Questionnaire Design, Translation, and Instrumentation:
Best practices and innovations

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Annual Regional Seminar on Household Surveys, 2025
November 13, 2025

Agenda

Key best practices:

- Specifying analysis plan
- Managing trends over time
- Translation
- Cognitive testing
- Instrumentation

Innovations:

- Workflow tools
- Generative AI
- Technological advances in design and testing

Key Best Practices

Specifying Analysis Plan

Start with a clear set of research objectives and an analysis plan

- Research objectives guide questionnaire scope and structure.
- Early development of the analysis plan ensures alignment across the survey lifecycle.
- Clarifies key concepts and definitions for consistent team understanding.
- Helps reduce unnecessary questions, lowering respondent/interviewer burden.

Specifying Analysis Plan, con’t

Design for Format and Precision

Analysis plan clarifies required format and level of precision for variables

- **Format example**: Distance to school
  - Categorical format: “ < 1km”, “1 – 5 km”; “> 5 km” for analysis of general access
  - Numeric format” Exact distance needed for modeling travel time or cost
- **Precision example**: Age
  - Employment survey: Broad age categories may suffice
  - Vaccine survey: Precise age in month is critical (e.g., for dosage timing)

Specifying Analysis Plan, con’t

Planning for contextual and linked data

- Some data (e.g., number of schools, nearest clinic) better sourced externally.
- Early planning allows parallel collection for timely analysis.
- Administrative records (e.g., health, tax) can enrich survey data.
- Include consent question to enable linkage during the interview.
- May reduce need for sensitive or complex questions in the questionnaire.

Managing Trends Over Time

Three approaches to drafting survey questions:

- **Reuse existing questions**
- Adapt questions from other sources
- Develop new questions from scratch

Consistent wording and format are critical for accurate trend data

- Ensures changes reflect population shifts, not questionnaire changes

Especially important for:

- National statistical organizations
- Benchmarking and comparing trends across surveys

Managing Trends Over Time, con’t

Challenge: Updating questions while preserving data continuity

- Even small wording changes can disrupt trends

Strategies:

- Split-sample design: Randomly assign old and new versions within same survey
- Interviewer feedback approach (Statistics Portugal): Interviewers complete short evaluations after each interview, providing paradata for refining questions and improving clarity

Goal: Maintain trend integrity while improving relevance and quality

Translation

Why talk about translation?

- Indigenous and minority language speakers risk exclusion if only official language is used
- Internal migration and population diversity increase need for linguistic inclusivity
- Translation is essential for **representativeness**:
    - Excluding language groups can lead to non-response bias

Translation, con’t

Moving beyond back translation

Back translation:
- Translate to target language, then back to source language for comparison

Limitations:
- Focuses on literal equivalence, not conceptual meaning.
- Misses cultural nuances; can result in awkward wording.
- Research shows back translation does **not guarantee usability or clarity**.

Translation, con't

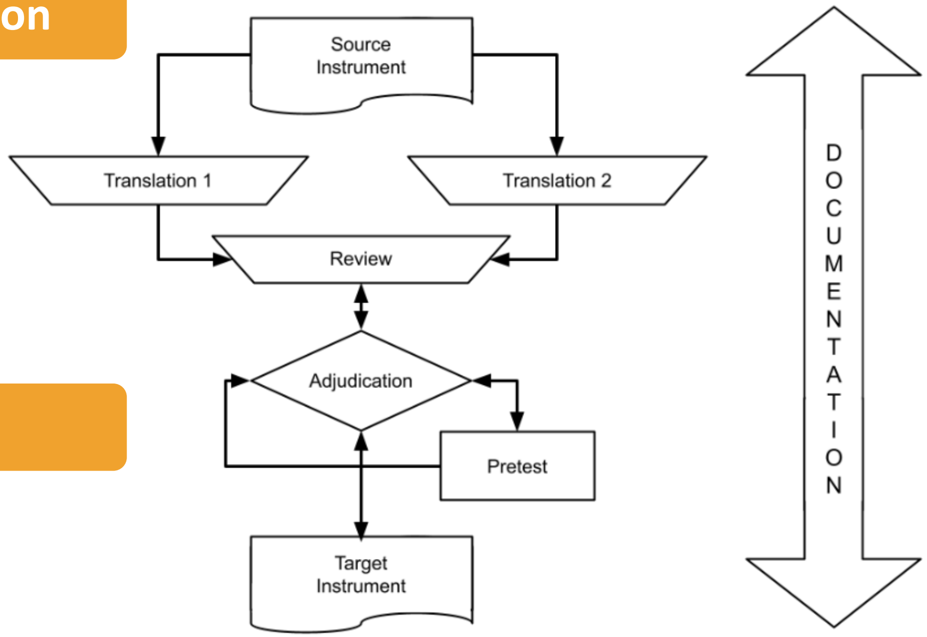
TRAPD: Recommended team-based approach

TRAPD = Translation, Review, Adjudication, Pretesting, Documentation

- **T:** Two or more independent, parallel translations
- **R:** Team review of all items to resolve differences
- **A:** Adjudication of unresolved issues
- **P:** Pretesting with target population
- **D:** Documentation for transparency and future revisions

