Winter 2023
SurvMeth 622 Fundamentals of Data Collection
Assignment #4: Evaluation Study Proposal

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Current Survey Analysis: Potential Sources of Error in Design

To estimate early career success and subjective job satisfaction among recent college graduates, the presented survey does an excellent job of applying multiple modes such that switching is possible, implementing follow-up with nonrespondents, and maintaining updated contact information with every response-collection rotation. However, since the questionnaire was designed and revised several years ago, presumably before 2010, changes in the social context such as public policy programs may increase errors in its data collection. For example, the post-completion optional practical training (OPT) extension for eligible STEM program students was introduced in 2008 with a 17-month grace period, and has been changed to 24 months since 2016[i], which impacts the response rate of international graduates. A rare additional round of selection of H-1B visa in July 2021 due to low filing volume from the initial selection[ii] also affects the recruitment of longitudinal survey, especially those that include target populations holding non-immigrant visas. Another example is the improvement of technology that allows more venues for social investigations. People are getting used to schedules filled with less costly, and less time-consuming virtual meetings after the COVID-19 pandemic and fewer mails or phone calls. The unchanged survey modes may introduce a higher nonresponse rate.

Potential sources of error in current survey design are labeled in two categories: 1) representativeness error, including nonresponse that skews data analyses, and panel attrition over time that increases uneven representativeness; and 2) measurement error, such as mode effects

that lead to different answers in different modes, recall difficulty that results in incorrect reports, and panel conditioning with repetitive, similar questionnaires.

Evaluation Study Design

In this study, I focus on addressing representation issues source from panel attrition and wave nonresponses, and measurement error in respondents forgetting accurate answers and mode effects. I will conduct both observational and experimental studies to evaluate potential error of this longitudinal, mixed-mode household survey.

Hypotheses

1. **Panel attrition** in representativeness error is one of the undesired impacts caused by long intervals between interviews that cannot accommodate changes in contact information. Loss of visa-holders may be specifically substantial due to ineligibility to stay connected with the U.S. agency after visa expires. Shortening investigation intervals is effective in gathering more responses from a respondent across different time periods.
2. Responses to the earliest time or reasons for specific actions, cognitions, or facts are inaccurate due to **recall effects** in measurement error. Conducting repetitive survey with shorter terms helps mitigate this issue.
3. **Nonresponses** due to inflexibility to advanced technology or sample being unconfident to respond with non-native languages are possible. Incorporating modes with trending techniques and providing services of reminder and translation help address this issue.
4. Selection to complete investigation with self-administered or interviewer-administered modes generates **mode effects** because some survey items are sensitive to several people. Providing multiple mode options and compare the consistency is a solution.

Overall Design and Initial Wave

The two-stage contact method is introduced to this study. In each wave of data collection, except for the first wave, the first stage asks respondents of their willingness to participate, preferred mode of responding, and, for a portion of interviewees, whether to receive a calendar invitation or not. It uses the venues respondents chose previously in the last section of their latest responses. Nonrespondents will receive follow-up communications via other available contact information modes. The survey or interview is completed in the second stage, with required response of preferred contact modes for the next round at the end of the survey. It applies respondents' selections from the first stage of contacts.

The initial wave remains mostly unchanged—a new sample of recent graduates is recruited each year with the assistance from higher education institutions. New graduates are first contacted asking their willingness to participate one year after their graduation by email sent by their schools. Respondents have choices to participate by self-administered emails or web surveys, or interviewer-administered phone calls or virtual meetings such as Microsoft Teams, Google Meets, Zoom, etc. After the first wave, I will divide the effective respondents into three groups with imbalanced sample sizes for future waves of data collection.

Future Waves

First, I will manually select 20% of the initial-wave respondents to the third group based on their answers to the demographic questions, ensuring half of the sample is visa-holders, including permanent residents (i.e. Green Card holders), and the other half is legal non-visa residents (i.e. U.S. citizens or non-citizen nationals from U.S. territories). They are then randomly assigned to two subgroups, where each subgroup mixes 25% of the visa-holders and 25% of the legal non-visa residents. In the communications with this group of people prior to each annual survey distribution, all of them will have options to receive a calendar invitation on

their platforms of selections, while only one subgroup will have access to translation services during their responses. The last round of contacts is delivered five years after their graduation.

Second, the remaining 80% first-wave respondents are randomly and evenly assigned to two groups, one being contacted biennially on two subsequent occasions, and the other being contacted annually on four subsequent occasions. Both groups will have their last survey round held five years after their graduation. Within each of the two groups, samples will be randomly assigned to two subgroups, one can request calendar invitations after being contacted by the first stage, while the other subgroup will not be informed of this service.

