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
Describing Data

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

• “Women Safer”

Car accidents caused by:

- Women 45%
- Men 55%

Student paper

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:

Data ➔ Labeled pie charts ➔ Accurate comparison

Evaluating statements:

Does data match comparison? ➔ Labeled pie charts ➔ Interpret type of comparison
## Describing Data

### 2008 National Exit Poll Data

<table>
<thead>
<tr>
<th></th>
<th>Obama</th>
<th>McCain</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>43%</td>
<td>55%</td>
<td>2%</td>
</tr>
<tr>
<td>Black</td>
<td>95%</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>Latino</td>
<td>67%</td>
<td>31%</td>
<td>2%</td>
</tr>
<tr>
<td>Asian</td>
<td>62%</td>
<td>35%</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>66%</td>
<td>31%</td>
<td>3%</td>
</tr>
</tbody>
</table>
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.”
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:

- SIDS cases:
  - At home: 80%
  - Home care: 12%
  - Day care: 3%
  - Relative's home: 4%
  - Baby sitter: 1%

Missing comparison:

- Where babies are?
“448,820 applications were submitted in 2005 for 17,000 med school spots”
“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.”
Foundation for further investigation

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