Mobile Phone Survey

Surveda Technical Manual:
IVR, SMS, and Mobile Web Modes

Version 4
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Editor's Note

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Table of Contents

List of Tables

List of Figures

1. Introduction

1.1 Overview

Efficient monitoring and surveillance are cornerstones to track progress of disease burden, related risk factors and policy interventions. The systematic monitoring of risk factors to generate accurate and timely data is essential for a country's ability to prioritize essential resources and make sound policy decisions.

With increasing access and use of mobile phones globally, opportunities exist to use mobile phone technology as an interim method to collect data and supplement infrequent household surveys. Such technologies have the potential to allow for efficiencies in producing timely, affordable and accurate data to monitor trends, and augment traditional health surveys with new, faster mobile phone surveys.

The Bloomberg Philanthropies Data for Health (D4H) Initiative aims to strengthen the collection and use of critical public health information. One of the components of the initiative aims to explore innovative approaches to risk factor surveillance, including the use of mobile phone surveys. The main objectives of this component are to:

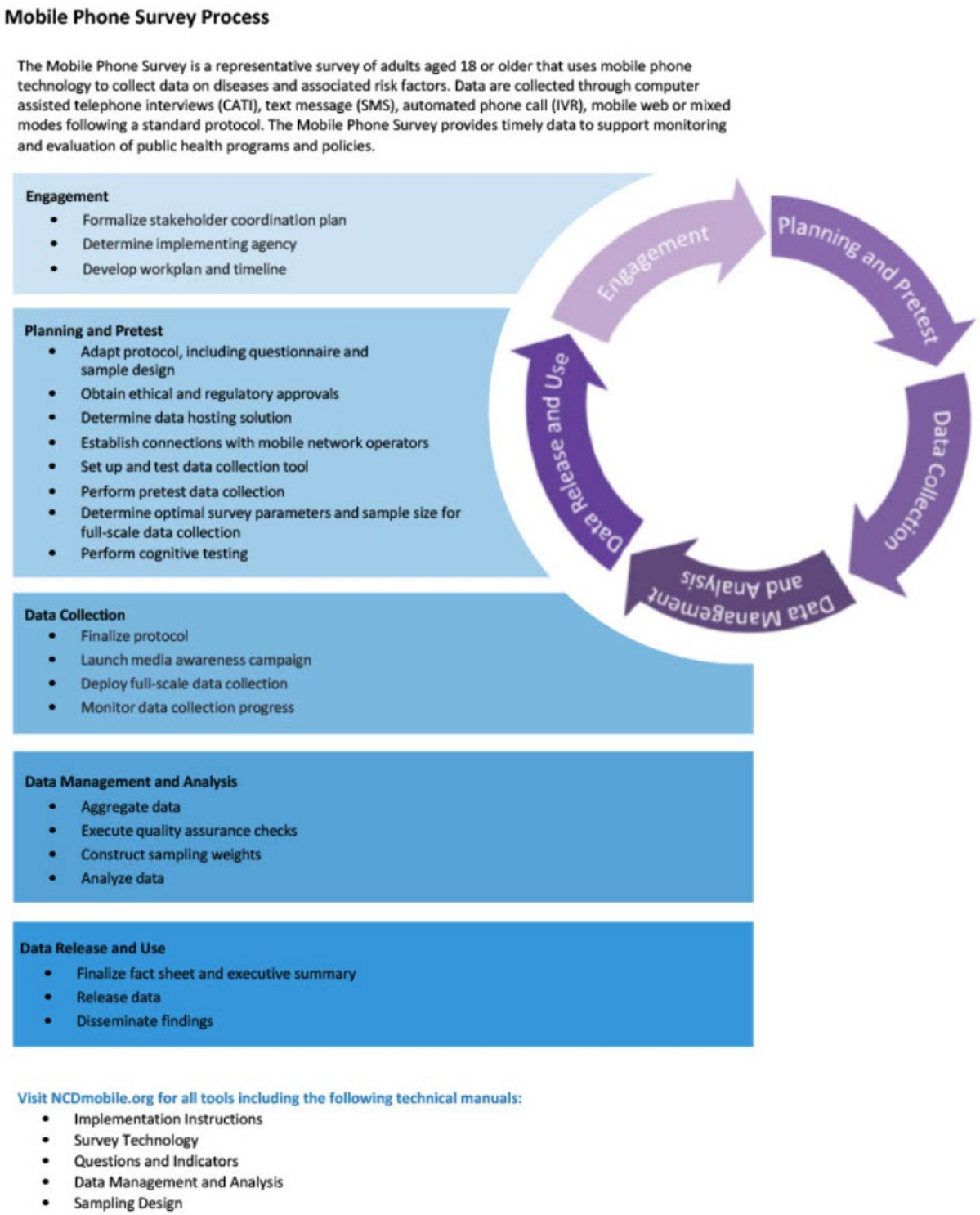
- **Empower Country Governments**: Collaborate with ministries of health to implement mobile phone technology for the systematic collection of representative health-related data, facilitating ongoing risk factor surveillance and informed public health decision-making.

