

## Using paradata to manage and monitor multi-mode surveys

Gina Cheung; Cheng Zhou (University of Michigan); Marcel van der Steen (CBS)

[qianyang@umich.edu](mailto:qianyang@umich.edu); [zhouc@umich.edu](mailto:zhouc@umich.edu); [m.vandersteen@cbs.nl](mailto:m.vandersteen@cbs.nl)

### *Abstract*

The multi-mode survey has been a popular data collection method for many years now. How to adapt the best mode for any respondent will be one of the critical challenges for the success of this way of data collection.

In this presentation, we will discuss how we utilize Blaise paradata collected during the interviews by combining them with the acquired survey data in order to identify:

1. The multi-mode questionnaire design difference, especially between self-administered and interviewer administrated methods
2. Multi-mode questionnaire data quality, interview interruptions, modes switch, etc.
3. Which special functions are needed for different data modes, such as text reminders, call reminders, and email follow-ups.
4. How to build a real-time production dashboard for managing multi-mode surveys and identity issues.

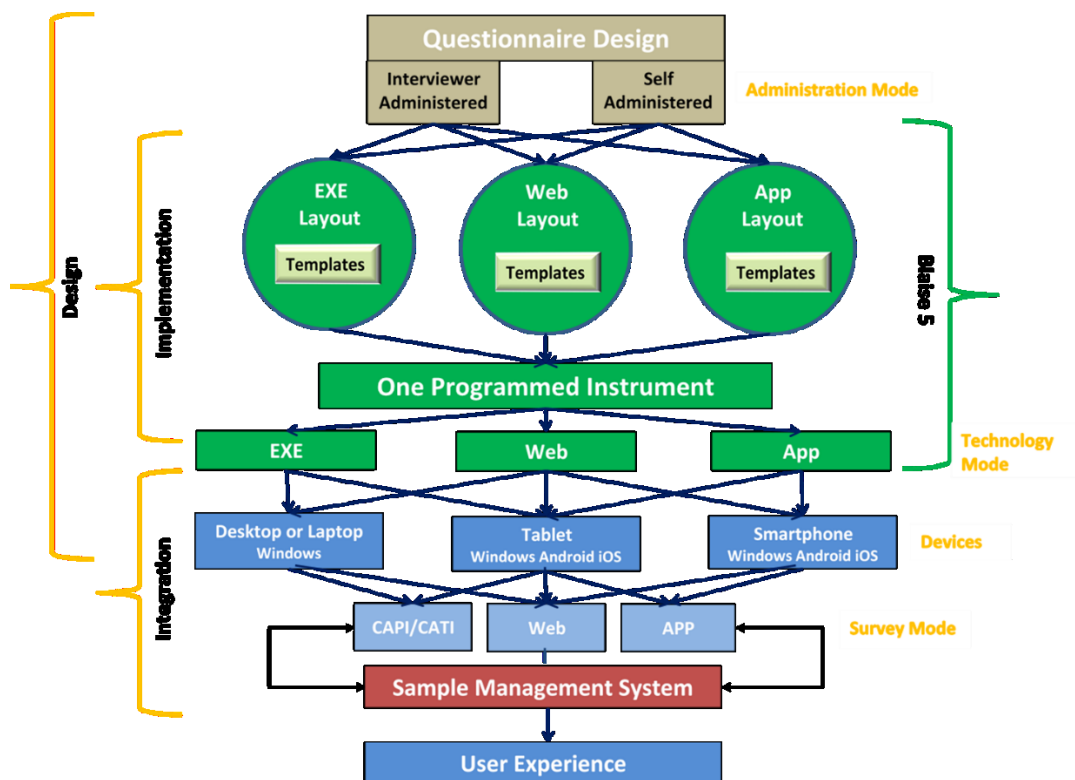
# Using paradata to manage and monitor multi-mode surveys

Gina Cheung, University of Michigan / CBS - Statistics Netherlands  
Cheng Zhou, University of Michigan  
Marcel van der Steen - CBS - Statistics Netherlands

The multi-mode survey has been a popular data collection method for many years. Adapting the best mode for any respondent is one of the critical challenges for the success of this way of data collection. In this paper, we will discuss how we utilize paradata collected during the interviews together with the acquired survey data to identify and improve in four significant areas:

1. multi-mode questionnaire design difference, especially between self-administered and interviewer-administrated methods;
2. multi-mode questionnaire data quality, interview interruptions, modes switch, etc.;
3. special functions needed for different data modes, such as text reminders, call reminders, and email follow-ups;
4. how to build a real-time production dashboard for managing multi-mode surveys and identity issues.

In the examples given in this paper, we use Blaise as our data collection method.



The first critical task is to identify each answered questionnaire's mode correctly. There are a couple of different ways to achieve this. The easiest way would be to embed information in the survey URL by appending other parameters to the base URL. For example, we can append a parameter called 'source' to represent different sources: different letters could be assigned to this parameter to distinguish the URLs sent via invitation letters (source=L), emails (source=E), text messages (source=T), or from a CATI mode (source=C). Even different email types can be distinguished by assigning different letters for initial invitation (source=I) and later reminders (source=R). A systematic way is required when constructing the URL in these different email templates.

