

The Language of Comparisons

Describing and Analyzing Comparisons
of Rates

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100%
CRANBERRY
FLAVORED BLEND WITH
TWO OTHER JUICES
WITH ADDED INGREDIENTS
FROM CONCENTRATE



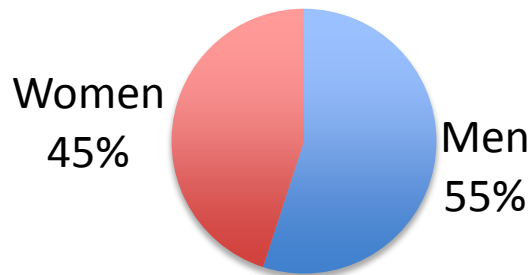
ILY VALUE

Describing Data

- “There are more blacks than whites on death row, not as total numbers but speaking in comparison.”
- “Women Safer”

Student paper

Car accidents caused by:



Boston Globe graphic

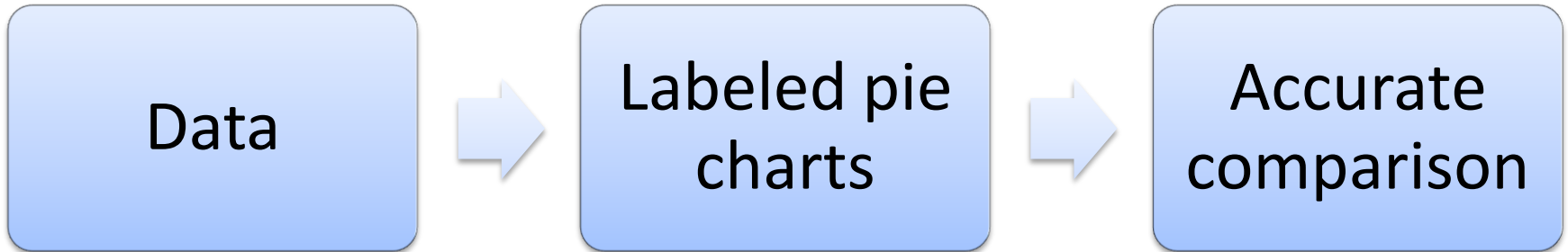
Evaluating statements

- Verizon:
“Most reliable service”
- Cingular:
“Fewest dropped calls of any network”

How can these both be true?

Complementary skills

Describing data:



Evaluating statements:

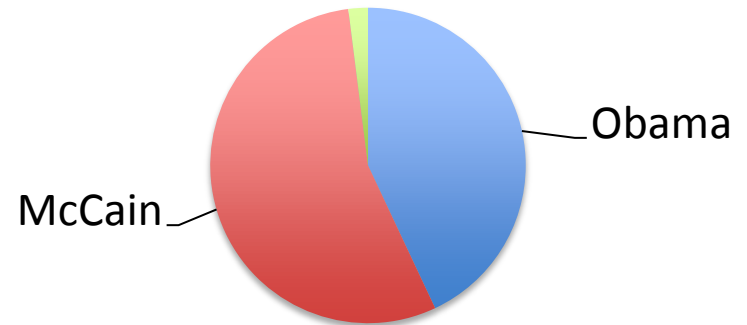


Describing Data

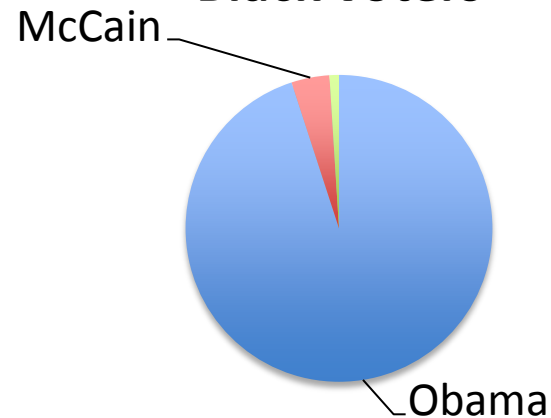
	Obama	McCain	Other
White	43%	55%	2%
Black	95%	4%	1%
Latino	67%	31%	2%
Asian	62%	35%	3%
Other	66%	31%	3%

