Essentials of Survey Research Design
An In-house Course for the University of Greenwich
20 May 2011
Dr Pamela Campanelli
A One-Day SRA course in the Essentials of Survey Design
Presenter: Dr. Pamela Campanelli

09.00 – 09.30  Coffee and registration

**Presentation**

09.30 – 09.45  An overview and introduction to the course

09.45 – 10.05  An overview of survey design

**Interactive discussion and feedback**

10.05 – 10.30  Participants make a list of all the steps in a survey

10.30 – 10.50  **Choosing a mode of data collection**
• Some key differences in the four main modes of data collection (face-to-face, telephone, postal, & web).

10.50 – 11.05  Break

**Workshop and feedback**

11.05 – 11.35  • Exercise in suggesting an optimal combination of modes for a 2-part study of GPs

**Presentation**

11.35 – 12.10  What to look for in a good sample design

12.10 – 12.45  Fundamental principles of questionnaire design
• Pitfalls for individual questions

12.45 – 13.35  Lunch

13.35 – 14.20  Questionnaire design *(continued)*

**Workshop and feedback**

14.20 – 14.50  • Critiquing an existing short questionnaire

**Presentation**

14.50 – 15.20  • The questionnaire as a whole (with differences for interview versus self-completion questionnaires (including examples from the new literature on visual layout)

15.20 – 15.35  Break

15.35 – 15.45  • The questionnaire as a whole *(continued)*

15.45 – 16.05  Some essentials of piloting

16.05 – 16.50  From field work through data processing with some tips for improving response rates

**General feedback**

16.50 – 17.00  Discussion of any remaining questions from participants

Feedback on the day
• Name
• Where you are from
• Previous experience of surveys (if any)
• What you hope to learn from the course

About This Course
An introduction to the design and collection side of survey research
• An overview of survey design
• Choosing a mode of data collection
• What to look for in a good sample design
• Fundamental principles of questionnaire design
• Some essentials of piloting
• Issues in coding and data processing
• Some tips for improving response rates

For More Information (1)
Survey Research Overall:

An Overview of Survey Design

Survey Research
• Is quantitative
• Typically uses a sample rather than census
• Uses a standardised questionnaire
• Uses standardised interviewing

For More Information (2)
Questionnaire Design Overall:

Self-Completion Surveys:

Interview Surveys:
Types of Survey Design
- Cross-sectional (one time)
- Repeated (or continuous) cross-sections
- Panel (same individuals interviewed over time)
- Combinations (e.g., panel with repeated cross-sections)
- Embedded experiments or survey as tool to assess experiment

What Are the Steps in Conducting a Survey?
Stages of a Survey (Example 1)

Stage 1: Survey Design & Preliminary Planning
- Specify research problem/question
- Prepare q’naire outline
- Plan preliminary operations
- Develop preliminary sampling plan
- Draft preliminary q’naire
- Develop preliminary analysis plan and report outline
- Prepare pretest codes

Stage 2: Pretesting
- Prepare sampling frame
- Select pretest sample
- Hire & train pretest interviewers
- Pretest
- Revise survey design & operations plan
- Revise analysis plan; Draft final report outline

Stage 3: Final Survey Design & Planning
- Develop sampling plan
- Revise q’naire; Prepare final codes
- Prepare final q’naire
- Hire & train interviewers
- Collect Data
- Establish sample control

Stage 4: Data Collection
- Select sample
- Prepare final q’naire
- Analyze data
- Prepare data file
- Draft report
- Prepare final report

Stage 5: Data Coding, Data-File Construction, Analysis, and Final Report
- Reduce data
- Editing
- Coding
- Data entry
- Cleaning
- Check data quality
- Verification
- Validation

### Stages of a Survey (Example 2)

<table>
<thead>
<tr>
<th>MONTH 1</th>
<th>MONTH 2</th>
<th>MONTH 3</th>
<th>MONTH 4</th>
<th>MONTH 5</th>
<th>MONTH 6</th>
<th>MONTH 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESIGN, PLANNING PILOTING</strong>&lt;br&gt;Design thinking,&lt;br&gt;Obtain budgets permissions etc&lt;br&gt; Prepare pilot, Field pilot Field piloting ends&lt;br&gt;Book printing resources&lt;br&gt;Finalise main field docs, Print&lt;br&gt;Field documents printed and dispatched</td>
<td>Cleared to start operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SAMPLING</strong>&lt;br&gt;Design&lt;br&gt;Obtain/organise sample frame&lt;br&gt;Book samplers&lt;br&gt;Draw &amp; check sample. Sample ready</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MAIN DATA COLLECTION</strong>&lt;br&gt;Book interviewers&lt;br&gt;Brief interviewers&lt;br&gt;Fieldwork period</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Main fieldwork ends</td>
</tr>
<tr>
<td><strong>PROCESSING (MANUAL AND COMPUTER)</strong>&lt;br&gt;Book coding,&lt;br&gt;editing, keying staff&lt;br&gt;Book programming help</td>
<td></td>
<td></td>
<td>Office coding/editing&lt;br&gt;Key</td>
<td>Data keying ends&lt;br&gt;Data ready&lt;br&gt;Computer editing etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DATA ANALYSIS &amp; REPORTING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Data analysis&lt;br&gt;Report writing</td>
</tr>
</tbody>
</table>

From draft of Survey Research Practice II by Thomas et al
## Initial Planning
- Specify research question
- Review literature
- Define population
- Define budget
- Decide on sampling strategy in connection with choosing mode
- Define timetable & operational plan

### Further Planning

<table>
<thead>
<tr>
<th>Stages</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sampling</strong></td>
<td>Obtain sampling frame, Decide on sample sizes, Draw pretest sample(s)</td>
</tr>
<tr>
<td><strong>Questionnaire design</strong></td>
<td>Organise questionnaire topics, Draft initial questions, Organise into questionnaire, Draft initial questionnaire, Write letters (advance or all correspondence for postal)</td>
</tr>
<tr>
<td><strong>Interviewer-based</strong></td>
<td>Select interviewers, Basic interviewer training, Briefing on pilot</td>
</tr>
<tr>
<td><strong>Self-completion based</strong></td>
<td>Stationery planning, Database set up, Mail merge set up, Print mailing package for pretest, Assemble mailing package for pretest</td>
</tr>
<tr>
<td><strong>Coding &amp; Processing</strong></td>
<td>Create coding frame for mainstage, Hire coders, Train coders</td>
</tr>
<tr>
<td><strong>Monitoring</strong></td>
<td>Supervising pretest interviewers, Accompanying / listening on pretest interviews, Monitor timetable &amp; operational plan</td>
</tr>
<tr>
<td><strong>Analysis &amp; Report Writing</strong></td>
<td>Determine key analysis vars, Draft analysis plan, Draft report outline</td>
</tr>
</tbody>
</table>

### Further Planning

<table>
<thead>
<tr>
<th>Stages</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pretesting &amp; piloting</strong></td>
<td>Draw main sample, Iterative tests, Iterative revisions, Usability testing needed if CAI, Final questionnaire, Briefing for mainstage</td>
</tr>
<tr>
<td><strong>Mainstage fieldwork</strong></td>
<td>First calls, First mailing package ready, Multiple callbacks, Multiple contacts, Process questionnaires as they come in: Data editing, Coding, Data entry (if not CAI), Reconciling final number of questionnaires, Monitor patterns of NR while survey is in the field, Supervising interviewers, Progress chases, Random callbacks to check for interviewer falsification, Monitor timetable &amp; operational plan</td>
</tr>
<tr>
<td><strong>Post data collection</strong></td>
<td>Computerised data cleaning, Weighting? Imputation? Re-run cleaning program</td>
</tr>
</tbody>
</table>
## Timetabling a Postal Survey:
**Small Housing Association (n=200)**

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 3</td>
<td>Sampling and questionnaire design</td>
</tr>
<tr>
<td>3 - 3 ½</td>
<td>Plan stationery and administrative requirements</td>
</tr>
<tr>
<td>3 ½ - 5</td>
<td>Data Collection and Reminder</td>
</tr>
<tr>
<td>5 - 7</td>
<td>Data processing and analysis</td>
</tr>
<tr>
<td>7 - 9</td>
<td>Reporting</td>
</tr>
<tr>
<td>10</td>
<td>Finish and celebrate</td>
</tr>
</tbody>
</table>


## Timetabling a Postal Survey:
**Example of Large Complex Social Research Postal Survey (n=4000+)**

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>Design</td>
</tr>
<tr>
<td>5</td>
<td>Pretesting</td>
</tr>
<tr>
<td>6-9</td>
<td>Pilot testing</td>
</tr>
<tr>
<td>10-11</td>
<td>Refinement and redesign</td>
</tr>
<tr>
<td>After 11</td>
<td>Writing analysis programs</td>
</tr>
<tr>
<td>12</td>
<td>Printing questionnaires</td>
</tr>
<tr>
<td>13-20</td>
<td>Data Collection and 2 Reminders</td>
</tr>
<tr>
<td>21-24</td>
<td>Data set closed (week 21); data checking and cleaning</td>
</tr>
<tr>
<td>25-26</td>
<td>Data entry</td>
</tr>
<tr>
<td>26</td>
<td>Complete analysis programs</td>
</tr>
<tr>
<td>27-28</td>
<td>Data validation</td>
</tr>
<tr>
<td>29-32</td>
<td>Data analysis</td>
</tr>
<tr>
<td>33-36</td>
<td>Write up results</td>
</tr>
<tr>
<td>37</td>
<td>Finish and celebrate</td>
</tr>
</tbody>
</table>

Adapted from course material developed by R. Thomas and E. McColl
## Timetabling a Telephone Survey: Example of U.S. RDD Telephone Survey (n=1,000)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number of Weeks</th>
<th>Week Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review literature and draft questionnaire</td>
<td>8</td>
<td>1-8</td>
</tr>
<tr>
<td>Non-field pilot (e.g., cognitive interviews or focus group)</td>
<td>1-2</td>
<td>8-9</td>
</tr>
<tr>
<td>Revise questionnaire</td>
<td>2</td>
<td>10-11</td>
</tr>
<tr>
<td>Conduct field pilot 1 (n=25-40)</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Debrief interviewers and revise questionnaire</td>
<td>3</td>
<td>13-15</td>
</tr>
<tr>
<td>Conduct field pilot 2 (n=20-30)</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Debrief interviewers, revise questionnaire, and develop training materials</td>
<td>4</td>
<td>17-20</td>
</tr>
<tr>
<td>Select samples (for pretests and main study)</td>
<td>12</td>
<td>8-19</td>
</tr>
<tr>
<td>Conduct main data collection</td>
<td>8</td>
<td>21-28</td>
</tr>
<tr>
<td>Code data and prepare data files</td>
<td>12</td>
<td>21-32</td>
</tr>
<tr>
<td>Analyse data and write report</td>
<td>Open</td>
<td>Open</td>
</tr>
</tbody>
</table>


## Choosing a Mode of Data Collection
Strategic Beginning

Help – I’ve got to design a survey!
No – Don’t sit down and start writing questions.
What are the strategic things to think about first?