Limitations and Result Applications

Several pairs of within-group, between-group, and cross-time series comparisons are allowed under this structure of study design. However, due to budget and feasibility, this study is limited to evaluating the effects of the following factors and assumptions:

Panel attrition and recall effects

I assume that panel attrition and recall effects are both related to the long interval of surveying because 1) people forget and make up facts or perspectives; 2) people change contact information and are no longer accessible; and 3) non-citizens are no longer eligible to stay in the U.S. The first and the second group in waves other than the first are both composed of randomly and evenly assigned first-wave effective respondents. They can be treated as controlled and treated groups that allow comparisons between short and long interval effects. The random process enables the assumption to control for other variables. Noting the consistency of individual responses helps reveal recall effects of different interval lengths, while comparing response rates across groups helps interpret reasons of panel attrition.

Nonresponses

Nonresponse error has multiple factors. In this study design, I pay attention to non-native English-speaking respondents' fear and sample who are willing but forget to participate. I also assume that a majority of visa-holders are non-native speakers to simplify the experiment design. It would be most ideal to apply a randomized controlled trial experiment. Nonetheless, the fact that proportions of respondents' nationalities may be extremely diverse prompts me to assign members to the third group manually, to ensure within-group equal representativeness.

Within the third group, translation services distinct the two subgroups, each composing of half visa-holders and half legal non-visa residents with all other factors remaining the same, and allow comparisons in multiple ways. One of the examples is to cross-validate the association between use rates of translation services and nonresponse rates across visa-holders within one time period or cross-timely. In addition, all members are allowed to request for reminder in each first-stage contact. This further allows between-group comparisons of respondents holding different nationalities with respondents requesting for reminder services in the first and the second group.

Mode Effects

Mode effects can be examined with experiments such as mix-mode surveys to a portion of the respondents. However, this study design has been complicated and beneficial in multiple ways to implement comparison analyses. Thus, I apply observational study that reallocate groups by modes and compare the consistency of responses across the border of the experimental groups.

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[i] Optional Practical Training Extension for STEM Students (STEM OPT). U.S. Citizenship and Immigration Services. Retrieved on April 15, 2023, from https://www.uscis.gov/working-in-the-united-states/students-and-exchange-visitors/optional-practical-training-extension-for-stem-students-stem-opt.

[ii] H-1B Specialty Occupations, DOD Cooperative Research and Development Project Workers, and Fashion Models. U.S. Citizenship and Immigration Services. Retrieved on April 15, 2023, from https://www.uscis.gov/working-in-the-united-states/temporary-workers/h-1b-specialty-occupations-and-fashion-models/h-1b-electronic-registration-process.