2008 National Exit Poll Data

White Voters



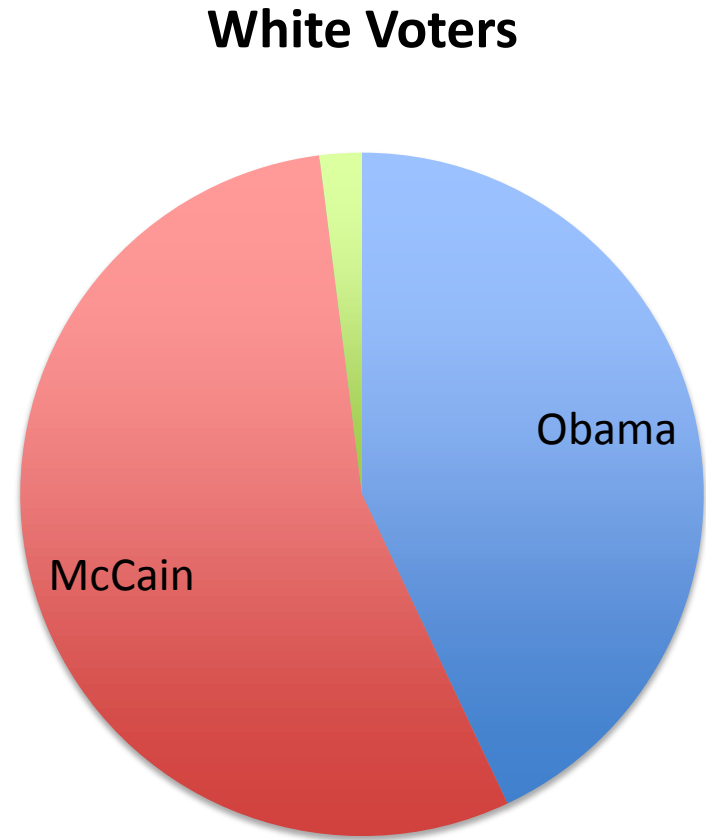
Black voters



Comparing raw numbers, or within one pie:

“More white voters voted for McCain than for Obama.”

“More” means you can compare the raw numbers



Comparing rates across two pies

“Black voters were **more likely** than white voters to vote for Obama.”

“Obama was **more popular** with black voters than with white voters.”

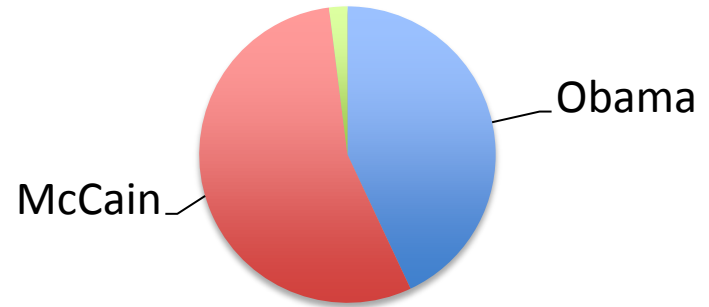
DOES NOT SUPPORT:

“**More** black voters than white voters voted for Obama.”

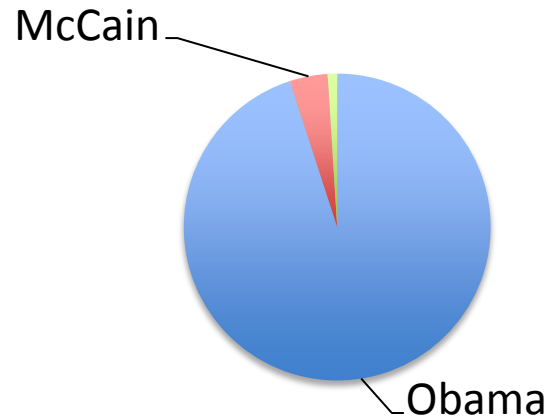
“Obama voters were **more likely** to be black than to be white.”

