

Why Do a Mixed-Mode Survey?

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I. Perspective on today's webinar

- Prior to 2000, it was difficult to garner enthusiasm for using different modes of contact and/or response for doing a survey.
- In less than two decades mixed-mode surveys have become the most preferred way of conducting surveys in many (but not all) situations and are replacing RDD household surveys.
- Outline:
 - I. Perspective and Key Definitions
 - II. Research Progress on web-push mixed-mode designs
 - III. Brief Digression into Visual vs. Aural Design
 - IV. Thinking Towards an Internet Intensive Age with Practical guidelines
 - V. Summary and Where To Next?

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A Memorable meeting in 1993

- I met with the project manager of a national survey of "nursing homes" who had a problem.
- A mail request was sent to nursing home addresses. A follow-up mail request was sent but seemed to get lost, often going to a different person. Later he would transfer the study to the telephone unit and try to call non-respondents. It was awkward and he wanted a better method.
- My response: "The telephone numbers can easily be found. Call each nursing home before the survey starts and ask to whom the questionnaire should be addressed? Then send the questionnaire, the follow-up, and final phone call to that person."
- His response: "I can't do that! I will send it to the telephone division once, but I will not do that twice!"
- Why? Moving from one division to another in his organization took a huge effort and time in the early 1990's. The Internet was in its infancy and much of the record keeping was manual; most organizations could not handle two modes of contact in the field at the same time. My idea would have lengthened the study.

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Second Memory from 1990s: Many surveyors believed that, "We must have interviewers"

- RDD Telephone interviews were considered the best available survey method for household surveys.
- Interviewers were deemed essential because:
 - They provided persuasion.
 - They answered questions.
 - They corrected misunderstandings.
 - They led respondents through difficult branching patterns.
- These benefits made it easy to overlook certain problems with telephone interviews.
 - Respondents provided socially desirable answers
 - Respondent agreeability or acquiescence was greater.

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Third memory; Interviewers often produced different answers than self-administration

- Do you strongly agree, somewhat agree, somewhat disagree or strongly disagree that this a good time to look for a job?
(“Don’t know and/or No opinion” withheld on telephone, unless “needed” but not on paper or web)
- How would you rate your health?
Excellent, Good, Fair, Poor
(More “excellent” answers in interviews than either mail or web)
- Combining telephone and paper (or web) would sometimes produce different answers even when wording was the same.

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What is important about those three memories and what has changed?

- Development of the Internet and computer management systems in late 1990’s made it possible to do efficient real-time coordination of multiple modes.
- Talking to someone else on the phone became outdated. Society shifted...
 - from bank tellers to ATM’s
 - from store clerks to electronic checkouts
 - from checks to electronic payments.
 - from interviewer to Internet-only employment and service applications.
 - from 1-800 calls to the internet for purchase of products.
- If we don’t need people as intermediaries for most tasks, why do we need interviewers for surveys?
- Measurement Differences? If we ask questions in the same way across modes, i.e. unified mode construction, many measurement differences will disappear.

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The voice telephone era of RDD household surveys is mostly over

- The presenting problems for RDD surveys are:
 - Single digit response rates.
 - Need to combine individual (cell) and household (land) lines.
 - Need for brevity (the 18 minute rule).
 - Need to devote questions to correcting for area code transportability, ownership of cell/landline access, not driving a vehicle, age of respondent.
 - People likely to answer phone only once, so that it is becoming a “one chance to persuade” (in 5 seconds or less) methodology
- However, **cultural** change is the biggest problem; voice telephone is seldom used for ordinary conversations.
- Most telephone communications are now asynchronous texts and emails.

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The hoped for Email contact/web response replacement, is not yet working well.

- Earliest internet surveys occurred in late 1990's.
- Coverage for household populations remains limited (<80-85%), some on slow connections.
- Individual internet skills are limited among some adults, especially the less educated, older and lower income individuals.
- No email sample frame for household selection comparable to telephone RDD.
- Email only contact produces response rates similar to phone.

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The hoped for email/web replacement is not yet working well (2).