- **Develop a Standardized Mobile Phone Survey Framework**: Create and promote a globally recognized mobile phone survey protocol that ensures uniformity in data collection methods, enhancing the reliability and comparability of health data across diverse populations.

- **Optimize Mobile Phone Survey Effectiveness**: Evaluate and identify best practices in the design and implementation of mobile phone surveys, ensuring they are tailored to effectively capture critical health risk factors.

The Mobile Phone Survey is a representative survey of adults 18 years of age and older. The survey uses standardized instruments and procedures reviewed and approved by international experts. This includes a core questionnaire with optional questions, sample design utilizing random digit dialing (RDD), data management procedures and data collection using single or mixed modes such as interactive voice response (IVR), short message service (SMS), mobile web and computer-assisted telephone interviewing (CATI). The implementation process consists of five stages: 1) engagement; 2) planning and pretesting; 3) data collection; 4) data management and analysis; and 5) data release and use. Details on each stage are presented in the Mobile Phone Survey Process Chart (see **Figure 1**).

Figure 1. Mobile Phone Survey Process Chart



2. Introduction to Surveda

This manual describes Surveda, an open-source, multi-modal mobile phone survey web application tool. It is capable of collecting data via Short Messaging Service (SMS), Interactive Voice Response (IVR) and mobile web. This manual presents a high-level description of Surveda and links to complementary associated documentation such as "how-to" training briefs and videos. Additional Surveda documentation is available in the Bloomberg Philanthropies Data for Health Initiative Online Knowledge Base. Technical assistance for mobile phone surveys is available from the Centers for Disease Control and Prevention (CDC) and collaborating partners and Innovative Support for Emergencies Diseases and Disasters (InSTEDD).

Mobile phone surveys may offer several advantages relative to traditional household surveys. The primary benefits of mobile phone surveys are speed, repeatability and low cost. Ministries of Health (MOH) can conduct health surveillance over a large geographic area quickly as training and logistics are minimal compared to household surveys. Mobile phone surveys utilizing Surveda are automated and self-administered and do not require interviewers during implementation. Because of the low cost of mobile phone surveys, MOHs can conduct surveillance with larger sample sizes and greater frequency. The infrastructure of establishing connections with mobile networks to deploy surveys may be reused for repeat surveys or for other surveillance initiatives. Mobile phone surveys are a relatively new mode of data collection in low- and middle-income countries. As such, they cannot replace traditional face-to-face surveys for health surveillance. However, mobile phone surveys can be a useful supplement to face-to-face household surveys.

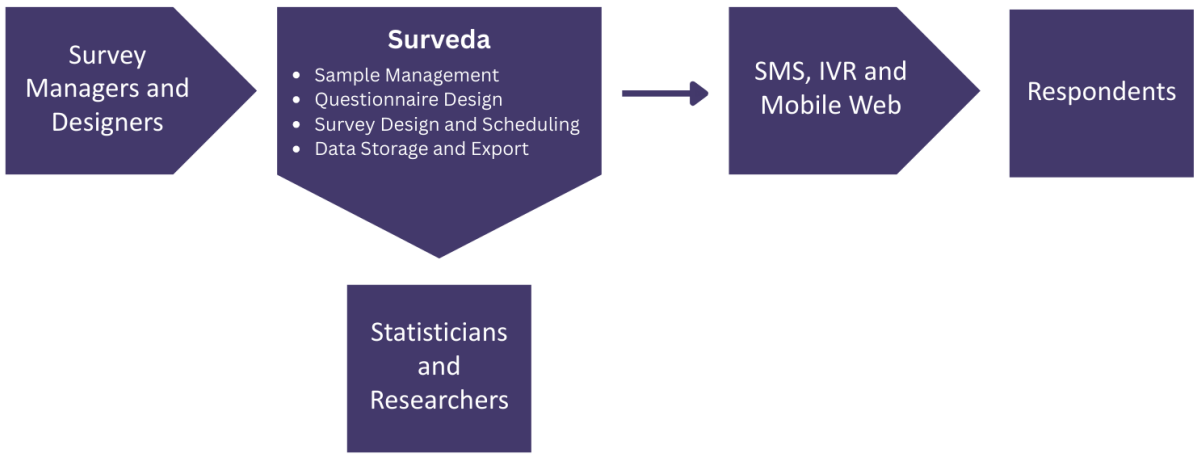
Key features of Surveda include the following:

- **Open-source:** The source code for Surveda holds a GNU General Public License 3 (meaning anyone can use, study, or modify the software with others online), is freely available online and is built on existing open-source software. Surveda can be modified as needed to support other project goals.
- **Mixed mode:** Surveda can deploy surveys in a combination of modes, using either SMS, IVR, or mobile web. Surveys can be sent using one or two modes. Mixed mode deployment leverages the strengths of the selected modes and can increase response rates. It can also help in reducing bias and reaching a more diverse population sample.
- **Easy-to-use interface:** Surveda employs an intuitive and simplistic design requiring minimal training by the end-user. The interface reflects a simple dashboard with built-in quality control functions to create, deploy and manage surveys. The robust survey designer supports multi-lingual deployment and features to reduce non-response (call-backs, question sequencing and survey scheduling functions).
- **Flexible survey type:** Users of Surveda can deploy either a cross-sectional survey or a panel survey, where longitudinal data is collected on the same respondents.
- **Secure storage:** The platform provides mechanisms to securely transport and store respondent-level data. Data can be hosted in the cloud or locally. Cloud-hosted environments are recommended.

- **Time-tested software:** Surveda is built on existing software programs Verboice and Nuntium, created by InSTEDD. This means the software is tested, reliable and robust.

As shown in Figure 2, Surveda is a full-service survey design and implementation tool. Users can design questionnaires, upload samples of mobile phone numbers to be contacted, configure channels and modes, set schedules, define call-back protocols and timelines and deploy surveys. Surveda also employs survey management features including real-time survey monitoring and survey progress visuals as well as data downloads in several formats. Surveda sends surveys to respondents via channels established through mobile network operators (MNOs) or aggregators. Respondents send data back via these channels, and Surveda securely stores the data, anonymizing and de-identifying responses.

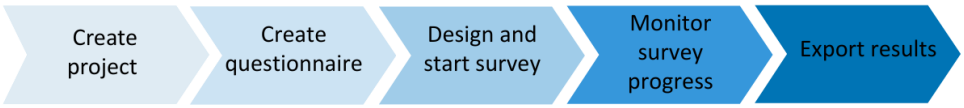
Figure 2. Surveda Tool Design



2.1 Surveda Overview

Surveda is accessed over the internet through a web browser and is optimized for Google Chrome. Prior to using the tool, the development of an implementation plan to define the survey design and inputs is recommended. As shown in Figure 3, Surveda employs five main steps: creating a project, creating questionnaires, designing and starting a survey, monitoring survey progress and exporting survey results. The steps are the sequential building of inputs defined in Surveda.

Figure 3. Functions of Surveda



2.1.1 Create Project

The first step in this process is to create a new project. A project is the top level of organization. It houses surveys and questionnaires and is a place to store and manage surveys. In a single project (e.g., D4H), a user may have multiple surveys, for example, separate surveys on diet, physical activity and alcohol use. Please see section 3 ('Creating a Project, Assigning Collaborators, Creating Questionnaires and Creating Surveys') for additional information on how to create a project within Surveda.

2.1.2 Create Questionnaire

The questionnaire contains question text, translations, response possibilities, skip logic and variable names. Users create questionnaires tailored for SMS, IVR and/or mobile web modes using the questionnaire designer, which is an interactive online form built into Surveda. Surveda can deploy questionnaires in multiple languages specific to each country. Questionnaires can be saved, copied and reused across multiple surveys within a project. By default, questionnaires use English as the primary language, but the language can be changed as needed. In addition, users can utilize the "topic randomization" functionality in Surveda, which allows users to create sections within which questions are contained. Then, these topics or blocks of questions are randomly shuffled during survey execution. This feature has the potential to reduce respondent bias due to topic order and drop-off due to survey fatigue. Please see section 3 ('Creating a Project, Assigning Collaborators, Creating Questionnaires and Creating Surveys') for additional information on how to design a questionnaire.

2.1.3 Design and Start Survey

Using the interactive, step-by-step tool, users can design the survey by creating the questionnaire, uploading the sample, setting days and times for sending invitations to potential respondents and selecting the survey mode (e.g., SMS, phone calls, mobile web or two of the three modes). Specific dates and times (e.g., national holidays, outside of business hours, etc.) can be "blocked out" from contact deployment in accordance with local holidays or regulations. Please see section 3 ('Creating a Project, Assigning Collaborators, Creating Questionnaires and Creating Surveys') for additional information on how to create and deploy a survey.

