Unit 6: Analyzing and interpreting data

“There’s a world of difference between truth and facts. Facts can obscure the truth.”

- Maya Angelou
Myths

• Complex analysis and **big words** impress people.
• Analysis comes at the end when there is data to analyze.
• Qualitative analysis is easier than quantitative analysis
• Data have their own meaning
• Stating **limitations** weakens the evaluation
• Computer analysis is always easier and better
Things aren’t always what we think!

Six blind men go to observe an elephant. One feels the side and thinks the elephant is like a wall. One feels the tusk and thinks the elephant is like a spear. One touches the squirming trunk and thinks the elephant is like a snake. One feels the knee and thinks the elephant is like a tree. One touches the ear, and thinks the elephant is like a fan. One grasps the tail and thinks it is like a rope. They argue long and loud and though each was partly in the right, all were in the wrong.

For a detailed version of this fable see:
http://www.wordinfo.info/words/index/info/view_unit/1/?letter=B&spage=3
Data analysis and interpretation

- Think about analysis EARLY
- Start with a plan
- Code, enter, clean
- Analyze
- Interpret
- Reflect
  - What did we learn?
  - What conclusions can we draw?
  - What are our recommendations?
  - What are the limitations of our analysis?
Why do I need an analysis plan?

- To make sure the questions and your data collection instrument will get the information you want
- Think about your “report” when you are designing your data collection instruments
Do you want to report…

- the number of people who answered each question?
- how many people answered a, b, c, d?
- the percentage of respondents who answered a, b, c, d?
- the average number or score?
- the mid-point among a range of answers?
- a change in score between two points in time?
- how people compared?
- quotes and people’s own words
Common descriptive statistics

- Count (frequencies)
- Percentage
- Mean
- Mode
- Median
- Range
- Standard deviation
- Variance
- Ranking
Key components of a data analysis plan

- Purpose of the evaluation
- Questions
- What you hope to learn from the question
- Analysis technique
- How data will be presented
Getting your data ready

• Assign a unique identifier
• Organize and keep all forms (questionnaires, interviews, testimonials)
• Check for completeness and accuracy
• Remove those that are incomplete or do not make sense
Data entry

- You can enter your data
  - By hand
  - By computer
Hand coding

Question 1: Do you smoke? (circle 1)

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>No answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>//</td>
<td>/// //</td>
<td>/</td>
</tr>
</tbody>
</table>
Data entry by computer

• By Computer
  – Excel (spreadsheet)
  – Microsoft Access (database mngt)
  – Quantitative analysis: SPSS (statistical software)
  – Qualitative analysis: Epi info (CDC data management and analysis program: www.cdc.gov/epiinfo); In ViVo, etc.
### Data entry computer screen

Smoking: 1 (YES) 2 (NO)

<table>
<thead>
<tr>
<th>Survey ID</th>
<th>Q1 Do you smoke</th>
<th>Q2 Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>002</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>003</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>004</td>
<td>2</td>
<td>48</td>
</tr>
<tr>
<td>005</td>
<td>1</td>
<td>26</td>
</tr>
</tbody>
</table>
Dig deeper

• Did different groups show different results?
• Were there findings that surprised you?
• Are there things you don’t understand very well – further study needed?
<table>
<thead>
<tr>
<th></th>
<th>Supports restaurant ordinance</th>
<th>Opposes restaurant ordinance</th>
<th>Undecided/declined to comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current smokers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n=55)</td>
<td>8 (15% of smokers)</td>
<td>33 (60% of smokers)</td>
<td>14 (25% of smokers)</td>
</tr>
<tr>
<td><strong>Non-smokers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n=200)</td>
<td>170 (86% of non-smokers)</td>
<td>16 (8% of non-smokers)</td>
<td>12 (6% of non-smokers)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N=255)</td>
<td>178 (70% of all respondents)</td>
<td>49 (19% of all respondents)</td>
<td>26 (11% of all respondents)</td>
</tr>
</tbody>
</table>
Discussing limitations

Written reports:
• Be explicit about your limitations

Oral reports:
• Be prepared to discuss limitations
• Be honest about limitations
• Know the claims you cannot make
  – Do not claim causation without a true experimental design
  – Do not generalize to the population without random sample and quality administration (e.g., <60% response rate on a survey)
Analyzing qualitative data

“Content analysis” steps:
1. Transcribe data (if audio taped)
2. Read transcripts
3. Highlight quotes and note why important
4. Code quotes according to margin notes
5. Sort quotes into coded groups (themes)
6. Interpret patterns in quotes
7. Describe these patterns
Hand coding qualitative data
Interview w/ G. Green  4/13/02  

over the past year. Even so, I'd get in touch with him.

Interviewer: OK, great. Thanks. That will help. I'd like to turn to another issue. If you had to vote tomorrow on an ordinance to ban smoking in all government-owned buildings, how do you think you would vote?

Respondent: Well, I don't know. I'm not sure we really have a problem in that respect. To be honest, smoking really isn't at the top of my list of policy priorities, you know? Right now, I'm up to here with sewers and industrial development. Smoking will most likely have to wait.

Interviewer: So you're saying it hasn't really hit your
### City Council Member Interviews, April 2002

<table>
<thead>
<tr>
<th>Code</th>
<th>Margin Note</th>
<th>Respondent</th>
<th>Date</th>
<th>Page</th>
<th>Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competing priorities</td>
<td>Tobacco not a policy priority</td>
<td>GG</td>
<td>04/13/2002</td>
<td>8</td>
<td>To be honest, smoking really isn’t at the top of my list of policy priorities, you know? Right now, I’m up to here with sewers and industrial development. Smoking will most likely have to wait.</td>
</tr>
<tr>
<td>How to approach problem</td>
<td>Perception that knowledge leads to cessation</td>
<td>GG</td>
<td>04/13/2002</td>
<td>9</td>
<td>Shouldn’t the health department start by telling people in our county that smoking is bad for them? It seems like people must not know that, because they just keep right on smoking anyway.</td>
</tr>
<tr>
<td>Govt role</td>
<td>Workplace smoking policies not a public policy issue</td>
<td>FH</td>
<td>04/15/2002</td>
<td>2</td>
<td>I haven’t really thought before about people being exposed at work as a public policy issue. I mean, it’s really up to the people who oversee the workplace, isn’t it?</td>
</tr>
<tr>
<td>Govt role</td>
<td>Concerns about county ability to enforce worksite policies</td>
<td>FH</td>
<td>04/15/2002</td>
<td>4</td>
<td>I can’t see what good a worksite policy will do…. We at the county won’t have any power to enforce it anyway.</td>
</tr>
</tbody>
</table>