Why a Changing World Needs Mixed-Mode Designs

Prof dr Edith D. de Leeuw

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Some History

- 1784 First Official Mail Coach in UK
- 1792 French Republic founded
  - 1799 Napoleon first consul of France
- 1876 First telephone conversation
  - “Mr. Watson come here I want you”
- 1957 Launch of first satellite
  - Sputnik I

History and Survey Methods

- *1784 First Official Mail Coach in UK*
- 1791 First mail survey: Sinclair
- *1799 Napoleon first consul of France*
- Official registers in Europe
  - Sampling frame and Data source
- *1876 First telephone conversation*
- 1960's Telephone Interviewing started
  - 1971 First CATI

History and Survey Methods

- *1957 Launch of Sputnik 1 by USSR*
- Reaction in USA:
  - Strategic defense research: ARPA
    - Need for country wide communication
      - ARPANET in 1961
      - 1990 ARPANET and Scientific networks connected (National Science Foundation USA)
      - X-mass eve 1990 Berners Lee (CERN):
        - Software for information exchange: WWW
      - 1992 Mosaic based on ***open source*** code CERN
      - 1995 Transfer management goes to independent international organizations
        - Internet as we know it is born!

Changing World

- Face-to-face Interviews in 2009
  - Costly, difficult to reach respondents, high nonresponse
    - Changing society
      - At home patterns, smaller families, individualization, urbanization..
- Telephone interviews
  - Less costly, high nonresponse, coverage problem
    - Do-not-call registers, SUGGING, mobile phones, call recognition
- Mail surveys
  - Reasonable response, depends on available sampling frame & literacy, low costs
- Web surveys
  - Very low costs and large samples, but restricted population, lowest response (higher in web panels), self-selection

Changing Methodology

- Technology and society changes all the time
  - So should our survey designs and data collection
- Paradox in 2009
  - Never have people been so connected technologically
    - Mobile phone, Internet, Twitter, SMS (texting), face-book, etc
  - Never has it been more difficult to reach them
    - And convince them to cooperate
      - From interpersonal communication to ‘self-initiated’
        - Money from teller machines, ordering theatre ticket, through the web, buying and selling online, etc
- Mixed-mode is the only fitness regime
  - Blyth, 2008

Mixed Mode Survey

- Combine two or more modes
  - Contacting
  - Data collection
- Contact
  - Screening or convincing or reminding
- Data Collection
  - Nonresponse follow-up by different method
  - SAQ-module during face-to-face interview
  - Dual frame, offering choice, etc

Types of Mixed Mode Surveys

- Two major distinctions:
  - Different contact methods are used in different survey phases
    - E.g., for recruitment, screening, interview, for questionnaire administration web
      - Different mode for different tasks
    - Mostly win-win situation, no threat to measurement if data collection is done in ***one- single*** mode
  - Different methods used for data collection
    - Different modes for ***same*** task
    - Risk for differential error

Why Mix Modes?

- Increase in International Surveys
  - Different tradition in countries
  - Different coverage patterns
- Increase in Online Surveys and desire to exploit new technologies
  - Coverage problems
  - Special, selected groups
- Nonresponse increase and changes in nonresponse nature and characteristics
  - Need more effort to increase response
  - Need to investigate bias
- Increase in survey costs
  - Optimal costs ratio

