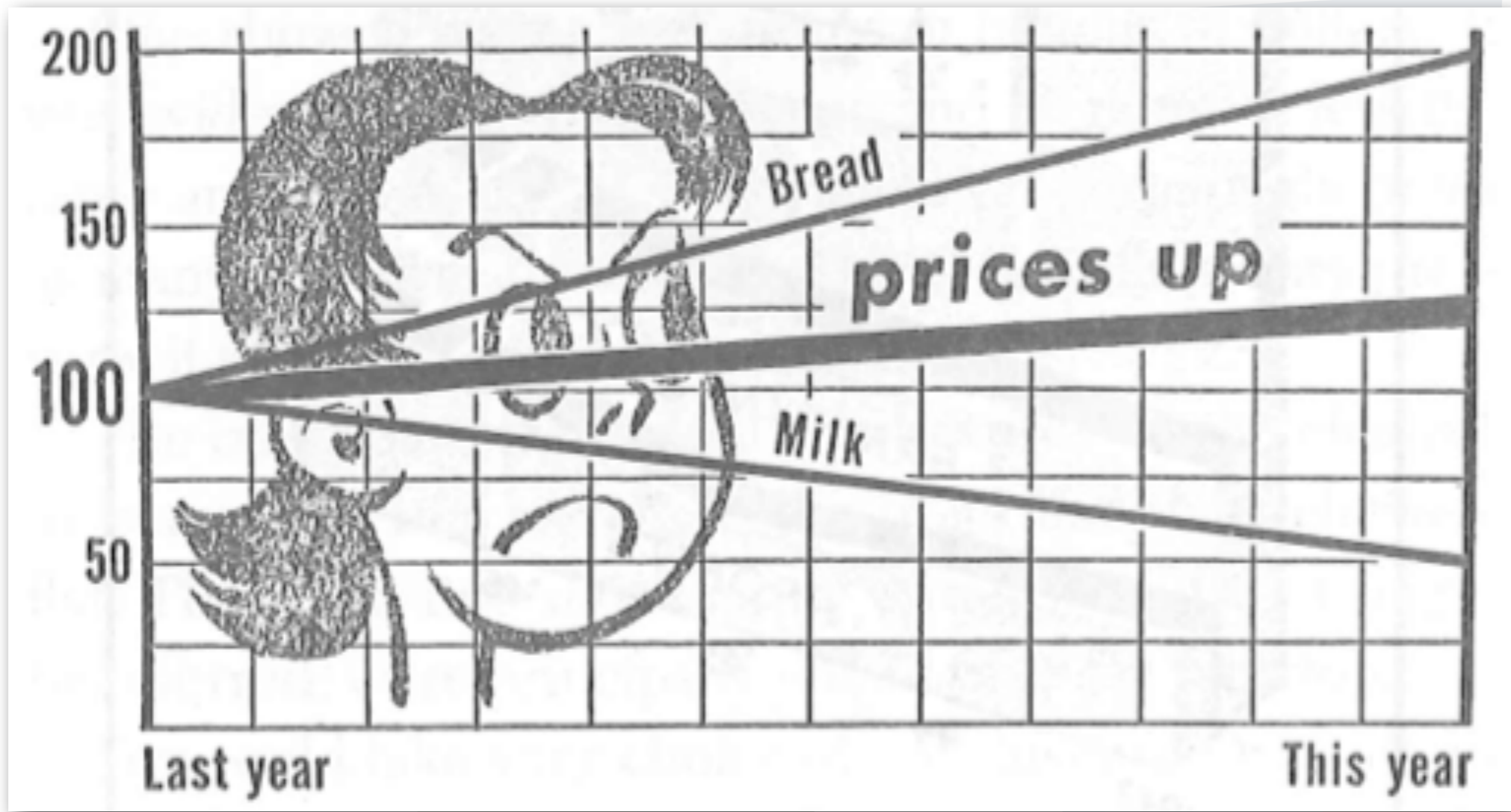
## (Eastern Style)