2.1.4 Monitor Survey Progress

Survey progress can be monitored in Surveda. The status of all sent invitations can be viewed, including the number of completed interviews, partial interviews and other types of non-response (e.g., call failed or refusal). This process allows survey managers to gauge the overall performance of the survey as well as to estimate how long the survey will take to complete. Please see section 3.7 for additional information on how to monitor survey progress within Surveda.

2.1.5 Export Results

The survey platform offers multiple ways to export survey data. Currently, all exports are available in a comma delimited (CSV) format, which can be imported into a wide range of data analytic tools such as Microsoft Excel, Tableau, Stata, R, SAS and most other statistical software packages. Please see section 4 for additional information on the types of data output available from Surveda.

2.2 Why Surveda?

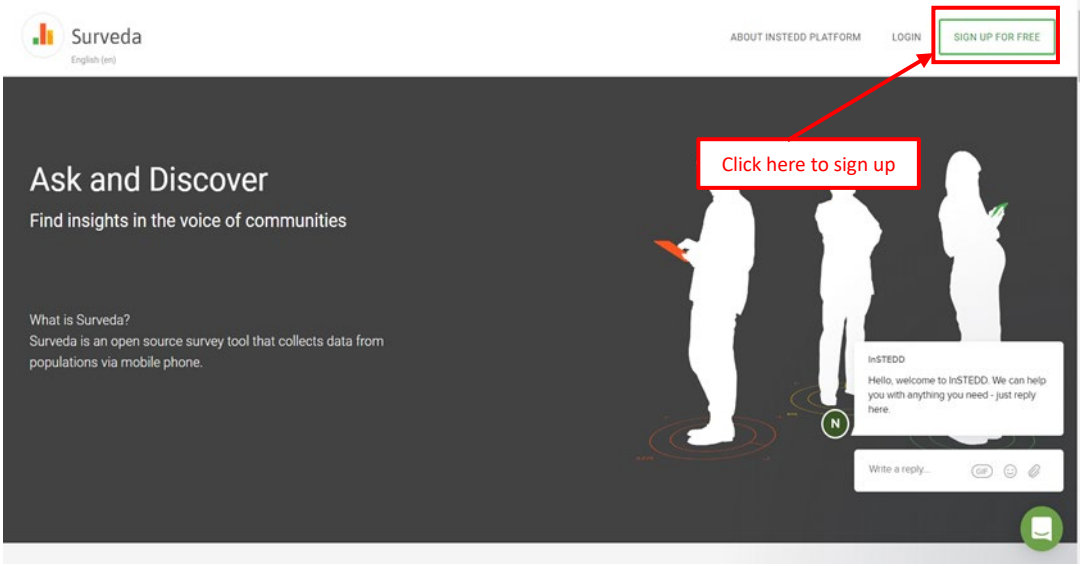
While Surveda was developed to help Ministries of Health (MOH) conduct data collection of noncommunicable diseases (NCDs), it is a flexible tool that can be used for other data collection purposes. Using Surveda, MOHs can collect individual-level data on risk factors from respondents via SMS, IVR and/or mobile web. In an SMS survey, respondents receive and answer questions via text messaging. In an IVR survey, respondents listen to prerecorded questions and select responses by pressing numbers on the mobile phone keypad. In a mobile web survey, an SMS containing a link is sent to the respondent, who then answers questions on a webpage.

2.3 Creating an Account

Anyone can create an account in Surveda for free. The steps below show how to create an account.

Creating a User Account on Surveda

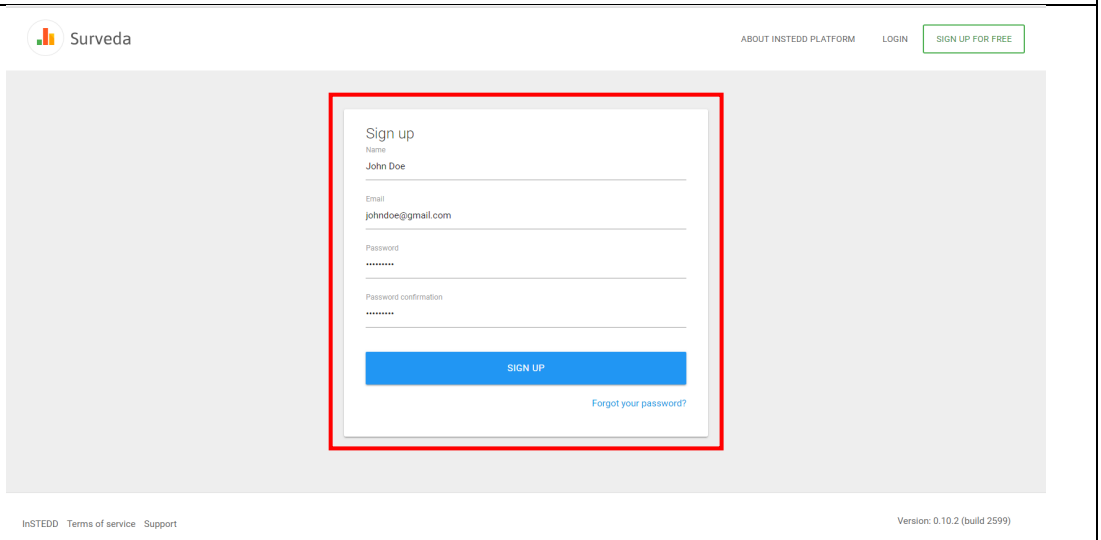
Step 1: Go to "surveda.instedd.org". Click **"SIGN UP FOR FREE"** in the upper right corner of the screen.

