Internet and Mail Survey Research at the 2013 AAPOR Conference

Benjamin L. Messer
Research Into Action
PAPOR Mini-Conference
June 28, 2012

Disclaimer

- *Paper/presentations obtained with author permission. Any misinterpretations are my own.*

Mail and Internet Sessions at AAPOR

- 1) The Web Option in Multi-Mode Surveys
- 2) Methodological Brief: Internet Surveys
- 3) Sampling and Data Quality Issues in Internet Surveys
- 4) Developments in the Design and Implementation of Web Surveys
- 5) Using Mail to Improve the Effectiveness of Web and Telephone Data Collection for Address-Based Samples of the General Public

Divided papers into five broad categories

- Design
- Sampling
- Implementation
- Response
- Web in mixed-mode surveys

Design Issues in Web (and Mail) Surveys

- Response difficulty
- Question design
- Questionnaire design
- Letter design

Response Difficulties: Exploring response option visual design with eye-tracking

- Libman, Smyth, & Olson
- Conducted student survey via web and used eye-tracking technology to determine response difficulty
- Analyzed:
  - One vs. two columns response categories
  - Fully-labeled vs. partially-labeled scales
  - “Smiley-face” symbols next to satisfaction response categories

Response Difficulties: Exploring response option visual design with eye-tracking

- Eye-tracking results:
  - One column responses faster for select-all and two column responses faster for select-one
  - Respondents moved faster through fully labeled multi-item questions
    - Radio buttons and labels are related through visual proximity
  - When smiley-face symbols are next to satisfaction response options, respondents spent more time processing and answered more positively
  - Overall, respondents spent more time looking at response options vs. question stem

Response Difficulties: Classifying mouse movements to predict respondent difficulty

- Horwitz, Kreuter, & Conrad
- Paradata from American Community Survey on mouse movements
- Analyzed common mouse movements and time of response

Response Difficulties: Classifying mouse movements to predict respondent difficulty

- Mouse-tracking results:
  - Common movements:
    - hover over question text
    - moving between response options and “Next” button
    - moving back and forth between response options
  - Over 20% engaged in one “common movement”
  - Found 1.2 movements on complex question formats and 0.7 movements on less complex question formats
- Useful for identifying response difficulties

Response Difficulties: The effects of interactive feedback

- Hudson, Hupp, Zhange, & Schroeder
- Analyzed the effects of providing interactive feedback in web surveys
  - Pop-ups that offer tips/hints, ask questions, etc.

Response Difficulties: The effects of interactive feedback

- Providing interactive feedback during data collection helps respondents who are less Internet-savvy
  - Was seen as a burden for Internet-savvy respondents
- For respondents who need it, should be highly interactive

Question Design: Dynamic vs. Static Open-ends

- Fuchs
- German web survey
- Tested dynamic list-style open-end response options vs. static list-style open-end response options
  - “Which other university did you apply?”

Question Design: Dynamic vs. Static Open-ends

- Static design shows one, three, or six answer spaces for open-end responses
- Dynamic design shows one then three, one then six, and three then six answer spaces for open-end responses
- No statistically significant difference between the two designs
  - Static 3 or 6 and Dynamic 1-3 and 1-6 had higher item nonresponse but more desired responses
- Also tested drop-down answer suggestions
  - Resulted in fewer missings but limited variation

Question Design: Using Google to Test Questions

- Stern & Welch
- Analyzed whether Google's single-item surveys can be used as a pre-test for survey questions (vs. cognitive interviewing)
  - Tested question measuring how many phone calls are answered via cell and home phones
    - All, Some, Few vs. more than 75%, 25-75%, less than 25%
- Results indicate that it can be used successfully for pre-tests vs. cognitive interviewing
  - Inexpensive and quick
    - $400 for 4000 completes in about 30 hours
  - Allows for feedback in a self-administered environment

Questionnaire Design: The effects of compressing Qx length on data quality

- LeBlanc, Cosenza, & Lloyd
- Consumer Assessment of Healthcare Providers & Systems (CAHPS)
  - Three mail contacts
- Tested horizontal display of responses options (compressed into 4 pages) vs. vertical display (12 pages) in mail survey