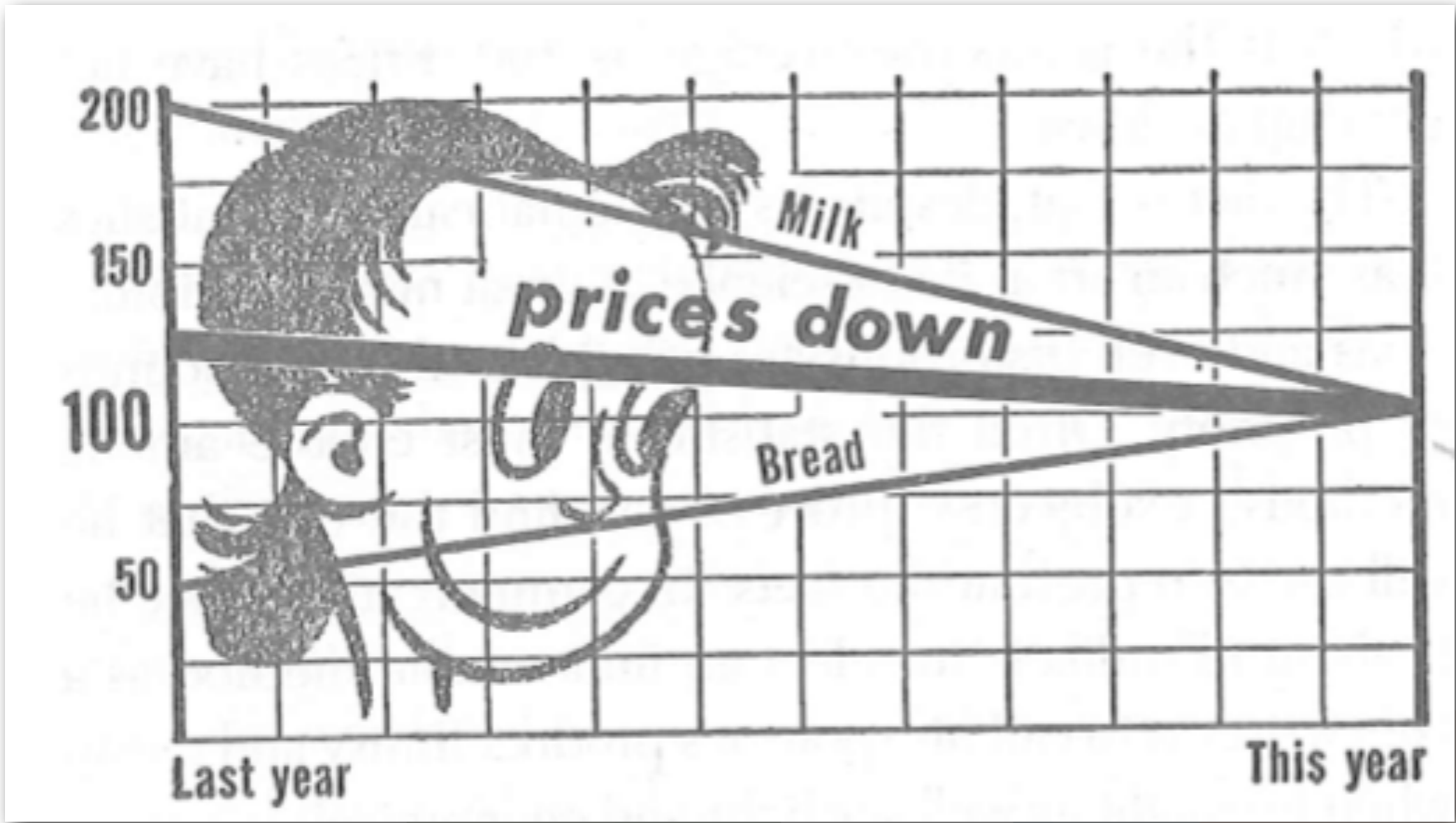


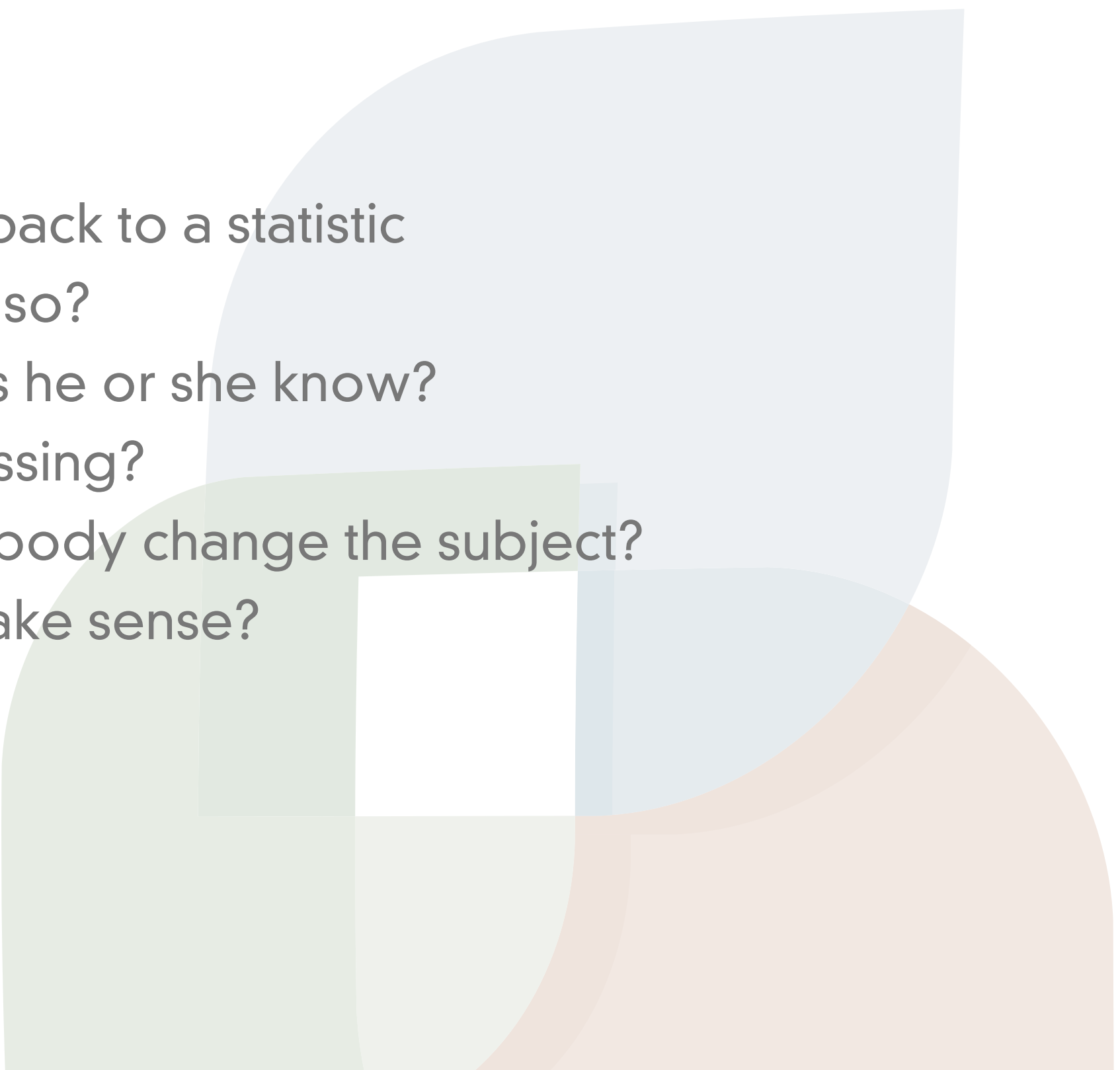


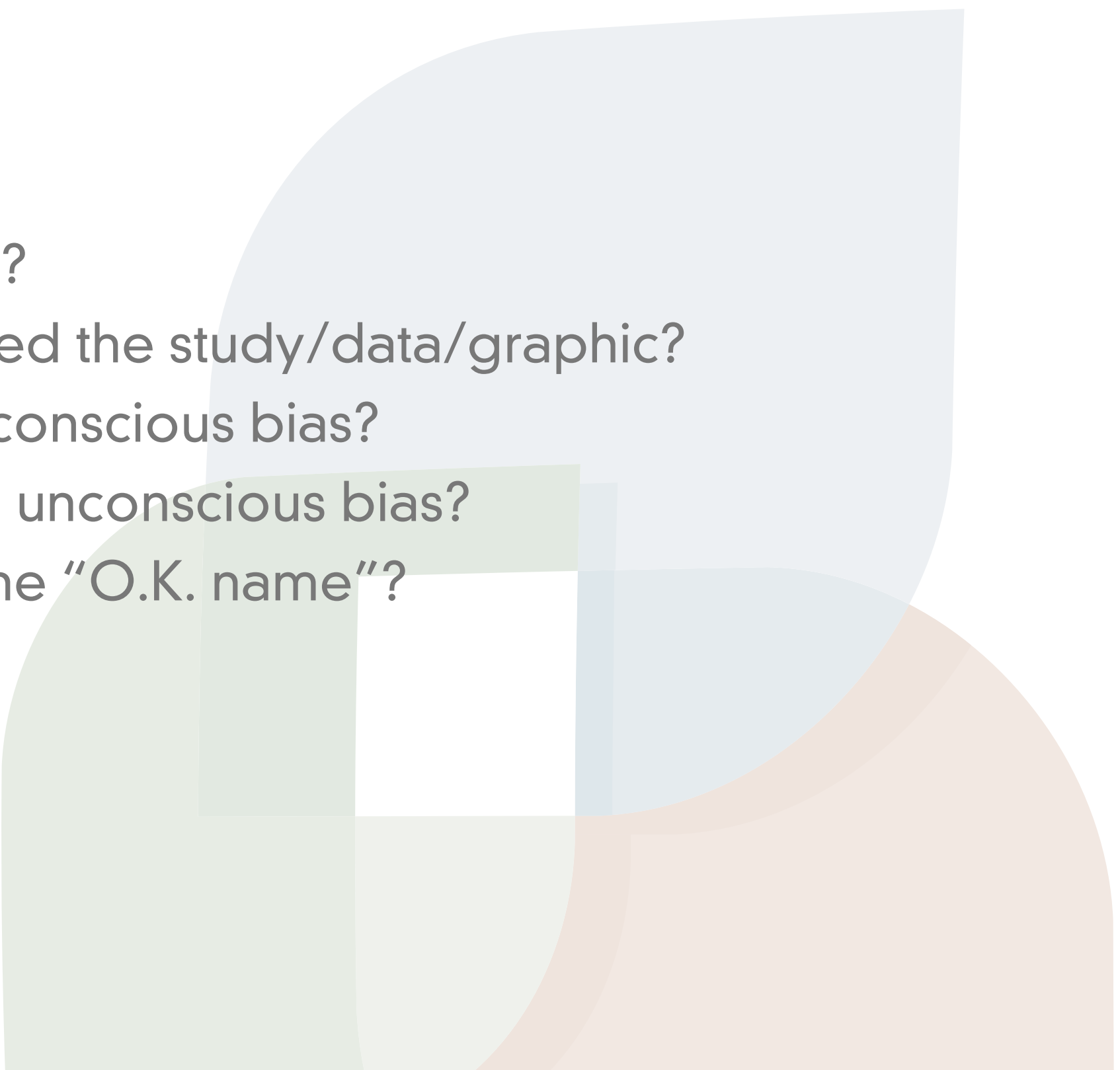


