

Special Course on Mixed Mode Survey Methodology RTI - Odum Institute, NC USA March 19, 2007

Dr. Edith de Leeuw



Universiteit Utrecht

Short Course Description RTI-Odum Institute, March 2007



When One Mode Is Not Enough: Methodology for Mixed Mode Surveys

When planning a survey, many decisions have to be made and one of the most important decisions concerns the choice of data collection mode. In the first decade of the 21st century a large variety of data collection methods are available for social surveys and official statistics, which leads to methodological questions, such as, which method is best? Each method has advantages and disadvantages. Sometimes, the choice is easy and straightforward, but often the situation is more complex and one single method will not suffice. Therefore, multiple modes of data collection or mixed modes have become more and more popular in survey practice.

The topic of this short course is the methodology for mixed mode surveys. In this course, I will give an introduction and overview of methodological issues involved in the designing, implementation, and evaluation of mixed mode surveys. I will discuss advantages and disadvantages of mixed mode survey designs and give an overview of common forms of mixed mode design and reasons for using more than one mode in a survey. Special attention will be given to the impact of mixed-mode designs on survey quality, such as coverage, measurement error and mode effects, nonresponse, cost and timeliness.

The objective of this course is to provide students with a methodological and theoretical background on mixed mode methodology and with an empirical knowledge-base on the implications of mixed-mode design for survey error, questionnaire design, logistics and resources.

Lecturer: Dr. Edith de Leeuw, Methodika Amsterdam/Departments of Methodology and Statistics, Utrecht University

Edith D. de Leeuw is senior researcher and professor in survey methodology at the department of methodology and statistics, Utrecht University. She received her Ph.D. in Survey Methodology and Statistics at the Vrije Universiteit, Amsterdam. She was a Fulbright scholar at the Social and Economic Sciences Research Center of Washington State University and visiting scholar of the Program on Social Statistics at UCLA. She is a fellow of the Interuniversities Joint Institute for Psychometrics and Sociometrics (IOPS) in the Netherlands, and was recently awarded the Visiting International Fellowship at the Institute of Social Research, University of Surrey. She has published many articles in both Dutch and international scientific journals and co-authored books in the field of survey methodology and statistics. Her most recent publications focus on mixed-mode surveys, children as respondents, and comparative and cross-national research. She has taught specialized courses on survey methodology in Europe and the USA, and is at present editing an International Handbook on Survey Methodology.

A New Trend



“Asking questions off respondents is one of the main data collection methods in social science and its associated applied fields. The oldest survey methods are the face to face interview and the mail questionnaire. After, 1970 telephone interviews have become increasingly popular. A new trend is mixed mode surveys; surveys that combine more than one data collection mode within one study.”

“One of the most important questions for both survey researchers and for consumers of survey research is whether the data collected by one method differ from the data collected by another.”

De Leeuw, 1992
back cover

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A New Trend



“Mixed mode surveys, that is, surveys that combine the use of telephone, mail, and/or face-to-face interview procedures to collect data for a single survey project are occurring with increasing frequency. A second, or in some cases even a third, method to collect data for a single survey is being used throughout the world.... Indeed, mixed mode is becoming one of the survey buzz words of the late 20th century”

Dillman & Tarnai, 1988

- Important issues in mixed mode identified by Dillman & Tarnai are a.o.
 - Data comparability
 - Questionnaire construction and pretesting

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Mixed-Mode the Norm



“In general, data collection systems do not consist of one mode only, since mixed-mode surveys are the norm these days.”

Biemer & Lyberg, 2003

“An emerging new breed of survey software is starting to make this [combine CATI/CAWI] possible”

Macer, 2004

Mixed Mode Surveys



- Which Mode to Choose
 - Face-to-face, mail, telephone, web?
- Which Mix to Chooses
 - Mail-Telephone?
 - CATI-CAWI?
 - ???

Terminology



- Mixed Mode
- Multi Mode
- Multiple Mode
 - Often used interchangeably
- *Mixed Mode*
 - *Any combination of modes*
 - *In any part of the data collection process*

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Mixed Mode Surveys A Road Map



- New adventurous continent
 - Mixed Mode Territory
- How to plan the trip
 - Where to visit?
 - What to pack?
- Short course
 - Road map
 - Itinerary



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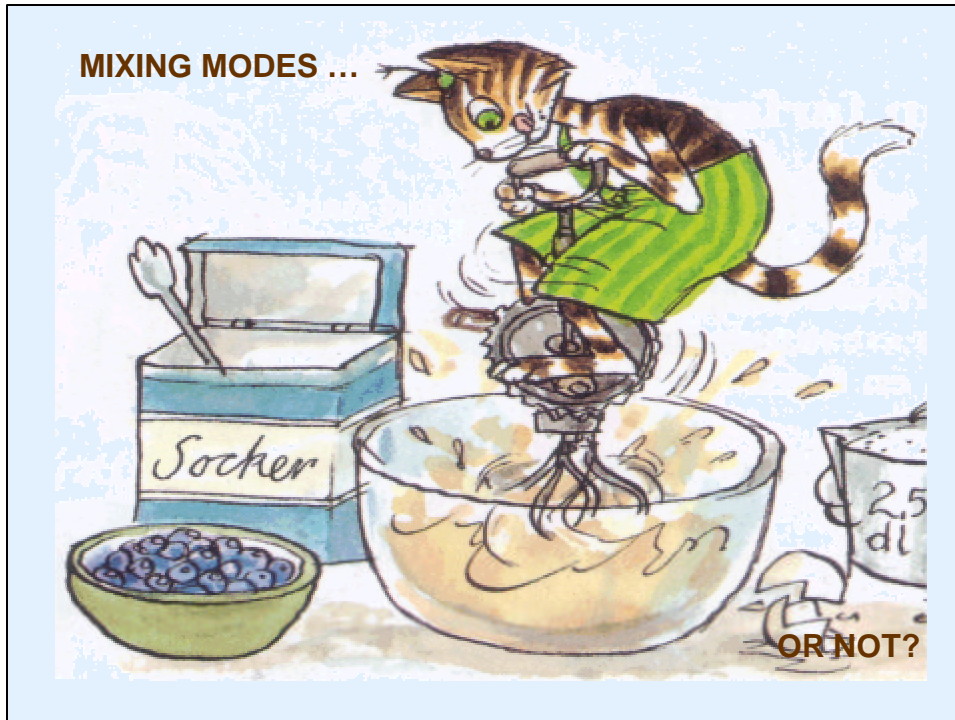
Background Literature



