Design Features to Reduce Unit Nonresponse

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Agenda

Reasons for Unit Nonresponse

Theories of Survey Participation

Design Features to Reduce Unit Nonresponse

- -Modes of contact and data collection
- -Communication materials
- -Use of incentives
- -Questionnaire length

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Reasons for Unit Nonresponse

- Failure to reach and contact sampled households/sampled persons

- Failure to obtain cooperation from sampled households/sampled persons
  - Unable to participate
  - Unwilling to participate

Failure to Reach and Contact Sampled Households/Persons

- Failure to reach and contact sampled households/persons
  - Bad contact information
    - Postal undeliverables
    - Bad phone numbers
    - Bad email addresses
  - Impediments to reach/contact sampled households/persons
    - Access to housing units (locked apartment buildings, gated community, intercoms etc)
    - Caller ID, call blocking, voice mails, answering machines etc
    - Spam/junk email/text message filter
    - Gate-keeper (approval from school district, parental consent etc)
  - Busyness/At-home pattern

Failure to Obtain Cooperation: Unable to participate

- Failure to obtain cooperation from sampled households/persons
  - Unable to participate
    - Language barrier
    - Health and disability
    - Technology access and ability
      - Smartphone, app, Zoom

Failure to Obtain Cooperation: Unwilling to Participate

- Failure to obtain cooperation from sampled households/persons
  - Unwilling to participate (Groves and Couper, 1998)
    - Social environment
    - Household and person characteristics
    - Making participatory decisions
      - Survey design features/attributes
      - Interviewer characteristics
      - Interviewer-respondent interactions

Failure to Obtain Cooperation: Social Environment

- Failure to obtain cooperation from sampled households/persons
  - Unwilling to participate (Groves and Couper, 1998)
    - Social environment: stable and out of control of survey researchers
      - Economic conditions, neighborhood characteristics
      - Survey-taking climate
        - But, paid media campaigns shown to change survey-taking climate (e.g., Yan and Datta, 2015)

Failure to Obtain Cooperation: Household/Person Characteristics

- Failure to obtain cooperation from sampled households/persons
  - Unwilling to participate (Groves and Couper, 1998)
    - Household and person characteristics
      - Related to response propensity, but not cause of nonparticipation
      - Out of control of survey researchers
      - But,
        - Responsive and adaptive designs (Groves and Heeringa, 2006; James Wagner's talk)
        - Targeted design (Lynn, 2017)

Failure to Obtain Cooperation: Theories of Survey Participation

- Failure to obtain cooperation from sampled households/persons
  - Unwilling to participate
    - Making participatory decisions
      - Heuristics rules of survey participation (Groves, Cialdini, and Couper, 1992)
      - Leverage-saliency theory (Groves, Singer, and Corning, 2000)
      - Benefit-cost theory (Singer, 2011)
      - Social exchange (Dillman, 1978; Dillman et al., 2014)
      - Response burden (Yan and Williams, 2022)

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Groves, Cialdini, and Couper (1992): Heuristic Rules for Survey Participation

- Reciprocation
  - One would be more likely to participate in a survey when participation is considered as the repayment of a perceived gift, favor, or concession
- Consistency
  - One would be more likely to participate in a survey when participation is consistent with his/her committed beliefs, attitudes, and values
- Social validation
  - One would be more likely to participate in a survey to the extent that one believes that similar others would participate in it.

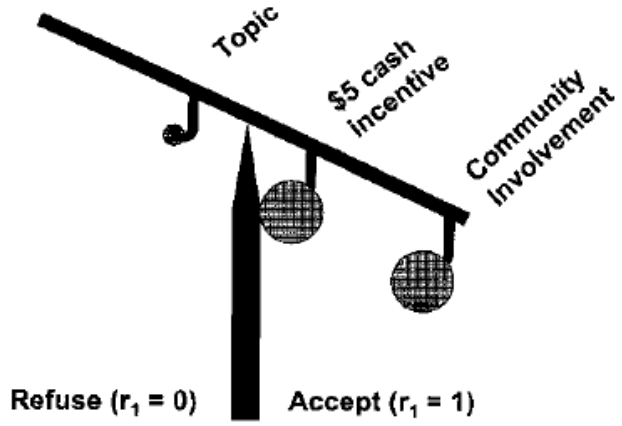
Groves, Cialdini, and Couper (1992): Heuristic Rules for Survey Participation (2)

- Authority
  - One would be more likely to participate in a survey request of someone who one perceives as a legitimate authority
- Scarcity
  - One would be more likely to participate in a survey that presents a scarce opportunity
- Liking
  - One would be more likely to participate in a survey request of the liked others

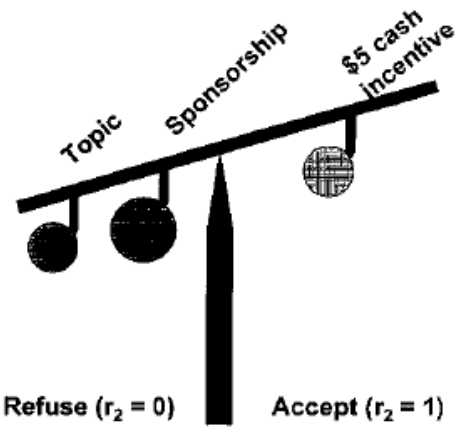
Groves, Singer, and Corning (2000): The Leverage-Saliency Theory

