Evaluating Survey Questions: An Inventory of Methods

Report of the FCSM Subcommittee on Question Evaluation Methodology

Diane K. Willimack
U.S. Census Bureau

Any views expressed are those of the FCSM QEM Subcommittee and not necessarily those of the U.S. Census Bureau.
Answers to ----

- Why evaluate survey questions?
- What do we mean by question ‘evaluation’?
- Why an inventory of evaluation methods?
- What to do with the Methods Inventory?
- How can you use the Methods Inventory?
Why evaluate survey questions?

- Do they ask what the researcher intended?
- Are they consistently understood as intended?
- Are respondents willing and able to consistently answer the questions as intended?
- Is it overly burdensome for respondents to provide a full response?

Groves et al., 2009
What do we mean by question ‘evaluation’?

PRETESTING

Question Development

Question Evaluation
What do we mean by question ‘evaluation’?

**Question Development**

- Specify/refine concepts & develop initial questionnaire design
- Iterative process of question testing and revision

**Question Evaluation**

- Assess validity of results
Question Development

Concept

Attributes

Operational Definitions

Questions

Measurements
Question Development

How much do you weigh in pounds & ounces?

EXAMPLE

Attributes

Operational Definitions

Pounds & Measurements

United States Census Bureau
U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov
Question Development Methods

- Actively use respondents
  - Ethnography
  - Early Stage Scoping
  - Focus Groups
  - Concept Mapping
  - User Needs Assessment

- Strengths
- Limitations

- Passively use respondents
  - Dimension/Attribute Analysis
  - Mining of Questionnaires

- Strengths
- Limitations
Question Evaluation

Purpose

Prior to field test or production data collection

- Will respondents’ answers meet the intent of the question?

During or following field test or production data collection

- Do/did respondents’ answers meet the intent of the question?
‘Field’ Tests

- Differences in sample design terminology:
  - Field pretest
  - Field pilot
  - Dress rehearsal
  - ...other terms

- Sample design:
  - Size:
    - Small-scale
    - Large-scale
  - Selection:
    - Convenience
    - Purposive
    - Probability
Why an inventory of evaluation methods?

- No single method satisfies all research needs
  - Hammers, screwdrivers, wrenches, and computers
- All methods have strengths and limitations
- Many methods can be used for different purposes
  - One method → multiple applications
- Using more than one method is advised
  - Strengths of one method offset limitations of another
  - Complementary findings provide fuller picture
  - Corroboration strengthens validity of results
The Inventory of Methods

- 14 methods
  - Definition
  - Typical uses with examples
  - Strengths
  - Limitations
  - References
The Methods

**Qualitative**
- Methodological Expert Review
- Cognitive Interviews
- Vignettes & Fictional Scenarios
- Usability Testing
- Feedback from Survey Personnel
- Respondent Debriefing

**Quantitative**
- Response Analysis Survey
- Randomized Experiments
- Validation Studies
- Analysis of Paradata
- Re-interview / Content Evaluation
- Response Quality Indicators
- Item Response Theory
- Latent Class Analysis
The Methods

Qualitative
- Methodological Expert Review
- Cognitive Interviews
- Vignettes & Fictional Scenarios
- Usability Testing
- Feedback from Survey Personnel
- Respondent Debriefing

Strengths
- Respondent-centered
  - In-depth, descriptive information
  - Rich, contextual insight
- Conducive to iteration
- Less resource-intensive

Limitations
- Lack statistical inference
  - Not representative of target population
  - Results not generalizable
- Not “real-life”
The Methods

**Qualitative**
- Methodological Expert Review
- Cognitive Interviews
- Vignettes & Fictional Scenarios
- Usability Testing
- Feedback from Survey Personnel
- Respondent Debriefing

**Quantitative**
- Response Analysis Survey
- Randomized Experiments
- Validation Studies
- Analysis of Paradata
- Re-interview / Content Evaluation
- Response Quality Indicators
- Item Response Theory
- Latent Class Analysis
The Methods

**Quantitative**
- Response Analysis Survey
- Randomized Experiments
- Validation Studies
- Analysis of Paradata
- Re-interview / Content Evaluation
- Response Quality Indicators
- Item Response Theory
- Latent Class Analysis

**Strengths**
- Representative sample
- Statistical inferences and comparisons
- Diagnostic
- Reflect field conditions

**Limitations**
- Resource intensive
- Unable to identify –
  - Nature of problems
  - Possible solutions
Other Features

**Qualitative**
- Methodological Expert Review
- Cognitive Interviews
- Vignettes & Fictional Scenarios
- Usability Testing
- Feedback from Survey Personnel
- Respondent Debriefing