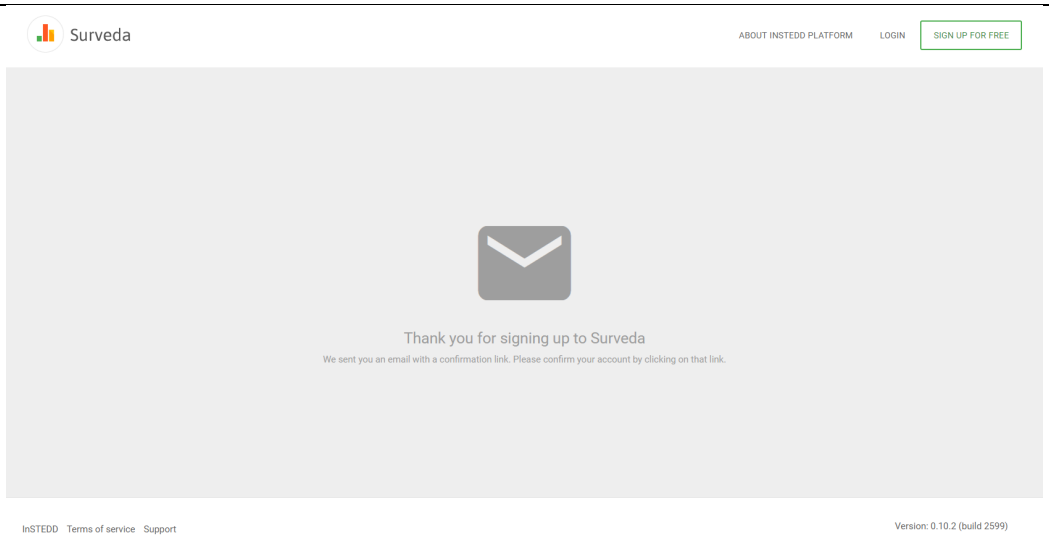
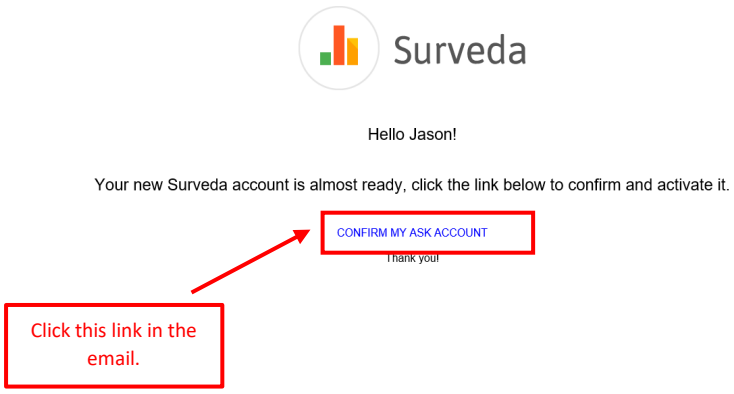