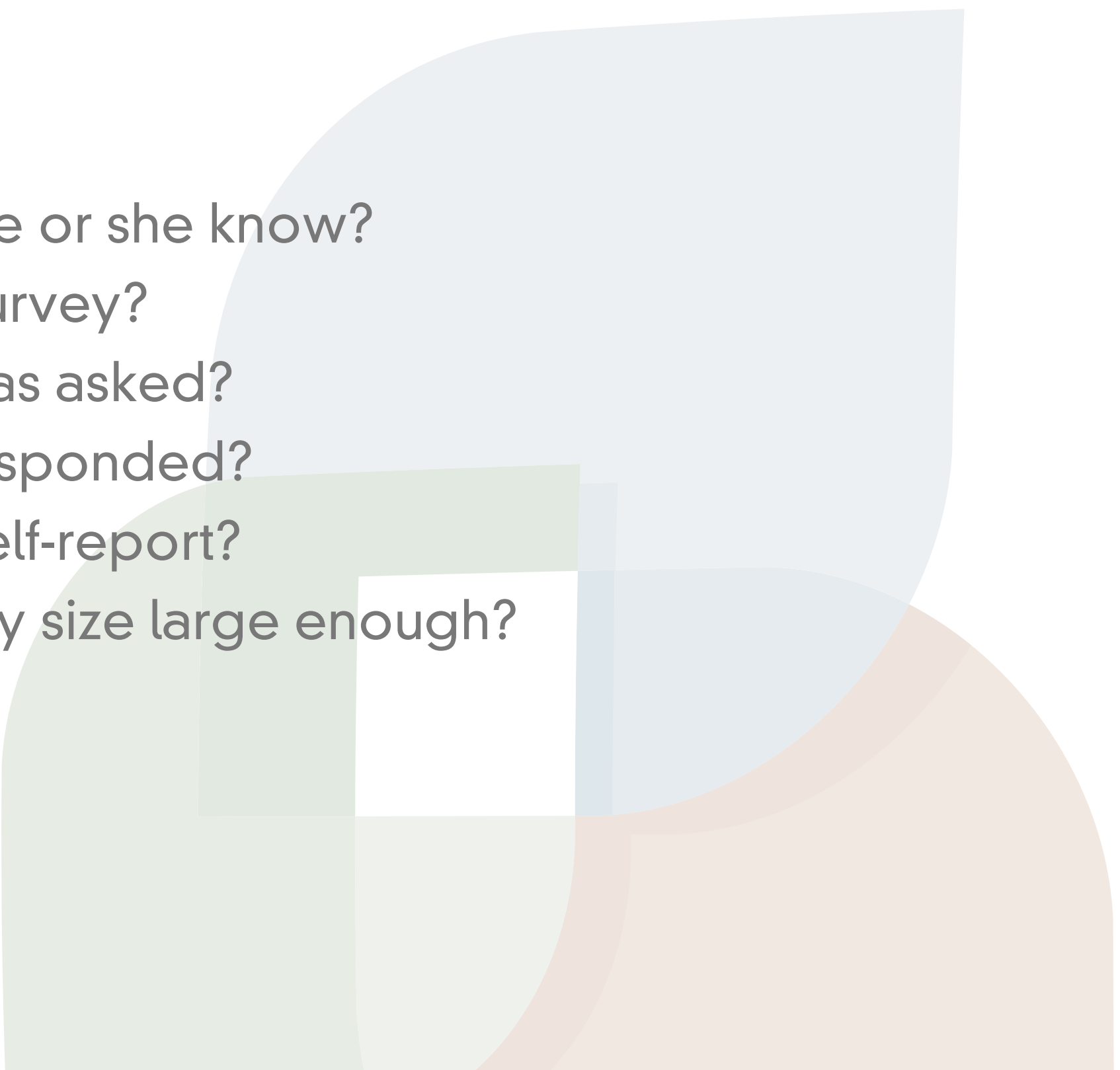


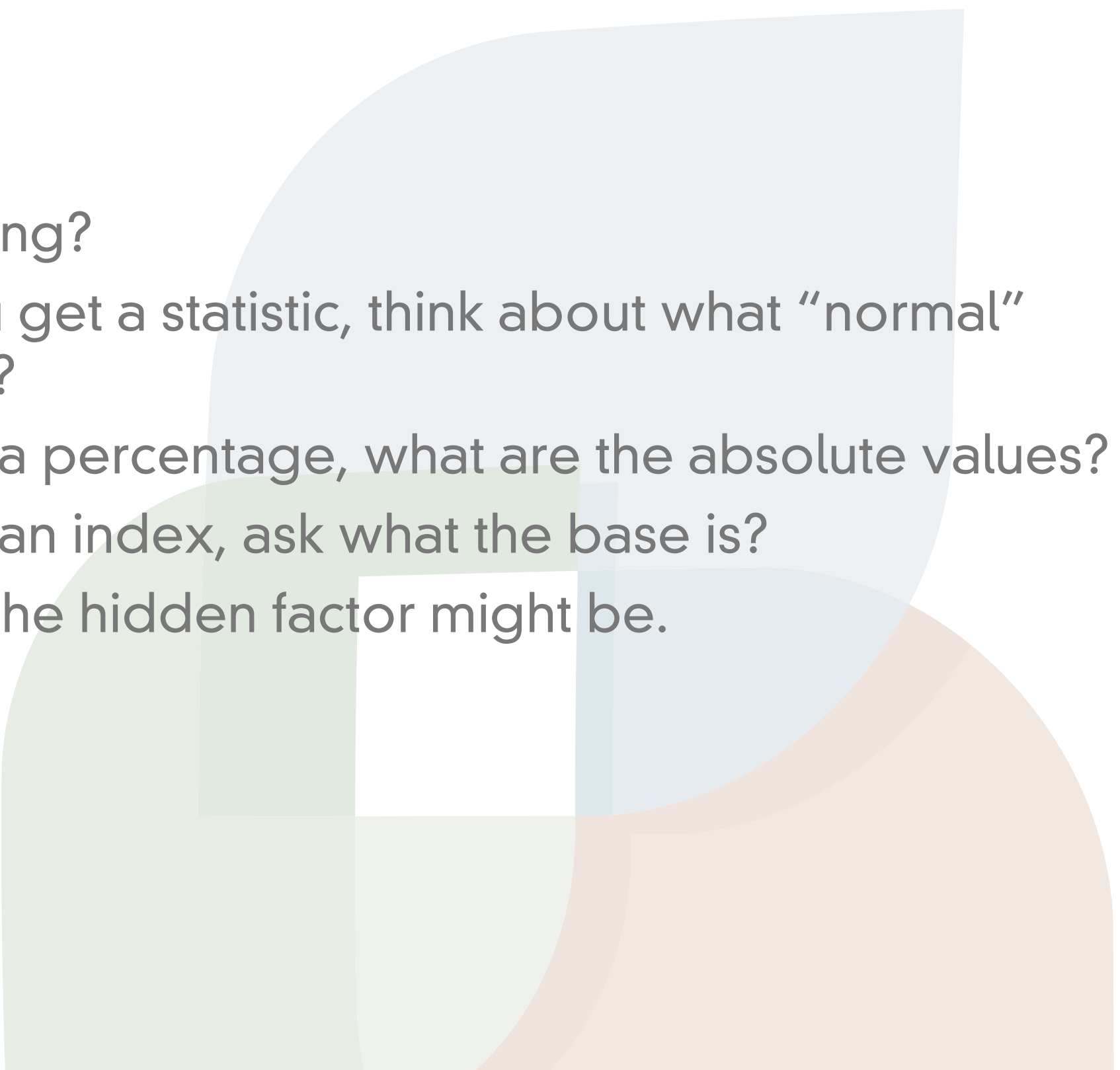




- 
- How to talk back to a statistic
    - Who says so?
    - How does he or she know?
    - What's missing?
    - Did somebody change the subject?
    - Does it make sense?

- 
- 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”?