Questionnaire Design: The effects of compressing Qx length on data quality

- **TEST A:** 4 page - horizontal scales on single lines only
  - ☐ Never
  - ☐ Sometimes
  - ☐ Usually
  - ☐ Always
- **TEST B**: 4 page - scales with multiple columns and rows

☐ Never	☐ **Sometimes**
☐ **Usually**	☐ Always

Questionnaire Design: The effects of compressing Qx length on data quality

- Compressed version resulted in lower overall response rates although item nonresponse rates were similar
  - Compressed version $500 cheaper

Letter Design: Aiding within-household selection with graphical symbols

- Stange, Olson, & Smyth
- 2012 Nebraska Annual Social Indicators Survey (NASIS)
- Analyzed the effects of including a calendar in the contact letter on next-birthday within-household respondent selection

Letter Design: Aiding within-household selection with graphical symbols

- Results suggest that the calendar in the letter did not aid in regard to response rates or demographic representativeness
  - Actually resulted in fewer HHs making the accurate within-household respondent selection
    - Held across all demographic subgroups

Sampling Issues in Web Surveys

- ABS vs. Email Sampling
- Sampling from social media and search engines

ABS or Email?

- Bilgen, Stern, & Wolter
- Analyzed results from sampling via email (InfoUSA) vs. ABS
  - Email Blast: 3 email contacts and incentive
  - ABS: 4 mail contacts with incentive requesting web response
- ABS resulted in higher response rates but Email Blast resulted in more respondent representativeness (vs. General Social Survey baseline)
  - Could get at different portions of the web population with use of both methods

Sampling from social media & search engines

- Stern, Wolter, & Bilgen
- Tested the use of Google and Facebook ads to recruit respondents
  - Ads displayed in a variety of locations
  - Used $5 & $10 incentives, and displayed sponsorship (NORC)
- Results show that Google was faster and less expensive vs. Facebook
  - Google respondents closer demographically to General Social Survey baseline
  - Both methods very successful at getting younger respondents
- Questions remain over generalizability of results

Implementation Issues in Web Surveys

- Contact strategies
- Survey sponsorship effects

Contact Strategies: Phone call or mailed letter?

- Connelly, Sjoblom, Hepburn, & Datta
- National Survey of Early Care & Education (NSECE)
- Web+phone and Web+F2F
- Tested the effects of a phone call request vs. a mailed letter request

Contact Strategies: Phone call or mailed letter?

- No significant difference in using initial phone call vs. initial mailed letter
  - Mail more effective at reaching more respondents at a lower cost
    - 90 hours of labor (n=656)
  - Phone helped to better identify ineligible respondents
    - 180 hours of labor (n=656)
- Web response rate higher when respondents received letter
  - Phone/F2F response rate higher when respondents received phone call

Contact Strategies: Effects of mailed invitations

- Bandilla, Couper, & Kaczmirek
- German General Social Survey
- CAPI Interview to determine web access
  - Group A: have web access but email not asked or provided
  - Group B: have web access and email asked and provided
  - Group C: have web access and email asked but not provided
  - Group D: no web access
- Mailed all groups a web request letter and a follow-up questionnaire

Contact Strategies: Effects of mailed invitations

- Only 42% of those asked for email actually provided it

- Group A: 19.2% web, 30.4% mail
- Group B: 26.4% web, 22.4% mail
- Group C: 22% web, 32% mail
- Group D: 3.2% web, 54% mail
- Overall weighted RR: 16.9% web, 51.8% web+mail

- Mixed mode design using mail contacts works well
- Asking for email address does not appear to have negative consequences even if majority do not provide it

Contact Strategies: Advanced letters, additional reminders, and different timing of mailings

- Reiser
- National Census Test
  - Web → Mail → Phone
- Tested sending an advanced letter (vs. none), adding an additional mail reminder (vs. none), and varying the timing of mailings