- Multiple design features/attributes
- For each design feature/attribute
  - Leverage: assigned importance by Rs
  - Saliency: salience of attribute made by survey request
- Participation decision

$$ln[p_i/(1\text{-}p_i)] = \beta_0 + \beta_1 C_{ij} + \beta_2 S_{ij} + \beta_3 C_{ij} S_{ij} + \epsilon_i,$$



Person 1, $P(r_1 =1) = e^{\beta_0 + \Sigma(\beta_{1j}L_{1j} + \beta_{2j}S_{1j} + \beta_{3j}L_{1j}S_{1j})}$



Person 2, $P(r_2 =1) = e^{\beta_0 + \Sigma(\beta_{1j}L_{2j} + \beta_{2j}S_{2j} + \beta_{3j}L_{2j}S_{2j})}$

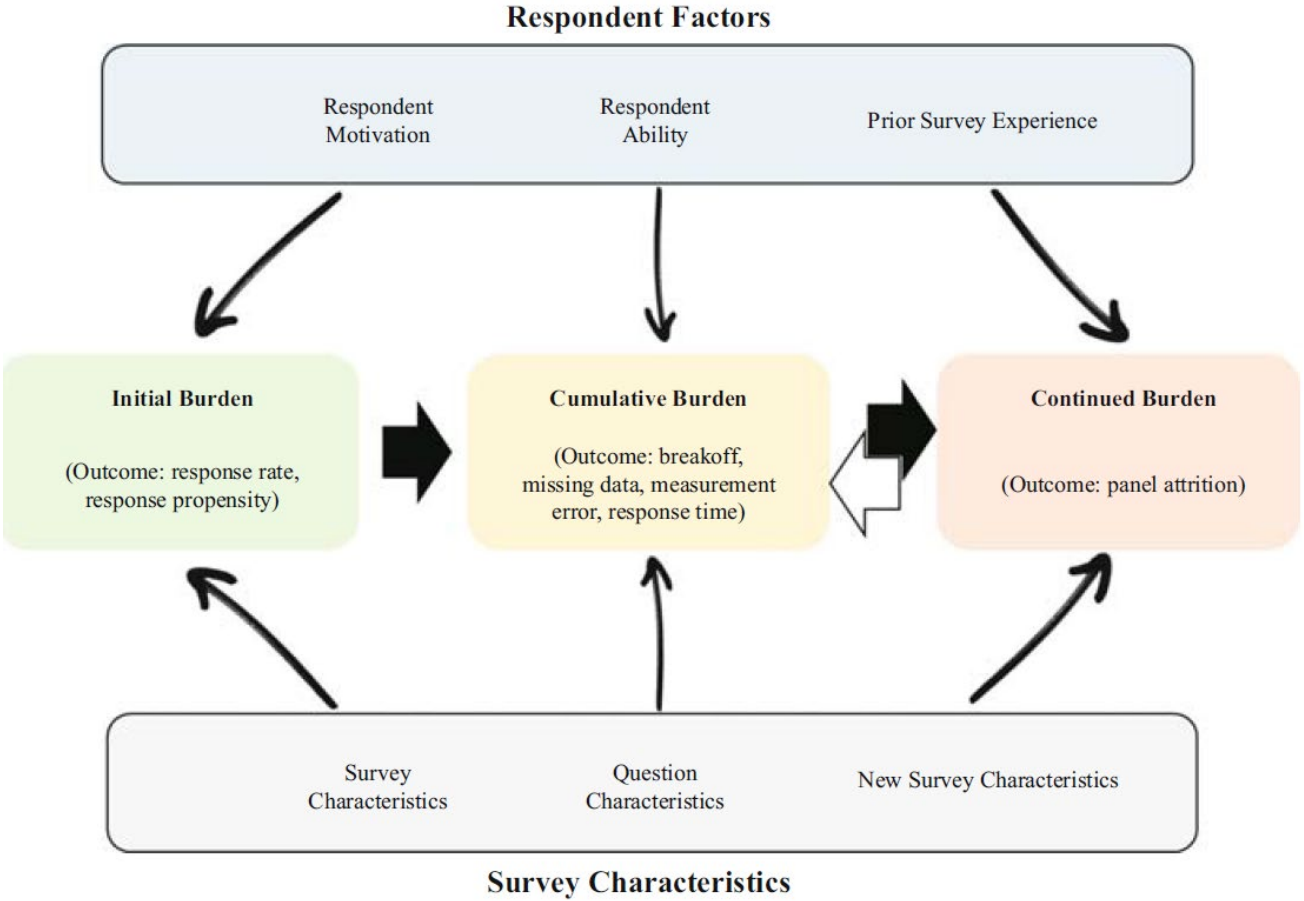
Singer (2011): Benefit-Cost Theory

- Multiple design features/attributes
- For each design feature/attribute, Rs assigning
  - Importance
  - Valence
- Participation decision
  - People choose to participate in a survey when the benefits of doing so outweigh the costs