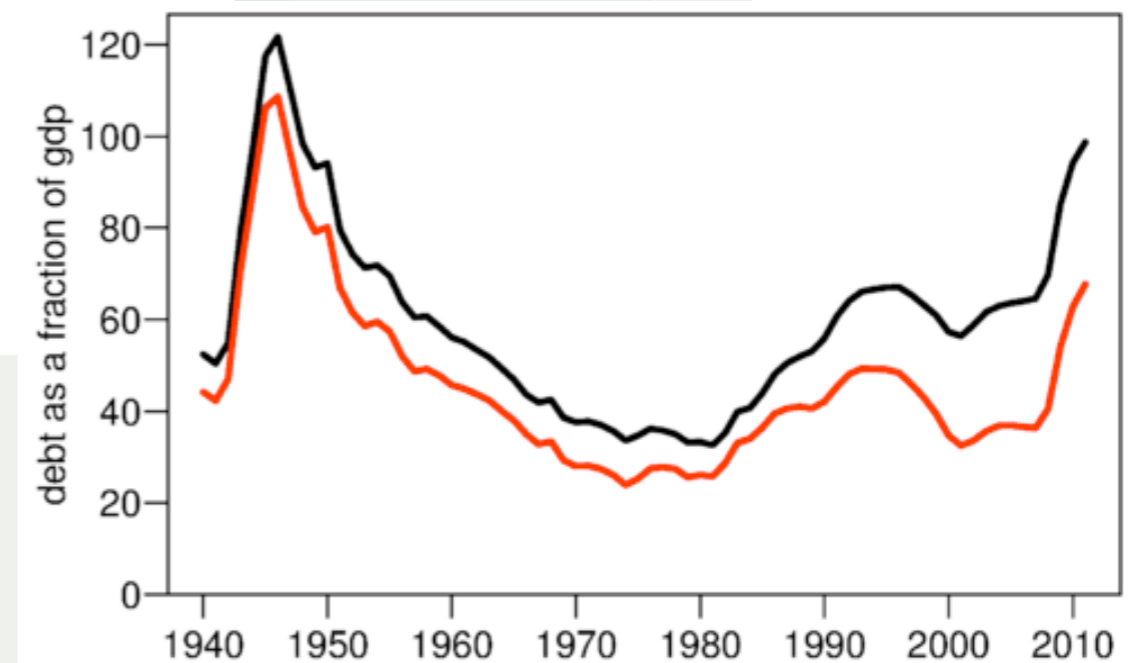
- 
- How does he or she know?
    - Was it a survey?
      - Who was asked?
      - Who responded?
    - Was it a self-report?
    - Is the study size large enough?

- 
- 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?



# ★ AMERICA'S POLITICAL TASTE FOR PIZZA ★

Determine your friends political leaning based on pizza preference

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...



What America likes...



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

Enjoy pizza for lunch



Eating pizza for either lunch or dinner



Enjoy pizza for dinner

Order take-out or delivery



Eating pizza at home

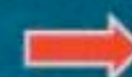


Make home-made pizza

Warm those slices up



Eating left-over pizza



Enjoy the pizza cold, right out of the refrigerator

Drink soda with their pizza



Washing their pizza down with a cold beverage

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.

# New Year's Resolutions

What Resolutions Are Made,  
How Likely You Are To Keep Them  
And How To Improve  
Your Chances Of Success

## HOW COMMON IS SETTING A RESOLUTION?



The less happy you are, the more likely you are to set New Year's Resolutions. This is especially true for those who set money-related resolutions:



## TOP NEW YEAR'S RESOLUTIONS

- DRINK LESS ALCOHOL
- EAT HEALTHY FOOD
- GET A BETTER EDUCATION
- GET A BETTER JOB
- GET FIT
- LOSE WEIGHT
- MANAGE DEBT
- MANAGE STRESS
- QUIT SMOKING
- REDUCE, REUSE, AND RECYCLE
- SAVE MONEY
- TAKE A TRIP
- VOLUNTEER TO HELP OTHERS



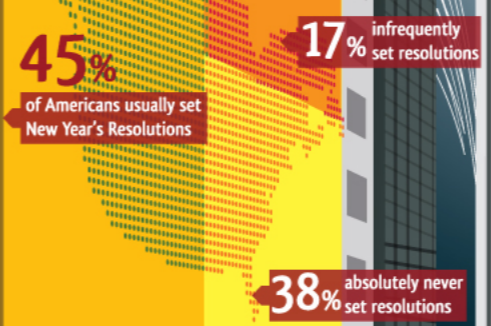
## YOUR CHANCES OF SUCCESS



## TIPS TO INCREASE THE LIKELIHOOD OF SUCCEEDING

- Choose a Specific, Realistic Goal
- Pick Just One Resolution
- Don't Wait Until New Year's Eve
- Start With Small Steps
- Avoid Repeating Past Failures
- Set intermediate milestones
- Keep Working on Your Goals
- Get Support from Your Friends and Family

## HOW COMMON IS SETTING A RESOLUTION?

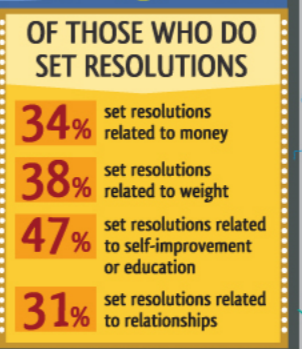


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<http://www.usa.gov/Citizen/Topics/New-Years-Resolutions.shtml> • <http://www.steveshapiro.com/2008/12/11/interesting-new-years-resolution-statistics/>