Why Mixed-Mode 2

Choosing the Optimal Data Collection Method

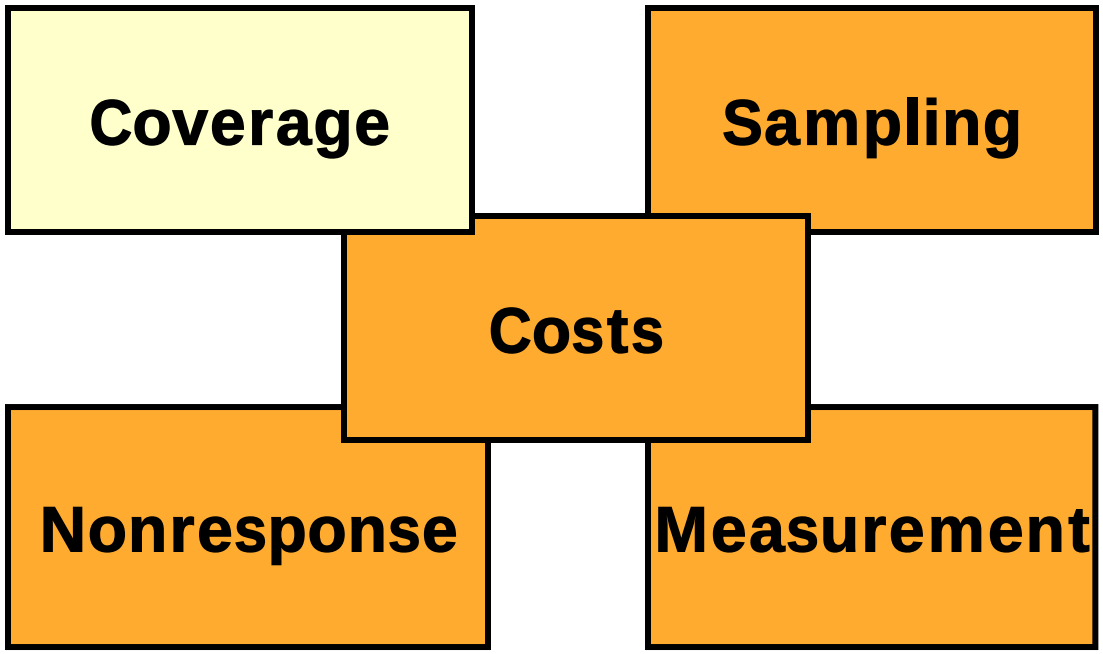
- Best data collection procedure given
  - Research question
  - Population
- Reduce total survey error
- Respect survey ethics/privacy
- Within available time
- Within available *budget*