- Population to be studied
- Key aims of study
- Required sample design, size and geography
- Time available
- Topics and complexity of questioning, response burden

From: City University/CASS course in “Quantitative Survey Design and Collection”, presented by Thomas and Campanelli, slide by Thomas.

Different Modes of Data Collection

<table>
<thead>
<tr>
<th></th>
<th>Face-to-Face</th>
<th>Telephone</th>
<th>Postal</th>
<th>Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper-and-Pencil</td>
<td>- Paper-and-pencil interviewing (PAPI)</td>
<td>- Conventional telephone (PAPI)</td>
<td>- Self-admin. q’naire (SAQ)</td>
<td>- Not applicable</td>
</tr>
<tr>
<td></td>
<td>- Self-administered questionnaire (SAQ)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer-Assisted</td>
<td>- Computer-assisted personal interviewing (CAPI)</td>
<td>- Computer-assisted telephone interviewing (CATI)</td>
<td>- Disk by mail (DBM)</td>
<td>- Web surveys (CAWI)</td>
</tr>
<tr>
<td></td>
<td>- Computer-assisted self-interviewing (CASI)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Mode of Data Collection Differences: Key Indicators

<table>
<thead>
<tr>
<th></th>
<th>Face-to-Face</th>
<th>Telephone</th>
<th>Postal</th>
<th>Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost</strong></td>
<td>High</td>
<td>Medium/Low</td>
<td>Low</td>
<td>Very low</td>
</tr>
<tr>
<td><strong>Length of Data Collection Period</strong></td>
<td>Medium/Long</td>
<td>Short</td>
<td>10 weeks</td>
<td>1 to 3 weeks</td>
</tr>
<tr>
<td></td>
<td>4 to 12 weeks</td>
<td>2 to 4 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response Rate</strong></td>
<td>Good to Very Good</td>
<td>Fair to Good</td>
<td>Poor to Good</td>
<td>Poor to Good</td>
</tr>
<tr>
<td><strong>Quality of the answer in the data base</strong></td>
<td>Very Good</td>
<td>Very Good</td>
<td>Fair to Good</td>
<td>Fair to Good</td>
</tr>
<tr>
<td><strong>Accessibility to household respondents</strong></td>
<td>Difficulties with physical impediments: e.g., intercoms in flats, locked gates, large dogs, etc.</td>
<td>Difficulties with answering machines and call screening</td>
<td>Competition of junk mail</td>
<td>If e-mail invitation, competition of SPAM</td>
</tr>
</tbody>
</table>


### Mode of Data Collection Differences: Questionnaire Issues

<table>
<thead>
<tr>
<th></th>
<th>Face-to-Face</th>
<th>Telephone</th>
<th>Postal</th>
<th>Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Complexity of q’n aire layout</strong></td>
<td>May be complex</td>
<td>May be complex</td>
<td>Keep simple</td>
<td>Keep simple (although complex skips can be used)</td>
</tr>
<tr>
<td><strong>Complexity of question</strong></td>
<td>May be complex</td>
<td>Must be short and simple (For R to remember)</td>
<td>Simple and clear (as no interviewer present to help)</td>
<td>Simple and clear (as no interviewer present to help)</td>
</tr>
<tr>
<td><strong>Control of question order</strong></td>
<td>Very good</td>
<td>Very good</td>
<td>Poor</td>
<td>Fair to poor</td>
</tr>
<tr>
<td><strong>Rapport</strong></td>
<td>Very good</td>
<td>Good</td>
<td>Fair</td>
<td>Fair to poor</td>
</tr>
</tbody>
</table>

Mode of Data Collection Differences: Other Questionnaire Issues (1)

- **Sensitive questions**
  - Use
    - Self-completion form with in face-to-face interview
    - Postal, or
    - Perhaps web survey (some recent concerns among the general public about internet security).

- **Missing data**
  - Postal surveys had most missing data. Internet not tested. (De Leeuw)

- **Open Questions**
  - Answers to open questions are potentially the least thorough on Postal surveys because they are relatively more burdensome in this mode. Better on Internet Surveys, Best on Telephone and Face-to-Face surveys. (Czaja and Blair; Dillman)

De Leeuw, E.D. (1992), *Data Quality in Mail, Telephone, and Face to Face Surveys*, Amsterdam: TT-Publikaties

Mode of Data Collection Differences: Other Questionnaire Issues (2)

**Postal and Web**

- **16 percent of UK adult population have literacy level of an 11 year old or less** *(Skills for Life national needs and impact survey, DfES, 2003)*

- **Self-completion in face-to-face gets around the literacy issue with audio self-completion questionnaire**
Telephone Presents
Questionnaire Design
Differences

Can answer categories be presented visually?
Yes, for all modes except telephone.
(Note that Face-to-Face allows for show cards).

<table>
<thead>
<tr>
<th>Number of answer categories (Depends on purpose and . . .)</th>
<th>Visual Presentation</th>
<th>Only Aural presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 5 to 7 answer categories suggested for attitude scales (Fowler)</td>
<td>• Limit of 3 to 4 answer categories for attitude and factual questions (Fowler)</td>
<td></td>
</tr>
<tr>
<td>• No specific limit for factual questions (but beware of response burden, and primacy effects)</td>
<td>• Exceptions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– 0 to 10 scales for attitude items (Fowler)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– Questions with more answer categories which are presented as a series of branching questions</td>
<td></td>
</tr>
</tbody>
</table>

• Primacy effects

• Recency effects

**Telephone is Different (2)**

<table>
<thead>
<tr>
<th>Types of scales</th>
<th>Visual Presentation</th>
<th>Only Aural presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can use</td>
<td>Ranking,</td>
<td>Can NOT use</td>
</tr>
<tr>
<td></td>
<td>Semantic differential, Visual analogue, or Smiley faces</td>
<td>Ranking, Semantic differential, Visual analogue, or Smiley faces</td>
</tr>
<tr>
<td></td>
<td>Common to use “Tick all that apply”</td>
<td>Must make each answer category a separate Yes/No question (which is actually the better format)</td>
</tr>
</tbody>
</table>


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**Telephone is Different (3)**

A Dilemma for the European Social Survey –

- Wanted all countries to be face-to-face so designed the survey to be face-to-face,
- but face-to-face wasn’t viable in some countries.
- Perhaps it would have been better to design for telephone, even if the simpler design was used for face-to-face surveys in some places (as opposed to maximising the design for each mode)
Length of Questionnaire by Mode and Type of Survey  
(Also depends massively on Topic of Survey and Population)

<table>
<thead>
<tr>
<th></th>
<th>Face-to-Face</th>
<th>Telephone</th>
<th>Postal</th>
<th>Web</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household Surveys</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30 to 60 minutes</td>
<td>15-35 minutes</td>
<td>4 to 12 pages</td>
<td>&lt;15 Minutes</td>
</tr>
<tr>
<td></td>
<td>Czaja &amp; Blair, p.35</td>
<td>Czaja &amp; Blair, p.35</td>
<td>(longer than web, shorter than phone) Czaja &amp; Blair, p.35</td>
<td>Czaja &amp; Blair, p.35</td>
</tr>
<tr>
<td></td>
<td>Although 2 hours is possible</td>
<td>Typically 10 to 20 minutes – exceptions 5 minutes to 1 hour</td>
<td>Typically 4 to 8 pages, but many a bit shorter and some a great deal longer</td>
<td>Dillman (2007) gives example of long web survey, 45 pages for average R, p.374</td>
</tr>
<tr>
<td>Business Surveys</td>
<td>Typically not used</td>
<td>Maximum 10 minutes</td>
<td>8 pages better than 12</td>
<td>No specific recommendation available</td>
</tr>
<tr>
<td></td>
<td>Lester and Wilson</td>
<td>Tamai &amp; Paxson</td>
<td>Tamai &amp; Paxson</td>
<td></td>
</tr>
<tr>
<td></td>
<td>But this is only to pass on pre-filled info</td>
<td>Note: there were 19 questions on 8 page version</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


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Telephone Surveys of Businesses

Questionnaire is usually sent in advance to respondent (thus visual is possible).


- Questionnaire is mailed to businesses at the beginning of each year
- R’s record data on monthly basis
- Post card reminder sent to remind R of prearranged time for CATI call
- The interviewer then calls the respondent and
  - collects and edits the data,
  - addresses any respondent issues, and
  - arranges an appointment for the next month’s call.

Workshop

Mode of Data Collection Workshop (1)
You are asked to design and run a survey of general practitioners in medicine (family doctors) throughout England on behalf of the National Health Service Central Executive. Most GPs are members of practices with varying numbers of doctors plus support staff, but a minority operate as lone practitioners.

A complete list of GP surgeries from England, with up-to-date postal addresses, telephone numbers and e-mail addresses, is available. Sample size calculations show that a sample of about 1,000 GPs is required. (Note that all GPs within a surgery will be part of the study.)

Assume that:
• You have two months to complete the data collection
• An adequate budget is available for any mode of data collection, but that the sponsor wants an efficient design that will provide adequate quality while minimising cost.

Adapted from Workshop Exercise written by Roger Thomas, NatCen.

Mode of Data Collection Workshop (2)
The main aims of the survey are:

A. To obtain detailed factual information about the types and amounts of drugs that GPs prescribe to patients that they have diagnosed as suffering from 5 specified diseases over the past year. This information will need to be extracted from confidential patient databases compiled and held by the practice. You will not have access to these.

B. To obtain and record the professional views of GPs on aspects of current prescribing policies and practices in the NHS. It is likely to have approximately 20 questions, some of which will be open and some of which will be sensitive.

Adapted from Workshop Exercise written by Roger Thomas, NatCen.

Mode of Data Collection Workshop (3)
Discuss how best to collect this information, bearing in mind that:
• GPs receive many items of mail and other communications every day.
• You therefore need as far as possible to minimise the response burden on GPs themselves, as a way of maximising response to the survey.
• It is often difficult to get direct access to the GPs. One must go through the practice manager.

Adapted from Workshop Exercise written by Roger Thomas, NatCen.

Mode of Data Collection Workshop (4)
Questions to answer:
1. By what mode(s) will you make first contact?
2. By what mode(s) will you collect the information needed at A above?
3. By what mode(s) will you collect the information needed at B above?

Adapted from Workshop Exercise written by Roger Thomas, NatCen.

What to Look for in a Good Sample Design
## Types of Samples (1)

### Nonprobability Samples
- **Convenience**
  - A sample that is selected with sole concern for its ease of access.
- **Purposive**
  - Selected using researcher's deliberate subjective choice about what is "representative."
  - Example: Quota Sample.
  - Often used by market research
  - Often implemented by an interviewer

### Probability Sampling
- A sample that is selected by a random mechanism, where each member of the population has a known and non-zero probability of selection.

### Other
- Consumer panel – Probability or Non-probability?
- Census – Not a sample

---


---

## Types of Samples (2)

### Probability Sampling
- A sample that is selected by a random mechanism, where each member of the population has a known and non-zero probability of selection.