- Lack of trust on multiple levels; sponsorship, misrepresentation of purpose, threat of malware, and consequences of making a mistake.
- We are moving from age of desktops, to laptops, (and now) to devices, which are not optimally designed for answering surveys—screen size affects when and how they get used.
- The purse and pocket problem combined with the smartphone response situation of people being “on the move” from one task to another makes getting lengthy and thoughtful survey responses very difficult.
- Mixed-mode designs may be part of the solution.

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Survey Error Perspective and Defining Mixed-mode Surveys

- My emphasis is on probability sampling of households and other populations.
- I am also focused on simultaneously reducing four types of error: coverage, sampling, nonresponse and measurement (described as the four cornerstones in Dillman, Smyth and Christian, 2014).
- Cost-effectiveness is also a concern
- Mixed-mode refers to using more than one survey mode as contact and/or response mode(s).

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It's useful to think about four types of mixed-mode designs (Dillman, et al. 2009).

- Each respondent gives answers by two response modes in one survey,**
e.g. In-person interview followed by self-administered questionnaire for sensitive questions.
- Response mode is different at different times for the respondent,**
e.g. Longitudinal survey, e.g. switching from telephone to web.
- Different modes for different respondents in one survey,**
e.g. A choice of response modes is offered, mode-preference allowed.
- Contact mode is different than the response mode,**
e.g. Mail request to respond by web.

But, mixed-mode designs often involve more than one type of mixed-mode design, including multiple contact modes and multiple response modes.

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Part II. Building effective mixed-mode designs with a web-push emphasis (overview)

1. Address-based sampling. Our best household coverage.
2. Ten Web-push experiments. Use of mail contact to push respondents to the web while withholding until later other response options (mail, telephone and/or in-person) for reducing nonresponse error. (See Dillman, In Press)
3. Nine practical guidelines derived from succession of experiments. (See Dillman, Hao and Millar, 2016)

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Postal addresses have emerged as sample frame with most complete household coverage

- U.S. Postal Service Computerized Address File that provides addresses without names achieves ~98% household coverage (See Harter et al. 2016).
- But, it requires mail contact.
- Potential benefits of mail contact:
 - Deliver incentives with the survey request (much more effective than post payments)
 - Send follow-up contacts in different forms to offer additional arguments for responding.
 - No evidence of a precipitous decline in mail response rates as happened for telephone.

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Results from a sequence of 10 experiments, 2007-2014

- My research team ran a series of “push to web” experiments, where we took what we learned from one test, made changes and ran the next test.
- There are two kinds of research:
 - **Tightly controlled experiments**—Individually add or subtract 1 or 2 specific procedures, so if there is a difference in response we know the reason.
 - **Breakthrough research**, of building the best combination of ideas we think practical. If we get a positive effect we can’t say why, but it provides a basis for then adding or subtracting elements in future research.
- We were doing the latter, the first one being a “kitchen sink” experiment; we did everything we thought reasonable to get households to respond over the web.
- Success of first experiment led to later tests, with each adding and taking away design features
- I would like to take you through this process and the results.

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Design Features of the Experiments (1)

- Address-based samples.
- Undid old mail strategies, e.g. name personalization, envelopes, use of postcard.
- Respondent selection, adult with most recent birthday or most knowledgeable household member.
- 20+ minute surveys (70-140 questions, on 12 pages in postal version of questionnaire)
- A variety of topics—community satisfaction to water and electricity management priorities

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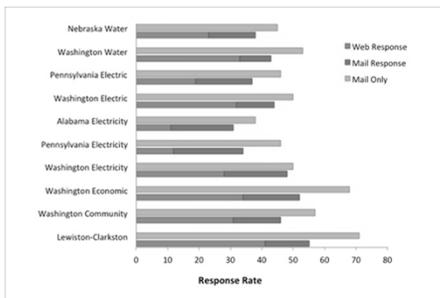
Design Features of the Experiments (2)

- 4-5 postal contacts, paper questionnaire provided in 3rd or 4th contact.
- \$4 -5 token incentive with request to respond; in some cases a second incentive (with third request).
- Unified mode construction to reduce measurement differences.
- Tailoring paper and web to population and each other with graphic design and color.
- Our background model was, “What we thought could be applied eventually to the “American Community Survey”

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Overview of the results: Response rates for web-push (mean, 43%, with 62% over the web) vs. mail out/mail back (mean, 53%) surveys, 2007-2014 (Dillman, Smyth and Christian, 2014, Chapter 11).