Benefits:

- Collaborative, iterative process
- Focus on meaning, cultural appropriateness, and usability



Translation, con’t

Challenges in translation

Primarily oral languages

- On-the-fly interpretation risks inconsistency
- Provide key term lists and interviewer training for consistency

Varied gender encoding: Grammatical vs natural vs genderless

- Decisions on gendered wording and emerging non-binary forms require pretesting
- Self-completion surveys require balance between inclusive wording vs cognitive load

Translation, con’t

Improving quality of translations

Advance Translation

- Start early:
  - Assess translatability before finalizing source questionnaire
- Interdisciplinary team applies **TRAPD approach**:
  - Translation, Review, Adjudication
- Include all target languages or representative language groups

Goal:

- Identify source questionnaire issues (unclear wording, cultural challenges)

Solutions:

- Reword, remove items, add notes and briefs

Cognitive Testing

Why cognitive testing matters

Qualitative method to evaluate question performance

Identifies misunderstandings, recall difficulties, decision-making challenges

Improves clarity, reduces burden, enhances data quality

Example survey question: In the past week, did you have access to clean water daily?		
Stage	Description of the stage	Example application
Comprehension	Respondents interpret the meaning of the question to understand what is being asked	Understanding how “clean water” is defined
Retrieval	Respondents recall relevant information from memory	Remembering how often they had clean water available in the past week
Judgment	Respondents evaluate the retrieved information to form an answer	Deciding if their water is “clean” and whether their access to clean water is frequent enough to count as “daily”
Response	Respondents map their answer to the response options provided by the survey	Choosing “yes” or “no” based on their judgment

Instrumentation

What is instrumentation?

- Development of **survey specifications** for electronic data capture
- Applies to **CAPI, CATI, and web surveys**
- Guides programmers on structure, logic, and functionality
- Ensures **consistency, accuracy, and efficiency**
- Create specifications **in parallel** with questionnaire drafting

Instrumentation, con’t

Core elements of specifications

- Use **templates & conventions**: colors, capitalization, variable names
- **Variable names & labels**: unique, descriptive, no special characters
- **Question text & formatting**: exact wording, emphasis (bold/underline)
- **Response option codes**: consistent coding
- **Select-all-that-apply**: choose coding approach early (string, alphabetic, binary)
- **Interviewer instructions**: visually distinct; include QxQ guidance

Instrumentation, con’t

Logic, validation, and additional details

- **Skip logic & enabling conditions**: standardized syntax with variable names
- **Validation conditions**: range checks, clear messages for self-administered surveys
- **Other programming logic**: screen layout, randomization, survey aids
- **Metadata & paradata**: fieldwork dates, mode, language, GPS, interviewer observations

Innovations

Workflow Tools

Improvements to managing the survey lifecycle process

Example: **DataCTRL survey tool suite** (Centerdata, Netherlands)

- Integrated tools for:
  - Questionnaire design and implementation
  - Translation workflow (TRAPD)
  - Survey coding, fieldwork management, interviewer tools
  - Sample management, data collection, dissemination
- Linked steps eliminate version issues
  - Seamless transmission from design → programming → translation
  - Direct import of translated questionnaires into electronic data capture systems
- Improves efficiency and coordination in complex surveys

Generative AI

Machine translation: Opportunities and limitations

Automated translation tools:
- Rapid, low-cost translations
- Quality better for common language pairs

Limitations:
- Context errors (e.g., agree/disagree scales)
- Uneven quality across languages; dialects often missed
- Lacks transparency for team-based review (TRAPD)

Recommended approach:
- Machine translation + post-editing team review
- Review remains essential for data quality

Generative AI, con't

Design and coding: Opportunities and limitations

Applications in survey design:

- Question development and evaluation
- Identify wording issues and suggest improvements

Open-ended response coding:

- Classify responses, identify themes, generate summaries
- Reduces time and labor; improves consistency

Limitations:

- Struggles with complex or multi-coded answers
- Risk of bias across demographic groups

Key takeaway:

- Use AI as a complement and not a replacement for human expertise

Technological Advances in Design and Testing

Crowd sourcing for questionnaire design

Crowdsourcing: collective input via online platforms

- Uses platforms like Mturk and social media

Benefits:

- Diverse perspectives, cultural nuance, rapid feedback
- Cost-effective compared to traditional pretesting
- Best for simple questions, not complex probing

Technological Advances in Design and Testing, con't

Cognitive interviewing through web probing

Web probing: embedded cognitive probes in questionnaire

- Enabled by internet access and low-cost web surveys
- Generates less detail than traditional interviews
- Provides open-ended responses for question evaluation
- Promising alternative for online populations

Thank you!

QUESTIONS?

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