Dillman et al. (2014): Social Exchange

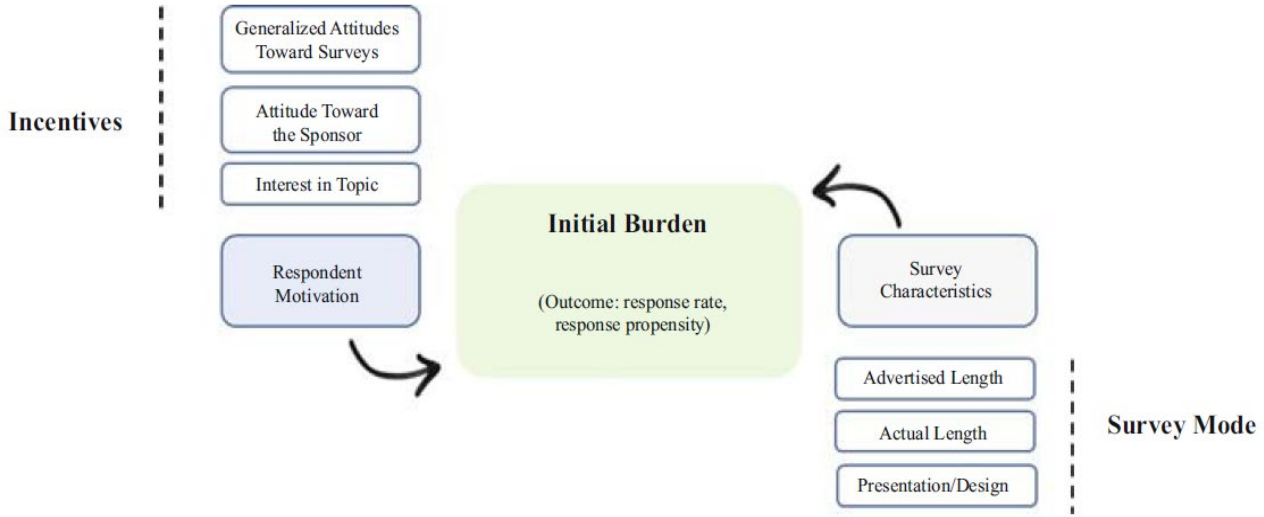
- Dillman (1978); Dillman et al. (2014)
  - Respondents make diffuse, social calculations of costs and benefits when deciding to participate in a survey request or not
  - Respondents are more likely to participate in a survey if they believe and *trust* that the rewards of participating will *eventually* exceed the costs of participating

Yan and Williams (2022): Conceptual Framework of Response Burden



Yan and Williams (2022): Factors Causing, Moderating, and Mediating Initial Burden

- Initial perception of burden at time of survey request
- Drives decision to participate or not
  - Low level of initial burden leads to a participatory decision



Theories of Survey Participation: Summary

- Overlaps between theories
  - Reciprocation key component to social exchange
  - Leverage-saliency theory, benefits-cost theory, social exchange, and response burden framework involve "evaluations"
    - Carefully deliberated or immediately derived through heuristics
    - When respondents are well informed or when respondents are poorly informed
    - Situational
- All frameworks predict that survey design features/attributes increasing benefits/rewards and survey design features/attributes reducing burden and costs will increase participation

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Design Features to Reduce Unit Nonresponse

- -Modes of contact and data collection
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Modes of Contact and Data Collection

- Response rates to single mode surveys
  - Trend by mode: Face-to-face > telephone > self-administered
  - Trend by time: Declining over time (de Leeuw and de Heer, 2002)
    - For telephone surveys (Yan and Curtin, 2010)
    - For in-person surveys (Williams and Brick, 2018)
    - For mail surveys (Olson, Smyth, Medway, and Yan, 2023)
    - For web surveys (Olson, Smyth, Medway, and Yan, 2023)
- Multimode surveys are on the rise due to potential to improve response rates and reduce cost (de Leeuw 2018; Tourangeau 2017)

Multimode Modes to Reach/Contact Sampled Units

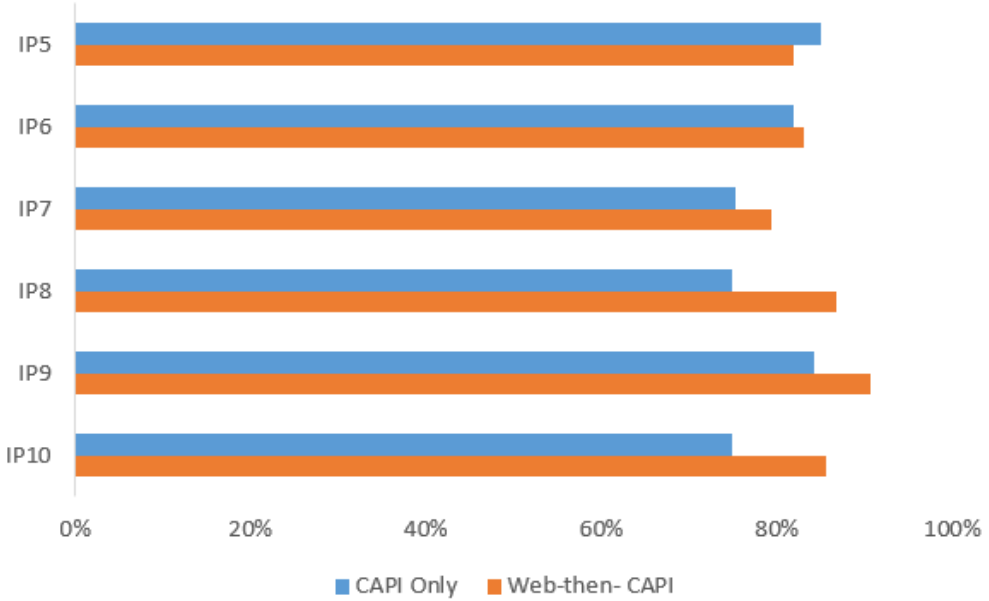
- Using multiple modes to reach/contact sampled units
  - Guidelines recommended by Dillman and colleagues (2014)
    - Obtain contact information for more than one mode whenever possible
    - Use multiple contact modes to increase the likelihood of contacts being received and attended by sample members
    - Use contact by a mode different than the response mode to increase trust that the survey is legitimate and useful
  - Empirically
    - Use of an email reminder (besides mailings) increases response rate to sequential web-mail survey by 4 percentage points (Yan, 2021)
    - Sending a prenotification text message doubled telephone completes (Westat, 2023)