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Here is how the first experiment produced the breakthrough; 2007 Lewiston-Clarkston Study

- 51 numbered questions, 90 responses, 10 pages (paper)—a 20+ minute (if it were telephone) conversation
- Four contacts.
 1. Pre-notice letter.
 2. Paper questionnaire and/or web request (depending upon treatment).
 3. Thank-you post card.
 4. Replacement questionnaire(s).
- \$5 token cash incentive included with 2nd contact.

(Later studies would change number and nature of contacts)

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We compared four treatments

1. **Mail preference with web mention:** Send mail questionnaire and mention web with initial request
2. **Push-to-mail:** Send mail questionnaire but withhold mention of web for about two weeks
3. **Push-to-web:** Web invitation with no mail questionnaire, but explain that mail questionnaire will be sent in about two weeks
4. **Equal mail/web preference:** It is your choice!

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Larger plain envelopes (even for web-only request) to get them opened

- Normal business stationery more likely to be ignored.
- Used a return label showing the photo from survey cover and the survey title to increase familiarity.



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Correspondence tailored to city address

- All letters used WSU stationery (legitimation).
- \$5 affixed to letter (to get it read)
- Photo of questionnaire cover used to tie different elements together (interest).



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A picture of the Lewiston and Clarkston region identified the survey area (confluence of the Snake and Clearwater Rivers)



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Additional pictures identified the survey area

- Photos taken of local landmarks, artwork, and symbols to make survey recognizable and visually attractive.



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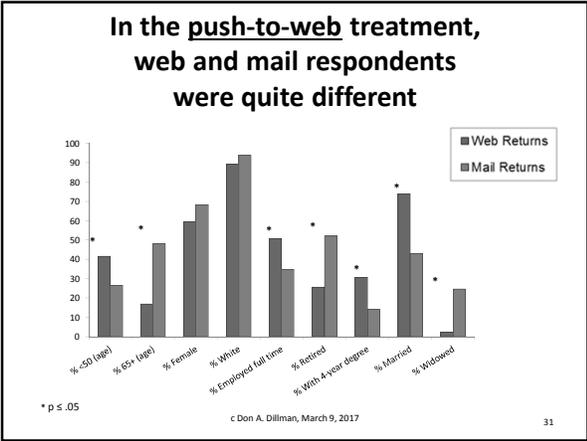
Mail Questionnaire tailored with broad survey topic, who should respond, and back-page pictures

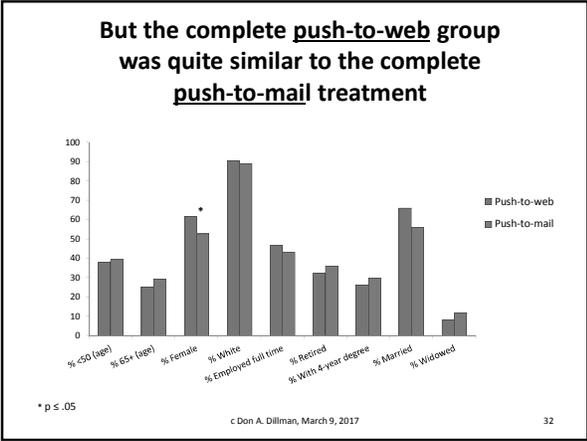
Use of tailored images to help connect respondents to survey and to place an emphasis on study area instead of on survey source. 90 responses requested



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Initial success encouraged us to do four more large-scale tests to evaluate the web-push methodology

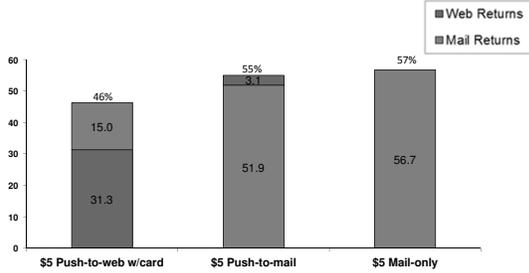
1. Lewiston, ID-Clarkston, WA Survey 2007
2. Washington Community Survey 2008
3. Washington Economic Survey 2009
4. WA, PA, AL Tri-state Electricity Survey 2011
5. WA and NE Water Management Survey 2012

- Needed multiple topics and populations
- Research goal was to refine through subtraction and addition experiments, e.g. token cash incentives, other state populations, questionnaire design, respondent selection, location of sponsor, etc.)
- ~ 28 additional experiment treatments, with successful treatments being carried forward.