Appendix

Figure 1. Initial wave two-stage contact process

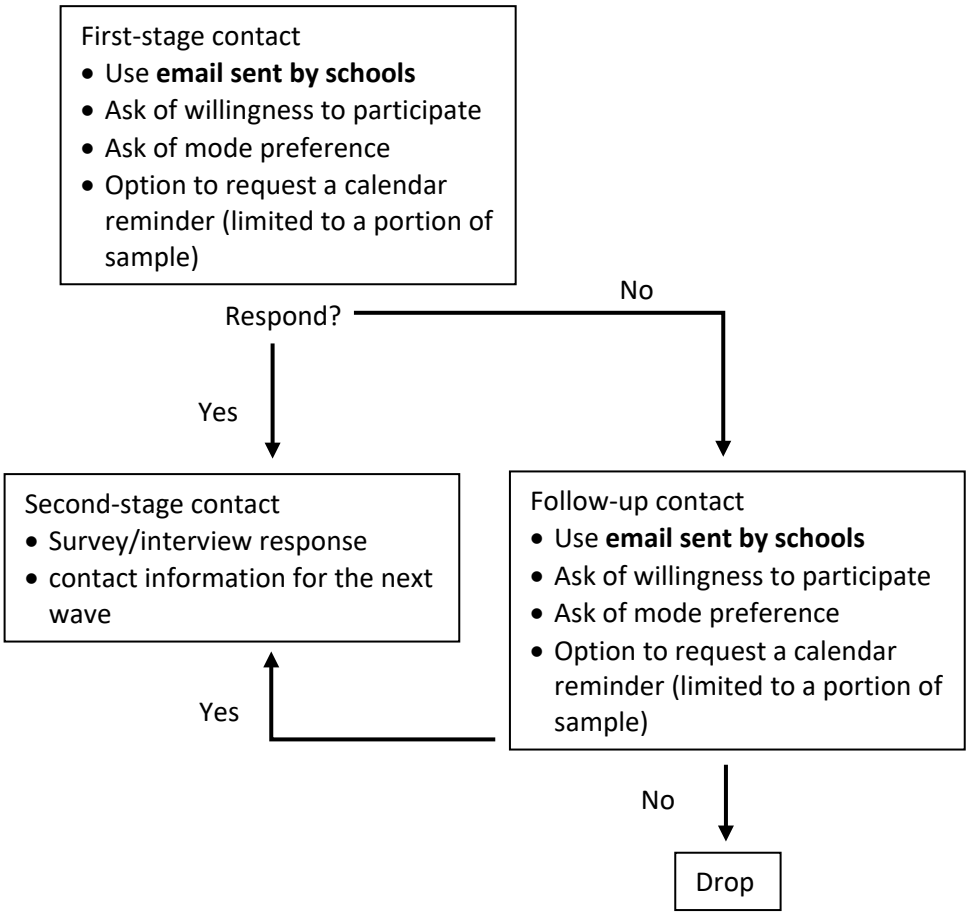

Figure 2. Two-stage contact process for waves 2-5

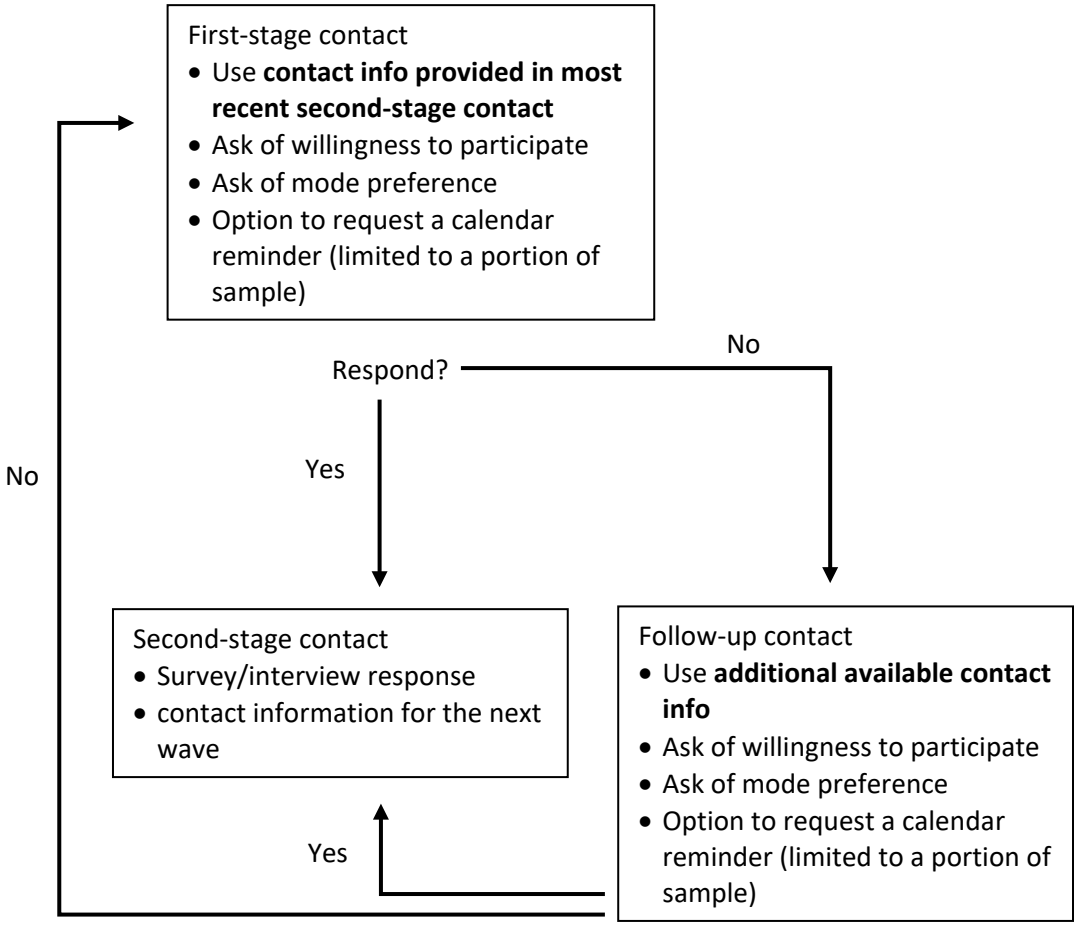

Figure 3. Study Design Structure

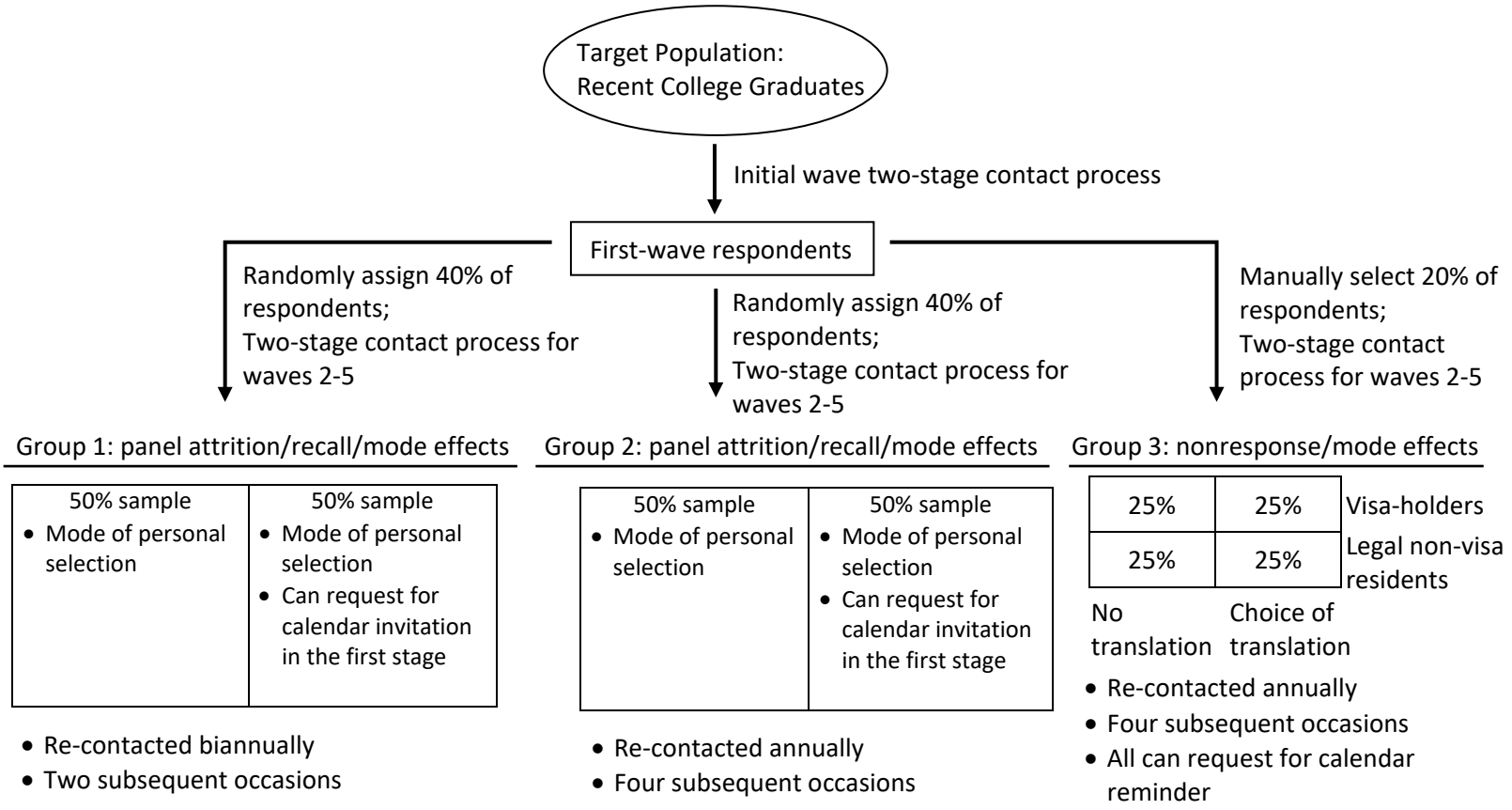

Table 1. Summary table of the study

Issues	**Panel attrition**	**Recall**	**Nonresponse**	**Mode Effects**
Experimental Study Design				
Shorten Terms of Investigation	V	V		
Calendar Invitations			V	
Translation Services			V	
Study Feature				
Experimental	V	V	V	
Observational				V
Comparison Method				
Within-group (Between-subgroup)			V	V
Between-group	V	V	V	V
Cross-Time	V	V		V