### Other
- Consumer panel – Probability or Non-probability?
- Census – Not a sample

---


---

## Pros & Cons of Types of Samples (1)

- **Convenience**
  - Extremely cheap/quick but massive bias

- **Purposive** (Quota)
  - Cheaper/quicker than Random, but availability/cooperation bias

- **Random (Probability) Sampling**
  - More expensive/slower, will have nonresponse bias. With a good response rate, will have significantly less overall bias than Quota sample

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## Pros & Cons of Types of Samples (2)

- **Consumer Panel**
  - Initial set up costs, but then cheap/quick.
  - Depends on how constructed, but will have some type of availability/cooperation bias
  - Also panel conditioning bias
  - Can be good for qualitative research

- **Census**
  - No sampling variability
  - But unless good response rate can suffer from massive nonresponse bias

---

Better to have a sample with a good response rate than a census with a poor response rate

<table>
<thead>
<tr>
<th>Magazine</th>
<th>&quot;TDM&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample size</td>
<td>79,000</td>
</tr>
<tr>
<td>Returned questionnaires</td>
<td>474</td>
</tr>
<tr>
<td>Response rate</td>
<td>0.6%</td>
</tr>
<tr>
<td>Proportion of respondents under age of 40</td>
<td>37%</td>
</tr>
<tr>
<td>Percent saying important to regularly receive magazine</td>
<td>54%</td>
</tr>
<tr>
<td>Percent saying impression highly favourable</td>
<td>90%</td>
</tr>
<tr>
<td>Percent selecting most positive category for seven key evaluation questions</td>
<td>58%</td>
</tr>
</tbody>
</table>


---

## Nonresponse Bias

**Example of Potential Bias Due to Nonresponse**

<table>
<thead>
<tr>
<th>Responding (Answers Known)</th>
<th>Nonrespondents (Possible Range of Answers if Everyone Responded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>45</td>
</tr>
<tr>
<td>No</td>
<td>45</td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
</tr>
</tbody>
</table>

Nonresponse Bias (continued)

Range of Possible True Percentages When 50% of Sample Gives an Answer, by Response Rate

If 50% of those responding gave particular answer, true value if everyone in sample responded could range from:

- 10% - 5-95%
- 30% - 15-85%
- 50% - 25-75%
- 70% - 35-65%
- 90% - 45-55%


When Using Probability Sampling

- Use a proportionate stratified design rather than simple random samples.
  - Stratification is where the overall list is divided into subgroups called strata and a random selection is made from each strata.
  - In proportionate stratification, the members of each strata have the same chance of selection (i.e., the same sampling fraction).
  - In disproportionate stratification, small sub-groups are over-sampled to facilitate comparisons with large subgroups (overall estimates need to be weighted).

There are several variations of probability sampling (these are described in the appendix):
- Simple random sampling
- Systematic sampling
- Stratified sampling
- Multi-stage cluster sampling
- Sampling with probability proportional to size

Sampling Frames (1)

- A sampling frame is a complete list of all units eligible to be sampled.
- A sample is only as good as the quality of the frame. Thus, the frame should be as accurate as possible.
  - Eligible units, which are missing from the frame (such as newly constructed houses), have a zero chance of selection and result in coverage error.
  - Duplicate units cause problems as they have a different probability of selection.
  - Ineligible units on the frame (often called “deadwood” – such as businesses in a household survey) can be a nuisance and if not correctly estimated can lead to a smaller or larger sample than you ideally want.

Sampling Frames (2)

Sampling frames can be constructed . . .
- From pre-existing lists (e.g., population registers, UK postcode address file for household samples, interdepartmental business register)
- Geographically with multi-stages (e.g., the first stage of sampling starts with geographic units for which a list is available.
- Through time (e.g., a survey of every i-th passenger to leave the transport)

Stratification Example


Other Issues–Sampling Frame Issues for Households (1)

Face-to-Face (no issue):
- The best frame is the postcode address file (from Royal Mail)

Postal (no issue):
- The best frame is the postcode address file (from Royal Mail)

Telephone:
- Need Random Digit Dialling
- New problem of “mobile only” households
What should your sample size be?

(Assuming Probability Sampling)

Other Issues—Sampling Frame Issues for Households (2)

Internet:
- A representative web sample of households is not possible. The “digital divide”: Not everyone has access to the internet.
- Circa 2005, 30 to 35% of the populations of Britain, Canada and the US had zero access, with disproportionate numbers in groups such as the disabled, elderly, poor and minorities.

See:

Determining Sample Size (2)

- Readers of survey results need to be informed of the margin of error associated with each survey estimate so they know how to properly interpret the survey results.
- For example, if the margin of error associated with the 70% voting Labour was plus or minus 30% (i.e., the population percentage good range from 40 to 100%), the reader would realise that it is completely unclear who will win the election.
- The Margin of Error appropriate to your survey survey estimates is something that you consciously choose.
- The main factor in determining Margin of Error is sample size. The larger the sample, the smaller the margin of error.

Determining the Right Sample Size to Achieve a Particular Margin of Error (MofE)

\[ n = \frac{(1.96^2) \times \text{percentage}(100 - \text{percentage})}{\text{MofE}^2} \]

Need to determine:
1. How much Margin of Error (MofE) you can live with
2. Estimate the size of the percentage you expect to get in answer to your survey question (i.e., do you expect 70% voting Labour or some other percentage). In most cases you will have a multi-purpose survey where every question will have a different percentage. For a multi-purpose survey, the safest option is to insert 50% in the formula above.
3. The 1.96 provides you with a Margin of Error in which you can be 95% confidence that the true population value is found. If you wanted a different level of confidence you could go to a table of the normal distribution. Note 1.645 is associated with 90% confidence, 2.58 is associated with 99% confidence.

More about the Margin of Error


Determining Sample Size (1)

- Attached to every survey estimate is a “margin of error” based on the fact that only a sample was drawn (assuming probability methods) and not a census.
- By random chance, different samples will select different respondents and thus have different estimates.
- For example, a survey found that 70% of residents planned to vote for the Labour candidate in a local election (imagine simple two party election) plus or minus 5% (i.e., we are 95 percent confident that the percentage voting Labour in the population is captured by the interval 65 to 75 percent). This suggests the Labour candidate will win in the local election.

• Readers of survey results need to be informed of the margin of error associated with each survey estimate so they know how to properly interpret the survey results.
• For example, if the margin of error associated with the 70% voting Labour was plus or minus 30% (i.e., the population percentage good range from 40 to 100%), the reader would realise that it is completely unclear who will win the election.
• The Margin of Error appropriate to your survey survey estimates is something that you consciously choose.
• The main factor in determining Margin of Error is sample size. The larger the sample, the smaller the margin of error.

What should your sample size be?

(Assuming Probability Sampling)
### Table 2.1

Confidence Ranges for Variability Attributable to Sampling

<table>
<thead>
<tr>
<th>Percentage of Sample with Characteristic</th>
<th>Sample Size</th>
<th>5/95</th>
<th>10/90</th>
<th>20/80</th>
<th>30/70</th>
<th>50/50</th>
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<tbody>
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<td>35</td>
<td></td>
<td>7</td>
<td>10</td>
<td>14</td>
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<td>500</td>
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<td>3</td>
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</tr>
<tr>
<td>750</td>
<td></td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
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<td>1000</td>
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<td>1</td>
<td>2</td>
<td>3</td>
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<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Chances are 95 in 100 that the real population figure lies in the range defined by the number indicated in the table, given the percentage of sample reporting the characteristic and the number of sample cases on which the percentage is based. NOTE: Table uses 2 x std. error instead of 1.96 x std. error. From Fowler, F.J.Jr. (2002), *Survey Research Methods*, Sage.

### Other Points about Sample Size (1)

A. Consider how much ‘margin of error’ you can tolerate
   - For overall sample
   - More importantly, concentrate on the minimum sample sizes that can be tolerated for the smallest subgroups of importance.

B. Remember you also need to estimate
   - The amount of nonresponse you expect and
   - The amount of ineligible units you expect to find on your sampling frame

Your ideal sample size in A, needs to be adjusted by the estimates in B.

### Worked Example for Multi-Purpose Survey

**percentage (%) = 50%**

Assume your desired Margin of Error (MofE) is ± 3%

95% confidence uses 1.96

\[ n = \frac{1.96^2 \times \text{percentage}(100 - \text{percentage})}{M\text{ofE}^2} \]

\[ n = \frac{1.96^2 \times 50(100 - 50)}{(3)^2} \]

\[ n = \frac{3.8416 \times 2500}{9} \]

\[ n = 1067 \]

A sample size of 1067 will guarantee you a margin of error of 3 percent (or less) for all of your survey percentages.

### Other Points about Sample Size (2)

**EXAMPLE:**

- Consideration of overall and subgroup estimates suggests a sample size of 2,401.
- You estimate 30% nonresponse and 10% ineligible units.
- So 2,401 is only 60% of the sample size you really want to start with.

\[ 100/60 \times 2,401 = 1.66 \times 2,401 = 4001.66 \]

Your starting sample size.

Watch out! People often fall into the trap of using 1.4 x 2,401!!!

### Other Points about Sample Size (3)

- In general, the “Margin of Error” is NOT affected by the size of the population. It will be affected if the sample starts to represent a significant proportion of the population, say 10% or more.

- If sample will be more than 10% of the population, use this formula for sample size calculation.

\[ n = \frac{N \times \text{percentage}(100 - \text{percentage})}{(N - 1) \times (M\text{ofE})^2 + \text{percentage}(100 - \text{percentage})} \]

- And this formula for margin of error calculation.

\[ \text{Margin of Error} = 1.96 \times \sqrt{\frac{(1 - \frac{n}{N}) \times \text{percentage}(100 - \text{percentage})}{n}} \]
Quality Criteria for Sampling

- Avoidance of convenience samples. Probability better than quota (but expensive and slower)
- Use of high quality sampling frame
- Use of appropriate sample size for purpose of study
- When using probability sampling: Use a proportionate stratified design rather than simple random samples

Getting Started (2)

- Be as specific as possible with your objective
  - Many questions are poor because their objective was not specific enough!
- Think about how you will want to analyse the data
  - Decreases the likelihood that
    - critical items are left out of the final questionnaire
    - the questionnaire includes “everything but the kitchen sink” and thus creates excessive respondent burden
    - Identify which topics are most critical and thus deserve more “space” in the instrument (e.g., measuring household income with 1 or 36 questions)

Fundamental Principals of Questionnaire Design

Getting Started (1)

- Start with list of concepts, issues to be investigated
- Look at existing questionnaires (but note these may need to be improved)
- A Possible Question Source
  - CASS Question Bank
    - http://surveynet.essex.ac.uk/sqb/qb/
- Get input from “clients” (if appropriate)
- Get input from “experts” (if appropriate)
- Refer to background literature (if appropriate)
- Depending on who your intended respondents are and your level of experience, you may need to do some preliminary qualitative work to understand how your respondents think and talk about your key topics

Some Tips on Wording Questions

What’s Wrong with the Wording of this Question? (1)

“Reason last saw doctor”

Example from Fowler, F. J., Jr. (1984), Survey Research Methods, Sage p. 76.
What’s Wrong with the Wording of this Question? (2)

slightly better

“What was the medical problem or reason for which you most recently went to your GP?”


