

Questionnaire Design and Survey Research

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Survey or Questionnaire Research

- Gather almost any type of information
 - Demographics
 - Opinions
 - Preferences
 - Knowledge
 - Outcomes
 - Not all surveys are research: e.g., Doodle



Advantages of Questionnaire Research

- **Costs**
 - Generally low cost
- **Sample Size**
 - Vary from quite small to extremely large
- **Issues**
 - Gather information on multiple issues and topics
- **Format**
 - Vary from mail, internet, interview, telephone
- **Impact**
 - Can yield and produce significant competitive advantage, e.g., J.D. Power and Associates



Disadvantages of Questionnaire Research

- Respondent Self Report
- Respondent Interpretation
- Respondent Bias
- Extrapolation to Non responders
- Item bias



| | Mail | Telephone | Interview | Internet |
|-------------------|-----------------------------|----------------------------|--------------------------|------------------------------|
| Cost | low | Low to moderate | high | variable |
| Response | low | Willingness of participant | High | Variable, access to computer |
| Investigator time | limited | Training of interviewers | Training of interviewers | limited |
| Study time | long | short | short | short |
| Sample size | Can be very large | Small to medium | Limited, usually small | Can be very large |
| Anonymity | Can be completely anonymous | Phone number | Personal contact | Web address |
| Respondent Bias | Item interpretation | voice | high | Must be computer literate |
| Investigator bias | limited | voice | Body language | Very limited |



Important Aspects of Email Survey

| Aspect | Comments |
|---------------|--|
| Cost | Low; data entry may be costly |
| Personnel | Investigator only; limited training for others |
| Sample Size | Large; requires a name and email address |
| Response rate | Generally low; >30 % is rare |
| Data | Quantity with limited quality |
| Bias | Nonrespondent bias is high |
| Subjects | Not intrusive to subjects |



Survey introduction key statement or cover letter

- Who you are
- Background for study
- Purpose of study
- What will be done with data
- Why they were chosen
- Assurance of confidentiality
- When respondents need to do
- Contact information if questions arise
- **Approval for survey, if applicable (Institutional Review Board)**
- Return deadlines
- Statement of importance
- Acknowledgements
- Statement of appreciation
- Closing
- Signature

Limit to one page



Approval for survey, if applicable (Institutional Review Board)

- IRB approval is needed whenever a project meets the regulatory definitions of human-subject research in either the common rule or FDA regulations
- The common rule requires IRB approval of all “human subjects research”
 - Is this research?
 - Are human subjects involved?
- **IRB approves your study (survey) not Research and Development, department chair, advisor, instructor etc**



45 CFR 46.101(b) Categories of Exempt Human Subjects Research*

1. Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (a) research on regular and special education instructional strategies or (b) research on the effectiveness of or the comparison among instructional techniques, curricula or classroom management methods.

2. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
 - a. information obtained is recorded in such a manner that subjects can be identified, directly or through identifiers linked to the subjects and
 - b. any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability or reputation.



Protected Health Information

- Name
- All Dates/Times
- Address information including zip code
- Date of birth (and age if >89)
- Telephone/Fax numbers
- Email
- SSN
- MRN, account numbers, insurance numbers



Protected Health Information

- Certificate/license numbers
- Vehicle, device numbers
- URLs/IP addresses
- Biometric identifiers
- Full face photographic images
- Unique numbers or codes including initials
- Rare conditions



Carilion Clinic IRB review: Survey (example)

This letter is to inform you that the application for your proposed study, received May 17, 2017, has been reviewed by the staff of the Carilion Institutional Review Board (IRB). We have determined that your project does not require continuing IRB review. The research meets the criteria of exempt status according to §45 CFR 46.101 (b) (2) Research involving the use of education tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observations of public behavior.

The IRB has waived the requirement of Documentation of Informed Consent as outlined in 45 CFR 46.117(c) as the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context. However, we require that you include information about the research study in the email you intend to send, including notice that participation in the survey is voluntary and assurances that responses to the survey will be anonymous.

HIPAA does not need to be waived for this study as no protected health information will be used or disclosed from medical records from a covered entity.

If any changes are made to your research that could increase the risk to subjects, you must notify the IRB by submitting a Research Change/Update form. The IRB will then make a determination regarding whether the research should remain in an exempt status.



Internet Surveys

- Data are immediately available when the respondent submits the survey
- Results can be loaded into a database for analysis
 - Qualtrics
 - Survey Monkey
 - SurveyGizmo
 - Google
 - REDCap



Personal Interview Surveys

- High cost
- Requires personnel training
- Relatively small sample size
- Response rate are high due to face to face encounter
- Data is varied and time may limit the amount of data collected



Survey Item Construction and Format

- The survey must provide data that answers the research questions, hypotheses or null hypothesis
 - Demographic data (may want to put at end of survey)
 - Structured or unstructured questions
- Avoid questions that have two concepts “double barreled”
 - What do you think the speed limit should be for cars and trucks?



Survey Item Construction and Format

- Avoid double negative questions
 - I can't get no satisfaction (Rolling Stones)
 - Do you disapprove of the Affordable Care Act
- Avoid leading questions
 - How short was Napoleon?
- Avoid absolute questions
 - Do you eat breakfast everyday (Y/N)
- Avoid biased questions
 - Where do you like to drink wine in Roanoke



Survey Item Construction and Format

- Avoid overlapping ranges
 - What is your annual salary?
 - \$50,000 or less
 - \$50,000-60,000
 - 60,000-70,000
 - 70,000 or more
- Avoid inadequate response options
 - How long have you been at your job?
 - Less than 1 year
 - 2-5 years
 - greater than 5 years



Survey Item Construction and Format

- Do not assume prior knowledge or understanding?
 - What type of smartphone do you own?
 - Have you ever had a CT scan?
- Avoid ambiguous questions
 - Are you willing to relocate for your job?
- Avoid making your questions too general
 - Do you think wireless devices can cause health problems



Survey Responses

- Ranking or rating
 - 1 = most preferred, 5 = least preferred
 - Do not mix ranking or rating between questions in same survey
- Verbal frequency scale
 - Likert scale
 - 1. Strongly agree
 - 2. Agree
 - 3. Neutral
 - 4. Disagree
 - 5. Strongly disagree



Survey Responses

- Verbal frequency scale
 - A. Always
 - B. Often
 - C. Occasionally
 - D. Infrequently
 - E. Never



Survey items completed

- Proofread the survey
- Consult with a statistician early in survey development process
- Review layout and placement
 - Submit button
- Pilot test the survey
- Do not launch without IRB approval