- Fritz Scheuren (2004). What is a Survey, American Statistical Organization at <http://www.amstat.org/sections/SRMS/pamphlet.pdf>
- P. Biemer & L. Lyberg (2003) Introduction to Survey Quality, New York: Wiley
- R.M. Groves (1989). Survey errors and survey costs. New York: Wiley.

Why Mix Modes? Total Survey Error Perspective





Why Mix Modes?



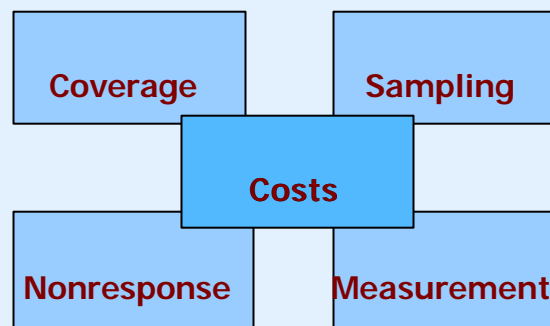
- Optimize data collection procedure
 - Research question
 - Population
- Reduce total survey error
- Respect survey ethics/privacy
- Within available time
- Within available ***budget***

Best Affordable Method



- Mixed-mode explicit trade-off
 - Costs
 - Errors
- Example: Nonresponse follow-up
 - Mail survey
 - Telephone follow-up
 - Face-to-face for sub sample of remaining nonrespondents

Balance Costs & Errors



Coverage Error



- Sampling frame must include *all* units of population of interest (once), if not:
- Frame Coverage Errors
 - Non-sampling error
- Errors arising from construction of sampling frame
 - Omissions
 - Erroneous inclusions
 - Duplications

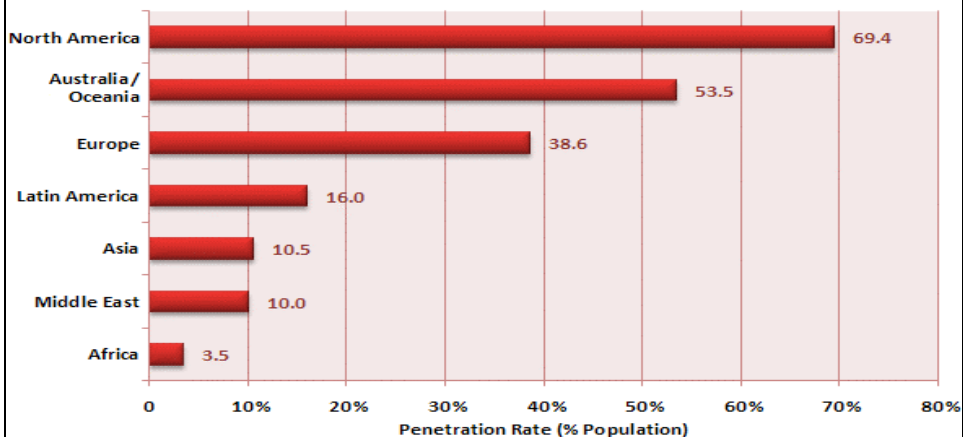
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Web Surveys and Coverage

Internet Penetration by World Region



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Sampling Error



- Occurs because only a sample of the population is invited to participate in a survey in stead of the total population
 - Statistic of interest is computed on sample
- Provided a **probability** sample is used
 - Each element in the population has a **known** and non-zero probability of selection from the sampling frame
 - Provide protection against selection bias (e.g. self-selection)
 - Give a means of quantifying sampling error

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Example Sampling Error



- CNN GALLUP Survey USA on 'Bush and war on terror' January 2006 (source USA Today)
 - Sample: Nationwide N= 1003 adults answered
 - Margin of error +/- 3 %
- Is the Bush administration right or wrong in wiretapping conversations of US citizens without a court order?
 - Right: 50% Wrong: 46% No opinion 4%
- What would be your conclusion based on these data?
- Which headline would YOU write?

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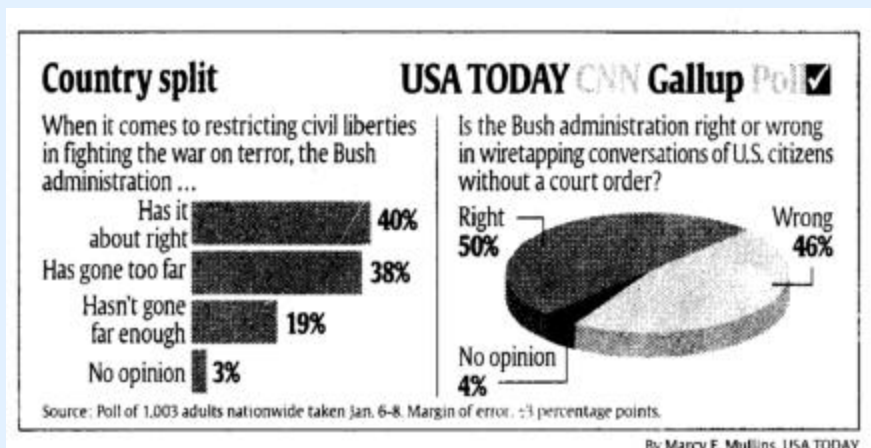
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Statisticians is this what the people of the USA want?