Two pies, matching wedges:

White Voters



Black voters



Many words for comparing rates

- Safer
- More reliable
- More popular
- More effective
- Disproportionate
- Better on-time record
- Better batting average

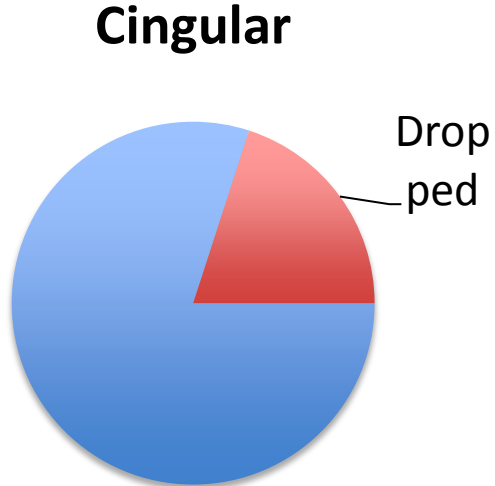
Evaluating statements

1. Are you comparing numbers or rates?
2. Sketch pie charts from provided numbers
3. Do you have parallel wedges of distinct pies?

Cell phone ad example

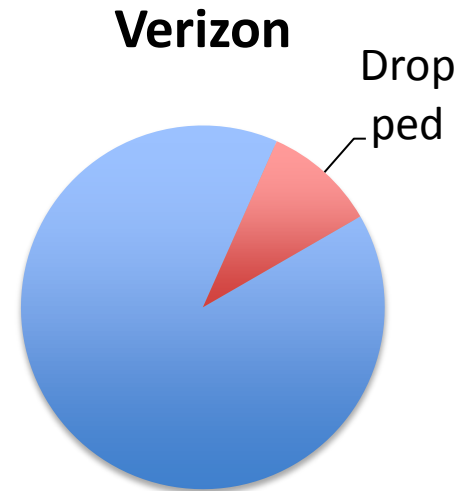
Cingular: “Fewest dropped calls”

- Comparing **numbers**: how many dropped calls



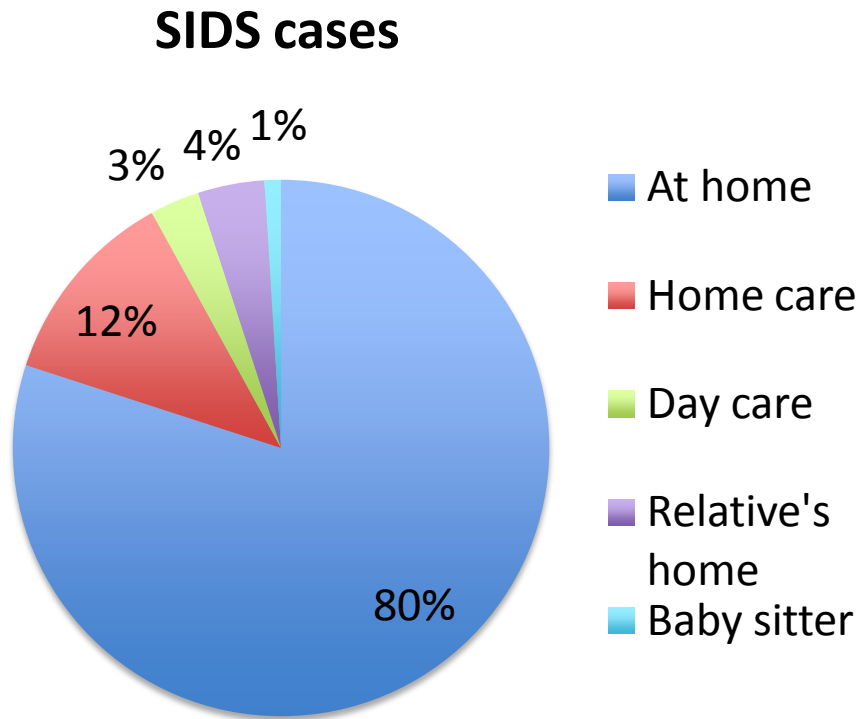
Verizon: “Most reliable service”

- Comparing **rates**: percent of calls dropped



“We found that the proportion of infants dying from SIDS in organized child care settings was disproportionately high.”