(For summarized detail, see Chapter 11 of Dillman, Smyth and Christian. 2014.)

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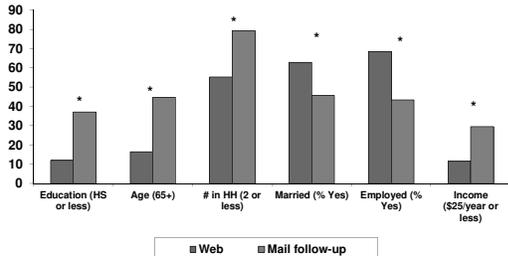
Push-to-web had lower total response, but 2/3 of responses came over the web. For push-to-mail, a late web request had very small effect.



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Introducing a paper questionnaire in third contact brought in different kinds of respondents than did the initial push-to-web effort. (Messer and Dillman, 2011)

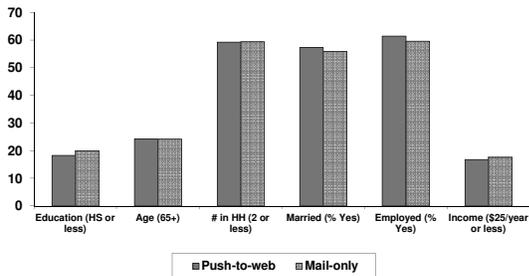


* p < .05

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The combined push-to-web group (web plus mail respondents) was demographically similar to the mail-only treatment



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Does mail item non-response negate gains in response rates?

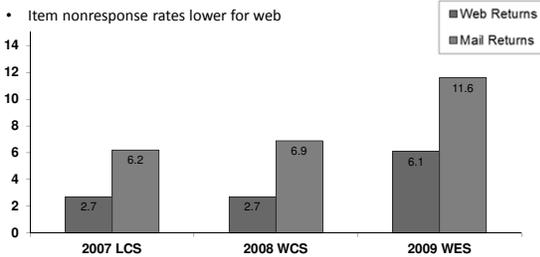
- If mail higher item non-response rates then perhaps that cancels out the benefits of gaining the additional responses in web-push designs.
- Thus, it was important to evaluate.
- We examined results from three Lewiston/Clarkston (2007), Washington Community (2008), Washington Economic (2009) surveys. (See Messer, Edwards and Dillman, 2012).

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Web vs. mail item non-response in the push-to-web groups for LCS, WCS, and WES

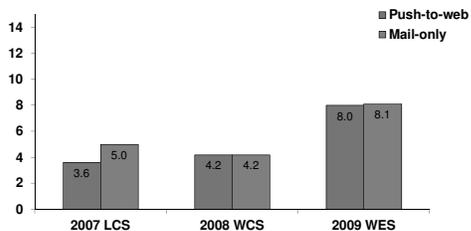
(Messer, Edwards and Dillman, 2012)



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BUT, push-to-web and mail-only groups have similar overall item nonresponse rates; Late mail respondents in push-to-web groups are probably less capable respondents(older with less education).



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Summary of Major findings across all experiments

(Dillman, Smyth and Christian, 2014; Dillman, In Press)

1. 10 Postal-only response = 53% (38% to 71%).
2. 10 Push-to-web response = 43%(31% to 55%).
3. Offering initial choice pushes most people (~80%) to mail.
4. Web-push produces about 60% of responses over the web.
5. Token cash incentives with request significantly improves web and overall response rates.

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Summary of Major findings (2)

6. Significant differences exist between web and mail responders (education, age, income, marital status).
7. Web+mail treatment respondents are quite similar to all mail-only treatment respondents.
8. Item non-response to mail is a less of a problem than we had anticipated when visual design principles are applied.
9. Response decreases when surveying in distant states.
10. Web-push costs slightly more per respondent than mail-only because of lower response rates (but this is changing).

