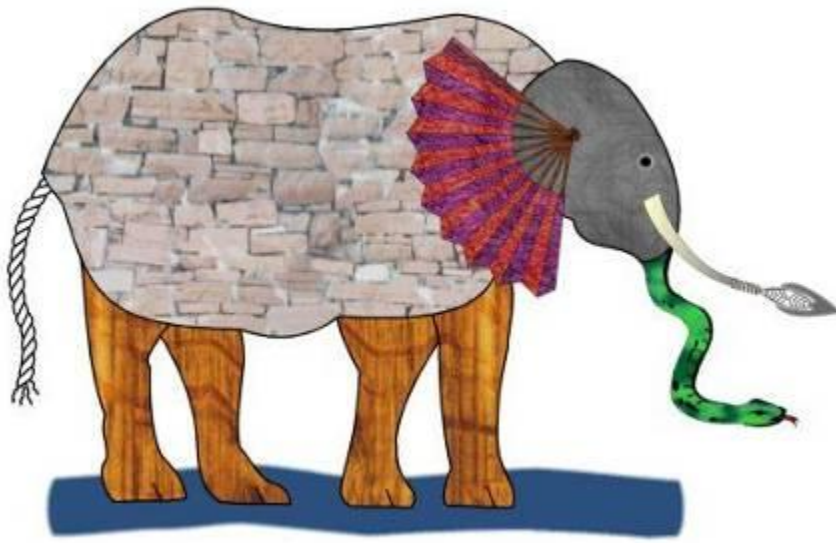# Unit 6: Analyzing and interpreting data

"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

Blind men and an elephant

- Indian fable

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 a 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

EXTENSION
Building Capacity in Evaluating Outcomes
Unit 6: Analyzing and interpreting data

Hand coding

Question 1 : Do you smoke? (circle 1)

YES	NO	No answer
//	/////	/

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)

Survey ID	Q1 Do you smoke	Q2 Age
001	1	24
002	1	18
003	2	36
004	2	48
005	1	26

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?

	Supports restaurant ordinance	Opposes restaurant ordinance	Undecided/ declined to comment
Current smokers (n=55)	8 (15% of smokers)	33 (60% of smokers)	14 (25% of smokers)
Non-smokers (n=200)	170 (86% of non-smokers)	16 (8% of non-smokers)	12 (6% of non-smokers)
Total (N=255)	178 (70% of all respondents)	49 (19% of all respondents)	26 (11% of all respondents)