Biemer & Lyberg, 2003

Best Affordable Method

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

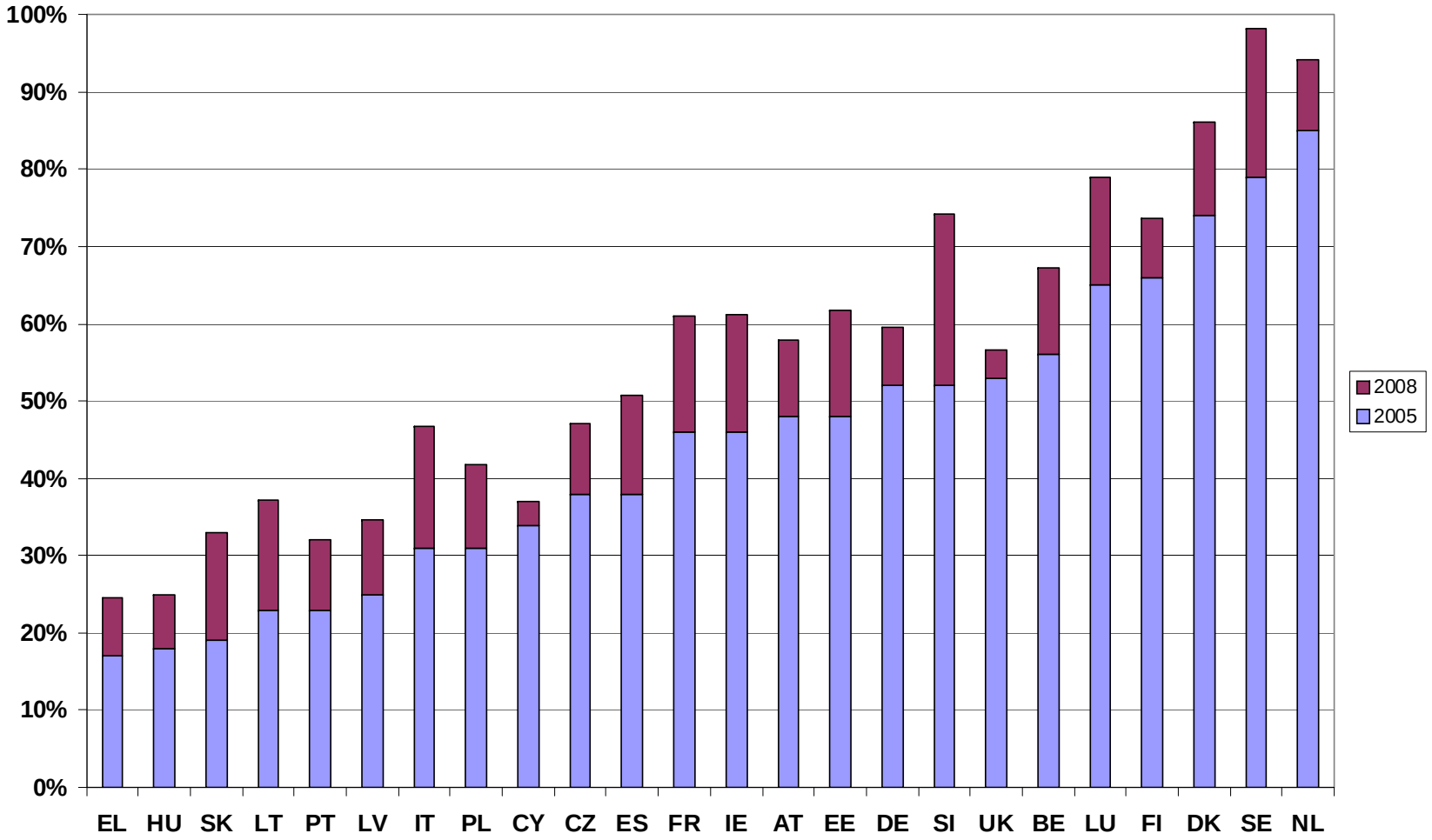
Survey Errors & Costs