Key Issue

Where a question is ambiguous, a respondent may select one of the two possible interpretations, without the interviewer (or researcher) necessarily being aware that this has happened.


Which Question Would You Prefer?

A. I would like you to think about how much time you spend commuting to work. When coming up with a total only include time spent as the driver of a motor vehicle. Please only think about the last time you drove to work within the last 7 days. In the last 7 days, how much time did you spend commuting to work on the last day you drove to work?

B. Thinking about the most recent time you drove yourself to work, how long did you spend driving? Please answer to the nearest quarter of an hour.

ALSO: Respondents Infer Meaning

- In their search for meaning, respondents make use of whatever information they can find and make inferences. Could be the answer categories or a previous question. Many inferences lead to error.

- This is less likely to happen if the question is clear. BUT...


Trade Offs (1)

TRADE OFF 1

Within a question, all ambiguous words and concepts need to be clarified.

Yet at the same time, questions need to be short and simple.

Trade Offs (2)

TRADE OFF 2

Long complex questions are best handled as a series of short simple questions.

Yet at the same time, a “multiple question approach” lengthens the questionnaire, which can lead to nonresponse.
In Addition to “Comprehension of the Question”, there are 3 other Cognitive Stages a Respondent Passes Through in Answering a Survey Question

- Comprehension
- Recall
- Judgement

Judgmental Heuristics
- Availability
- Representativeness
- Anchor and adjust

- Response


Solutions to Poorly Defined Terms (2)

3. Beware of using examples to clarify a term as these may inadvertently limit the respondent’s frame of reference (e.g. a different set of examples can produce different answers!)

A Few Aids to Improve Recall (1)

1. Make the reference period as short as possible – but note it has to be appropriate for your question objective.
2. Encourage Rs to spend more time on the task
3. Ask respondents to check records


Solutions to Poorly Defined Terms (1)

First test your questions to see what terms are misunderstood

The try one of the following:
1. Substitute a clearer word/concept
2. Provide a short succinct definition

But, beware of long complicated definitions!

A Few Aids to Improve Recall (2)

4. Multiple questions

“ Asking multiple questions improves the probability that an event will be recalled and reported” (Cannet, Marquis, & Laurent, 1977, as reported in Fowler, 1995)

“Stimulating associations . . . [which activates] the cognitive and intellectual network in which the memory is likely to be embedded, is likely to improve recall” (Eisenhower et al., 1991, as reported in Fowler, 1995)

Have the question sequence recreate an actual experience

A Few Aids to Improve Recall (3)

- Another way of making use of multiple questions is to specifically focus on the kinds of events likely to be forgotten (or not included).
- Or focus on some of the possible consequences of the events to be reported to trigger memory. Questions about filing insurance claims or contacting the police can be useful trigger questions when R is the victim of a crime.


A Few Aids to Reduce Question Sensitivity

- Assure confidentiality in a way that is easy to understand way
- Tell respondent the reason for accuracy
- Provide a comfortable and safe context for the respondent to supply an answer
- Drinking example
- Voting example

General Issues with Question Wording (2)

- Consciously decide about the use of middle categories. Respondents may hold a true middle category position, but many respondents use the middle category as an easy way out. Base your decision on the objective of the question.
- Many respondents use a don’t know or no opinion category as an easy way out. Only include if you are certain that your respondents truly don’t know or have an opinion.
- Where possible, obtain actual numbers (or number ranges) rather than using vague quantifiers (i.e., often, sometimes, rarely, never). Vague quantifiers have different meanings to different people.
- Note that approximate ranges (e.g., Everyday, A few times a week, About once a week, etc.) are problematic for people whose behavior is not regular.

General Issues with Question Wording (3)

BEWARE OF CERTAIN QUESTION FORMATS

- Ranking (In contrast: Rating is easier for respondent, more successful in an effort, less costly to implement, easier to analyze and provides information about where respondents answers are placed on the continuum of importance). Note with ranking, someone may rank the items from 1 to 9, but feel they are all important or all unimportant, etc.
- Open vs. closed questions do not produce the same data because they pose different cognitive tasks. Therefore one needs to consciously choose.
- Avoid agree/disagree questions because they are more cognitively complex than a standard rating question and are prone to acquiescence bias (i.e., the tendency to agree to a statement regardless of its content).
- Avoid hypothetical questions because people aren’t accurate about future behavior.
- Avoid satisfaction questions because of their undiscriminating positivity bias. (Instead, substitute a series of factual questions or ask about the concepts of importance and actual experience.)

General Issues with Question Wording (4)

BE AWARE

- That earlier questions may affect how the respondent answers later questions (i.e., context effects)
Workshop 1:

Given the topics we have just been discussing, what are the problems with the following questionnaire?

Community Development Survey
1. Please tell us the ages of residents living in your household. NUMBER
   - Adults aged 60 plus
   - Adults 26 to 59 years
   - Adults 16-25 years
   - Young people aged 11-25 years
   - Children aged 5-10 years
   - Children under 5

The Questionnaire as a Whole

2. How happy are you with the area you live in?
   - Very satisfied
   - Fairly satisfied
   - Neither satisfied nor dissatisfied
   - Fairly unsatisfied
   - Very unsatisfied
   - Don’t know

Questionnaire as Whole (1)

- An ID number
- A letter or paragraph which describes what the survey is about and motivates people to participate
- Clear, specific instructions on the questionnaire on how to mark answers
- For Postal
  - Typically have “tick” boxes.
  - Need overall instruction: “Please tick the box that best describes you or write in the information requested.”
  - Need prominent “question by question” instructions (e.g., “Tick one box only”;
  - “Write number in box”)

Thank you

Please return in the postage paid envelope.
First questions should

- Apply to everyone
- Be easy to answer
- Be interesting
- Be connected to what R understands as topic of survey
- Be closed
- Not be sensitive!
- So, where should you put your demographic variables?

Meaningful Order

“it is useful for the respondent to sense the flow, or natural progression, of the instrument.” (Czaja and Blair, 2005)

Definitions (be sure these are part of the question)

- In postal surveys, R rarely reads instruction booklets.
- In web surveys where underlined words provide definitions, Rs rarely use
- Remember to put definitions first in interview surveys

Routing

- If paper self-completion: Avoid complex routing. It will confuse or be ignored. Usually best to have everyone answer every question (i.e., no routing).
- But several “Does not apply” response categories can backfire.
- If routing, use arrows as well as prominent explicit text.

Addition of four visual elements: Differently shaped directional arrows, word changes, larger font, and redundant instruction to define skip pattern:

23. Normally, do you work out every day?

☐ No  (Skip to 28)
☐ Yes

24. (If Yes) How many minutes per day do you work out?

________ Minutes per day

Addition of alternative visual elements: Change in location of response boxes with spacing change for screened question to define skip pattern:

23. Normally, do you work out every day?

No . . . .  (Skip to 28)
Yes . . . .

24. (If Yes) How many minutes per day do you work out?

________ Minutes per day
Questionnaire as Whole (6)

- Open questions
  - In self-completion, be sure to provide the appropriate amount of write-in space (too much or too little can lead to item nonresponse).

- Sections
  - In interview surveys, have the interviewer read out a sentence (e.g., “The next few questions are about . . .”).
  - In self-completion, use short one or two word labels that are eye catching.


Further Issues for Interview Questionnaires

And then Self-Completion Questionnaires


Interviewer Requirements (1)

- All interviewer surveys require:
  - CLEAR interviewer instructions as part of the questions. “READ OUT”; “CODE ALL THAT APPLY.”
  - Well-designed questions that
    - Are easy to read
    - Don’t have dangling clauses where the respondent may interrupt
    - Etc.
  - Note that long, complex questionnaires is one of the factors that may increase the prevalence of interviewer falsification.


Interviewer Requirements (2)

- All interviewer surveys require (continued):
  - The words between the question and the answer categories to make the question flow.

  Example:
  Do you agree or disagree with the following statement: Women with young children should not work. Would you say that you . . .
  - Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strong disagree?


Further Issues for Interview Questionnaires

And then Self-Completion Questionnaires


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  - CLEAR interviewer instructions as part of the questions. “READ OUT”; “CODE ALL THAT APPLY.”
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  Example:
  Do you agree or disagree with the following statement: Women with young children should not work. Would you say that you . . .
  - Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strong disagree?
Special Features for Self-Completion (1)

- If paper self-completion CONSIDER (Dillman, p. 83)
- A4 paper folded to create an A5 booklet stapled along the spine with a single column of questions on each page. (When folded fits in standard 110cm to 220cm envelope.)
- A3 paper folded to create an A4 booklet stapled along the spine with a double column of questions on each page

Special Features for Self-Completion (2)

- Be consistent in style, layout and task.
- De-emphasise anything not relevant to the respondent (e.g., code numbers).
- Lay out the page to follow natural eye movements – (i.e., the eye will first go to what is big, colourful or interesting. If all areas of the page are of equal interest, the eye will first go to the upper left hand corner. Make titles and instructions big and put in upper left. Make IDs and project numbers small and put in in the bottom right.)
- Think about the effects of proximity (R’s will group elements which are close together).

Special Features for Self-Completion (3)

- Make questions number bigger and bold or use reverse print.
- Put question stem in bold and answer categories in plain.
- Use answer spaces consistently for certain tasks and change style for different tasks (Remember remember problems with “Community Development Survey”).
- Don’t split questions (or answer categories between pages).
- Vertically align questions.
- Vertically align response choices.

Think of how much the Federal government is doing to make sure women have the same job opportunities as men. Would you say the federal government is doing too much, about the right amount, or too little about this?

- Far too much
- Too much
- About the right amount
- Too little
- Far too little
- Don’t know
- No opinion

Be Very Careful of the Visual Layout (1)


Be Very Careful of the Visual Layout (2)

Here are a number of opposite statements. For each pair, first of all decide which one you agree with more. Then tick a box to say if you ‘agree strongly’ with the statement, or ‘just agree’. If you don’t agree with either statement, tick the middle box.

a. Ordinary people get their fair share of the nation’s wealth

This statement

I agree with: OR

Don’t agree with either statement

This statement

Strongly agree Just agree

[ ] [ ]

Strongly agree Just agree

[ ] [ ]

b. There is no need for strong trade unions to protect employees’ working conditions and wages

This statement

I agree with: OR

Don’t agree with either statement

This statement

Employees will never protect their working conditions and wages without strong trade unions

Strongly agree Just agree

[ ] [ ]

Employees will never protect their working conditions and wages without strong trade unions

Just agree Strongly agree

[ ] [ ]
Visual “Makeovers”
### Qualifications Obtained Since the End of Year 11 (5th Year)

1. Have you obtained any GCSEs, AS/A-levels or NVQs since the end of year 11? (5th year) (Please do not tell us about your year 11 results here, but we would like to know about any results.)