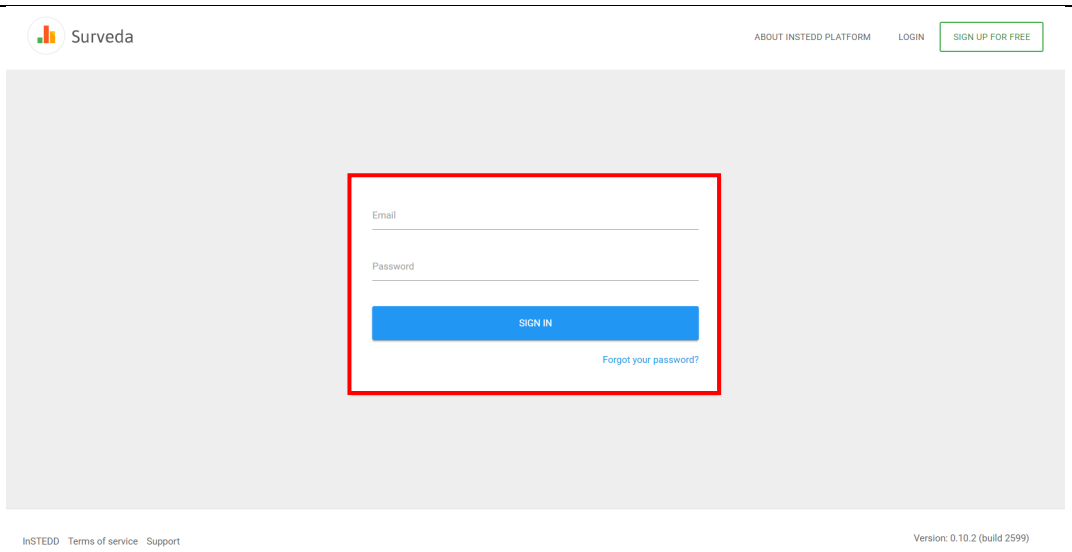
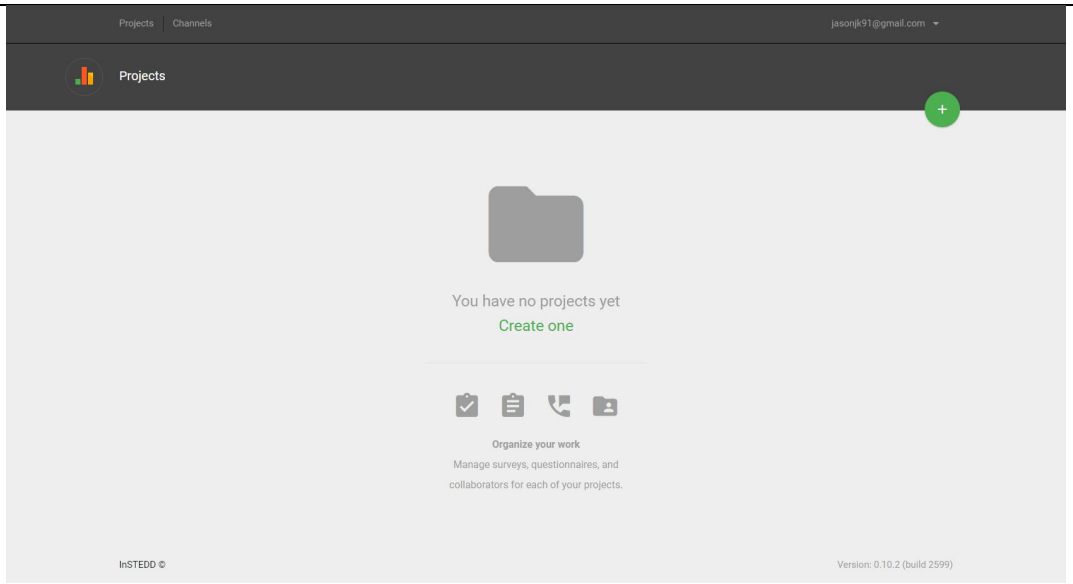
Step 2: Fill in the following fields:

- **Name**
- **Email**
- **Password**
- **Password confirmation**

*Note that the password confirmation is an exact repeat of the password entered under "Password."



Step 3: Sign into the email account used to register the Surveda account.	
Step 4: Within several minutes, a confirmation email will be sent to the email address. Open the email from **InSTEDD Surveda** and click "**CONFIRM MY ASK ACCOUNT**" to validate the account and re-route to the Surveda login page.	

Step 5: Log in into Surveda using the email and password used to create the account.	
Step 6: Surveda is accessible.	