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“Country Split”



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Sampling Error 2



- Statistic of interest is computed on sample
- Statistical procedures to accommodate this
 - Standard error, p-value, statistical tests, etc
- Standard software assumes Simple Random Sampling
- But there are more complicated sampling schemes (e.g., stratified, cluster)
- This needs more complicated statistics
 - Multilevel analysis, Sudaan, etc

Types of Samples



- Information from whole population, that is, NO sampling: A Census 😊
- Probability Sampling
 - Random selection, random sampling
 - Allows for statistical theory, inference 😊
- Non probability Sampling
 - Selection probability unknown
 - No known probabilities of inclusion in sample
 - No statistical theory
 - No p-values, no margins of error ☹

Non-response Error



- Nonresponse / Missing Data
 - Inability to obtain data on all questionnaire items from all persons:
Missing Data
- Unit non-response
 - Whole unit fails to provide data
 - Sampling unit, data collection unit, or analysis unit

Non-response Error 2



- Quantification (Non) Response Figures
 - Response Rate, Refusal Rate, etc
- Standardization response figures
 - WWW.AAPOR.ORG section survey methods, standards and best practice
 - RDD telephone, in person household, mail and internet surveys of specifically named persons
 - WWW.ESOMAR.ORG professional codes and guidelines for guidelines on internet research including non response categories that have to be reported

Non-Response Error 3



- Beware Nonresponse Error is more than nonresponse!
- Nonresponse error
 - I. Nonresponse occurs
 - II. Respondents and non-respondents differ on variable of interest (key variable study)
- Nonresponse figures as such uninformative
 - High nonresponse but few or no error (or vice versa)
 - Need nonresponse studies / diagnostics

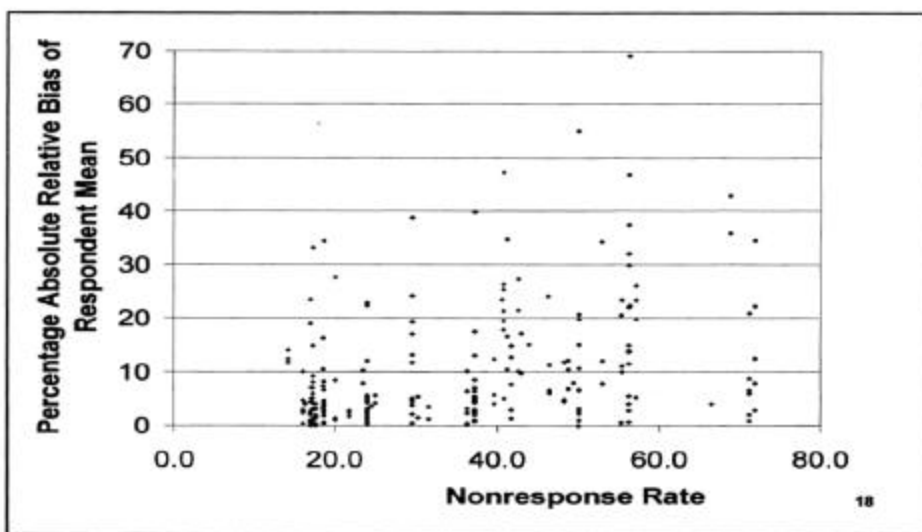
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Nonresponse Rate vs Bias

Slide Groves 2005



Measurement Error



- Measurement Error
 - Nonsampling error or error of observation.
- Measurement errors are associated with the data collection process itself.
- Measurement error occurs when a respondent's answer to a question is inaccurate,
 - In other words when answer departs from the 'true' value

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Measurement Error 2



- Measurement errors are associated with the data collection process itself
- There are three main sources of measurement error:
 - Questionnaire
 - Respondent
 - Method of data collection.
- When interviewers are used for data collection, the interviewer is a fourth source of error

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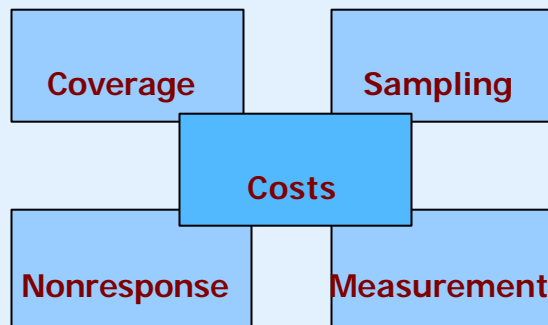
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Mixed Mode Surveys: Some Special Cases

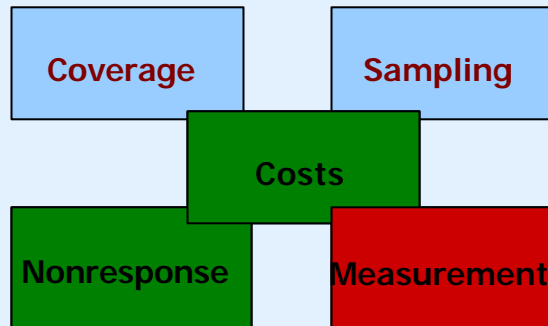


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Why Mix Modes? Balance Costs & Errors!