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
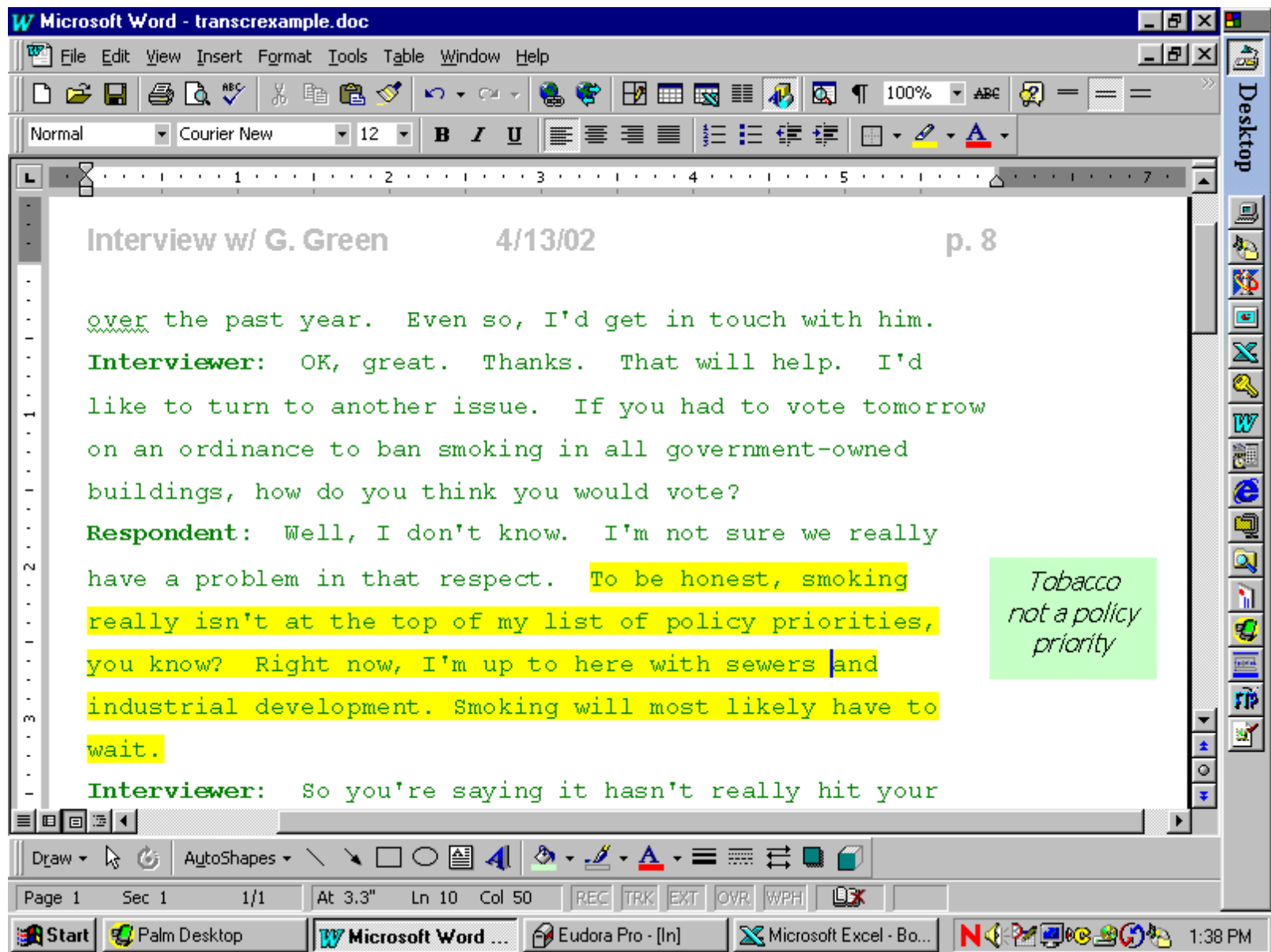
7. Describe these patterns

Hand coding qualitative data

3-13-02 Evaluation Workshop, Madison

Q 5. What do you need next to continue your learning about evaluation?

Trg — 1 More advanced data analysis

T, R — 2 More time/information on all the same concept

P — 3 Just start doing them

Trg — 4 Another workshop

Fdbk — 5 Assessment feedback on how beneficial (or how well I did) the evaluation of my project was for USDA

Trg — 6 How to measure long range planning outcomes

> Line 7 is left uncoded because "Yes" is not usable data. →

7 Yes

P — 8 Do it!

Trg — 9 Need additional training and review

P — 10 Practice makes perfect

T — 11 Time to do actual reports

T, Fdbk — 12 Time to complete an actual project report using this framework. Constructive feedback on strengthening that report.

Trg — 13 More on how to decide evaluation reporting at the beginning of the grant or as you write the grant

P, M — 14 Practice what I learned with assistance of a mentor

U — 15 Unsure until I use the new ideas I've learned here.

P — 16 Apply what I have learned

Trg — 17 I need more training on analyzing data (need very basic hands on exercises) – maybe more exercises on indicators

Trg — 18 Would have liked to go to observation interview training too!

R — 19 More specific examples, i.e. completed logic models for different topics

U — 20 Not sure yet. I'll know when I sit down to writing report.

R, P — 21 Research suggested resources — develop more surveys – trial and error till I become perfect

Interview w/ G. Green   4/13/02   p. 8

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

Tobacco not a policy priority

Building Capacity in Evaluating Outcomes
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Example data set

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