Groves, 1987

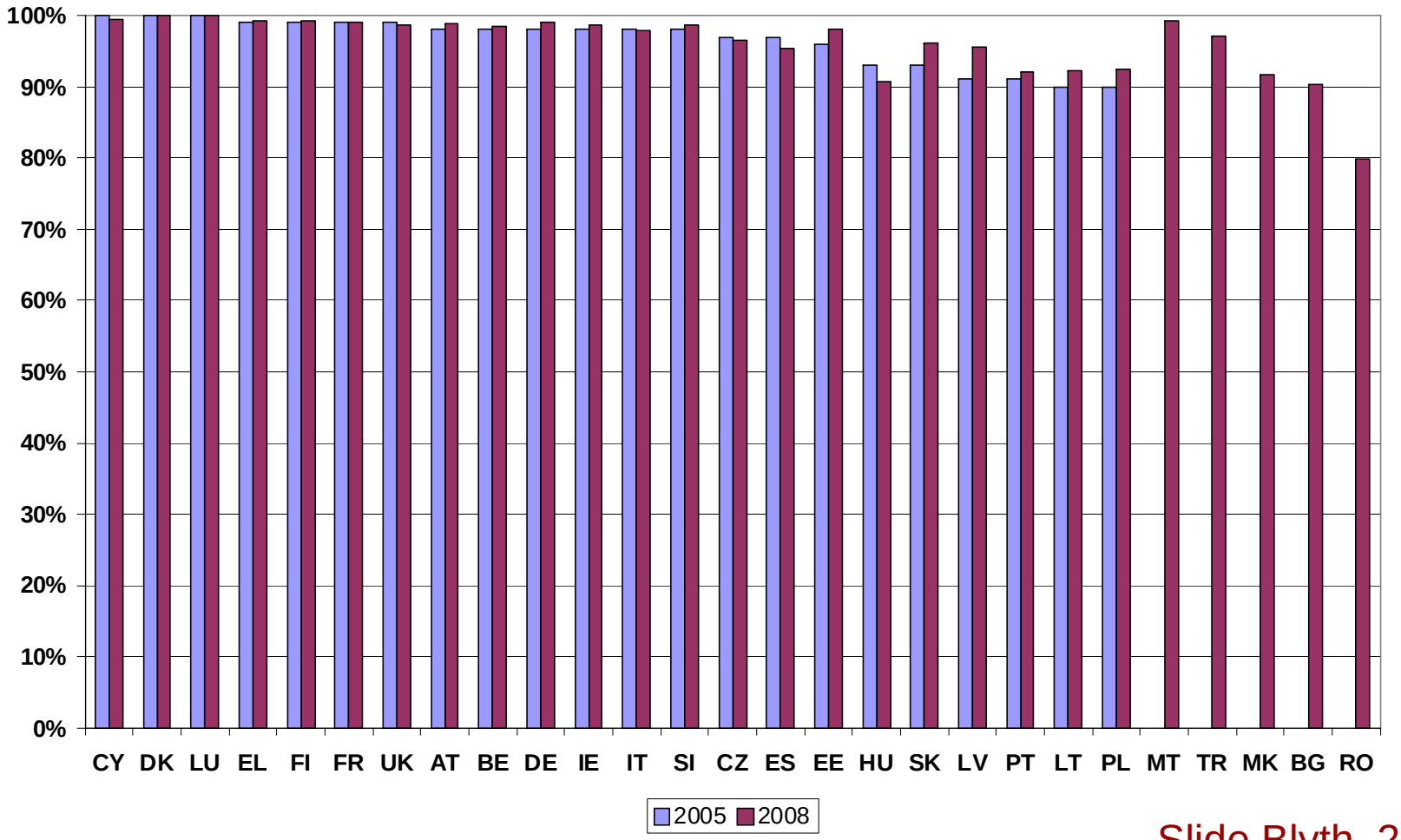
% Individuals with Internet Access at Home

Slide Blyth, 2008



% Individuals with a Telephone (of any sort)