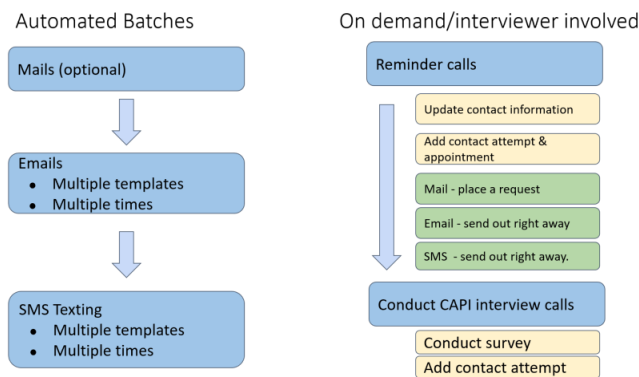
Furthermore, we can add a parameter (e.g., iwer) to record the interviewer's user id if it is a CATI mode (iwer=someUserId). These parameters can then be passed into the survey and saved in the data when the URL is opened. This way, the source and interviewer information would be available for each respondent once the survey was answered. Another indirect way to tell the mode would be to use the audit trail data generated by the survey server. For example, Blaise records the layout choices when a survey is opened. We could infer whether it is an interviewer-administered mode or respondent self-administrated mode as these two modes usually use different layouts.

Once the mode of each questionnaire can be determined, we could compare various paradata statistics between the different modes to improve quality control and survey design. We use three primary sources of data: Blaise generated audit trail data, Blaise survey data, and paradata generated from our sample management system. The audit trail data provide much information from the device level to the question level. Total survey time, time spent on individual questions, the number of questions visited or answered with variable data, break-off questions, and device/browser information can all be parsed from the raw Blaise audit trail data. One significant difference between the self-administered and interviewer-administered modes is that the self-administered mode is generally much shorter than the interviewer-administered mode. For the self-administered mode, total survey time and time spent on each question can be used to assess the quality of the survey. For example, some studies would flag a case if the total number of questions answered within one second exceeds a certain threshold or if the full survey length is too short while the actual numbers of answered questions are not small. Also, the device information, like operating system, device brand, resolution, etc., can be beneficial to detecting survey design issues. For example, we consistently monitor the break-off cases. If it often breaks off at specific questions, it could be a design issue. Or it could be a display issue if there are a lot of break-off cases with particular devices, browsers, or resolutions. For example, in developing countries, smaller screens are often used, and sometimes the whole content cannot fit within one page, and scrolling is required. As a result, the input boxes or following page buttons are not readily available. By monitoring these paradata, we could quickly identify these design issues and make improvements. Besides audit trail data, we sometimes use captured screenshots and recorded audio to perform quality control for interviewer-administered surveys.

To manage the sample lines and monitor the progress, we built a sample management system with specific features/functions to orchestrate the workflow. A common goal of a mixed-mode survey design is to maximize the probability of self-administered mode and rely on the interviewer-administered mode as a last resource. Studies then come up with different reminder schedules. They often consist of these functions: letter invitations, emails, text messages, reminder calls, and eventually conducting CATI mode calls. The detailed plans would vary among studies. Some could be combined or even skipped, but they generally follow this order. Letters would go out first, and then emails and text messages would be sent out in batches by a system-automated process. If the respondent does not answer the survey during these phases, the case gets into the reminder call phase. Interviewers are needed during this reminder call phase. When an interviewer contacts a respondent, a contact attempt will be recorded, and a result code will be assigned depending on the outcomes. Emails and text messages can be sent out upon request during the reminder call.

The last phase would be the conducting CATI mode call phase. This phase is very similar to the reminder call phase, except that conducting interviewer-administered surveys is allowed by default. Depending on the designed protocol, the survey may or may not be opened if the respondent prefers to do it over the phone. This is an example of project protocol:

### Reminder tasks



Progress reports are built with both system auto-generated paradata and interviewer-generated paradata. With these reports, project managers can quickly know the project's current status. For example, how many cases are done in each mode, how many emails/text messages have been sent out, and how many phone calls have been made? Then they could decide whether or not to adjust the schedule or put more or fewer resources into it.

Moreover, the survey data always provides critical information to monitor the survey status. There are usually some key research questions that determine the outcome of each survey. For example, many surveys have consent, eligibility, and privacy questions. We extract the answers to these critical questions to some tables frequently (e.g., every 15 min) and create

some reports for project managers to have a glance at the responses. This helps us quickly identify why a case fails to proceed and what is the possible cause. Often some respondents may call us to report that the survey quits unintentionally. By checking these reports, we can, most of the time, determine the possible cause without further investigation so that the case would be reset quickly if needed.

By utilizing the paradata like the survey audit trail data, sample management generated data, and the survey data itself, we can correctly distinguish different modes, identify potential issues, perform quality control, monitor the process, improve efficiency and reduce the cost of multi-mode surveys.