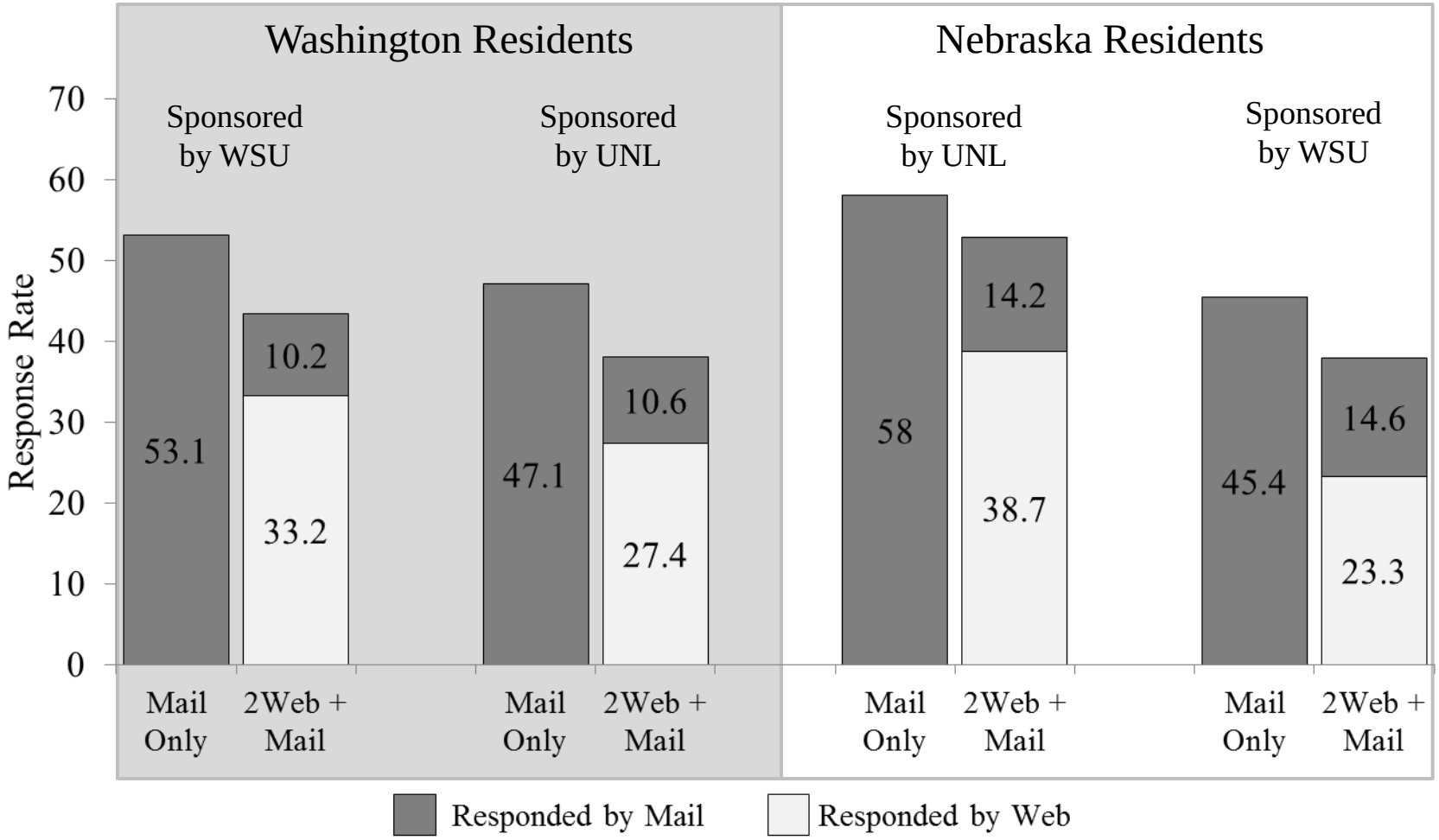
Contact Strategies: Advanced letters, additional reminders, and different timing of mailings

- Additional reminder was most effective
  - Increased web and mail response rates, and resulted in more telephone interviews
- Advanced letter did not impact overall response rates
- Mailing the questionnaire sooner (vs. later) also did not affect overall RRs
  - Did result in fewer web and more mail respondents