   **Qualifications (please tick)**
   - GCSE
   - AS
   - A-level
   - Foundation
   - Intermediate
   - Advanced
   - Other Qualification

   **Was your course:**
   - Full-time
   - Part-time
   - VTQ
   - Other

2. And since the end of year 11, have you completed any vocational or professional qualifications? If you have, please tell us about them below.

   **Obtained (please write in):**
   - First/General Certificate
   - First/General Diploma
   - National Certificate/Diploma
   - Other BTEC
   - City & Guilds
     - Part 1
     - Part 2/Craft/Intermediate
     - Part 3/Final/Advanced Craft
     - Other C & G
   - RSA
     - Certificate
     - First Diploma
     - Advanced Diploma
   - Other RSA
   - Other vocational or Prof. Qual:

   **Did it lead to an NVQ?**
   - Yes level 1
   - Yes level 2
   - Yes level 3
   - Not sure which level
   - No, not sure

   **Was your course:**
   - Full-time education
   - Full-time job
   - VTQ
   - Other

---

NOW PLEASE GO TO PAGE 12
### Youth Cohort Study Questionnaire - AFTER

#### Qualification Name

<table>
<thead>
<tr>
<th>Qualification name</th>
<th>Studying for/training for</th>
<th>Main subject</th>
<th>Level</th>
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<td>First Certificate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Diploma / general diploma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Certificate / Diploma (NVQs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Edexcel / BTEC (NVQs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CITY &amp; GUILDS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 1/Part 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 2/Part 2 / Craft / Intermediate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 3/Part 3 Final / Advanced craft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other City &amp; Guilds (other NVQs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCR (RSA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocational Certificate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advance Diploma / Certificate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other OCR (RSA) (other NVQs)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Other Qualifications

Other qualifications are asked about at later questions:

<table>
<thead>
<tr>
<th>Qualification name</th>
<th>Qualification level</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(e.g. Part 1, NVQ1, etc.)</td>
<td>Write in subject below</td>
</tr>
</tbody>
</table>

---

32
**Michigan Equine Survey – 2006**

**Dear Equine Enthusiast:**

The Michigan Equine Survey-2006 is being conducted for the purpose of describing the Michigan equine population in terms of numbers of horses, ponies, donkeys and mules, how they are used, and the economic impact of the equine industry at the state and local level. The survey was developed by equine advocacy groups in Michigan, researchers at Michigan State University and the Michigan Department of Agriculture. The information you report is kept confidential. Response to this survey is voluntary and not required by law. Your cooperation would help ensure reliable estimates. Please complete and return this questionnaire promptly.

**INTRODUCTORY SECTION**

1. Do you or anyone in your household operate any land or facilities in Michigan where equine are located?
   - Yes (Go to Section 1)
   - No (Continue)

2. Do you or anyone in your household own any equine, regardless of location?
   - Yes (Go to Section 1)
   - No

**To avoid duplication, indicate below any farm name or partner(s) associated with this operation not included in the above address.**

**If you receive more than one of these forms, please complete one, mark any other “duplicate,” and mail in all forms.**

<table>
<thead>
<tr>
<th>Farm Name:</th>
<th>Partner’s Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td>City: Zip:</td>
</tr>
</tbody>
</table>

**Section 1: GENERAL DESCRIPTION**

For the purposes of this survey, an operation is any farm or residence where equine are kept, regardless of the number of equine on the property or whether equine are kept for pleasure or for business.

1.1 Please report all equine owned, boarded or leased on December 31, 2005. Record the equine in the first column if they were located on your operation. Enter equine boarded elsewhere in the second and third columns.

<table>
<thead>
<tr>
<th>Equine on December 31, 2005</th>
<th>Equine located on your operation</th>
<th>Equine boarded at another location in Michigan</th>
<th>Equine boarded at another location outside Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Ownership</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partial Ownership</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Ownership Interest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If you do not have an equine operation and are strictly an owner (the total of the first column is zero) go to section 5.
1.2 Please indicate the primary activity of the operation (CHECK ONLY ONE)
- Boarding Stable
- Training Stable
- Equine Breeding farm
- Other (specify)

1.3 To what extent is this operation an equine business?
- 100% commercial
- 100% personal use
- % commercial
- % personal

Section 2: EQUINE INVENTORY
Record total number and total value, by breed, of equine located on this operation, regardless of ownership. Indicate the breed and primary use of each equine. If a horse is used for multiple purposes record only the primary one.

<table>
<thead>
<tr>
<th>Breed</th>
<th>Total No.</th>
<th>Total Value ($)</th>
<th>Breeding</th>
<th>Competition</th>
<th>Work</th>
<th>Racing</th>
<th>Trail Riding</th>
<th>Youth Activity (4-H, etc.)</th>
<th>Pleasure</th>
<th>Idle/Not working</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light Horse and Warmblood Breeds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Quarter Horse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Paint</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appaloosa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arabian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Half-Arabian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Morgan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standardbred</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tennessee Walking Horse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thoroughbred</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warmblood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breed unknown/grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Competition includes breed and open shows, dressage, rodeo, competitive trail rides, etc.
2 Work: farm work, police work, transportation.
Dear Equine Enthusiast:

The Michigan Equine Survey-2006 is being conducted for the purpose of describing the Michigan equine population in terms of numbers of horses, ponies, donkeys and mules, how they are used, and the economic impact of the equine industry at the state and local level. The survey was developed by equine advocacy groups in Michigan, researchers at Michigan State University and the Michigan Department of Agriculture. The information you report is kept confidential. Response to this survey is voluntary and not required by law. Your cooperation would help ensure reliable estimates. Please complete and return this questionnaire promptly.

Yours sincerely,

Signature

---

**Introductory Section**

1. Do you or anyone in your household operate any land or facilities in Michigan where equine are located?
   - Yes [ ] **Go to Section 1**
   - No [ ]

2. Do you or anyone in your household own any equine, regardless of location?
   - Yes [ ] **Go to Section 1**
   - No [ ]

Please check all that apply below and return this form in the postage-paid envelope.

- Sold equine operation to . . . . . . . . . . . . .
- Equine operation no longer exists. . . . . . . . . . . .
- Farming, but no equine on farm. . . . . . . . . . . . .
- Formerly owned equine, but do not at this time. . . . . . . . . . . .
- Never involved with equine as either an operator or owner: . . . . . . . . . . . . .

---

**Do we have the right details?**

a. Please make corrections, if necessary, to name, address and Zip Code on the address label below.

   Address Label

b. To avoid duplication, indicate below any farm name or partner(s) associated with this operation not included on the address label above.

   Farm or Partner’s Name  
   Address / City / Zip code

c. If you receive more than one of these forms, please complete one, mark any other “duplicate,” and mail in all forms.
### Section 1: GENERAL DESCRIPTION

For the purposes of this survey, an operation is any farm or residence where equine are kept, regardless of the number of equine on the property or whether equine are kept for pleasure or for business.

1.1 Please report all equine owned, boarded or leased on December 31, 2005. Record the equine in the first column if they were located on your operation. Enter equine boarded elsewhere in the second and third columns.

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<td></td>
</tr>
<tr>
<td>No Ownership Interest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.2 Please indicate the primary activity of the operation. Check only one.

- Boarding stable
- Training stable
- Lesson stable
- A private residence with horses, ponies, donkeys or mules for personal use
- Equine breeding farm
- Other type of farm (crop, fruit, livestock, etc.)
- Other

1.3 To what extent is this operation an equine business? Check only one.

- 100 % commercial use
- 100 % personal use
- Combination

% commercial use AND % personal use
Some Essentials of Piloting

4 Stages of a Standard Testing

1) Optional: Developmental work to thoroughly understand your population and your topic in order to draft survey questions

2) Question Testing
   a) Informal
      • Read the questions out loud, do mock interviews with colleagues and friends.
   b) With real respondents
      • To test and refine the wording of individual questions
      • To check the flow of the questionnaire as a whole
      • Czaja and Blair, 2005, suggest n = 20-40; Fowler, 1995, suggests n = 15-25, 30

3) If computerised questionnaire, need to check for programming errors

4) Optional: Dress Rehearsal
   – To test the survey procedures as a whole under “main survey” conditions;
   – n can be much larger

A standard field pilot for an interview survey typically involves:

• A small number of interviewers each doing a small number of interviews
• A fieldwork period of a few days to 2 weeks (depending on project timetable, number of interviewers, and whether it is face-to-face or telephone)
• A group debriefing session with the interviewers

Note that the scale of a pretest will depend on the…

• Budget available,
• Nature of the questionnaire, and
• In some cases, the size of the population.

Two Tests?

• If time and money allow, it is a really good idea to do two tests.
• Unless the need for an explicit “dress rehearsal”, both pilots can be at the question testing level (Stage 2b).

• In the first test you identify the questions which don’t work.
• You then improve them (or at least you think you do!)
• The only way to know for sure is to test them again.
• For example, in a second test, Forsyth et al (2004) found that some of their improved questions worked better for respondents but actually were worse for interviewers!

Specifics of what to look for in a Question Testing Pilot (1)

1. Questions or instructions that interviewers find awkward to read

2. Indicators of respondent problems, such as
   a) R is confused by the question and
      i. requests for repetition of the question
      ii. requests for clarification of the question
   b) R misinterprets the question without realising he or she has misinterpreted the question
   c) R interrupts question reading
   d) R expresses doubt between response alternatives
   e) R gives answer that doesn’t fit in the list of response alternatives
   f) R gives an estimated answer or a range of numbers for questions requiring precise numerical values

Specifics of what to look for in a Question Testing Pilot (2)

- R has other difficulties in providing an answer
  - Because of confusion with question or answer categories
  - Because the task asked by the question is too difficult
- R changes answer
- R is made uncomfortable by a question or section of the questionnaire
- R gets irritated by a question or section of the questionnaire
- R loses interest or motivation on a particular question or section of the questionnaire
- R appears that he or she would have liked the opportunity to have said more on a particular question or section of the questionnaire
- R says don’t know to a question
- R refuses to answer a question

Disadvantages of the standard pilot for an Interview Survey (2)

- “This is because certain kinds of problems will not be apparent from observing respondent behaviour, and
  - The respondents themselves may be unaware of the problems.”

Specifics of what to look for in a Question Testing Pilot (3)

3. Indicators of problems with the questionnaire as a whole:
   - Lack of flow and naturalness of the sections
     - Does the next question come up as a surprise for the respondent?
     - Did any of the sections seem to drag?
   - Is the question order causing context effects?
   - Are the skip patterns correct?

4. The overall timing

Disadvantages of the standard pilot for a Self-Completion Survey

Mail-out / Mail-back test (or e-mail request for web survey)
- Examine questionnaires for
  - Item nonresponse
  - Indicators of confusion
- Also gives you an idea of your response rate
- But no information on the reason for the problem!
- Not all problems will show up as item nonresponse or an indicator of confusion!