Only data in article:

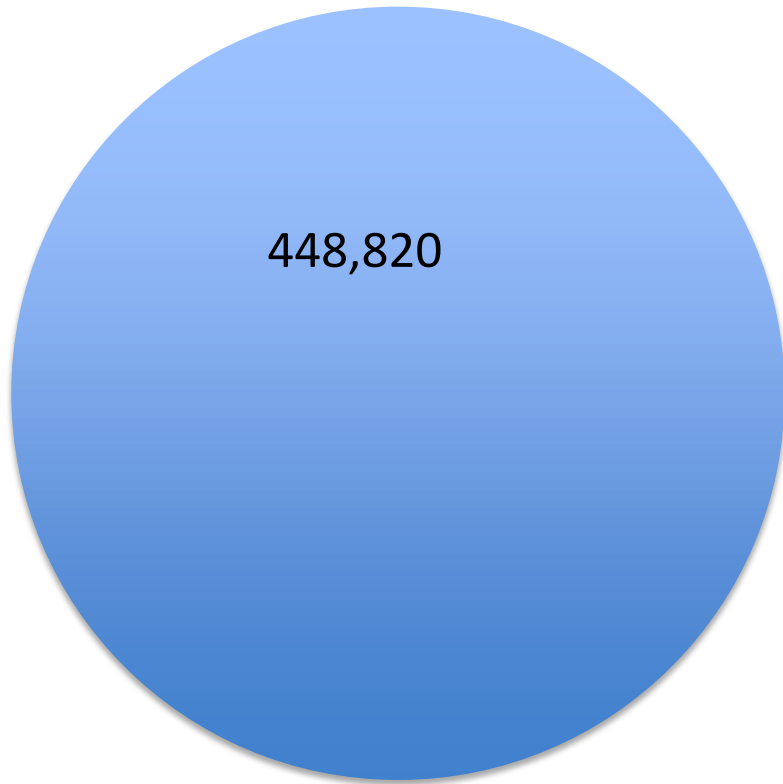


Missing comparison:

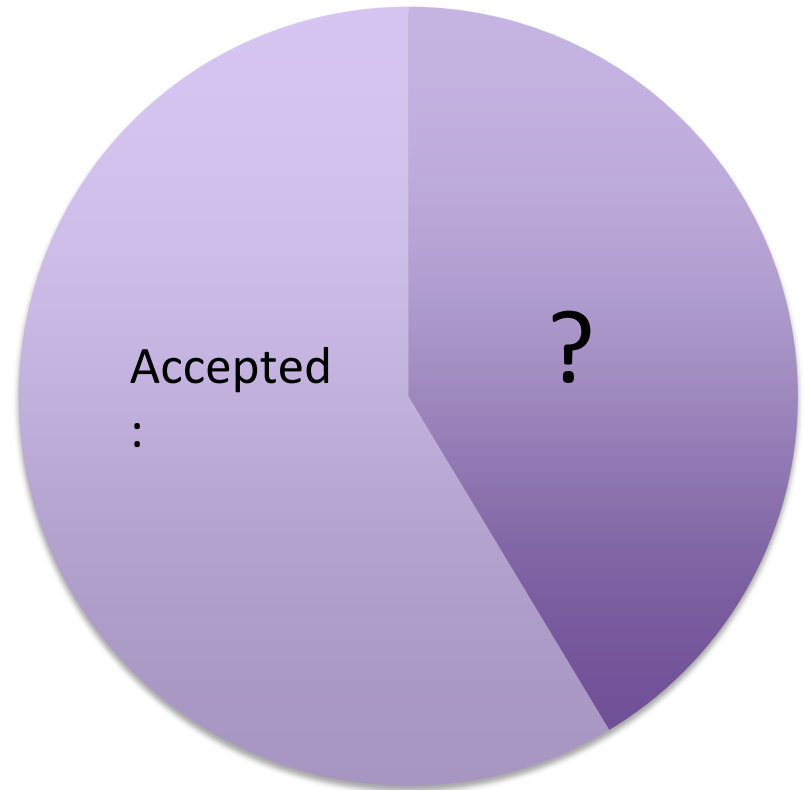


**“448,820 applications were submitted in 2005 for
17,000 med school spots”**

Applications

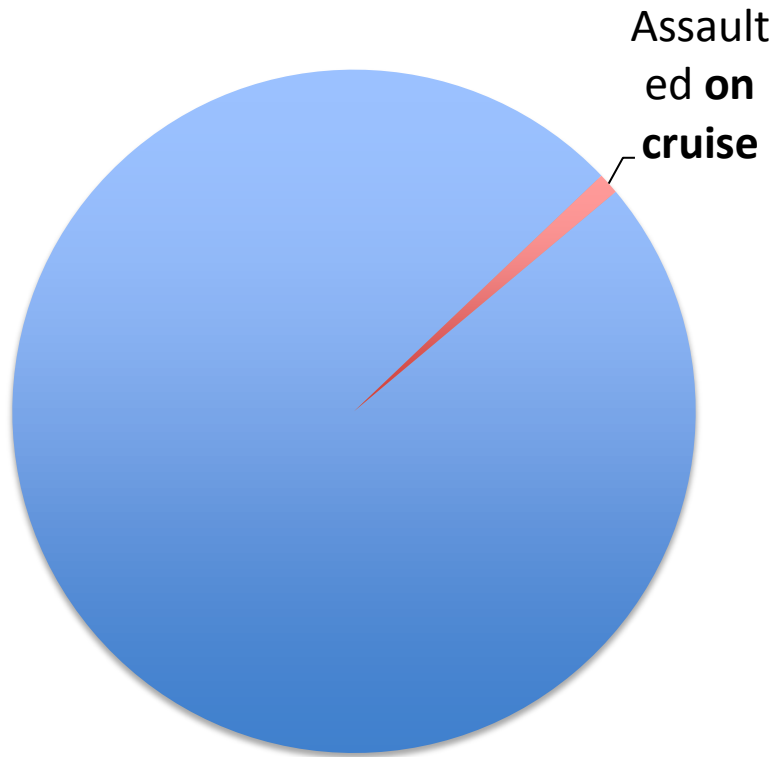


Applicants

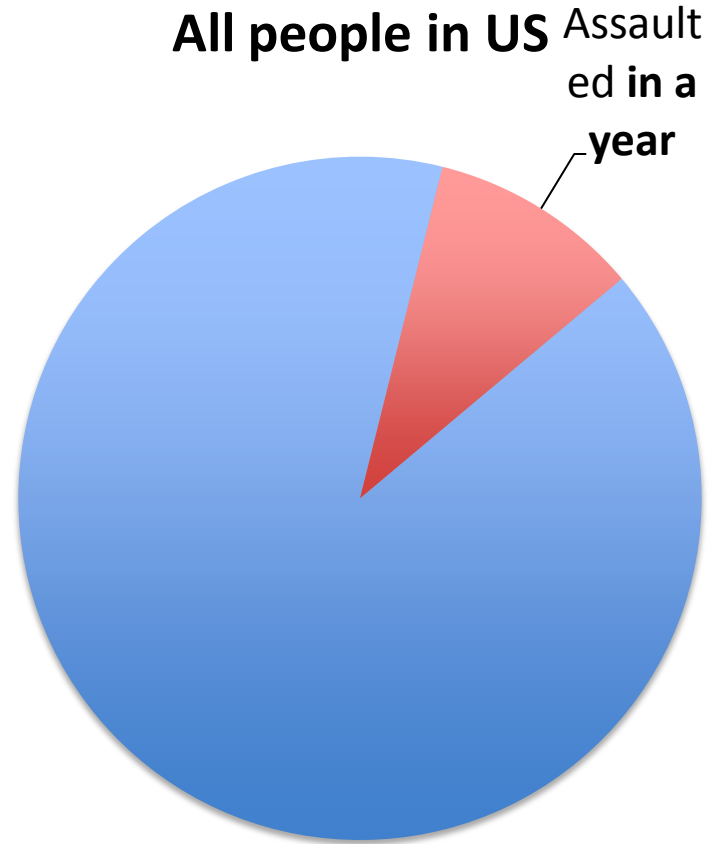


“According to the Bureau of Justice, 1 in every 1,000 people is raped or sexually assaulted on land each year; on cruise ships, there is only one alleged incident of sexual assault for every 100,000 passengers.”

Cruise ship passengers



All people in US



Foundation for further investigation

- Calculating percent increase or decrease
- Selecting comparison population, or “pie”
- Considering confounding factors
- Generalizing intuition to more complicated rates