Nonresponse Mixed Mode Solution

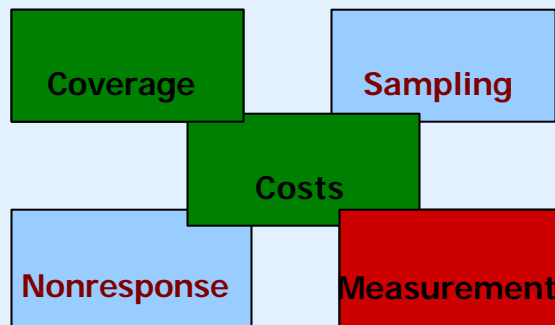


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Web & Coverage Mixed Mode Solution

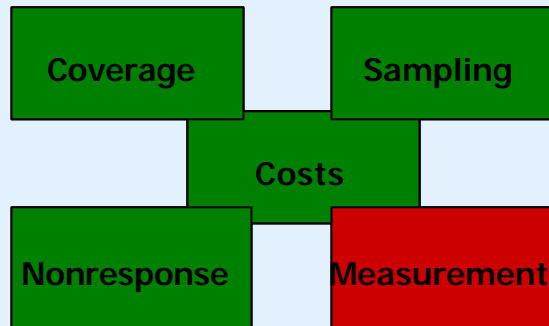


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International Surveys



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To Mix or Not to Mix



- Mixing modes has advantages, but
 - Will the answers provided by respondents differ by mode?
 - Can data that are collected through different modes be combined in one study?
 - Cross-sectional?
 - Longitudinal?
 - Can data that are collected through different modes be compared over studies or countries?

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Suggested Literature



- Very good introduction to all types of probability sampling including how to analyse
 - Sharon Lohr (1999). Sampling: Design and analysis. Pacific Grove CA: Duxbury Press
- Introduction to issues in nonresponse
 - Mick Couper & Edith de Leeuw (2003). Nonresponse in cross-cultural and cross-national surveys. In Harkness et al. Cross-cultural survey methods. New York: Wiley
 - Peter Lynn (to appear) Nonresponse. In De Leeuw, Hox & Dillman (eds). International Handbook of Survey Methodology
- Relevant articles on nonresponse issues
 - Special issue POQ (2006, 70, 5)
 - Special Issue JOS (1999, 15, 2) at www.jos.nu (freely available)

Suggested Literature



- Measurement Error and Mode Effects
 - Introduction
 - Biemer & Lyberg (2003) Introduction to survey quality, Wiley
 - De Leeuw (2004). New technologies in data collection, questionnaire design and quality. International Statistical Seminars Series # 44. San Sebastian: EUSTAT.
<http://www.eustat.es/prodserv/datos/sem44.pdf>
 - Advanced Monographs many worthwhile chapters
 - Biemer et al (1991). Measurement errors in surveys, Wiley
 - Lyberg et al (1997). Survey measurement and process quality. Wiley
- Internet surveys and sources of error
 - Mick Couper (2000). Web surveys: A review of Issues and Approaches, POQ, 64, 464-494.

When One Mode is Not Enough: Methodology for Mixed Mode Surveys

Dr. Edith de Leeuw

Taxonomy of Mixed Mode Multi Mode Contacts

Multi Mode Survey Systems



- Survey more than data collection
- Communication with Respondent
 - Contact Phase
 - Pre-notification
 - Screening
 - Invitation
 - Data collection
 - Follow-up
 - Reminders

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One Survey System Multiple Modes of Communication



- Example Nielsen media research
 - Multiple modes of contact in 7 steps
 1. Pre-recruitment postcard
 2. Recruitment phone call
 3. Advance postcard announcing diary
 4. Diary survey package
 5. Reminder postcard
 6. Reminder phone call
 7. Reminder postcard

Bennett & Trussel, 2001
Trussell & Lavrakas, 2004

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Contact Phase

Advance Notification/Screening

Different Mode then Data Collection



- Rationale
 - Correct sampling frame
 - Raise response rate
 - Enhance credibility and trust
- Effect on Quality
 - Reduce coverage and nonresponse error
 - No threats to measurement if data collection itself is **uni-modal** (= data are collected with one method only)

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Contact Phase

Invitation in Different Mode

then Data Collection



- Why
 - Reduce coverage and nonresponse error
- Effect on measurement
 - No threats to measurement if data collection itself is **uni-modal**
 - Telephone invitation for IVR
 - Potential threats if data collection is **multi-modal**
 - Postcard invitation for Web/CATI

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Follow-up Phase

Reminder(s) in Different Mode from Data Collection



- Rationale
 - Simple reminder, such as postcard, short telephone call, etc has low costs
 - Raise response rate
- Effect on Quality
 - Reduce nonresponse error
 - If pure reminder (data collection **uni**-modal) no threats to measurement

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Follow-up Phase

Reminder(s) in Different Mode from Data Collection



- Rationale
 - Simple reminder, such as postcard, short telephone call, etc has low costs
 - Raise response rate
- Effect on Quality
 - Reduce nonresponse error
 - If reminder plus additional questions, then **multi**-mode
 - Part of data collection different from main mode
 - Threat to measurement

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Taxonomy of Mixed Mode Measurement Error

Data Collection Phase



- Mixed mode for interaction with respondent in Contact Phase and Follow-up Phase mostly Win-Win situation
- More complicated in Data Collection Phase
- Only win-win situation in mixing interview mode with SAQ for sensitive questions
 - E.g. CAPI/CASI
 - Interviewer guidance for non sensitive questions
 - More privacy, less social desirability sensitive questions