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Web-push from mail start with follow-up by other modes now being used world-wide.

- American Community survey, since 2013, (web→mail→telephone→in-person)
- 2016 Canada Census, 2016, (web→mail→in-person)
- National Survey of College Graduates, since 2010, (web→mail→telephone)
- National Child Health Survey, test 2015-2017, (phase 1, web+mail→Phase 2 web+mail)
- Nexant gas and electric surveys, since ~2013), (web→mail and telephone)
- Australian Census, 2016, (web→mail→in-person)
- Japanese Census, 2015, (web→mail→in-person)
- ...and there are many others (See Dillman, In Press, 2017).

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Part III. A brief but critical digression into visual vs. aural communication

- Four languages contribute to question meaning:
 - Numbers (e.g. 1,2, 3)
 - Symbols (e.g. →)
 - Graphical display (size, shape, consistency, etc.)
 - (and) words
- We have to evaluate all four! (Christian and Dillman, 2004)
- One example of how visual communications makes a difference.

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NSF National Earned Doctorate Survey (web prototype); a web item that did not work

Date Degree Granted: Aug 99 (MM/YYYY)

- Some respondents tried to enter alphabetic abbreviations for the month (e.g., Aug.) or to report the year using only two digits, instead of the required four.
- Respondents indicated signs of frustration after receiving error messages that their answer was not in the desired format.

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Some Mechanisms by which visual layout influences answers to questionnaires (Dillman, Smyth and Christian, 2009)

- Pattern recognition (how we navigate pages of information, e.g., top left to lower right).
- The limits of attentive processing (e.g., 8-10 character limit of foveal view).
- Gestalt Laws of Pragnanz, Proximity, Simplicity, Continuation.
- Composition of visual elements: e.g., size, location, brightness, and shape.

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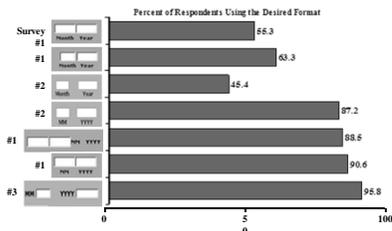
How Can We Get People to Report Right the First Time? Multiple Manipulations in Successive Experiments

- Size of month box relative to year box (a graphic element).
- Use of words (month/year) vs. symbols with imbedded numeracy (MM/YYYY).
- Separation of month and year box (Gestalt laws of proximity and similarity).
- Changes in wording of the question stem.
- Location of symbols in relation to answer space (foveal view and natural reading order).

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Summary of Experimental Results



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Unified mode construction needs to replace maximizing question design for each mode.

- Beyond visual layout, there are two other sources of measurement differences between modes: exact wording and question structure. (Christian, Leah and Don A. Dillman, 2004)
- In single mode studies, we usually maximized BOTH for each mode.
- Examples:
 - Check-all that apply (mail and web) vs. forced individual choices (telephone)
 - Withheld categories (e.g. no opinion)
 - Grids on mail and laptops vs. individual items on smartphones.
 - Long fully labeled scales (interviews) vs. short scales (smartphones)
 - Drop down menus (web) vs. full display of choices (mail)
- Increasingly, we need to **build same structures and wording across modes** and evaluate to find the most adequate. The needs of smartphones are now driving this! (See January AAPOR webinar by Barles and Thomas)
- That has been a key aspect of the studies already reported, and the ones I am about to show you. It's also difficult for study designers to deal with.

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Even with unified mode construction, respondents are likely to give more extreme positive answers to questions with vague quantifiers (Dillman, et al. 2009).

Q2. Overall, how satisfied are you with your long distance company?

- 1 Not at all satisfied
- 2
- 3
- 4
- 5 Extremely satisfied

Q3. Considering what you get and what you pay for it, how would you rate the overall value of your long distance company's products and services?