Survey Sponsorship Effects

- Edwards, Dillman, & Smyth
- 2012 Washington Water Survey and 2012 Nebraska Water Survey
- Tested the effects of university survey sponsorship (WSU and UNL) on web and mail response in the two states
  - Web+mail and mail-only designs in Nebraska and Washington

- Within-state sponsorship resulted in significantly higher response rates for mail-only and web+mail
  - Greater effect for web
- Mail-only RR higher than web+mail in both states



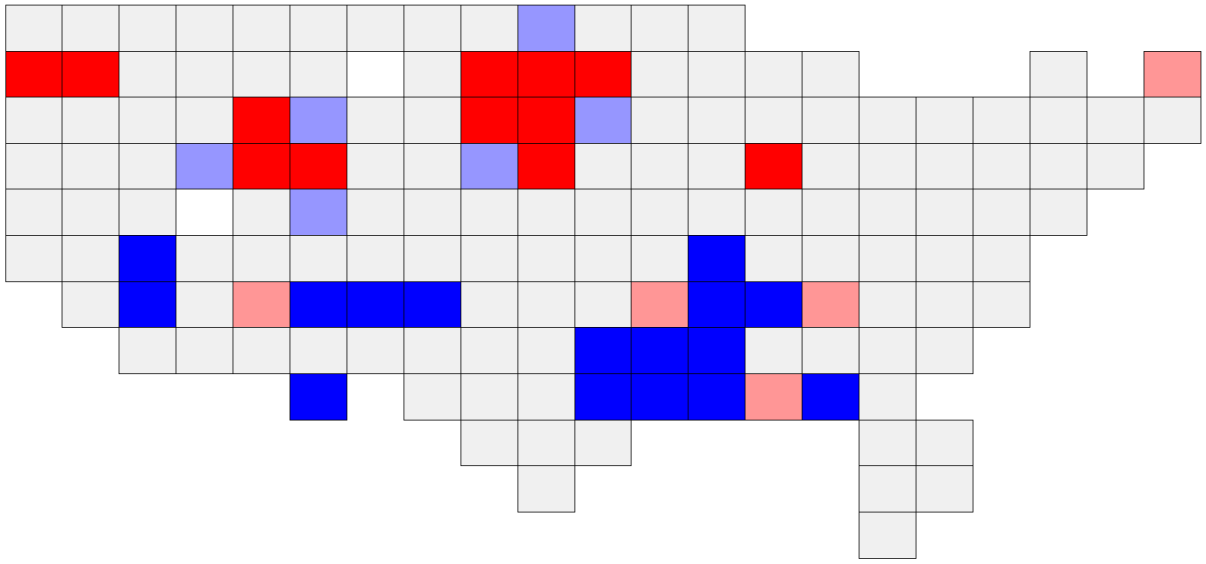
Response Issues in Web (and Mail) Surveys

- Spatial clustering and contextual effects
- Response distractions
- Web response devices
- Data quality

Response Issues: Spatial clustering of web responses

- English, Fiorio, Stern, & Curtis
- Used GIS to analyze the spatial distribution of web responses
  - NORC Internet Sampling Initiative (U.S. HH population; n=748)
  - Survey of Technology Usage

- Low web responses clustered in Mississippi Valley, Texas, southern California, and New Mexico
- High web response clustered in Dakotas and Utah, Oregon



Response Issues: Spatial clustering of web responses

- Web respondents closest demographically to population in high affluence and high Internet access regions
- Using Internet on mobile device and getting news via Internet also spatially clustered
  - High in Northeast, southern California, low in upper Midwest