Implications Mixed Mode in Data Collection Phase



- Risk
 - Introducing mode effects in data set
- Result:
 - Increasing measurement error
- However:
 - Reduction of other errors
 - E.g., Coverage / nonresponse
- Careful consideration needed
- Careful design for optimal mixed mode

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Mixes in Data Collection: Sequential vs Concurrent



- Sequential
 - Different modes for successive phases of interactions (contact phase, data collection phase, follow-up phase)
 - Screen or contact by phone, collect data by face-to-face interview
 - Different modes in sequence during data collection phase
 - American Community Survey
 - Mail, telephone, face-to-face

Balden, 2004

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Data Collection Phase: Sequential vs Concurrent



- Sequential
 - Different modes in sequence during data collection phase
 - American Community Survey
 - Mail, telephone, face-to-face
- Concurrent
 - Multiple modes are used simultaneously for data collection: implemented at same time
 - Asthma awareness study
 - Invitation postcard offering choice

Data Collection Phase: Concurrent Mixed Mode 1



- Multiple modes implemented at same time
 - For **all questions**, full questionnaire
- Reduce Coverage Error at reasonable costs
 - Dual frame sampling
 - Invitation offering choice
- Dangers concurrent multi-mode
 - Measurement differences
 - E.g., social desirability, recency effects
 - Difficult to entangle as (self-)selection and mode effect are confounded
- Reduced coverage error at the price of increased measurement error

Data Collection Phase: Concurrent Mixed Mode 2



- Multiple modes implemented at same time
 - For **all questions**, full questionnaire
- Different **populations**, different mode
 - International Surveys
 - Regional comparisons
 - Multiple cultures
- Practical considerations
 - Only way to get data for certain groups/countries
- Examples:
 - Behavioral Risk Factor Surveillance System (CDC)
 - ISSP

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Data Collection Phase: Concurrent Mixed Mode 3



- Multiple modes implemented at same time
 - For **sub set** of questions only
- Reduce Social Desirability Bias
 - Sensitive questions in more 'private' mode
 - CAPI - (A)CASI mix
 - Telephone - IVR (or T-CASI) mix
 - Face-to-face – paper SAQ mix
 - US National Survey on Drug Use and Health (NSDUH)
- Win-win situation
- Warning: Beware of concurrent mixed mode for **total** questionnaires when sensitive topics are studied!!!

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Data Collection Phase: Sequential Mixed Mode 1



- Multiple modes implemented in sequence one time period / cross-sectional study
 - Successful for nonresponse reduction
 - Inexpensive mode first main mode
 - More expensive mode as follow-up
 - Potential measurement error
- Beware for using data sequential mixed mode for assessment of nonresponse bias
 - Mode and non respondents confounded
 - Ideally assessment of nonresponse bias by small sub sample same mode

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Data Collection Phase: Sequential Mixed Mode 2



- Multiple modes implemented in sequence multiple time points / longitudinal study
 - Cost reduction and practical considerations
 - More expensive mode
 - Selection and screening for panel
 - Base-line study
 - Next waves less expensive study
 - Labor force survey many countries
 - Face-to-face first wave, later waves telephone
 - Web panel selection by face-to-face or phone,
 - Sometimes ABBAB, NESTOR study Holland
 - Potential measurement error
 - Time and mode may be confounded

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In Sum: Problems Mixed Modes in Data Collection Phase



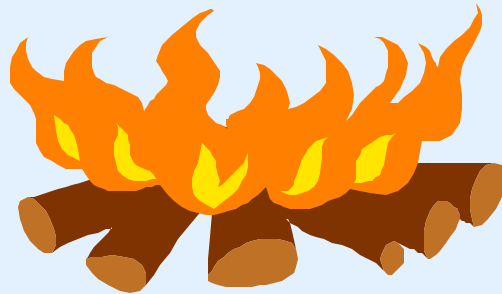
- Incomparability
 - Different subgroups different modes (e.g. nonresponse follow-up, telephone in city A, mail in city R)
 - Confounding
 - Are groups different (more crime in R)
 - Or is it mode effect (e.g., Soc. Des.)
 - Different samples, different modes (e.g., comparative research, international)
 - More crime in country X than Y or different survey methods

Suggested Readings



- Edith D. De Leeuw (2005). To mix or not to mix data collection methods in surveys. JOS, Journal of Official Statistics, 21,2, 233-255 (also available on www.jos.nu)
- Wally Balden (2004) Multi-mode data collection: Benefits and downsides. Presented at the 2004 conference of the great lakes chapter of the Marketing Research Association, Cancun, Mexico. Power point file at <http://glcmra.org/cancun>

Burning Questions?



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Why and How Modes Differ

Visual vs Aural

Self-Administered vs Interviewer-Guided

Why Modes Differ



- Interviewer Impact
- Media-related Factors
- Information Transmission

Interviewer Impact



- Self-Administered vs Interviewer guided
- Interviewer ++
 - Motivate respondent
 - Guide through complex questionnaire
 - Facilitates Question-Answer process
 - Clarify questions, instructions
 - Probe for detailed answers
 - Notes down answers

Interviewer Impact



- Self-Administered vs Interviewer guided
- Two sides of a coin
- Interviewer - -
 - Restrict respondent in personal space
 - Less private, less anonymous
 - Appearance of interviewer

How Modes Differ



- Empirical Evidence Interviewer Impact
 - Social-desirability
 - E.g., drinking, fraud
 - More open in self-administered modes
 - More positive
 - Less lonely, better health in interview
 - Acquiescence
 - Tendency to agree
 - Easier to agree than disagree with another person
 - Missing data/open questions
 - General interviewer probes help