# Average Wireless Speeds Coast to Coast

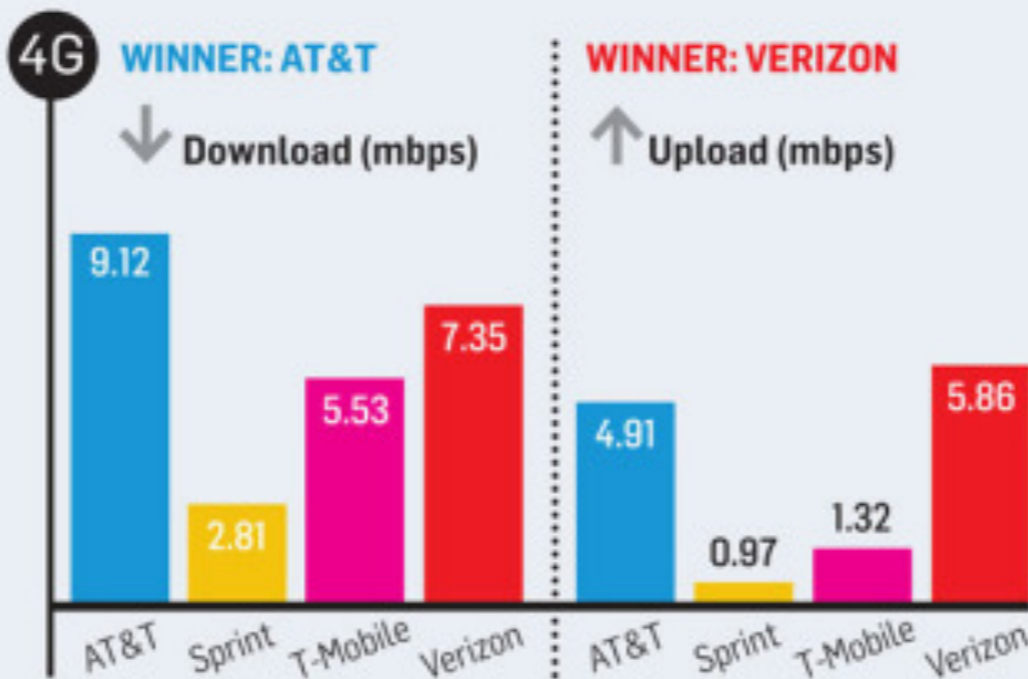
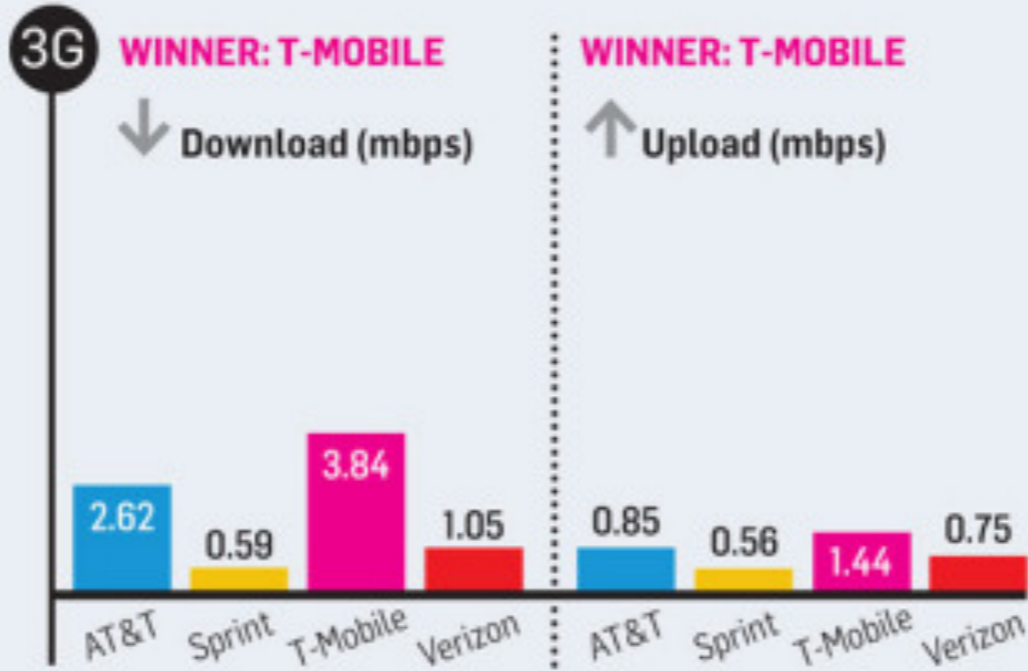