Source: Eurobarometer 2005 & 2008

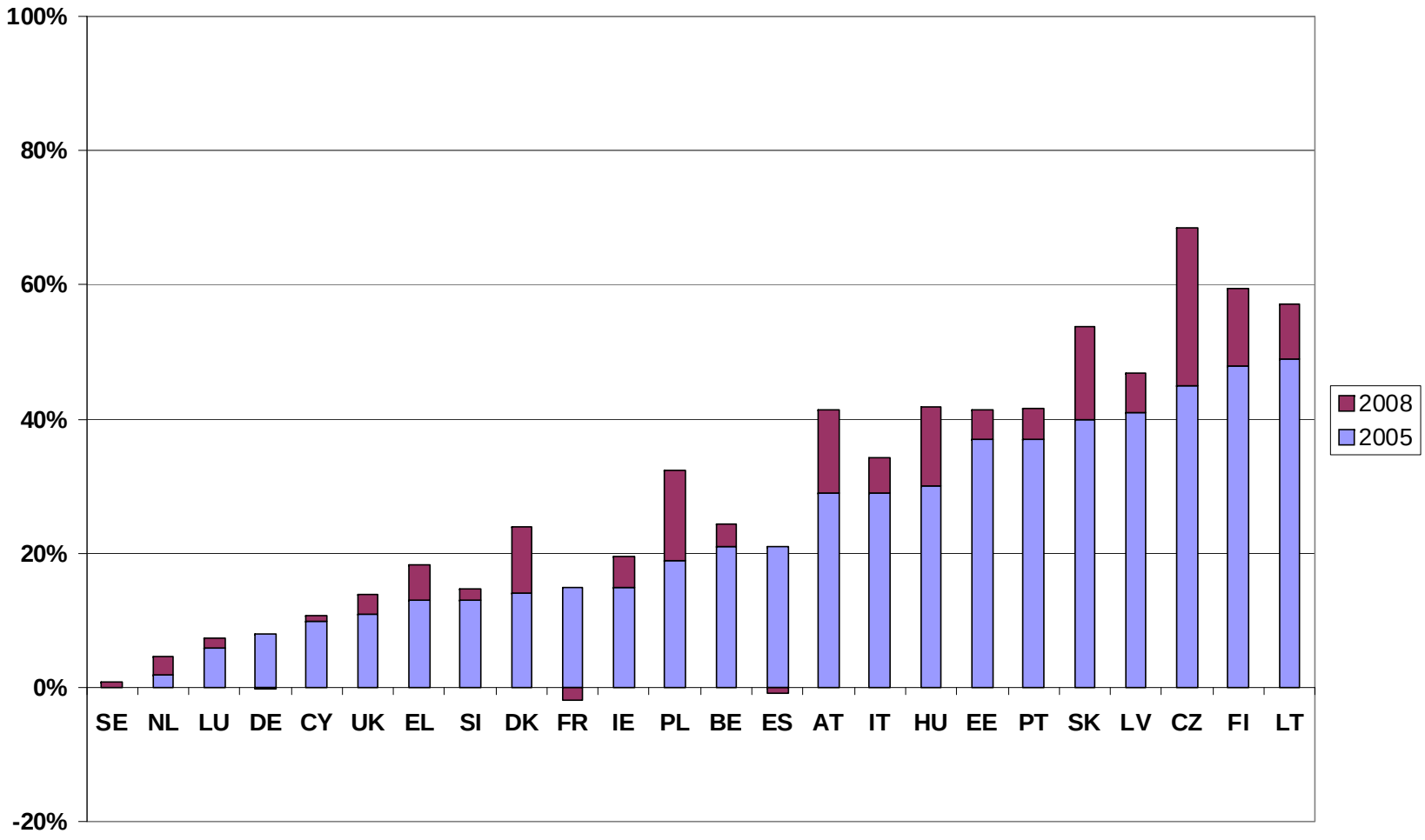


Slide Blyth, 2008

% Individuals Mobile only No Fixed (land)line

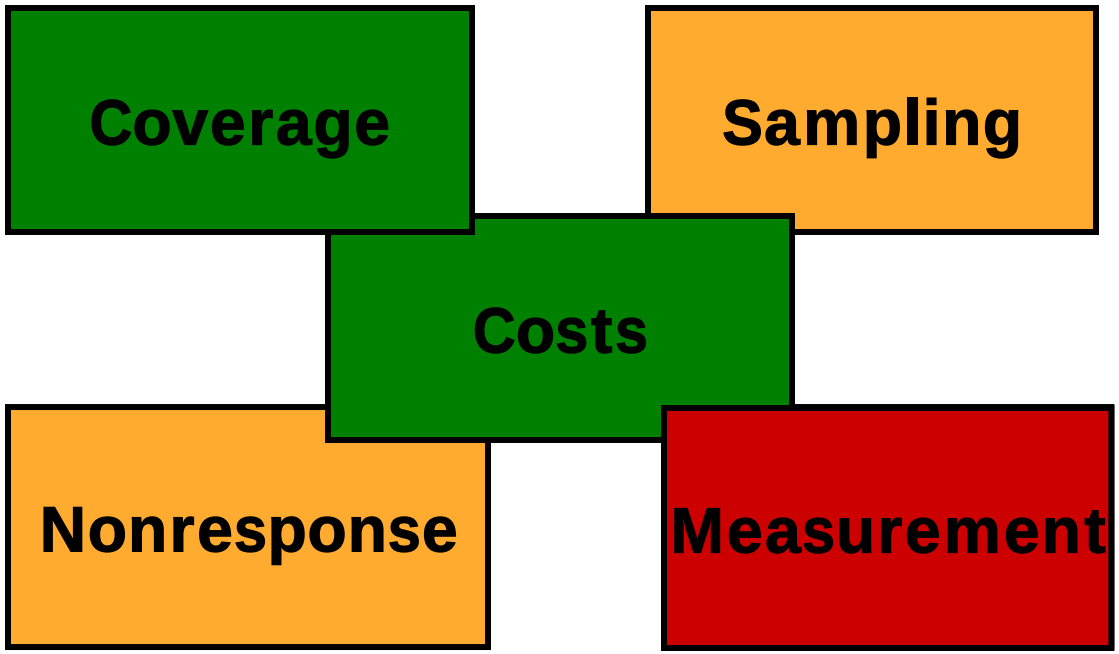