Other Question Testing Methods (1)

- Expert Reviews / Analysis / Panels are a way of making use of the advice of experts to identify potential problems in the questionnaire. No respondents are involved. (INT/SC)

- Systematic Forms Appraisal is the review of a questionnaire by a Expert using a specific coding frame. See, for example, http://appliedresearch.cancer.gov/areas/cognitive/qa99.pdf (INT/SC)
Respondent Debriefing Questions are special follow-up questions used to determine respondents' understanding of the original survey question. (INT/SC)

FOR EXAMPLE:

- Tell respondent there will be two parts: The survey itself and then some follow-up questions to help you determine how well the survey questions are working.
- After the survey, remind respondent about a survey question and then ask debriefing question(s).
- Example: "I asked you earlier about "how many hours you last week at all jobs. What time period did you think of?"

Avoid Debriefing Questions that

- Are too general
- Ask about confidence


Cognitive Interviewing is a type of "in-depth" or "intensive" interview which pays explicit attention to the mental processes respondents use to answer survey questions and uses specialised techniques, such as "thinking aloud". (INT/SC)

It is a fantastic tool, but requires special training!


Cognitive Interviewing can be used for Question Testing generally involves 8 to 12 (5 to 10) individuals who discuss a particular topic under the direction of a moderator who promotes interaction and assures that the discussion remains on the topic of interest. (Best with SC although INT possible)

For more information on standard focus groups, read:
### Focus Groups and Self-Completion

- Hand out questionnaires at beginning of focus group and have participants complete.
- Review completed questionnaires during break. Look for:
  - Patterns of item nonresponse
  - Indicators of confusion
- Continue with focus group
  - Debrief respondents
    - Pre-planned debriefing, and
    - Debriefing based on review and observations

### Some Proposed Guidelines for Best Practice in Piloting

**Thorough 4 Step Approach to Question Testing**

<table>
<thead>
<tr>
<th>Interview Survey</th>
<th>Self-completion Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Informal testing with friends or colleagues</td>
<td></td>
</tr>
<tr>
<td>2) Use of experts: expert review or systematic forms appraisal</td>
<td></td>
</tr>
<tr>
<td>3) Non-field test - cognitive interviews / focus groups</td>
<td></td>
</tr>
<tr>
<td>4) Field test with enhancement of respondent debriefing</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<tr>
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<td></td>
</tr>
<tr>
<td>4) Field test with enhancement of respondent debriefing</td>
<td></td>
</tr>
</tbody>
</table>

Note if there are still major changes after this fourth step, yet more testing would be needed!

### Under Severe Constraints

Any form of question testing is better than none at all!

Consider...

- Informal testing with friends or colleagues
- Self cognitive forms appraisal
- Then essential to have a method that accesses members of the target population who are strangers to the researcher and uncovers respondent hidden difficulties.

This could be...

<table>
<thead>
<tr>
<th>Interview Survey</th>
<th>Self-completion Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>cognitive interviews OR small-scale standard pilot with respondent debriefing</td>
<td></td>
</tr>
<tr>
<td>cognitive interviews OR a focus group</td>
<td></td>
</tr>
</tbody>
</table>

### From Fieldwork to Data Processing, With Tips for Improving Response Rates
### Just Prior to Fieldwork

#### Interview Surveys
- Provide specific briefing aids, such as documents for home study, videos and interviewer support to ensure high levels of performance
- Target perceived areas of interviewer weakness for specific training
- Evaluate and improve interviewer performance by the use of scripted dummy interviews
- Ensure interviewers are knowledgeable about what the survey is about!
- If commissioning this survey, consider attending a briefing or contributing to the training

#### Postal Surveys
- Monitor assembly to ensure the right personalised letter goes in the correct envelope
- It also matters how you put it in the envelope (see Dillman, 2007)

---

#### From Fieldwork into Data Processing (1)

#### Interview Surveys
<table>
<thead>
<tr>
<th>Briefing for mainstage of survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide specific briefing aids, such as documents for home study, videos and interviewer support to ensure high levels of performance</td>
</tr>
<tr>
<td>• Target perceived areas of interviewer weakness for specific training</td>
</tr>
<tr>
<td>• Evaluate and improve interviewer performance by the use of scripted dummy interviews</td>
</tr>
<tr>
<td>• Ensure interviewers are knowledgeable about what the survey is about!</td>
</tr>
<tr>
<td>• If commissioning this survey, consider attending a briefing or contributing to the training</td>
</tr>
</tbody>
</table>

#### Postal Surveys
<table>
<thead>
<tr>
<th>Print and assemble mailing package for mainstage</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Monitor assembly to ensure the right personalised letter goes in the correct envelope</td>
</tr>
<tr>
<td>• It also matters how you put it in the envelope (see Dillman, 2007)</td>
</tr>
</tbody>
</table>

---

#### From Fieldwork into Data Processing (2)

#### Face-to-face (Telephone)
<table>
<thead>
<tr>
<th>First calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular chases of interviewer progress throughout the survey.</td>
</tr>
</tbody>
</table>

| Ensure interviewers contact all allocated addresses early in fieldwork period |
| Have early accompaniments of interviewers by supervisors. |

<table>
<thead>
<tr>
<th>Multiple call-backs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure interviewers make a minimum of 4 calls at an address at different times of the day and different days of the week before writing it down as a non-contact. (Note that a maximum of 4 call-backs on an interview survey could lead to a 10% non-contact rate, but a minimum of 4 call-backs could lead to a non-contact rate under 3%)</td>
</tr>
</tbody>
</table>

| Random call-backs to check for interviewer falsification. |

<table>
<thead>
<tr>
<th>Check the completed questionnaires that interviewers submit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have a detailed inspection of the first five questionnaires returned by every interviewer to ensure procedures were correctly followed (detailed inspection continued after the first five until an interviewer’s work is judged satisfactory).</td>
</tr>
</tbody>
</table>

| Continue further monitoring of the quality of interviewer performance |

#### Postal (Web)
<table>
<thead>
<tr>
<th>First mailing package ready</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send first mailing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multiple contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dillman (2007) suggests 5 contacts as the most effective tool to improve response rates</td>
</tr>
</tbody>
</table>

| SEE MORE ON NEXT SLIDE |
Dillman’s Tailored Design Method

- Up to five contacts with the questionnaire recipient has been “shown to be more effective than any other technique for increasing response to surveys by mail” (p. 149).

  Each contact has a different look and feel to it.
  - The pre-notice letter (sent a few days before the questionnaire) indicates briefly that something “important” will be coming in the post (stimulating social exchange theory) and asks for no immediate response.
  - The questionnaire and detailed cover letter explains the nature of the request and asks for a response.
  - The postcard follow-up (sent a few days to a week after the questionnaire) has a different visual appearance and is expressed as a thank you.
  - The replacement questionnaire (sent 2-4 weeks after first questionnaire mailing) contains a powerful form of implicit personalization, “We’ve not yet heard from you . . .”
  - The final contact (sent one week after 4th contact) uses a different mode (e.g., telephone or alternative delivery e.g., DHL) and expresses the importance of the respondent to the sponsor by showing the expenditure of considerably more effort and resources, as reflected by the cost of delivery.


From Fieldwork into Data Processing (3)
For ALL Surveys

Monitor patterns of nonresponse while survey is in the field and change response strategy to access those cases which will reduce nonresponse bias

- If some subgroups or areas are less willing to cooperate than others, we may want to shift some resources to them or use special procedures.

It is very useful to determine the reasons for the nonresponse. If possible try contacting some of the nonrespondents.

For example:

In a survey of boat owners, many were nonrespondents because of a sensitive question about rubbish disposal from their own boats (as some practices are illegal). If we knew this then the second mailing could contain a cover letter to address this issue.

### Process questionnaires as they come in:

<table>
<thead>
<tr>
<th>Process questionnaires as they come in:</th>
<th>Don’t wait until the end of fieldwork</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand editing (if needed before data entry)</td>
<td>Check editing</td>
</tr>
</tbody>
</table>

### What is Hand Editing?

**Hand Editing is Grooming the Questionnaire for Data Entry**

*(Can also be used to give feedback to interviewers)*

<table>
<thead>
<tr>
<th>COMMON, BUT NOT UNIVERSAL PRACTICE</th>
<th>Handling marginal comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>All modes except web</td>
<td></td>
</tr>
<tr>
<td>All modes (web can be exception if answer is a required before going to next screen - Note there are problems with this practice)</td>
<td>Identifying missing info and assigning missing data codes</td>
</tr>
<tr>
<td>Face-to-face and telephone</td>
<td>Identifying interviewer problems (e.g., illegible entries)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RARER POSSIBILITIES</th>
<th>Simple coding (e.g., make all time entries consistent as weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper questionnaire modes</td>
<td>Extra coding (e.g., indicator of answer quality)</td>
</tr>
</tbody>
</table>
Appendix on What is Coding?

A code is a set of rules that translates answers into numbers (and vice-versa)

For closed questions

• Coding is typically done in advance of data collection:
  • For example, deciding that
    • “Yes” is always “1” and “No” is “2”
    • “Don’t know” is always “-1” and “Refused” is always “-2”
  • We aim for consistency
  • We make codes fit numbers in the real world, when possible, unlike the following example:

  How many times have you been to France in the last year?
  2 or more times  0
  1 time          1
  None           2
Coding Open-ended Questions (1)

- A “coding frame” is a list of categories into which answers are coded.

- Coding frames are developed through an interactive process, whereby the researcher:
  - Identifies categories that emerge from the data;
  - But at the same time, seeks to impose meaningful order on the answers that are obtained based on theory and research purpose.

There can be tensions between these two aims.

Coding Open-ended Questions (2)

The aims in developing a coding frame are to create categories that are:
- Mutually exclusive (i.e., don’t overlap)
- Exhaustive (i.e., all the answers can be assigned to a category)
- Analytically relevant (not too many or too few categories)

- Create your frame by coding pilot data or a sub-sample of the main survey
- Have an “other” category
Coding Open-ended Questions (3)

During production coding:

- Continue to monitor the “other” category. Consistent patterns, may warrant the addition of new codes

- Independently check a sample of each coder’s work to help identify
  - Ambiguities with the coding frame
  - Coders’ decision errors

- Also check on coder reliability by getting an interrater reliability estimate (i.e., pass the frame and the raw data to a second person, to see whether they allocate codes in the same way as the initial coder, calculating the percent agreement or Kappa which is the percent agreement taking into account agreement by chance)

Verbatim Data from that 1971 DAS (Detroit Area Study) based on the question, “Why do you think most women work?”

0052 Some work to get exercise. They say it makes them feel better physically. Some work because of need. (ANYTHING ELSE?) Some work so they can have their own money. Don’t have to depend on husband’s pay. They can buy what they want.