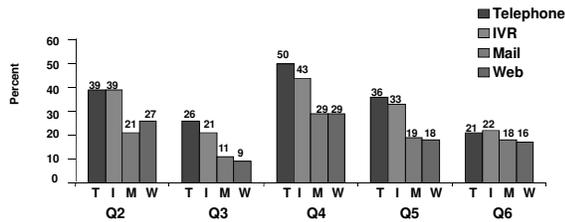
- 1 Terrible
- 2
- 3
- 4
- 5 Outstanding

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Main finding: Answers to the aural modes grouped together as did answers to the visual modes on all five satisfaction questions using vague quantifiers

Percent choosing labeled end-point on positive end of scale



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Key Implications from Aural vs. Visual Design Research

- If we construct paper and web questions similarly with regard to the four languages—words, numbers, symbols and graphics--we will reduce measurement differences.
- If we use unified mode construction between aural and visual questions we will reduce measurement differences.
- But, we may not be able to eliminated modest differences for opinion questions using vague quantifiers. (Christian, Dillman, and Smyth, 2008)

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Part IV. Capturing the power of multiple contact modes.

- One of the important things we have learned that greatly affects web-push studies is:
 - Changing mode of contact has a more powerful effect on response rates than offering people a different mode of responding to surveys.
- Using mail, email and telephone contact gives us more ways of contacting (coverage) and explaining our survey request to respondents.
- Here is how that can happen.

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Email augmentation of postal contact provides new possibilities

- URLs, usernames and passwords are hard for people to transfer from paper to computer.
- Also, simultaneous choice of response modes has two negatives: 1) lower response rates, and 2) most responses come by mail.
- Email augmentation is sending a quick email after postal letter to provide electronic link and ease task of responding over the web.
- For some general public surveys we may be able to get both postal and email contacts.

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Why Email augmentation of postal letters should ease the web response task

- URLs are difficult to remember, and flicking eyes back and forth from paper to screen produces errors.
- Strings of more than 4-5 characters are difficult for most people to remember and transfer.
- Few touch typists deal well with all four types of characters—CAPS, small case, numbers, and symbols—are often required for access codes.
- Email augmentation lowers the time and effort “costs” of responding.

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Experiment designed to see if we could eliminate the negative effect of choice with email augmentation

- Test made on student sample for whom we could get both postal and email addresses (Millar and Dillman, 2011).
- Seven treatment groups. To follow the next slide start at the bottom with email only contact and read upwards to top treatment that combined pre-incentive, choice of response mode (mail vs. web) and email augmentation of postal contacts.

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Treatment groups: Tests of email plus postal contacts on response rates (with and without \$2)

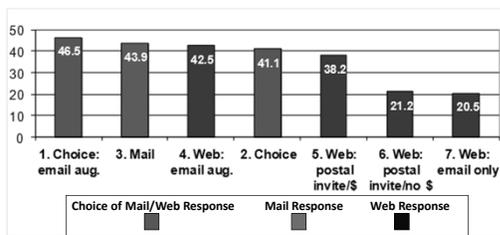
Requested Mode of response	Nov 9/10 Invitation	Nov 12/13 Invite prompt	Nov 18/19 Thank you reminder	Dec 7/8 Replacement	Dec 10/14 Replacement prompt
1. Choice	\$ ■	▲	■	■	▲
2. Choice	\$ ■	■	■	■	■
3. Mail	\$ ■	■	■	■	■
4. Web	\$ ■	▲	■	■	▲
5. Web	\$ ■	▲	▲	▲	▲
6. Web	■	▲	▲	▲	▲
7. Web	▲	▲	▲	▲	▲

■ Contact sent via MAIL ▲ Contact sent via EMAIL \$2 Incentive included

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Response Rate was highest when sample offered mode choice with postal incentive and email augmentation (Millar and Dillman (2011))



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Late offer of Mail increased email responses ad well as paper.

- The paper questionnaire went to 200 individuals, 32% responded.
- Response rate increased an additional 12 percentage points after postal questionnaire sent; ½ responded by paper and ½ by web.
- Final response was 77%
- The mixed-mode approach with email augmentation was quite effective.

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Some survey sponsors often find the power of multiple contact modes difficult to grasp and use

- Mixed-modes have been seen by many as giving people a mode preference. This is a “limited” view of mixed-mode possibilities.
- The “response power” comes more from providing multiple contacts that develop synergy as in email augmentation.
- And, now, to bring all of these ideas together!