Slide Blyth, 2008

Source: Eurobarometer 2005 & 2008



Solution (Web) Coverage

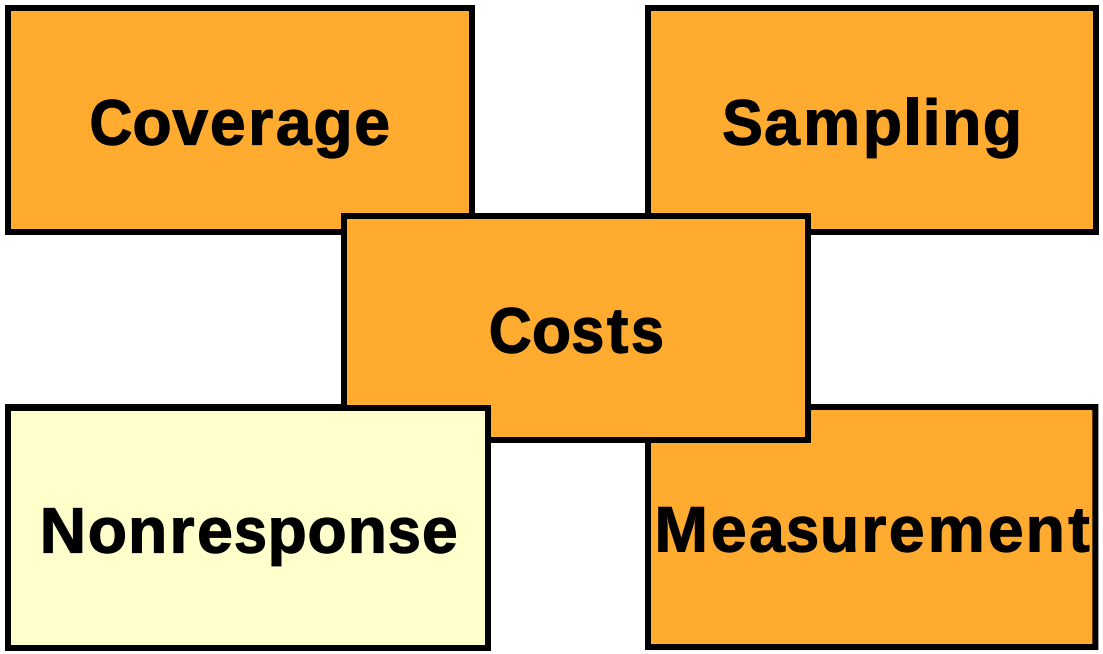
Concurrent Mixed Mode



Concurrent mixed-mode:

Two or more methods at same time

Survey Errors & Costs



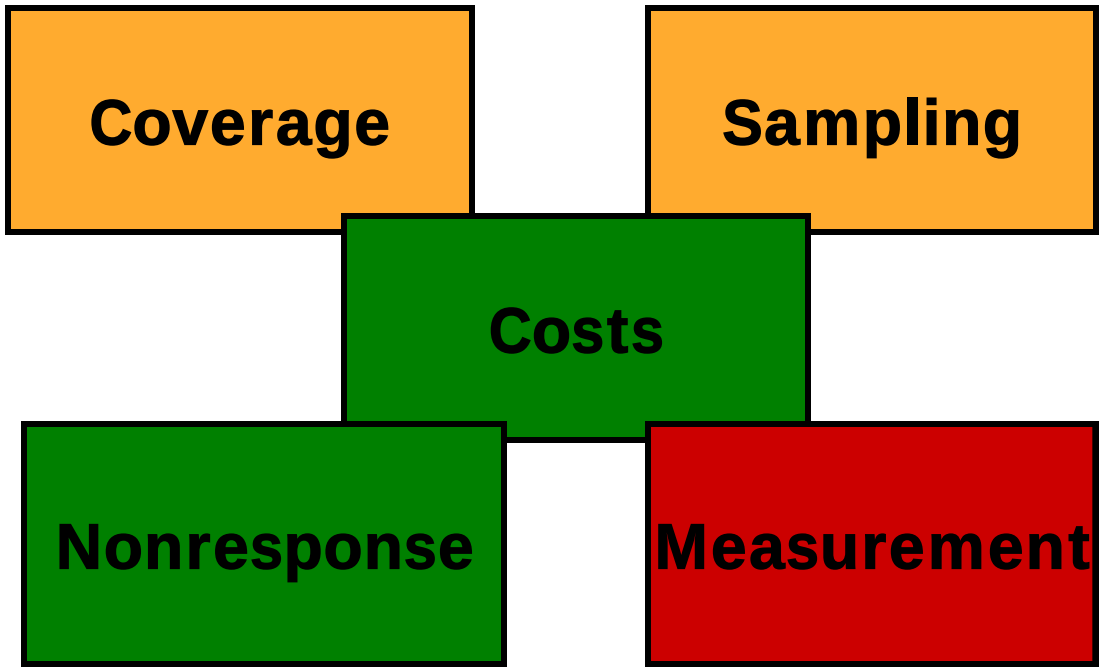
Nonresponse Internationally

- Nonresponse increasing
  - Example: International Comparison Official Statistics
    - Longitudinal data statistical offices around the world
    - **Internationally nonresponse increased over time, both noncontact and refusal**
    - Countries differ in overall response rate
    - Speed of increasing nonresponse differ from country to country

De Leeuw & De Heer, 2002

Nonresponse Solution

Sequential Mixed Mode



Sequential: One method after another

American Community Survey

- Sponsor: U.S. Census Bureau
- Target population: Households in U.S.
  - 2.9M addresses sampled
- Focus: social, housing, & economic characteristics
- Frame: Census Master Address File
- **Sequential mixed-mode design**:
  - Mail
  - Telephone follow-up
  - In-person follow-up
- Field period: 3 months
- Response rates: 97.3% (for 2005)
  - 1.9M interviews completed

Frankel & Link, 2007

Offering A Choice:
A Solution for Nonresponse??

- Form of **Concurrent Mixed Mode**, two or more modes implemented at same time
  - For all questions, full questionnaire, one population
  - Respondent is offered choice of mode
- Rationale reduce non response:
  - Client centered
  - Goodwill
- Sounds great, but …

Offer A Choice, Rather Not!