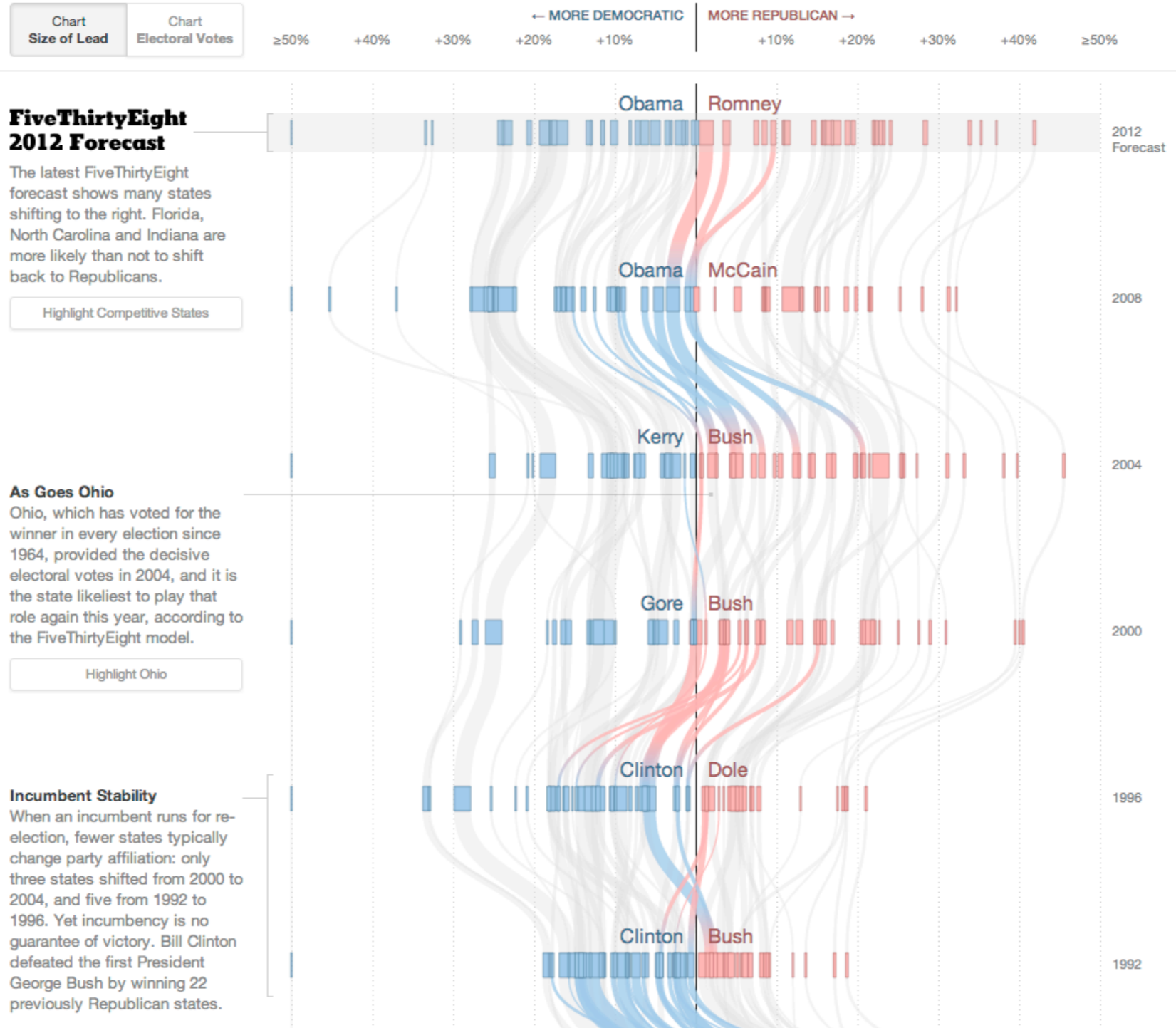
CHART NOTES: mbps = megabits per second; higher is better. AT&T doesn't offer 4G service in Denver or Seattle, so its 4G numbers reflect data from 11 cities, rather than 13. Also, Sprint does not offer 4G WiMax service in New Orleans, so its 4G numbers

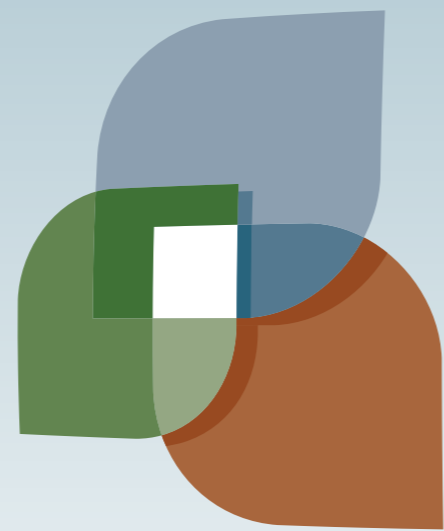
Published: October 15, 2012

### 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.

- Each box represents a state sized by number of electoral votes.
- Each curve shows how much it shifted left or right between elections.





L U C I