**Quantitative**
- Response Analysis Survey
- Randomized Experiments
- Validation Studies
- Analysis of Paradata
- Re-interview / Content Evaluation
- Response Quality Indicators
- Item Response Theory
- Latent Class Analysis
### Other Features

#### Qualitative
- Methodological Expert Review
- Cognitive Interviews
- Vignettes & Fictional Scenarios
- Usability Testing
- Feedback from Survey Personnel
- Respondent Debriefing

#### Quantitative
- Response Analysis Survey
- Randomized Experiments
- Validation Studies
- Analysis of Paradata
- Re-interview / Content Evaluation
- Response Quality Indicators
- Item Response Theory
- Latent Class Analysis
## Other Features

### Qualitative
- Methodological Expert Review
- Cognitive Interviews
- **Vignettes & Fictional Scenarios**
- Usability Testing
- Feedback from Survey Personnel
- Respondent Debriefing

### Quantitative
- Response Analysis Survey
- Randomized Experiments
- Validation Studies
- Analysis of Paradata
- Re-interview / Content Evaluation
- Response Quality Indicators
- Item Response Theory
- Latent Class Analysis
Other Features

Qualitative
- Methodological Expert Review
- Cognitive Interviews
- Vignettes & Fictional Scenarios
- Usability Testing
- Feedback from Survey Personnel
- Respondent Debriefing

Quantitative
- Response Analysis Survey
- Randomized Experiments
- Validation Studies
- Analysis of Paradata
- Re-interview / Content Evaluation
- Response Quality Indicators
- Item Response Theory
- Latent Class Analysis
Other Features

**Qualitative**
- Methodological Expert Review
- Cognitive Interviews
- Vignettes & Fictional Scenarios
- Usability Testing
- Feedback from Survey Personnel
- Respondent Debriefing

**Quantitative**
- Response Analysis Survey
- Randomized Experiments
- Validation Studies
- Analysis of Paradata
- Re-interview / Content Evaluation
- Response Quality Indicators
- Item Response Theory
- Latent Class Analysis
Other Features

**Qualitative**
- Methodological Expert Review
- Cognitive Interviews
- Vignettes & Fictional Scenarios
- Usability Testing
- Feedback from Survey Personnel
- Respondent Debriefing

**Quantitative**
- Response Analysis Survey
- Randomized Experiments
- Validation Studies
- Analysis of Paradata
- Re-interview / Content Evaluation
- Response Quality Indicators
- Item Response Theory
- Latent Class Analysis
Multiple Methods: An Example

2012 Census of Agriculture
National Agricultural Statistics Service

1. Expert Review
   • Methodological
   • Subject matter

2. Response Quality Indicators from 2007 COA

3. Cognitive Testing

4. Multiple Field Tests that featured ---
   • Randomized Experiments
   • Response Quality Indicators
   • Respondent Debriefings
What to do with the Methods Inventory?

- What the inventory is **not** ---
  - Not a cookbook
  - Not an exhaustive list
  - Not a list of methods that must be done
  - Not a checklist
  - Not a “how-to” manual for each method
What to do with the Methods Inventory?

- What the inventory is —
  - A compendium
  - A toolkit
  - An informational resource
  - A starting point
What to do with the Methods Inventory?

- Users of the inventory include ---
  - OMB desk officers
  - Statistical agencies
  - Other government agencies
  - Survey research contractors
  - Researchers
  - Data users
What to do with the Methods Inventory?

- Introduce a variety of methods for evaluating your survey questions
- Provide a common language for survey researchers, practitioners, and sponsors
- Engage in dialogue with survey designers, e.g. contractors, regarding question evaluation
- Ensure due diligence for including question evaluation strategies in survey proposals/plans
- Refer to cited literature to inform and guide proper implementation
How can you use the Methods Inventory?

- Identify goals of your question evaluation studies
- Consider alternative evaluation method(s)
- Match evaluation method(s) to your goals
- Consider costs and timing
- Consider the quality requirements of the data collected using your survey questions
- Select method(s) that satisfy your goals, while recognizing trade-offs due to constraints
A **Word** of Cautionary Advice

- Document
- DOCUMENT
- DOCUMENT!!!
Conclusion

- A variety of methods are available for evaluating survey questions
  - Tried & true, well documented in scientific literature
  - Different methods → different purposes
  - Multiple methods → complementary

- Why evaluate survey questions?
  - Satisfy OMB Statistical Quality Standards
  - **Contribute to data quality for official statistics**