Multimode Modes to Collect Data from Sampled Units

- Using multiple modes to collect data from sampled units
  - Guidelines recommended by Dillman and colleagues (2014)
    - Utilize information on respondent mode preference when practical, but recognize that improvements in response rates and data quality may be quite modest
    - Avoid offering a simultaneous choice of modes unless barriers to responding in both modes are removed
    - Offer a mail response option after a web response option in sequential mixed-mode designs to increase response rates and improve data quality
    - Reduce survey costs by withholding more expensive response modes until later in the field process

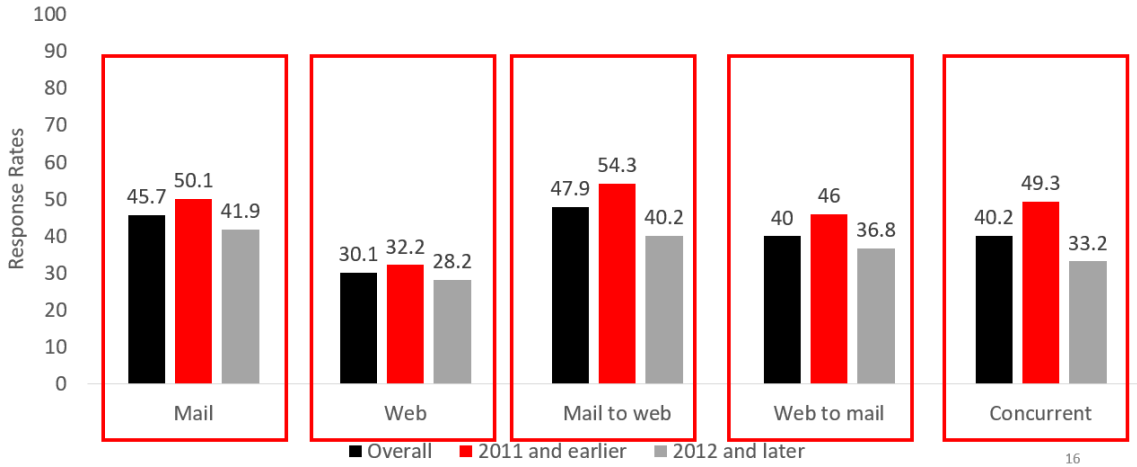
Multimode Modes to Collect Data from Sampled Units (2)

- UK Household Longitudinal Study Innovation Panel
  - Replenishment sample assigned to Computer-Assisted Personal Interviewing (CAPI) or multimode (web-then-CAPI)
    - Multimode exceeding CAPI only design



Multimode Modes to Collect Data from Sampled Units (2)

- Response rates to multimode mail and web surveys, mail-only, web-only surveys (Olson et al., 2023)
  - Mail-then-web > mail only > web-then-mail = concurrent > web only
  - Response rates decreased for all survey designs



Emerging modes: Short-Message Service (SMS)

- Short-Message Service (SMS), or text messaging
  - Can be used as a contact mode and/or a response mode
- Requires cell phone numbers; restricted by permission to text, word limits, possibility to incur additional charges
  - ~15% of text messages blocked (Westat, 2023)
- When used as a contact mode
  - Lower RR than emails (Bosnjak et al., 2008; Mavletova and Couper; 2014)
  - Higher RR than postcard (Barry et al., 2020; Virtanen et al., 2007)
  - No effects reported in 8 other studies

Emerging modes: Computer-Assisted Video Interviewing (CAVI)

- Computer-Assisted Video Interviewing (CAVI)
  - Also known as videophone interviewing, video interviews, live video survey interviews, video mediated interviews, video mediated surveys
  - Requires internet access, device with camera and mic, and knowledge/skills to download and use video platform
  - Alternative mode of data collection due to and since COVID-19
  - Offered after recruitment, involving comprehensive scheduling (Kuenz et al., 2023; Schober et al., 2020)
  - Top 3 barriers: does not want to, no access, connectivity issue (Arrue et al., 2022); uncomfortable (Schober et al., 2020)
    - Less likely adopted by older Rs, Hispanics, low education, living alone (Arrue et al., 2022)
  - Lower response rate and longer interviews (Pathania, 2022)

Modes of Contact and Data Collection: Summary

- Using multiple modes to contact sampled persons and to collect data from sampled persons has potential to improve response rate and reduce nonresponse bias
- The choice of modes to be mixed, the number of modes to be mixed, and the sequence and timing in which they are mixed affect response rate
  - Decisions vary target population, available information, survey topic, survey length, and task difficulty, etc.