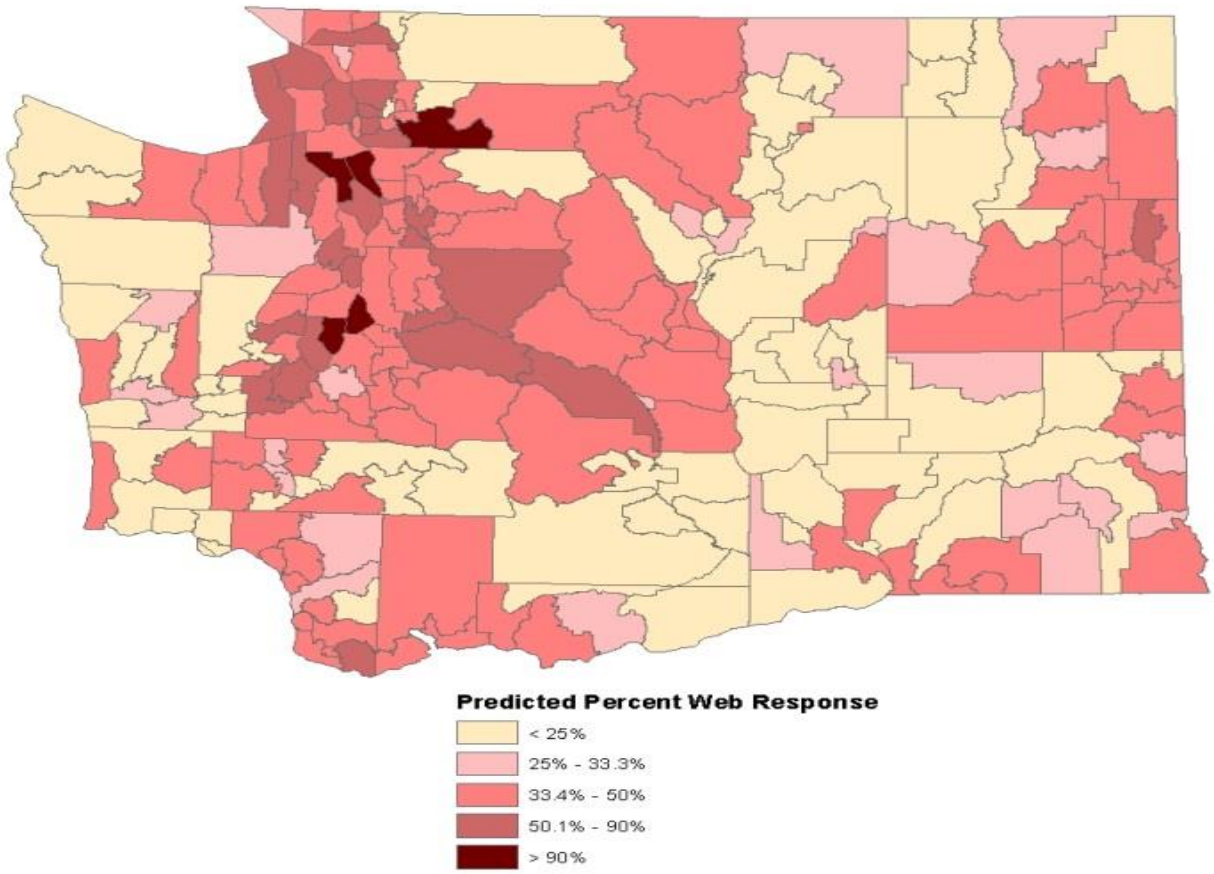
Response Issues: Contextual effects on web vs. mail response

- Messer & Dillman
- Three general public surveys in Washington state, 2007-2011
- Used GIS to determine the effects of community characteristics on response to web vs. mail modes
  - County and Census County Subdivision (CCD)
  - Created targeted web+mail designs based on results

Response Issues: Contextual effects on web vs. mail response

- Correlations:
  - County-level factors: population (+), median income (+), % college degree (+), HH Internet access (+), median age (-)
  - CCD-level: same as above, but also % Hispanic (+) and % non-Hispanic White (-)
- Multi-level multivariate analyses:
  - County-level: no significant predictors → too much individual variation within counties
  - CCD: population (+), income (+), education (+), and age (-)

Predicted probabilities for web response at CCD-level (multi-level model results)



Response Issues: Response distractions

- Ansolabehere & Schaffner
- Three web surveys
- Measured the various ways respondents are distracted during web survey administration

Response Issues: Response distractions

- Results indicate that respondents are distracted frequently, particularly in long surveys and for younger respondents
  - Distractions were found to affect duration but not data quality
    - On average, each distraction adds 5 minutes
- Most common distractions:
  - Watch TV
  - Talk to adult
  - Take a break
  - Phone call
  - Check email
- Other reported distractions:
  - Talk to child
  - Visit another webpage
  - Text message
  - Do a chore