Media Related Factors



- Social convention/customs
 - Socio-cultural but influence cognitive processing in question-answer process
 - Use of medium
 - Customs, associations, familiarity
 - Pace/locus of control
 - Interviewer vs respondent
 - Single vs Multi-task oriented
 - Convey sincerity

How Modes Differ



- Empirical Evidence Medium Impact
 - Hardly any systematic studies
 - Self-administered more consistent answers,
 - SAQ higher psychometric reliability on scales
 - Paper vs interview!
 - Conveying sincerity of purpose and trust research needed on nonresponse and sensitive questions
 - Spam vs Web survey
 - Panel vs one time web survey

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Information Transmission



- Presentation Stimuli
 - Visual vs Aural
- Delivering answer
 - Spoken vs written vs typed
- Channels of communication
 - Verbal, nonverbal, paralinguistic
 - Graphical language
- Segmented
 - Question by question vs page
 - Freedom to go back

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How Modes Differ



- Some evidence recency effect in telephone surveys
 - More often last offered answer category is chosen
- Context and order effects less likely in self-administered (paper) than interview
 - Overview / segmentation
 - No empirical studies including web surveys

Good news, but....



- There are some mode difference
 - Not large
 - Except for more sensitive questions
 - But....
 - All empirical evidence
 - Well conducted experiments
 - Controlling/adjusting population differences
 - ***Equivalent questions and questionnaires***

Questionnaire Design

Traditional Design for Mode and Consequences for Mixed-mode Surveys

Traditional Design



- Face-to-face: Visual + Aural
 - Show cards with answer choices
 - Long lists of answers, long scales with each point labelled
 - Pictures may be used
 - Open-ended questions on wide variety of topics
 - Trained interviewers are carefully instructed to probe in order to get detailed and complete information
 - No opinion etc not explicitly offered, but accepted when given
 - Transitional texts to guide interviewer and respondent to next block of questions

Traditional Design



- Telephone: Aural only
 - Shorter scales (2-5 point scales)
 - Often only anchored end-points
 - On a scale from 1 to 5 with 1 being not at all satisfied and 5 being completely satisfied
 - Visual analogue questions
 - Imagine a ladder with 7 steps
 - Imagine a thermometer with a scale from 0 to 100
 - Unfolding for longer scales
 - Satisfied, dissatisfied or somewhere in the middle
 - Completely, mostly, somewhat (dis)satisfied

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Traditional Design



- Telephone: Aural only
 - In general breaking up questions in parts
- Like face-to-face
 - Open-ended questions and probes
 - No opinion / no answer not explicitly offered
 - Accepted after probe

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Traditional Design



- Mail survey: Visual only, no interviewer
 - In general, no breaking up questions in parts
 - Use longer list of response categories in stead
 - Fully labelled scales
 - Check all that apply instead of yes/no
 - Only 'no answer' when person skipped question, in stead of interviewer coded 'refused, do not know, no opinion'
 - Go back and forth: more context available
 - Use illustrations / visuals

Traditional Design



- Web survey:
 - Visual only, but audio potential
 - No interviewer, but intelligent computer system
- Many similarities with mail
- Differences
 - More sequential offering of questions
 - Check all that apply almost standard format
 - Radio buttons

Traditional Design



- Web survey:
 - Visual only, but audio potential
 - No interviewer, but intelligent computer system
- Many similarities with mail
- Differences
 - Special formats
 - Slider bars
 - Drop down menus
 - Open questions influenced by box size, dynamic space
 - Visuals/illustrations and their influence (Couper, 2007)

Consequences



- Question format has effect on response distribution
- Empirical experiments even when mode constant (e.g. Schuman & Presser, 1981)
 - No opinion explicitly offered
 - Unfolding
 - Labelled response categories
 - Number of response categories
 - Check all that apply fewer affirmatives than yes/no (Dillman et al 2005, Rasinski et al 1994)

Consequences



- Question format has effect on response distribution
- Different modes have tradition of different formats
- Designers routinely enhance unwanted mode effects in mixed-mode survey

- Special design for mixed-mode surveys!

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Suggested Readings



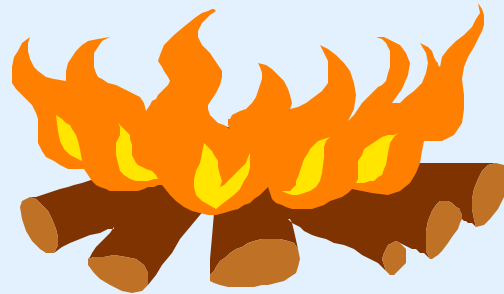
- Edith D. De Leeuw. Choosing the Method of Data Collection. To appear in De Leeuw, Hox & Dillman (eds) International Handbook of Survey Methodology, Lawrence Erlbaum (LEA)
- Edith de Leeuw (1992). Data Quality in Mail, Telephone & Face-to-face Surveys. TT-Publikaties available at <http://www.xs4all.nl/~edith/> then click on mode comparison.
 - Chapter 2: Why expect differences
 - Chapter 3: Empirical evidence of mode effects: A meta-analysis
- Don A Dillman & Leah Melani Christian (2005). Survey mode as a source of Instability in Responses across Surveys, Field Methods, 17,1, 30-52.
- Don A. Dillman. The logic and psychology of constructing questionnaires. To appear in De Leeuw, Hox & Dillman (eds) International Handbook of Survey Methodology

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Burning Questions?



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Designing for Mixed-Mode Two Cases

Simply Mixing Enhance Measurement Errors



- Different modes have tradition of different formats
- Question format has effect on response distribution
- Consequence: Designers routinely enhance unwanted mode effects in mixed-mode survey
- What to do?