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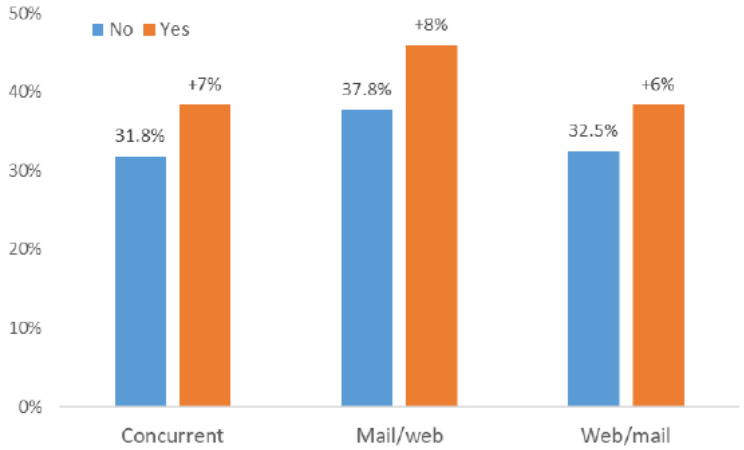
Communication Materials

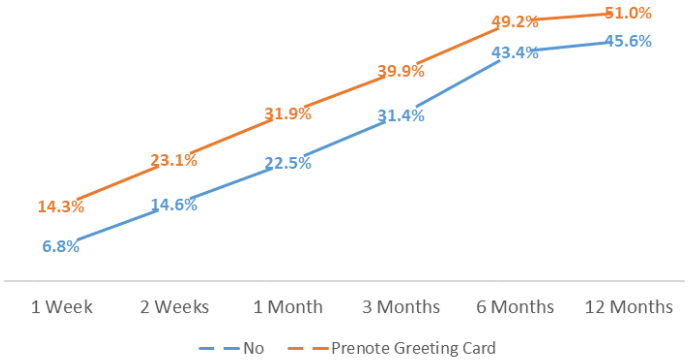
- For interviewer-administered modes
  - Advance letter or prenotification letter
  - Introductory script
- For self-administration modes
  - Materials mailed, emailed, texted
    - Advance letter, invitation, reminder, FAQs, mailing insert
  - Paper questionnaire
- Content and look-and-feel draw on theories of survey participation
  - Making benefits or potential rewards salient
  - Reducing burden or perceived burden

Communication Materials: Advance letter

- Sending advance letter increases response rates holding constant the number of contact (Yan, 2021)



- Sending advance letter in the format of a greeting card with a Thank-you message increase response (Griggs et al., 2019)



Communication Materials: Framing of Survey Request

- Prospect theory predicts that survey request framed as a loss yields higher response rate than request framed as a benefit
  - Benefit framing:
    - "The information you have given us previously is very valuable and will become even more valuable if you participate again this year."
    - "Your participation in this study is important to ensure that people like you can be heard"
  - Loss framing:
    - "The information you have given us previously is very valuable but will become much less valuable if you don't participate again this year."
    - "The information we gather will be less useful if we don't hear from you."

Communication Materials: Framing of Survey Request

	Tourangeau & Ye (2009)		Lynn (2019)		Yan et al. (2023)
	Time in Sample: 1 Wave	Time in Sample: 3 waves	Time in Sample: 6 waves	Time in Sample: 9 waves	Cross-sectional Sample
Benefit Framing	**77.9%**	*63.3%*	72.3%	74.7%	14.6%
Loss Framing	**87.5%**	*68.4%*	70.8%	68.6%	13.7%

Communication Materials: Summary

- Content and look-and-feel of communication materials grounded in theories of survey participation
  - Making benefits or potential rewards salient
    - Highlight sponsor, build trust and legitimacy, importance and relevance of topic, increase motivation
  - Reducing actual burden and perceived burden
    - Simplify tasks required of respondents
    - Make paper questionnaire appealing and less clustered

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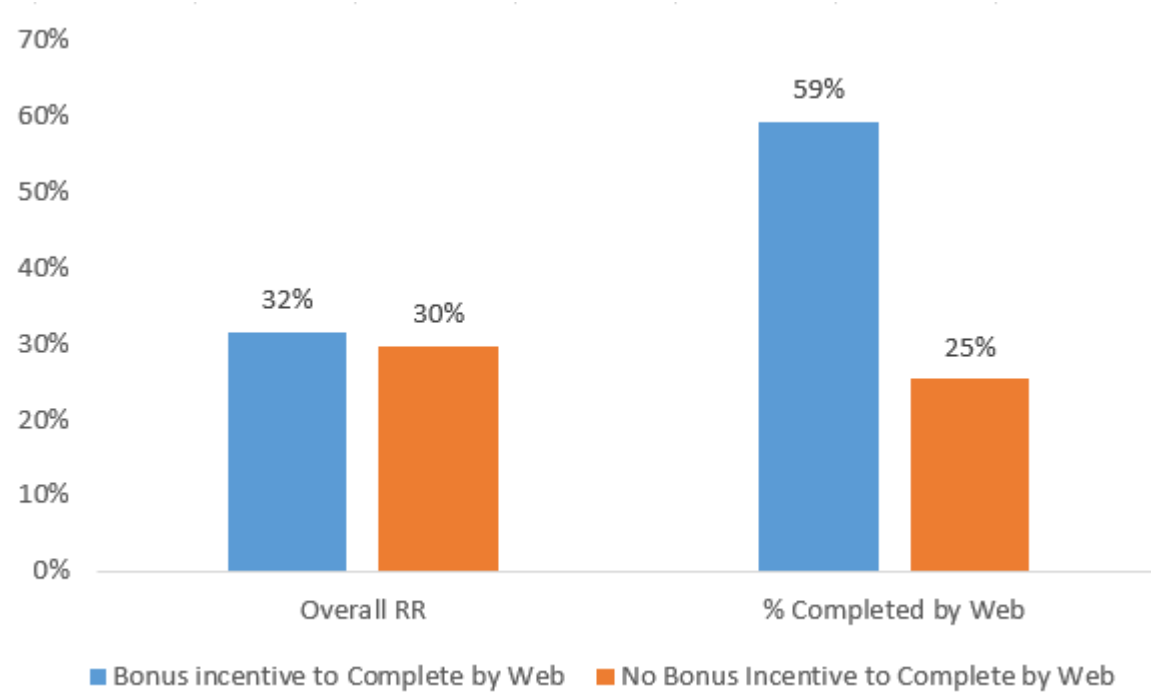
Use of incentives