0066 Husbands can’t support them. (ANYTHING ELSE?) No.

0102 They don’t want to do housework. They want to get out. Of course, some women have to work. Like a divorced woman. High school kids should work. They never learn how to work. But a mother shouldn’t work if she has young children. Too many kids are brought up by baby sitters today. They don’t get any guidance. They need guidance of their mothers. Even teenagers need guidance.

0117 To be self independent. (ANY OTHER REASON?) I can’t think of any right now.

0152 Because either they don’t have enough to do at home or they are bored.

0202 Because they need the money and don’t want to take care of the family. I’ve got 2 daughters-in-laws who won’t make the kids behave and go to work and let other people take care of them.

0252 Because they have to – if have 5 or 6 kids (ANY OTHER REASON) In general some other women work to have car – be independent – have what want – want that security when get to 60-62.
Sample, Detailed Coding Frame for the Question ‘Why do most women work?’

I. Financial Concerns
11. Help support family (e.g., specific mention of family
12. Help support themselves (e.g., divorced, widowed, single women)
13. Get extra spending money of their own, buy things for themselves
17. Need money, unspecified (e.g., financial help, need money, have to work)

II. Change from housework
21. Don’t want to do housework
22. Relieve boredom (e.g., not enough to do, families grown up, diversion)
23. Don’t want to take care of family
27. Get away from home, unspecified

III. Career, Independence, Personal Satisfaction
31. Personal satisfaction
32. Independence (the main stress is on independence rather than acquiring money to buy things for themselves) cf I.13
33. Have a career
37. Career, independence, personal satisfaction, unspecified

00 Inap, no second or third mention
97 Other (MAKE CARD)
98 DK
99 Not ascertained

Note 1: Codes 17, 27, 37 are general categories to be used only when enough information is not available to place the answer in one of the preceding categories under that topic.

Note 2: If several sentences refer to the same topic, code these as ‘one mention’.

From Fieldwork through Data Processing (6)
For ALL Surveys

<table>
<thead>
<tr>
<th>Keying (if not computer assisted)</th>
<th>Verification (if not computer assisted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Coding</td>
<td>Be careful of quality</td>
</tr>
<tr>
<td>Initial machine editing (cleaning)</td>
<td></td>
</tr>
<tr>
<td>• Format checks (all records present; no duplicate IDs)</td>
<td></td>
</tr>
<tr>
<td>More machine cleaning and correction</td>
<td></td>
</tr>
<tr>
<td>• check for incorrect use of skip patterns</td>
<td></td>
</tr>
<tr>
<td>• check for illegal characters - for example the letter I entered in place of the number 1</td>
<td></td>
</tr>
<tr>
<td>• check for out-of-range values</td>
<td></td>
</tr>
<tr>
<td>• identify extreme values, especially for continuous variables</td>
<td></td>
</tr>
<tr>
<td>• check for case records containing large numbers of missing data markers</td>
<td></td>
</tr>
<tr>
<td>• check for answers to one question that are inconsistent with answers to another? (Be careful).</td>
<td></td>
</tr>
<tr>
<td>• Flag problem case and look at questionnaire</td>
<td></td>
</tr>
<tr>
<td>• Make corrections applying logical rules (e.g. Whenever objectively defined situation X is encountered, do Y’).</td>
<td></td>
</tr>
<tr>
<td>• Re-check the data after cleaning to make sure no additional errors have been introduced</td>
<td></td>
</tr>
</tbody>
</table>
More About Data Cleaning

• By far the best ways of controlling error are through good document design and data collection practice, rather than through cleaning!

• If the cleaning step is ignored, the data may not appear appreciably different.

• However,
  – Some errors in individual data items may seriously increase bias, variance or both: e.g. in a financial survey, a few decimal point errors may seriously bias means.
  – Sub-sample sizes may appear to fluctuate unpredictably from one analysis to another, because skips have not been correctly followed.
  – Uninterpretable out-of-range code values may occur sporadically in tables.

Adapted from material by Thomas (NATCEN/CASS course on “Quantitative Survey Design & Implementation”, Thomas & Campanelli)

From Fieldwork through Data Processing (7)
For ALL Surveys

Weighting (often used by central government and survey companies)

• To correct for
  – differential probabilities of selection
  – nonresponse
  – coverage error
  – etc.
Imputation (filling in missing values—often used by central government)
• Infering the correct response from the answers to other questions?
• In a panel survey, filling missing response with response from previous round? (May be possible for some variables.)
• Inserting the “average” value?
  (but if a large amount of missing are data, can create a ‘blip’ in the distribution
of the data and cause variability to be underestimated).
• Hot-deck imputation – a donor questionnaire is found from the same survey
as the questionnaire with the missing item. The “nearest neighbour” search
technique is often used to expedite the search for a donor record. Similarity
is based on other data on the questionnaire that correlates to the data being
donated. For example: similar size and location of farm might be used for
 donation of fuel prices.
• Rubin’s multiple imputation methods
• Any of these types of imputation may (or may not) be better than doing
  nothing; but none is wholly satisfactory.

Dillman’s Tailored Design Method
Since the first edition of his book in 1978, Dillman has regularly
demonstrated 60 and 70+ response rates for self-completion surveys.
But from 3 key elements, he has moved to 5.

Five Needed Elements for Achieving High Response Rates
• A respondent-friendly questionnaire
• Inclusion of stamped return envelope rather than freepost (part of social
  exchange theory)
• Personalised correspondence (recent tests suggests 5 to 11% increase in
  response rates)
• A token financial incentive that is sent with the survey request (most
effective procedure after multiple contacts)
• Up to five contacts with the questionnaire recipient has been “shown to be
  more effective than any other technique for increasing response to surveys
  by mail” (p. 149).

From Fieldwork through Data Processing (8)
For ALL Surveys

Data Manipulation
• Sorting, Matching, Merging
• Recoding, grouping, transforming
• Combining and reducing

Analysis

Further Tips for Raising Response Rates in Self-Completion Surveys


Social Exchange Theory (1)
Social exchange theory, as used by Dillman, is about
• Showing respondents that you value them (builds up trust)
• Increasing “rewards” for respondents while reducing “costs”.

Social Exchange Theory (2)
• There is a large difference between social exchange and economic exchange (backed up by considerable research).
• Example: James and Bolstein (1992) in a survey of small construction companies found:
  • 64-71% response rate when token incentive of one to five dollars which was included in the first mailing
  • 57% response rate with promise of $50 at the end
  • 52% response rate with no incentives!

Interval Between Mailings is Important

- Too short, and you will be sending unnecessary reminders
- Too long, and sample members will have forgotten/lost the earlier mailing and perceive a lack of urgency
- Dillman, among others, give specific suggestions, but best advice comes from Czaja and Blair
  - “The spacing of the follow-up mailings depends on the flow of returns from the prior mailing. Until returns dwindle to a trickle, there is little advantage (or economic sense) in sending out additional mailings.” p. 230
  - We must keep track of how many we receive each day to monitor this!


Recommendations for Cover Letter (1)

- What the study is about
- Why it is important (in general and what the respondent will get out of it)
- How the respondent was selected and why it is so important that the respondent participate
- Promise of confidentiality
- A phone number to call if the respondent has questions and who will be reached at that number
- Good quality headed notepaper with survey organisation (and sponsor included) and signature by responsible researcher


Recommendations for Cover Letter (2)

- Content of Cover Letter has to have the right balance with social exchange theory!
  Poor example:
  - “I am writing to people like yourself because it’s necessary for my agency to complete a technical needs assessment as a matter of agency policy”
  - Sounds like the letter is being written to a lot of people and concerns something which is only important to the agency. No reward value.


Recommendations for Cover Letter (3)

- Have mental image of acquaintance with an education level a little lower than average in the survey population.
  - The letter is composed specifically to them.
- Keep it short. Think of 10p per word. How much money can you save?
  Surprisingly many letter start out,
  “My name is Dan Scurry and I’m writing to ask your help with a survey being conducted by the University of California Department of Health Services”
  But all this info is conveyed in other places!

Recommendations for Cover Letter (4)

- Make sure purpose is unbiased:
  - Poor example:
    “It is important to keep big business from harming the environment, so we are doing this survey to get your honest opinions on the extent to which you feel the environment should be protected.”
  - Better example:
    “It is unclear whether people want either more or less to be done by government to protect the environment than is now being done. . .” (p. 161)


Recommendations for Cover Letter (5)

- Repetition of appeals diminishes their effectiveness
  - Don’t keep sending the same letter!
  - Latter appeals are aimed at a different audience, i.e, those to whom the first appeal did not get through!
  - Remember that people will differ in what they consider to be rewards and costs.

Example Cover Letter from Dillman (2007)

Washington State University
Social and Economic Sciences Research Center

L. T. Hansen
2121 Lincoln Way East
Uniontown, WA 99962-2056

I am writing to ask your help in as study of new residents being conducted for the state of Washington. This study is part of an effort to learn what draws people to the state, and whether they are happy or unhappy with what they find here.

It’s my understanding that you may have moved to Washington state sometime in the last few years. We are contacting a random sample of new residents from every county in the state to ask why they moved, what their employment experience has been, and whether services are meeting their needs.

Results from the survey will be used to help state and local government make Washington a better place for new residents like you. By understanding what people want when they move here, public officials can do a better job providing services and improving the state’s quality of life. And by knowing more about the job skills of new residents, public agencies and private businesses can help make the most of what new residents contribute to the state’s economy.

Your answers are completely confidential and will be released only as summaries in which no individual’s answer can be identified. When you return your completed questionnaire your name will be deleted from the mailing list and never connected with your answer in any way. This survey is voluntary. However, you can help us very much by taking a few minutes to share your experiences and opinion about Washington state. If for some reason you prefer not to respond, please let us know by returning the blank question in the enclosed stamped envelope.

We have enclosed a small token of appreciation as a way of saying thanks for your help.

If you any questions or comments about this study, we would be happy to talk with you. Our toll-free number is 1-800-833-0867, or you can write to us at the address on the letterhead.

Thank you very much for helping with this important study.

Sincerely,

Don A. Dillman
Professor and Deputy Director

P.S. If by some chance we made a mistake and you have not moved to Washington (or back to Washington after living somewhere else) since January 1990, please answer only the first question in the questionnaire and return the rest of it blank. Many thanks.
APPENDIX
Further Tips for Raising Response Rates in Interview Surveys
Thorough List of Steps in a Survey
Types of Probability Samples

Gaining Cooperation (Maximising Response) (1)

1. Non Contacts

Call procedures
- Telephone: Optimal call-back algorithms
- Face-to-face: Don’t let interviewer preferences rule – "An address or selected person cannot be coded as a ‘non-contact’ until at least four calls have been made at that address. These must be at different times of the day including at least one evening call, and on different days of the week including at least one call at the weekend.” See National Centre for Social Research Interviewers’ Manual (1995, p.13)

"In actual fact, when I go round the addresses I do very little on that first call, I just introduce myself and say ‘I’m just finding the addresses today’ . . . ‘I’ll be back’ . . . (From Interviewer Focus Group)

Gaining Cooperation (Maximising Response) (2)

2. Refusals: Doorstep approach
- Interviewers benefit from training in doorstep intros
- Use social skills approach with role plays
- Groups sharing of good interviewer techniques
- Tape doorstep interactions as training tool
- Ensure interviewers are familiar with project

Gaining Cooperation (Maximising Response) (3)

- Encourage interviewers to
  - Retreat and re-approach
  - To make sure their responses to the respondent are relevant and appropriate to the specific concerns of that respondent.
  - Groves and Couper have labelled this “tailoring”.