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Nine practical guidelines for improving online response in mixed-mode surveys

(From: Dillman, Hao and Millar, 2016)

1. **Secure multiple modes of contact**
May facilitate email augmentation and/or telephone follow-up and improve contact possibilities.
2. **Use Postal mail first to legitimize and provide token cash incentive.**
Overcomes fear of the Internet, and improves trust.
3. **Where culturally appropriate use a telephone contact to “push” web.**
Chinese example produced 70% response but was not experimental.
4. **Use multiple modes of follow-up to increase attention to communications.**
Overcome inattention to particular modes.
5. **Provide mail or telephone as alternative response mode**
Reduces nonresponse error and increases response rates

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Nine practical guidelines for improving online response in mixed-mode surveys (2)

6. **Encourage online responses to mail request by withholding alternatives when email contact is not possible.**
Otherwise mail responses will be increased greatly.
7. **If immediate email augmentation of request sent by mail is possible offering of choice is okay.**
A quick email follow-up appears to overcome the negative effect of choice by providing electronic links.
8. **Use unified mode construction for writing survey questions.**
This helps to overcome measurement differences with aural/visual designs.
9. **Make it possible to respond via smartphone, but avoiding "pushing-it"**
Cut-offs are greater, and we are still learning to construct questions for smartphones, and will need to use unified mode construction more than is now being done.

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Part V. To summarize today's talk, here are 12 reasons web-push methodologies exhibit considerable promise

- 1 Address-based sampling provides superior household coverage.
- 2 Response rates to web-push are dramatically higher than RDD telephone.
- 3 Cost reductions from web-push seem likely.
- 4 Quicker responses from "most" people is being achieved.
- 5 Web-push is a better fit with society's "do-it-myself" culture.

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12 reasons web-push methodologies exhibit considerable promise (2)

- 6 We achieve a reduction in socially desirable answers (vs. interviews)
- 7 Reduction in extremeness of scalar responses (vs. telephone).
- 8 More effective branching is achieved on web, and by applying visual design theory, on mail.
- 9 Initial mail contact increases feelings of trust.
- 10 Pre-incentives improve likelihood of response.
- 11 Two-phase data collection may be collapsed into one phase (screen, plus longer questionnaire).
- 12 Web-push is a better fit with organizational preferences and pressures.

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Where to Next?

- I see a number of perils facing the increased reliance on web surveying, but could not cover them in this presentation. Those thoughts, and a description of the web-push age we are in is in a paper to be published by [Survey Methodology](#) in June, 2017 (Dillman, in Press)
- To wrap-up here are a few thoughts on what's next.
- Is the web-push era just a short blip while something else begins to take over, or...?
- I'm not sure, but I have found it useful to contemplate ideas offered by Thomas Friedman.

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Thomas Friedman on thriving in an age of accelerations

Moore's law (doubling the power of computer microchips every 2 years or so) is not coming to an end, and is now echoed in all five parts of computing devices:

- Integrated circuits that do the computing
- Memory units that store and retrieve information
- Networking systems within and across computers,
- Software applications for performing tasks within and between computers.
- Sensors (movement, language, light, sound, etc.)

(Friedman, Thomas. 2016. [Thank you for being Late: An optimist's guide to thriving in the age of accelerations](#). Farrar, Straus and Giroux, New York)

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Survey implications based upon Friedman's assessment of change

- Friedman argues that the broadening of Moore's Law occurred with the release of the Apple I-Phone in 2007.
- That's the same year our team began the experiments on pushing survey respondents to the web.
- Our capacity for pushing survey respondents to the web is increasing rapidly.
- At same time, Friedman goes into detail about [human adaptability](#) lagging behind technology.
- I believe that in designing surveys we must be, "neither too far ahead nor too far behind" where people are, and dealing with that gap is the biggest challenge we now face.
- To deal with the [heterogeneity](#) that exists within survey populations, we need to develop and master mixed-mode methods!

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Moving patiently towards the Future

- I did my first electronic survey in 1997, and constructed it as an embedded email—I was afraid people wouldn't know what a web page WAS. (Schaefer and Dillman, 1997)
- A colleague who observed our work predicted we would do only web surveys in five years; I was less optimistic, but I did not expect us to be needing mail to do web-push surveys in the 2017.
- The future arrives in surprising ways, and I look forward to seeing how the next rounds of survey innovation and practices surprise us.