- Providing an incentive increases response rates (Singer and Ye, 2013; Mercer et al. 2015)
  - Prepaid is more effective than promised
  - Combining prepaid and promised is more effective than promised only (Albanese et al., 2023)
  - Monetary incentive is more effective than non-monetary incentive
- Using a bonus or larger incentive
- Second incentive
- Visible cash

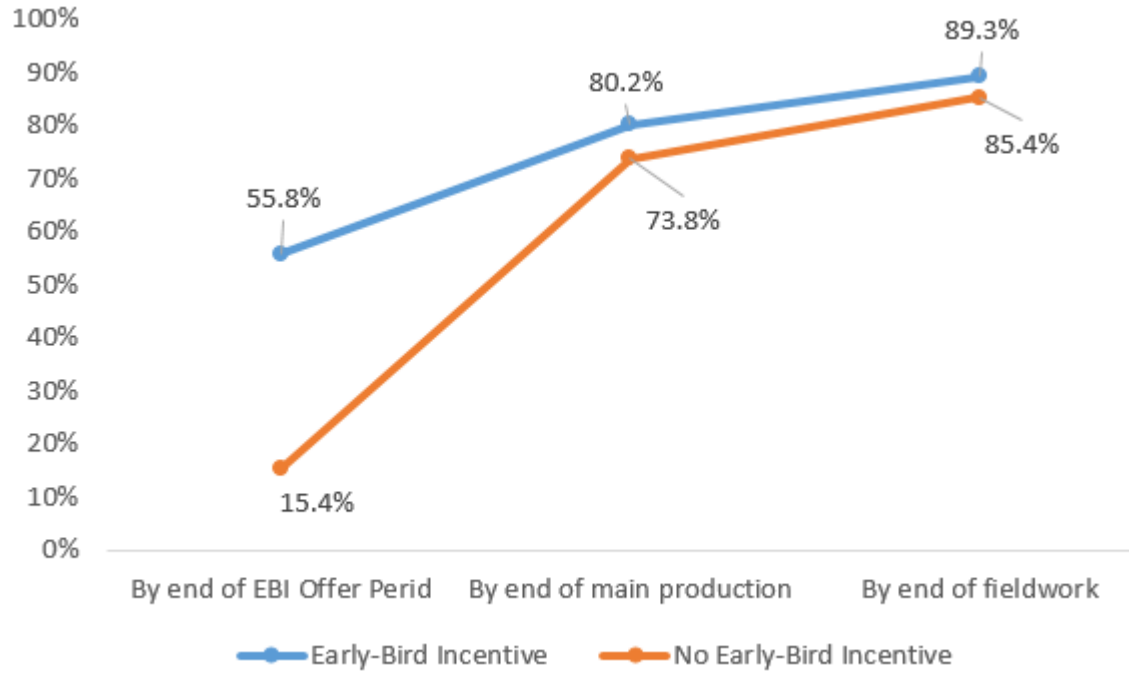
Bonus Incentive to Push Completion via a Desired Mode

- Using a bonus or larger incentive to
  - To push completion via a desired mode (e.g., Biemer et al., 2018; Yan et al., 2023; Westat, 2021)



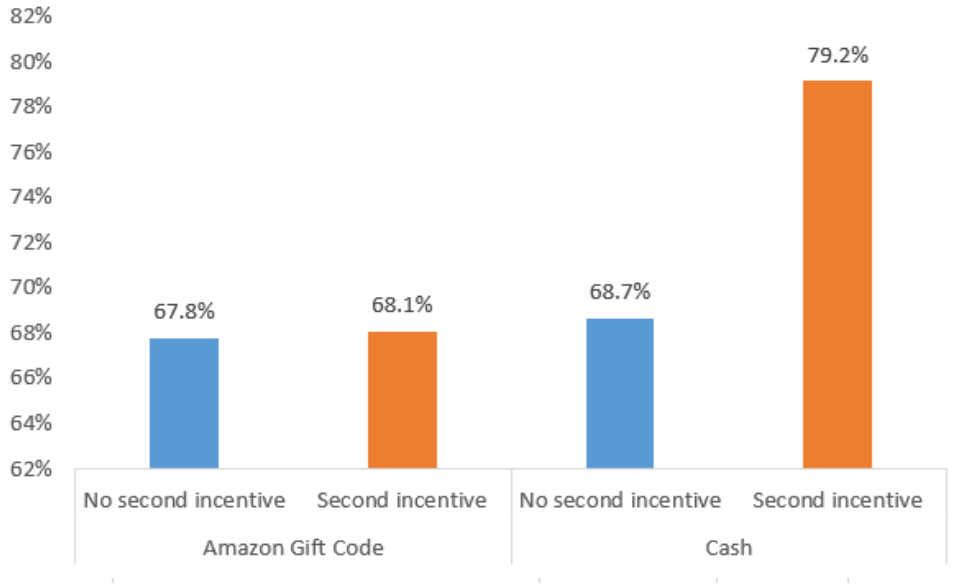
Bonus Incentive to Push Early Completion