Response Issues: Web Response Devices

- Buskirk, Walton, & Wells
- Nielsen panel
- Tested which device or mode respondents preferred to use: smartphone, tablet, computer, or paper/pencil
- Also tested different incentive amounts and survey times
- Found higher preference for computer or tablet vs. smartphone or pencil/paper
- Also found respondents most preferred 10 minute survey for $10 or 20 minute survey for $30
  - Neat use of conjoint analysis

Response Issues: Data Quality in Web vs. Mail Modes

- Tancreto, Horwitz, Davis, & Zelenak
- American Community Survey
- Looked at outliers on income question, rounded values in income fields, correlations between related measures, and gross difference rates among several questions
- Found no difference between web and mail overall
  - Rounding error on income more common on web but difference is small
- Did find a mode gross difference rate on:
  - Mortgage (mail lower)
  - Insurance (web lower)
  - Ancestry (web lower)

Issues with mixing web with other modes

- Screener effects
- Web and face-to-face (f2f)
- Web+Mail

Screener Effects: Telephone or mail to drive respondents to web?

- Edwards, Brick, & Lohr
- Companion to National Crime Victimization Survey
  - Requires screener to determine those eligible for web survey
- Tested "telephone screener harvest" vs. "two-phase mail screener" in ABS sample
  - Harvest: match sampled HHs with phone number, send unmatched HHs a mail screener
  - Two-phase: send mail screener to all HHs to get phone number, subsample mail screener nonrespondents for telephone match

Screener Effects: Telephone or mail to drive respondents to web?

- Telephone screener harvest (n=12,500)
  - 41% match rate
  - 74% ummatched returned mail screener with phone number
  - Overall RR 11.9%
- Two-phase mail screener (n=14,000)
  - 74% returned mail screener with phone number
  - 40% telephone match rate for mail screener nonrespondents
  - Overall RR 11.5% (mail screener respondents 45.2% overall RR)
- Telephone harvest screener less expensive

Web and F2F

- Collins, Mitchell, & Toomse-Smith

- Understanding Society's Innovation Panel
  - Longitudinal UK survey (n=100,000 individuals)
  - Web+CAPI (F2F)
- Analyzed the role of survey mode in respondents' decisions to participate

Web and F2F

- Web+CAPI RR: 74%
- CAPI-only RR: 78%

- Reasons for nonparticipation in web:
  - Did not receive invitation
  - Equipment not working
  - Procrastination
  - No motivation for web response
  - Bad experience by others in HH

Web+Mail: From mode-choice to sequential modes

- Ellis, Aspinwall, Heinrich, Ginder, & McDonald
- Deaths in Custody Reporting Program
  - Survey of jails
- Analyzed the effects of switching from web/mail mode choice design to web+mail sequential design
- Web RR increased and costs and data collection times decreased with web+mail
  - Web/mail choice: 22% via mail, 75% via web
  - Web+mail: 2% via mail, 95% via web

Web+Mail: Results from different combinations

- Tully & Lerman
- Student surveys in New Jersey
- Tested web/mail choice, mail+web, web+mail, and 2web+mail (i.e. web+web+mail)
  - 57% RR mail+web
  - 51% web/mail choice
  - 49% web+mail
  - 43% 2web+mail
- Costs are opposite (mail+web most expensive, 2web+mail least expensive)
- Few demographic differences between modes:
  - Race/ethnicity: more minorities via web
  - Education (higher for web)
  - Age (lower for web)

Web+Mail: Cost analysis

- Lesser
- Mail-only and web+mail surveys in Oregon, 2006-11
- Tested the cost effectiveness of web+mail vs. mail-only based on RRs to previous surveys
  - Cost/respondent is cheaper for mail-only up to sample size of 5,000
  - Costs/respondent similar for mail-only and web+mail when sample size is around 5,000
  - Costs/respondent is cheaper for web+mail for samples sizes over 5,000