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Thank you for your interest in today's AAPOR Webinar!

Acknowledgements and references to research reported in this talk follow.

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References on research reported here (1)

1. Schaefer, David and Don A. Dillman. 1998. "Development of a Standard E-mail Methodology: Results of an Experiment." Public Opinion Quarterly 62: 378-397.
2. Christian, Leah Melani, Don A. Dillman, and Jolene D. Smyth. 2008. "The Effects of Mode and Format On Answers to Scalar Questions in Telephone and Web Surveys." In Lepkowski, J. et al., *Advances in Telephone Survey Methodology*. New York: Wiley-Interscience. pp. 250-275.
3. Dillman, Don A., Jolene Smyth, and Leah Melani Christian 2009. *Internet, Mail and Mixed-Mode Surveys: The Tailored Design method* 3rd edition.
4. Edwards, Michelle L., Don A. Dillman and Jolene D. Smyth. 2014. An Experimental Test of the Effects of Survey Sponsorship on Internet and Mail Survey Response. Public Opinion Quarterly. 78 (3): 734-750.

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References on research reported here (2)

5. Edwards, Michelle L., Don A. Dillman and Jolene D. Smyth. 2014. An Experimental Test of the Effects of Survey Sponsorship on Internet and Mail Survey Response. Public Opinion Quarterly. 78 (3): 734-750.
6. Messer, Benjamin L., Michelle L. Edwards, & Don A. Dillman. (2012). "Determinants of Web & Mail Item Nonresponse in Address-Based Samples of the General Public." Survey Practice, April: <http://www.surveypractice.org>
7. Messer, Benjamin L. 2012. "Pushing households to the web: Results from Web+Mail experiments using address based samples of the general public and mail contact procedures." Ph.D. Dissertation. Washington State University, Pullman
8. Edwards, Michelle L. 2013. "Measuring Public Perceptions of Water Governance in Nebraska and Washington." Ph.D. Dissertation. Washington State University, Pullman.

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References on research reported here(3)

9. Messer, Benjamin L. and Don A. Dillman. 2011. "Surveying the General Public Over the Internet Using Address-Based Sampling and Mail Contact Procedures." Public Opinion Quarterly 75(3):429-57.
10. Millar, Morgan M. and Don A. Dillman. 2011. Improving Response to Web and Mixed-Mode Surveys. Public Opinion Quarterly 75 (2): 249-269
11. Dillman, D.A., Smyth, J.D., Christian, L.M. 2014. *Internet, Phone, Mail and Mixed-Mode Surveys; The Tailored Design Method* 4th edition. (John Wiley Co Hoboken, NJ)
12. Edwards, Michelle L., Don A. Dillman and Jolene D. Smyth. 2014. An Experimental Test of the Effects of Survey Sponsorship on Internet and Mail Survey Response. Public Opinion Quarterly. 78 (3): 734-750.

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References on research reported here(4)

13. Dillman, Don A., Feng Hao, Morgan M. Millar. 2016. Chapter 13. Improving the Effectiveness of Online Data Collection by Mixing Survey Modes. In Fielding, Nigel, Raymond M. Lee and Grant Blank. The Sage handbook of Online Research Methods, 2nd edition. Sage Publications, London.
14. Dillman, Don A. In Press. The Promise and Challenge of Pushing Respondents to the Web in Mixed-Mode Surveys. Survey Methodology (June, 2017).
15. Harter, Rachel, Battaglia, Michael P., Buskirk, Trent D., Dillman, Don A., English, Ned, Mansour Fahimi, Frankel, Martin R., Kennel, Timothy, McMichael, Joseph, McPhee, Cameron Brook, Montaquila, Jill, Yancey, Tracie, Zukerberg, Andrew L. 2016. Address-base Sampling. American Association for Public Opinion Research Task Force Report 133 pp. http://www.aapor.org/AAPORKentico/AAPOR_Main/media/MainSiteFiles/AAPOR_Report_1_7_16_CLEAN-COPY-FINAL.pdf

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