Module 6

Data Analysis Strategy
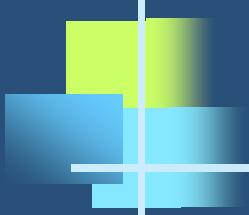
Learning Objectives

To become aware of basic data analysis concepts

- Quantitative analysis
- Qualitative analysis
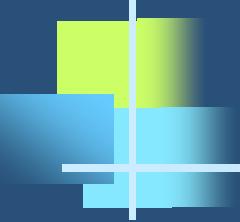
Data Analysis Strategy

- Keep in mind your analytical product and audience
- Conduct analyses to answer questions identified in your plan
- Don't let your data drive your analysis!
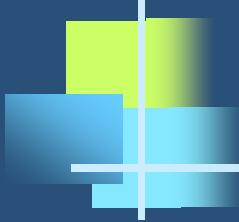
Quantitative Analysis: Basic Methods

- Descriptive Methods
- Associational Methods
- Deterministic Methods
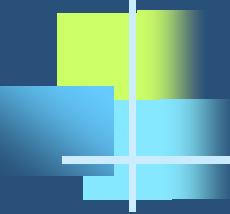
Quantitative Analysis (cont'd)
Descriptive Methods

Applied to a Single Variable

- Frequency/Percent Distribution
- Central Tendency
    - Means, Medians, Modes
- Dispersion
    - Standard Deviation
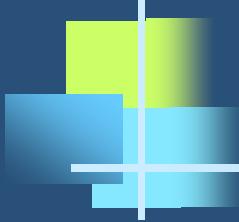
Quantitative Analysis (cont'd) Descriptive Methods

Applied to Two or More Variables

- Comparison of Means
- Cross - tabulations
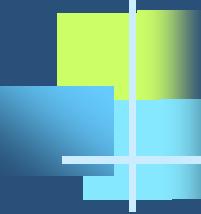
Quantitative Analysis (cont'd): Associational Methods

Strength and Direction

- Several different measures of association
- Some measures of association range from zero to 1, others range from -1 to +1
- The closer to -1 or $+1$, the stronger the relationship
- The closer to 0, the weaker the relationship
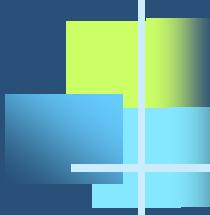
Quantitative Analysis (cont'd) Deterministic Methods

- Deterministic statistical methods can be used to build upon descriptive analyses to explore causal relationships

- Types include…

  - Bivariate (simple) regression

  - Multiple regression

  - Approaches using categorical data (e.g., logistical regression)
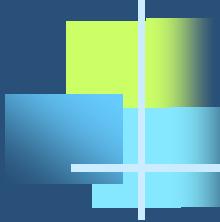
Discussion: Quantitative Data Analysis Strategies

What are your experiences in using quantitative data analysis?

What problems did you encounter?

What has been most useful?
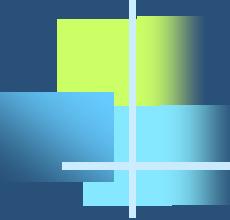
Qualitative Data Analysis

- Data from narrative documents, open-ended interviews,focus groups, unstructured observations

- Data presented as participants' perspectives and as researcher's interpretation
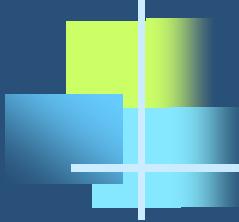
Qualitative Data Analysis (cont'd)

Developing Data Preparation Strategy:

- General review of information
- Obtain feedback on initial summaries
- Conduct close examination of words
- Develop codes and categories
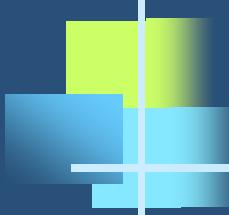
Qualitative Data Analysis (cont'd)

Organizing the data:

- chronology
- key events
- people
- process
- themes
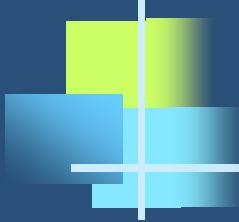
Qualitative Data Analysis
(cont'd)