Citations

- Design
  - Libman, Amanda, Jolene D. Smyth, & Kristen Olson. (2013). “Are you seeing what I am seeing? Exploring response option visual design with eye-tracking.”
  - Horwitz, Rachel, Frauke Kreuter, & Fred Conrad. (2013). “Classifying mouse movements to predict respondent difficulty.”
  - Hudson, Margaret, Andrew Hupp, Chan Zhang, & Heather Schroeder. (2013). “Evaluating Interactive Feedback in Computer-Assisted Self-Interviewing.”
  - Fuchs, Marek. (2013). “Dynamic visual design for list-style open-end questions.”
  - Stern, Michael J. & Vince Welch. (2013). “Can Google single-item question surveys help pre-test alternative versions of a survey question? A comparison of results from cognitive interviews and Google single-question surveys.”
  - LeBlanc, Jessica, Carol Cosenza, & Stephanie Lloyd. (2013). “ The effect of compressing questionnaire length on data quality.”
  - Stange, Mathew, Kristen Olson, & Jolene D. Smyth. (2013). “Using visual design to aid within-household selection in mail surveys: Does it lead to accurate selection and representative samples.”

Citations

- Sampling
  - Bilgen, Ipek, Michael Stern, & Kirk Wolter. (2013). “How do different sampling techniques perform in a web-only survey? Results from a comparison of a random sample email blast to an address-based sampling approach.”
  - Stern, Michael J., Kirk Wolter, & Ipek Bilgen. (2013). “ Can we effectively sample from social media sites and search engines? Results from two sampling experiments.”
- Implementation
  - Connelly, Jill, Micah Sjoblom, Peter Hepburn, A. Rupa Datta. (2013). “First contact strategies for web surveys: Is a phone call or a letter a more effective introduction?”
  - Bandilla, Woflgang, Mick P. Couper, Lars Kaczmirek. (2013). “The effectiveness of mailed invitations for web surveys.”
  - Reiser, Courtney N. (2013). “Internet response for decennial Census: 2012 National Census Test.”
  - Edwards, Michelle, Don A. Dillman, & Jolene D. Smyth. (2013). “Effects of survey sponsorship on Internet and mail response: Using address-based sampling.”

Citations

- Response
  - English, Ned, Lee Fiorio, Michael J. Stern, & Becki Curtis. (2013). "The geographic nature of responses to web surveys: How respondents and their sentiments are subject to spatial bias in a survey of technology use."
  - Messer, Benjamin L. & Don A. Dillman. (2013). "Using GIS to target address-based samples of households for a web (vs. mail) response: Evidence from three web+mail surveys in Washington State."
  - Ansolabehere, Stephen & Brian F. Schaffner. (2013). "Distracted respondents."
  - Buskirk, Trent D., Lauren Walton, & Thomas Wells. (2013). "To complete by smartphone or by tablet or by computer or by paper & pencil? That is the question: Exploring factors associated with respondent mode choice for multi-mode surveys."
  - Tancreto, Jennifer Guarino, Rachel Horwitz, Mary Davis, & Mary Frances Zelenak. (2013). "Internet vs. mail: A comparison of data quality indicators."
- Web in Mixed-Mode Surveys
  - Edwards, W. Sherman, J. Michael Brick, & Sharon Lohr. (2013). "Sample performance and cost in a two-stage ABS design with telephone interviewing."
  - Collins, Debbie, Martin Mitchell, & Mari Toomse-Smith. (2013). "Changing to a mixed-mode design: The role of mode in respondents' decisions about participation in the fifth wave of Understanding Society's Innovation Panel."
  - Ellis, Chris, Kim Aspinwall, Todd Heinrich, Scott Ginder, Hope Smiley McDonald. (2013). "The effects of pushing web in a mixed-mode establishment data collection."
  - Tully, Ryan & Amy Lerman. (2013). "Comparing the Effects of Mode Design on Response Rate, Representativeness, and Cost Per Complete in Mixed Mode Surveys in New Jersey."
  - Lesser, Virginia M. (2013). "Is pushing the general public to the web in address-based samples cost effective?"

Thanks, and any questions?

Contact info:

benjamin.messer@researchintoaction.com