Design for Mix



- Two Situations:
 - One main method that accommodates the survey situation best
 - Used to maximum potential
 - Other methods auxiliary
 - Truly multiple mode design
 - Modes equally important

Two Situations



- One main method, other methods auxiliary
 - Nonresponse follow-up.
 - Non-covered groups with additional method
 - Some longitudinal designs
 - Calibration studies
- Truly multiple mode design: modes equally important
 - Different countries/municipalities use different mode
 - Respondents may choose

One Main Mode Design for Optimal Mix



- **One Main Method**
- **Preferred-mode-specific design.**
 - Designing a mixed-mode study where one mode is the primary or preferred mode, and other modes are seen as auxiliary. In this design the questionnaire is optimized for the primary mode and the questionnaires for the other (auxiliary) modes are adapted to the optimal design for the main mode.

Design for Optimal Mix 1



- One Main Method, other methods auxiliary
 - Identify main method
 - Use main method optimal and to its maximum potential
 - Auxiliary methods designed **equivalent**
 - Avoid measurement error
 - Perhaps sub-optimal for aux. method

Example LFS



- Longitudinal face-to-face & telephone
- Identify main method
 - Main method not necessary first method
 - Main method **telephone**
 - **Face-to-face** auxiliary from longitudinal point of view
 - Main design for telephone interview

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Example LFS cont



- Design **longitudinal** questions for telephone use
 - Not full potential *face-to-face* used in face-to-face interview
 - No visuals, no show cards
 - Shorter scales, unfolding
 - Open questions
- Design **one-time** recruitment questions for face-to-face use (full potential visual)
- Data integrity for longitudinal use!

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One Main Method



- Telephone with Face-to-Face Mixes
 - If telephone main method
 - Relatively easy to design optimal
 - Interviewer assistance
 - No visual
 - If face-to-face main method
 - Absence of visuals makes it more complicated
 - Carefully balance pro and cons
 - Optimize for one? Uni-mode design?
 - Implement a small experiment within one mode

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One Main Method 2



- Self-Administered and Interviewer Mixes
 - SAQ or Interview Main Method?
 - Complexity of questionnaire
 - Issue in paper mail not web
 - Interviewer probing essential or not?
 - Visuals essential?
 - Face-to-face in mix accommodate, phone does not
 - CAWI-CATI may have problems
 - Sensitive questions?

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Example NCES



- RTI surveys for National Center for Educational Statistics
 - TSMII-paper Wine et al at www.rti.org
 - Original studies by telephone
 - Switch to Web with telephone follow-up
 - Highly Internet savvy population
 - So web good choice, but...

Example NCES 2



- Switch to Web with telephone follow-up
 - But, researcher did not want to loose advantages interviewer
 - Response conversion
 - Clarification, solving inconsistencies, coding, etc
 - Blend best features of both modes

Example NCES 3



- Start with web survey
 - Offer incentive for early completion
 - Help desk specially **trained telephone interviewers**
 - Telephone prompts instead of e-mail reminders
 - Directly or on answering machine
 - Reminding of early completion incentive

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Example NCES 4



- Questionnaire equivalence
 - Field tested
 - Some adaptation to web
 - Make more equivalent to phone
 - Changes web questionnaire
 - Continue button in stead of explicit 'no answer'
 - But generic pop-up after 3 consecutive no answers to remind of importance
 - Key-items redisplayed with tailored text
 - Revision finance items to be less sensitive
 - Help text for web also helped interviewers

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Example NSRCG



- National Survey of Recent Colleges Graduates
- <http://www.blaiseusers.org/IBUCPDFS/2004/24.pdf>
 - Mix Web, CATI, Paper
 - Mail survey main mode
 - Reminder paper + offer to complete on web
 - Final telephone

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Example NSRCG 2



- Designed one Blaise instrument
 - Data entry mail
 - CATI
 - CAWI
- Web guidelines based on mail questionnaire
- CATI some question text adapted to telephone interviewer format
 - Question split in subparts
 - Filter added
 - Simplified question with follow-up question instead of having text in stem of question

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Designing for Mixed-Mode Unified Mode Design

Unified Mode Design



- To minimize data integrity problems Dillman (2000) proposes UNI-mode design for all modes
 - **Uni-mode design.** From **unified** mode design; designing questions and questionnaires to **provide the same stimulus** in all survey modes in order to reduce differences in the way respondents respond to the survey questions in the different modes.

Uni Mode Design



- Unified or UNI-mode design for all modes
 - Make all response options the same across modes and incorporate them into the stem of the survey question.
 - Avoid inadvertently changing the basic question structure across modes in ways that change the stimulus.
 - Reduce the number of response categories to achieve mode similarity.

(Dillman 2000,2006, Chapter 6)

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Uni Mode Design cont



- Unified or UNI-mode design for all modes
 - Use the same descriptive labels for response categories instead of depending on people's vision to convey the nature of a scale concept.
 - Develop equivalent instructions for skip patterns that are determined by answers to several widely separated items.
 - Avoid question structures that unfold.

(Dillman 2000,2006, Chapter 6)

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Uni Mode Design cont



- Unified or UNI-mode design for all modes
 - Reverse the order in which categories are listed in half the questionnaires.
 - Avoid recency/primacy effects
 - Evaluate interviewer instructions carefully for unintended response effects and consider their use for other modes.