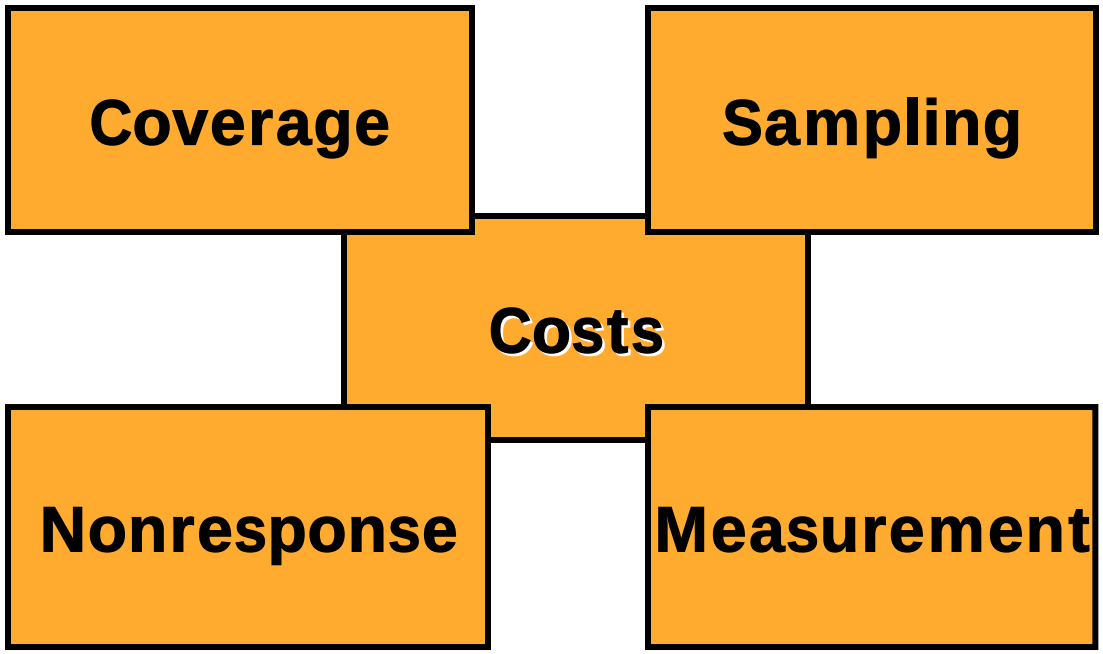
- No evidence for higher response in household surveys *at best*
  - Balden 2004, Lozar Manfreda , 2001, Dillman, 1995
- Even worse as recent experimental research shows, offering a choice results in:
  - Higher nonresponse in household surveys!!!
    - 1-9% Dillman (2009).
      - Example 3-9% lower response in ACS when offering choice
    - Perhaps, more effective in establishment surveys by official statistics (obligatory surveys!)
- Additional danger
  - Mode effects &measurement differences confounded with **self-selection** groups

Respondents Viewpoint:
Offering a Real Choice Makes Life More Difficul

- Researcher's viewpoint
  - Client centered to reduce nonresponse
  - Respondent friendly, establish good-will
- BUT Respondent's viewpoint is different
  - More information to read and process
    - Higher 'costs' in social exchange
  - Increased cognitive burden
    - Two decisions to make in stead of one
      - From "will I participate" to "will I participate and what method do I want to use"
      - Harder task so simplest thing is opt-out
    - May concentrate on choice, not on survey
      - Distracts from message and arguments on why to cooperate
        - Weakens saliency

Why Mix Modes?

Balance **Total** Error & Cost



May prefer reducing serious coverage error or nonresponse error even at the cost of slight increase in measurement error!

Implications Mixed Mode in Data Collection Phase

- Potential 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**

To Mix is to Design

- Mixing data collection modes has advantages in reducing noncoverage and nonresponse errors, but
- Mixing methods may enhance measurement errors
- So,

I. Design for Mixed Mode Surveys
   - Design equivalent questionnaires!

II. If possible, measure potential mode effects

III. Adjust

I. Questionnaire Design

- ‘Naively’ mixing modes enhances measurement error as different modes have traditions of different question formats
  - Question format has effect on response distribution!
- As a consequence, designers routinely enhance unwanted mode effects in mixed-mode survey
  - Question format effects may be the main cause for mode effects in standard mixed-mode design
  - Try to avoid different question formats across modes
    - Use equivalent questionnaires
- Special design needed for mixed-mode surveys!

II & III Diagnosis/Adjustment: Design for Mix

Build in overlap	**Method 1**	**Method 2**
Group X	**Main Data Collection**	**Some Data**
Group Y	**Some Data**	**Main Data Collection**

Consequences

Mixed Mode Strategy

Coverage	**Costs**
Nonresponse	**Measurement**
Sampling	**Logistics**

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