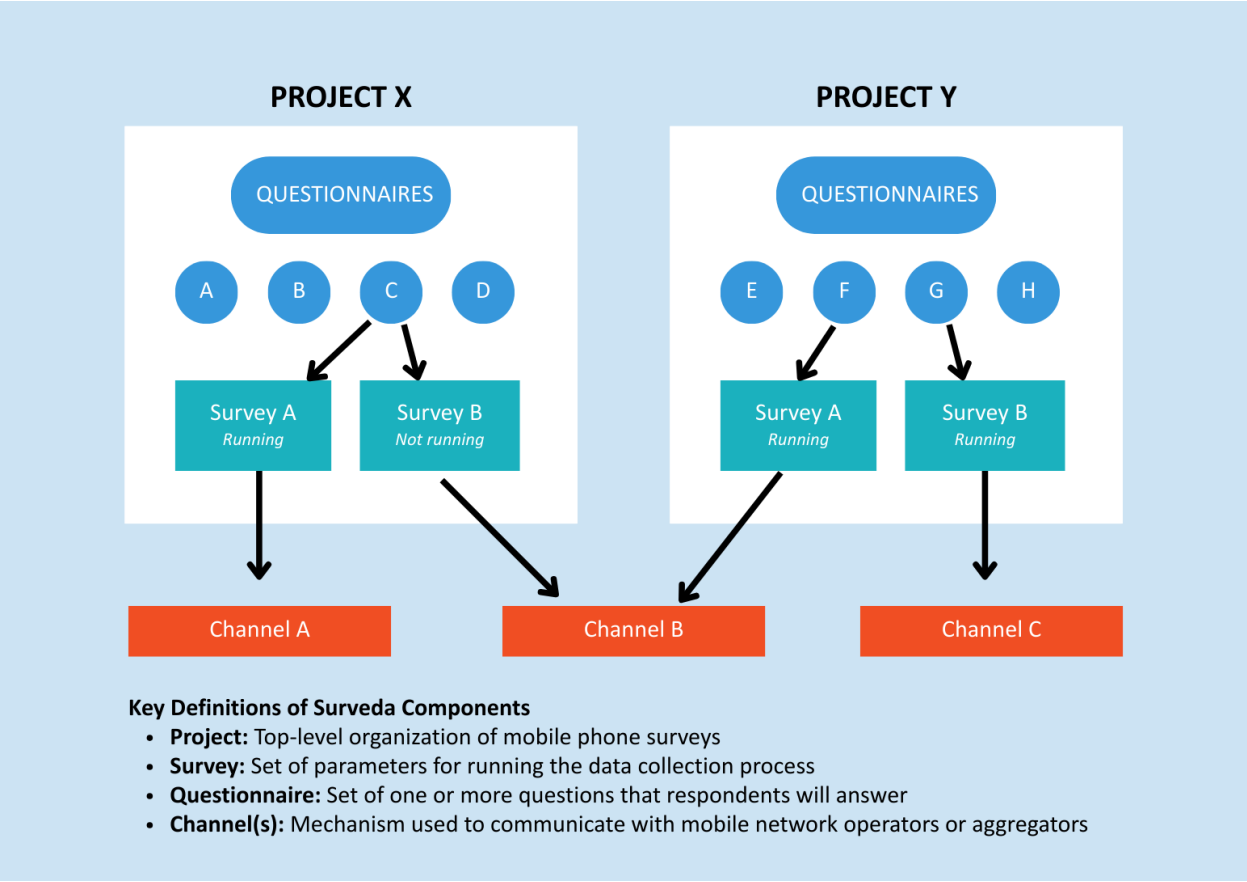
3. Creating a Project, Assigning Collaborators, Creating Questionnaires and Creating Surveys

3.1 Components of Surveda

3.1.1 Introduction

Surveda consists of four primary components that are the building blocks of the tool: projects, surveys, questionnaires and channels. Figure 4 highlights these components and shows how they are related and interconnected.

Figure 4. Surveda Components



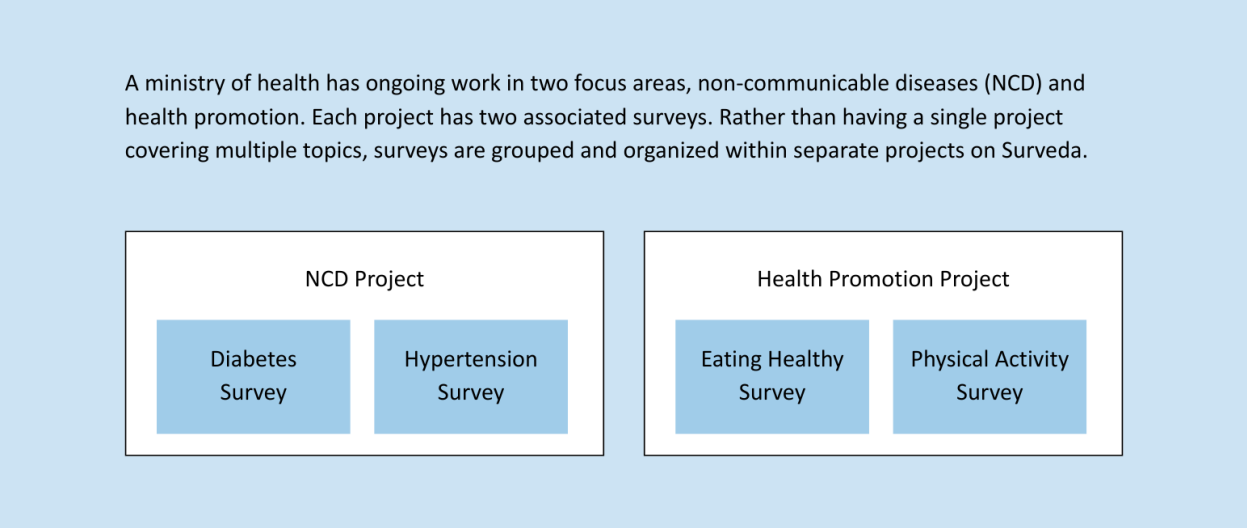
This section describes each component and how they are related. Understanding interconnectedness and how these pieces can be utilized will allow for effective design and management of mobile phone surveys.