Methods for Analysis

- Content Analysis
- Inductive Analysis
- Logical Analysis

Caution: keep in mind which analytical method will be applied when developing your data collection strategy!
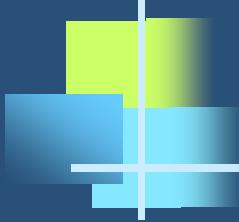
Qualitative Data Analysis (cont'd)

Content analysis:

identifies the important examples, themes and patterns in the data

- Coding scheme: expected categories
- Review data to see how they fall into these categories
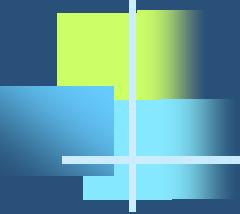
Qualitative Data Analysis (cont'd)

- **Content analysis example**: based on other research or experience, you expect to see these common themes about barriers to achievement and review the data to categorize them into these themes:
  - Teacher skills and attitudes
  - Resources (books, videos, computers)
  - Personal barriers: no time to study, boredom
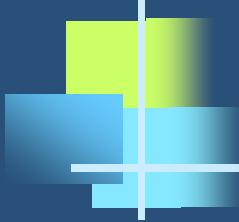
Qualitative Data Analysis (cont'd)

Inductive analysis:

understanding emerges from the data itself

- No preconceived categories
- Looks for variations in the data
- Review the data and see what emerges
  - Participants may have labeled the theme
  - If not, the researcher may label the theme
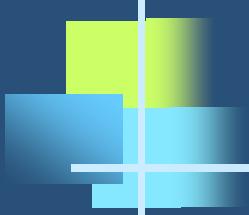
Qualitative Data Analysis (cont'd)

Inductive analysis example:

- The researcher may not have enough knowledge of a local community to understand supports and barriers to the teacher training project. The researcher will review the data and let the themes emerge.
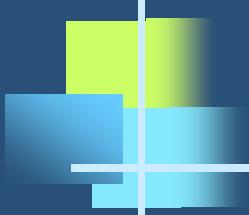
Qualitative Data Analysis (cont'd)

Logical analysis:

this combines both content analysis and inductive analysis

- The researcher works back and forth with the data, interpreting the data from multiple perspectives
- Look for over-arching themes
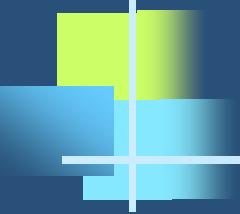
Qualitative Data Analysis (cont'd)

Logical analysis example:

While the researcher may discover expected barriers, the data may also reveal other factors. The researcher may then create an over-arching analysis—looking at students in terms of "willing" and "able" to do the work.
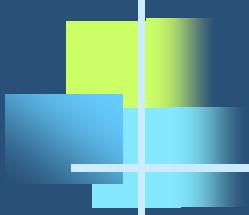
Qualitative Data Analysis (cont'd)

Similarly, looking at teacher skills and attitudes, there might be another overarching theme that looks at the relationship between teacher expectation of student performance and actual student performance.
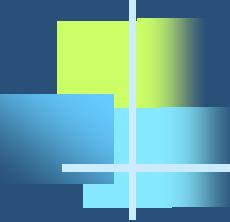
Greatest Risk: Bias

- Hard to recognize things you don't expect
- Need for verification
  - Counter interpretation
  - Compare results
  - Work out differences
- Triangulation gives credibility to the results:
  - Multiple data collection approaches, multiple data collectors, analysis from different perspectives.
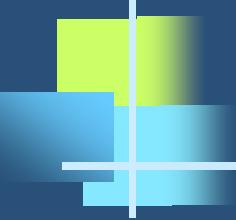
Strong Qualitative Studies

- Use detailed methods and rigorous data collection procedures to verify findings
- Apply an analytical framework
- Begin with a problem to understand, not causal relationships
- Use persuasive writing and thorough description
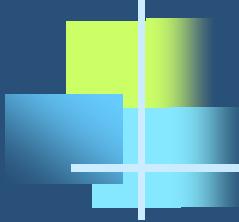
Discussion

What are your experiences in using qualitative data analysis?

What problems did you encounter?

What has been most useful?
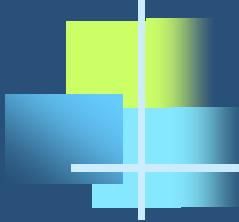
Discussion

Review Evaluation Grid (Design Matrix). What data analysis methods would you apply for the data discussed in Exercise 6?