So often respondents say ‘Oh they’re fed up with the government, they’re fed up with the National Health, they’re fed up with this and that.’ Say ‘Right, this is your chance, we want your views.’

And with the elderly, say that they’ve got so much more experience, they’ve got more opinions generally than everybody else. They’ve lived through so many more things so their opinions are more important in some ways.

The moderator than queried, ‘and with younger people too?’ Yes, because they are the future.

We’ve got an answer for everything.

Gaining Cooperation (Maximising Response) (4)

- Encourage interviewers to
- Maintain the interaction within the call to build rapport and receive clues


例1

R I’m not interested in that sort of thing.
I OK, then.

例2

R No I’m not interested.
I Can you tell me why not?


Thorough List of Steps in a Survey (1)

<table>
<thead>
<tr>
<th>Initial Conception of the Study (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Specify purpose / objective of the survey.</td>
</tr>
<tr>
<td>• Be sure that a survey is the best method to use to meet your purpose.</td>
</tr>
<tr>
<td>• Review literature.</td>
</tr>
<tr>
<td>• Consult colleagues and/or experts.</td>
</tr>
<tr>
<td>• If applicable, specify hypotheses.</td>
</tr>
<tr>
<td>• Define population.</td>
</tr>
<tr>
<td>• Define analysis plan to meet your purpose / objective.</td>
</tr>
<tr>
<td>• Think about the needs of potential users of your data.</td>
</tr>
<tr>
<td>• Determine budget - Make sure that adequate resources and funding are available to conduct all aspects of the survey.</td>
</tr>
<tr>
<td>• If applicable, apply for funding.</td>
</tr>
<tr>
<td>• Decide on the mode of data collection (e.g., face-to-face, telephone, postal, web). This decision interacts heavily with sample design and sampling frame, questionnaire design and cost.</td>
</tr>
<tr>
<td>• Decide who should be asked to provide the survey information (e.g., every person vs. one person in a household, which person or persons within a business, etc.).</td>
</tr>
</tbody>
</table>

Thorough List of Steps in a Survey (2)

<table>
<thead>
<tr>
<th>Initial Conception of the Study (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Justify the design in both scientific and managerial terms.</td>
</tr>
<tr>
<td>• Where appropriate, obtain ethical approval and clearances.</td>
</tr>
<tr>
<td>• Define timetable &amp; operational plan.</td>
</tr>
<tr>
<td>• Work out what resources (human and other) are needed to conduct the survey.</td>
</tr>
<tr>
<td>• Negotiate with others whose help is needed to conduct the survey.</td>
</tr>
<tr>
<td>• Avoid doing surveys during the summer holidays or in the month of December.</td>
</tr>
<tr>
<td>• Plan how to maximise response to the survey</td>
</tr>
<tr>
<td>- On interview surveys</td>
</tr>
<tr>
<td>- Number of calls</td>
</tr>
<tr>
<td>- Use re-issues?</td>
</tr>
<tr>
<td>- Use on non-contact letter for face-to-face?</td>
</tr>
<tr>
<td>- Etc.</td>
</tr>
<tr>
<td>- For self-completion surveys</td>
</tr>
<tr>
<td>- Plan reminder system</td>
</tr>
<tr>
<td>- Use prepaid token incentives? (see Dillman, 2007)</td>
</tr>
<tr>
<td>• Ensure all survey staff understand the confidentiality guarantee given to respondents. Keep questionnaires and data in a secure place.</td>
</tr>
</tbody>
</table>

Thorough List of Steps in a Survey (3)

<table>
<thead>
<tr>
<th>Further Planning (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampling</td>
</tr>
<tr>
<td>• Decide on type of sampling: convenience, purposive (e.g., quota sample), probability.</td>
</tr>
<tr>
<td>• Decide on type of probability sampling:</td>
</tr>
<tr>
<td>- Simple random sampling</td>
</tr>
<tr>
<td>- Systematic selection</td>
</tr>
<tr>
<td>- Non-proportional stratification</td>
</tr>
<tr>
<td>- Proportional stratification (e.g., where small sub-group is over-sampled to allow comparisons between groups)</td>
</tr>
<tr>
<td>- Clustering (e.g., typically employed in face-to-face survey to minimise interviewer travel costs; may also occur in other hierarchical multistage designs when a frame at the element level does not exist)</td>
</tr>
<tr>
<td>- Inverse probability proportional to size (a clever solution to ensure equal sized interviewer workloads in face-to-face surveys but also equal probabilities of selection)</td>
</tr>
<tr>
<td>• Work out how to obtain a listing of the population (sampling frame) and draw an unbiased sample from it. In some cases, frames may need to be developed from multiple sources or created in multiple stages or through time</td>
</tr>
<tr>
<td>• Decide on sample size to meet survey’s purpose.</td>
</tr>
</tbody>
</table>
**Thorough List of Steps in a Survey (4)**

**Questionnaire Design**
- Decide in detail what information is to be collected.
- Draft survey questions - ensure that the questions will deliver valid, reliable, quantified and standardised information.
- Identify which are the key analysis variables. This feeds back into questionnaire design as you may want to allow more questions to measure them.
- Weigh response burden and identify sacrifices that may be necessary to keep it within bounds in terms of task, topic and length.
- Put together the questionnaire.
- If paper questionnaire, lay out for printing.

**Further Planning (5)**

**Interviewer-based (face-to-face or phone)**
- Book or hire interviewers.
- Basic interviewer training.
- Briefing on pilot.

**Self-completion based (postal and/or web)**
- If postal, stationery planning.
- Set up a database for managing and monitoring the mail outs (emails) for the mainstage.
- Mail merge set up for postal.

**Analysis & Report Writing**
- Determine the type of statistical analyses to be used.
- Determine how each question will be used in the analysis.
- Draft report outline.

**Thorough List of Steps in a Survey (6)**

**Piloting**
- Draw example for pilot.
- Draw main sample.

**Sampling**
- Consider two (or more) phases of question testing. Ideally no question should go into the field unless tested. Individual questions should be tested as well as the questionnaire as a whole and any special survey procedures.
- A computer-assisted questionnaire, usability testing is needed.
- Create final questionnaire.

**Coding & Data Processing**
- Ensure quality of pilot interviewers.
- Briefing for mainstage of survey.
- More and assemble mailing package for mainstage.
- When questionnaire is finished, create coding frame for open questions in the mainstage.
- Hire and train coders.

**Thorough List of Steps in a Survey (7)**

**Mainstage**

<table>
<thead>
<tr>
<th>Interviewer-based (face-to-face or phone)</th>
<th>Self-completion based (postal and/or web)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First calls</td>
<td>First mailing package ready</td>
</tr>
<tr>
<td>Multiple callbacks</td>
<td>Multiple contacts</td>
</tr>
</tbody>
</table>

**Coding & Data Processing**
- Check the completed questionnaires that interviewers submit.
- Process questionnaires as they come in:
  - Hand editing (if needed before data entry)
  - Coding
  - Data entry (if not computer-assisted questionnaire)
  - Reconciling final number of questionnaires with number in database

**Thorough List of Steps in a Survey (8)**

**Post data collection (1)**

**Coding & Data Processing**
- Calculate your response rate.
- Create and format the data file, add variable labels, etc.
- Check for duplicate IDs.
- Conduct computerised data cleaning (note with a computer-assisted interviewing method, most of these checks are programmed into data collection)
- Weight for differential probabilities of selection or for nonresponse, etc.
- Possibly use imputation (i.e., filling missing values on individual questions). Often used by central government statistical agencies.
- Do further data management (e.g., recoding, merging files, creating derived variables)

**Thorough List of Steps in a Survey (9)**

**Post data collection (2)**

**Analysis & Report Writing**
- Analyse data.
- Write report.
- Disseminate report and articles.
- Disseminate of data (if appropriate)
- If paper questionnaires - Continue their safe keeping or destroy.
Probability Sampling Methods (1)

Simple Random Sampling (SRS)
- Randomly chosen selections using a random number table, computer-generated random number, lottery balls, etc.

Systematic selection
- Determine the population size (N)
- Determine the sample size you want (n)
- Divide N by n to get your interval (I)
- Select a random integer from 1 to I. This is your first selection
- Remaining selections are made by adding I.

Example:
- N = 100, n = 20, I = N/n = 5
- Random number between 1 and 5. 4 is chosen. Elements 4, 9, 14, 19, 24, etc. are chosen

NOTE: Special procedures are needed when N/n is a fraction, see Kish (1965, 1995), Survey Sampling, Wiley.

Probability Sampling Methods (2)

Proportionate Stratified Sampling
- Units are aggregated into different subgroups, called strata, and then a certain proportion of the units are randomly selected from within each stratum (the sampling fraction stays the same for all strata).
- To the extent that the strata are related to the variables in your survey, stratification will increase the precision of your estimate

Disproportionate Stratified Selection (e.g., different probabilities of selection)
- E.g., small subgroups are selected with a higher sampling fraction than the rest of the population to ensure a larger number of them in your final sample.
- Note weights need to be used for overall estimates and the process of weighting reduces the precision of your estimate

Probability Sampling Methods (3)

Multistage Cluster Sampling
- When design is hierarchical, e.g.,
  - Stage 1: Random selection of organisations
  - Stage 2: Random selection of employees within organisation
- Or with face-to-face household surveys to reduce interviewer travel costs.

Clustering reduces the precision of your estimate

Probability Sampling Methods (4)

Probability Proportional to Size (1)
the probability of selecting a sampling unit (e.g., area cluster, health center, business) is proportional to the size of its population
- Example of Face-to-Face Household Survey: Addresses are sampled in two stages (or more). In the first stage, the larger the size of the area cluster, the more likely it will be selected. In the second stage, the larger the size of the cluster, the less likely that an individual address will be selected from it. (Results in a clever solution to ensure equal sized fieldwork assignments for interviewers while maintaining equal probabilities of selection.)

\[
P_{fij} = \frac{a N_j}{b} \left( \frac{a N_j}{\sum N_j} \right) \left( \frac{b}{N} \right)
\]

- Where
  - a = the number of area clusters desired
  - b = the number of addresses desired within an area cluster
  - N = the total number of addresses in area cluster
  - N = the total number of addresses in the population

Probability Sampling Methods (5)

Probability Proportional to Size (2)

Example of Establishment Survey
- One stage of selection
- Larger establishments have higher chances of selection
- This unequal design is purposefully selected to reduce the variance of the survey estimates
- The variance is reduced to the extent that the size variable is related to the survey variable
- Weights would be the inverse of the selection probabilities