- Using a bonus or larger incentive to
  - To encourage early completion (e.g., Brown and Calderwood; McGonagle et al., 2022)



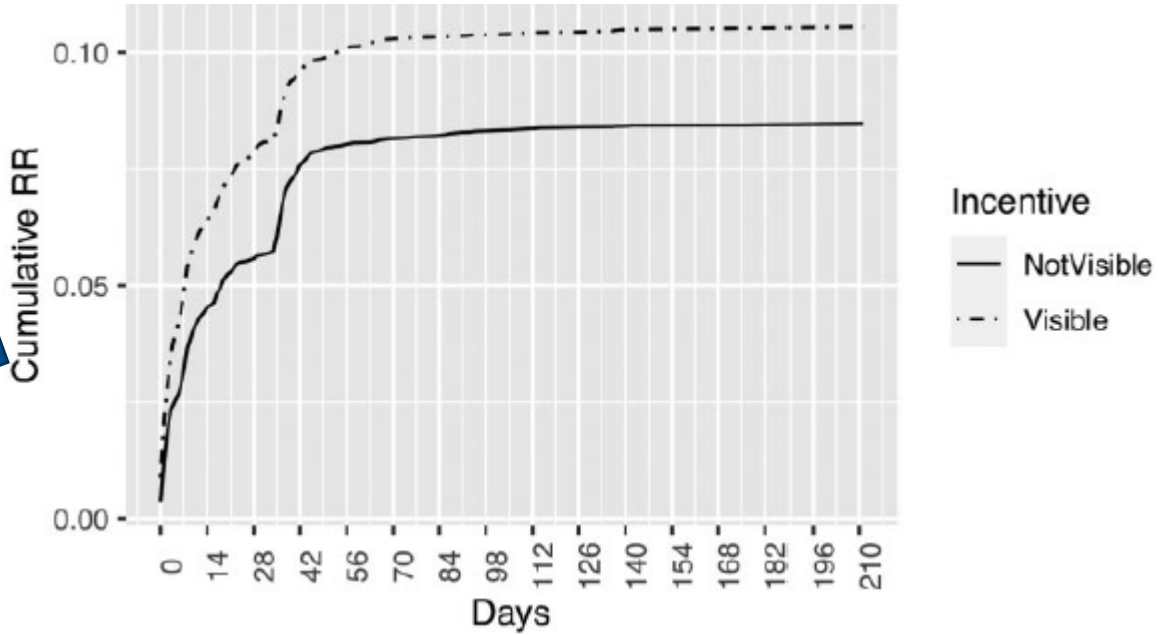
Using Second Incentive

- Using a second incentive to encourage response rate
  - Recommended by Dillman et al., (2014)
  - Empirically tested by Dykema et al. (2021), Zhang et al. (2023), Yan et al. (2023)



Visible Cash

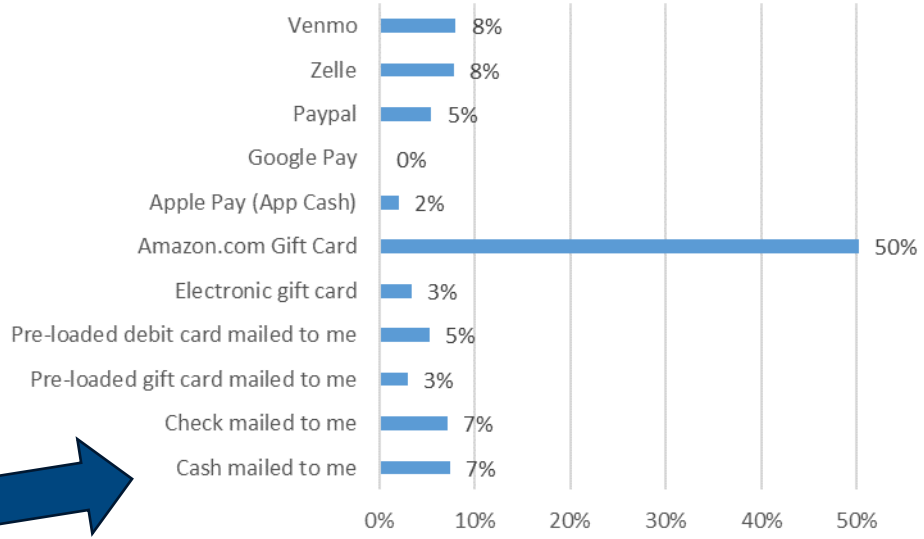
- Visible cash increases response rates (DeBell et al. 2020; Bilgen et al. 2021; Sherr and Wells 2021; Zhang et al., 2023)



- Overall RR: 16.8% (visible) vs. 15.5% (not visible)

Use of incentives: Summary

- Providing an incentive, a second incentive, or visible chase increases response rates
- Bonus or larger incentive can be used to achieve desired goals
- Open questions on amount, format, and timing of incentives
- People's preference for format of incentive is changing (Yan et al., 2023)
  - Digital payment:23%
  - Cash/Check: 14%