(Dillman 2000,2006, Chapter 6)

Example



Mail, Telephone and Face-to-face interview

- Early attempt De Leeuw 1992, chap 4, p 37
 - <http://www.xs4all.nl/~edithl/pubs/disseddl.pdf>
 - Response options the same across modes
 - Same descriptive labels for response categories
 - Reduced number of response categories
 - Maximum 7 pushing the limit
 - Used simple open questions
 - Used show cards
 - Interviewer instructions and instructions in mail questionnaire

Meeting the Challenge of Mixed-Mode Surveys 1



- Designing for Mixed modes
 - Unified (uni-) mode questions to reduce mode effects
- Designing for Mixed modes both
 - Questionnaire development
 - Questionnaire lay-out
 - Implementation procedures
- From unified to generalized mode design?

Generalized Mode Design



- **Generalized mode design.**
 - Purposively constructing questions and questionnaires to be different in different modes with the goal of achieving cognitive equivalence of the perceived stimuli, thereby resulting in equivalent answers across modes.

Generalized Mode Design 2



■ Prerequisites generalized mode design

- Designer understands
 - How differences between modes affect the question-answer process
 - How they affect the way respondents *perceive* the question, process the information and select and communicate the response
- Burden on the researcher to demonstrate that different questions elicit equivalent responses.

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Generalized Mode Design Example



- Christian, Dillman & Smyth 2005
 - CATI
 - When did you start attending WSU
 - Interviewer probed for desired format
 - Web
 - Same question text with write in standard programming
 - mmyyyy
 - Too many errors
 - Redesign size boxes, graphical language, symbols
 - Interviewer is intelligent system
 - Equivalence needed more than the same question wording!

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Meeting the Challenge of Mixed-Mode Surveys 2



- Designing for Mixed modes
- Embedding small experiments / mode comparisons
 - Provide data to estimate mode effect
- Empirically based adjustment
 - Weighting
 - Propensity score adjustment

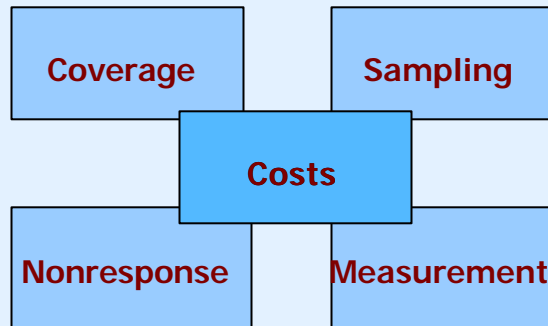
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Logistics Multiple Mode Surveys

Why Mixing Modes? Balance Costs & Errors

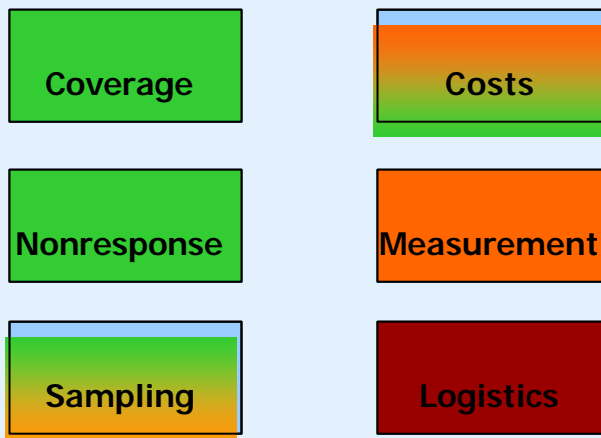


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Consequences Mixed Mode Strategy



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Logistics



- Need for field reports
 - Not much literature
- Lessons learned
 - Mixed mode studies
 - Past mode changes
 - International studies
 - Software developers

Main Issues



- In-House Expertise
- Communication
- Implementation and Timing
- Data Processing
- Quality Control
- Para information
- Cost

Risk



“Risk of errors, delays, and increased costs arising from the duplication of efforts or additional work inherent in conducting research across different modes” Macer 2003

- How to avoid /limit
 - Coping with operational complexity

Operational Complexity



- Different recruitment and screening strategies
 - Designed, programmed, tested
 - Integration needed
- Survey instrument
 - Designing and programming
 - Duplication or integrated software
- Data handling
 - Ideal relational data base
 - Practice mixed-mode puts penalty during data analysis: reformatting disparate data files

Expertise needed



- Expertise on all modes
 - In-House Expertise
 - Subcontractors
- General expertise for all modes on
 - Questionnaire development
 - Questionnaire testing
 - Field work implementation
 - Sampling issues
 - Data management

Communication



- Between experts on mode
 - Field work departments
- Between questionnaire developers and programmers and data analysts
- Between divisions
 - Sampling
 - Question development
 - Implementation/fieldwork
 - Data entry and coding
 - Data merging & analysis

Total Quality Approach



- Total survey design
- Document information
- Disseminate information
- Information on:
 - Survey process & quality
 - Methodologies
 - Software
 - Para data

Future



“Survey organizations are going to have to change dramatically in some ways in order to do effective surveys as we bring new technologies online and still use our other technologies where they work”

Dillman, 2000

Mixed Mode Surveys



- Survey research history of changes
 - Forced by changes in society and technology
 - Increased knowledge
 - Remember first face-to-face interviews
 - Short & simple questions
 - Later one of the most flexible methods 😊
 - Mixed mode has many challenges
 - We will meet those and learn 😊 😊 😊

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Suggested Readings



- Don A. Dillman (2006). Mail and Internet surveys, chapter 6
- De Leeuw et al. Mixed-Mode surveys: when and why. To appear in De Leeuw, Hox & Dillman (eds) International Handbook of Survey Methodology, Lawrence Erlbaum (LEA)
- Tim Macer <http://www.meaning.uk.com>
 - Review 09: CAWI and CATI
 - We seek them here, we seek them there.
 - Also in Survey and Statistical Computing IV
- Don Dillman website available papers
 - <http://survey.sesrc.wsu.edu/dillman/>

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