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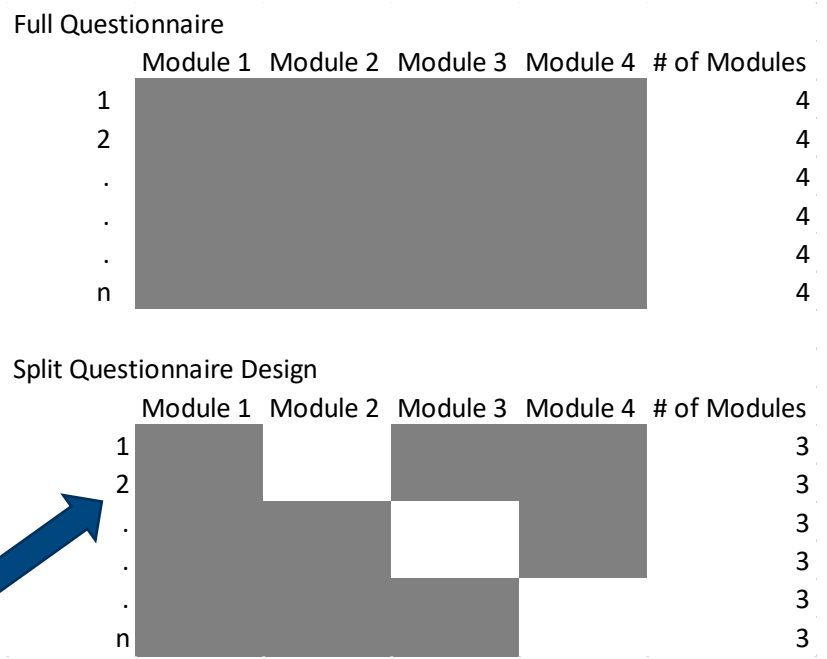
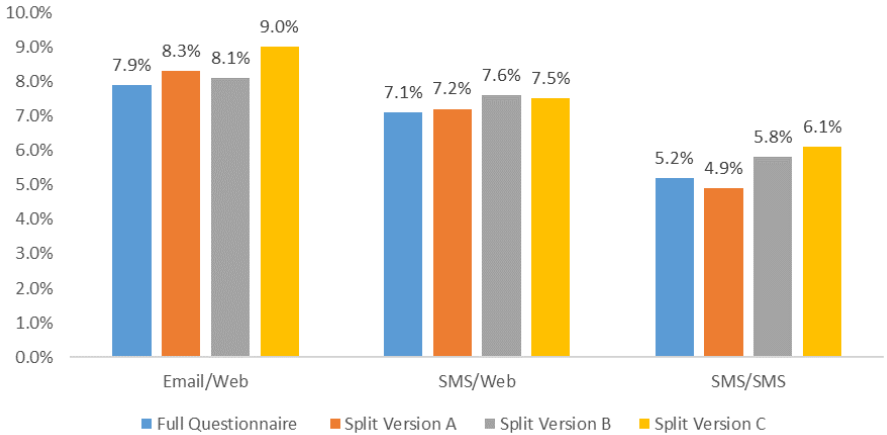
Questionnaire Length

- Longer surveys are believed to impose greater response burden and to lead to lower response rates (Yan and Williams, 2022)
  - Both advertised length and actual length are negatively related to response rates (e.g., Edwards et al., 2002; Galesic and Bosnjak, 2009; Hansen, 2007)
- Split questionnaire design is an effort to reduce questionnaire length and, thus, to increase response rates



Split Questionnaire Design

- Brenner et al. (2022): Completion Rates by Mode and Questionnaire Version



- How to split affects bias and variability (Axenfeld et al., 2022; Peytchev and Peytchva, 2017)

Questionnaire Length

- Longer surveys *do not always* translate into greater response burden and *do not always* necessarily lead to lower response rates
  - Only 6 out of 25 studies included in a meta-analysis empirically showed that longer surveys yielded lower response rates (Rolstad et al. 2011)
  - Respondents did not mind additional items clearly relevant to the survey topic (Williams, Brick, Montaquilla, and Han, 2016)
  - Objective burden (e.g., interview length)'s direct effect on response burden canceled out by the indirect effect of respondents' perception of the survey, producing small and non-significant overall effects on response burden (Yan, Fricker, and Tsai, 2022)
- Modular designs that ask questions over multiple settings are a potential alternative (West et al., 2015)

Questionnaire Length: Summary

- Survey researchers should be mindful about questionnaire length
  - Split questionnaire design is one way to reduce survey length
- But survey researchers should always examine analytical goals of questions
  - There is no need to ask questions not relevant or not used to answer key research questions
- Survey researchers should consider other data sources if possible
- Survey researcher should use theories of participation to change other design features to mitigate cost/burden of long surveys

Discussion

- Discussions of survey participation theories and design features are not meant to be a comprehensive and exhaustive review of literature
  - They are selected as food for thoughts and call for continued research
- Challenges of field:
  - There is no one-size-fits-all solution
    - e.g., incentives work in general, but not always
  - There are still open questions
    - e.g., $2 prepaid incentive or $5 prepaid or $25 prepaid

Discussion (2)

- Survey design decisions need to consider essential survey conditions (target population, sampling, survey design, survey topic etc.)
- Survey design decisions involve trade-offs between different components of survey error and survey cost

Thank You

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