3.1.2 Project

The project is a place to create surveys and questionnaires. Creating a project is the first step in designing a survey. The project itself is very basic, but it serves an important purpose to organize resources for running surveys.

A project can house multiple surveys and questionnaires (See Figure 5). Once created, surveys and questionnaires are fixed in a project and cannot move across projects.

Figure 5. Example of Project Organization



Projects can be shared between multiple users, referred to as *collaborators*. There is no limit to the number of projects that can be created, but similar surveys should be grouped into the same project.

3.1.3 Survey

A survey is a set of parameters describing how to administer the questionnaire to respondents. These parameters include a list of telephone numbers to be dialed or contacted, the questionnaire, the supported modes, cutoff rules and start, end and scheduling information.

3.1.4 Questionnaire

A questionnaire contains one or more questions that the respondents will answer. The questionnaire designer is intended to be simple and easy to use while also allowing for the flexibility to meet various requirements, such as skip logic, language translations, mode support, topic randomization and the ability to flag respondents as refused, ineligible, partial complete or full complete.

Questionnaires can be assigned to multiple surveys. In Figure 4, Project X has both Survey A and Survey B. Both surveys use Questionnaire C. This ability to reuse questionnaires helps ensure consistency in questionnaire design and may support efficiency across surveys.

3.1.5 Channels

A communication channel, or simply channel, refers to the connection made with a mobile network operator or aggregator to send out SMS messages or phone calls. A channel must be configured for each mode supported in a survey. For example, if a survey is to support both SMS and phone calls, then two channels must be created, one for each mode. As illustrated in Figure

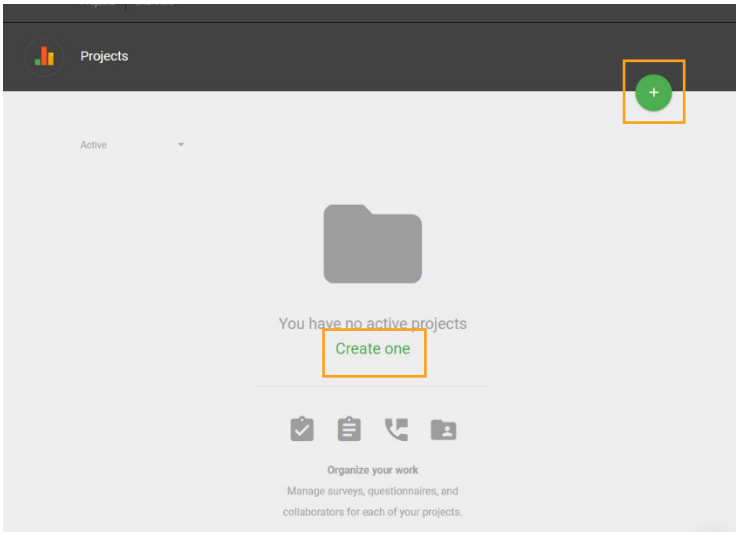
4, channels exist outside of the project domain, meaning that a channel can be used across projects.

3.2 Setting up a New Project

3.2.1 Creating a Project

The first step in conducting a mobile phone survey using *Surveda* is to create a new project. A project is the top level of organization used to store and execute surveys and questionnaires. Upon logging into *Surveda*, the standard landing page shows active projects associated with the account. With a new account, this landing page will display a message that there are no active projects (Figure 6). To add an account, either: 1) select the green "+" at the top-right of the page, or, 2) select the "Create one" text at the center of the page. Once a project has been created, the user will automatically be redirected to the Surveys landing page. Every project will be automatically named "Untitled project". This name can be changed by clicking the title or pencil icon and typing in the new name. Projects should be named for the focus area(s) of work associated with the proposed data collection exercise (in Figure 5, two separate projects would be named "NCD Project" and "Health Promotion Project").

Figure 6. Surveda Landing Page

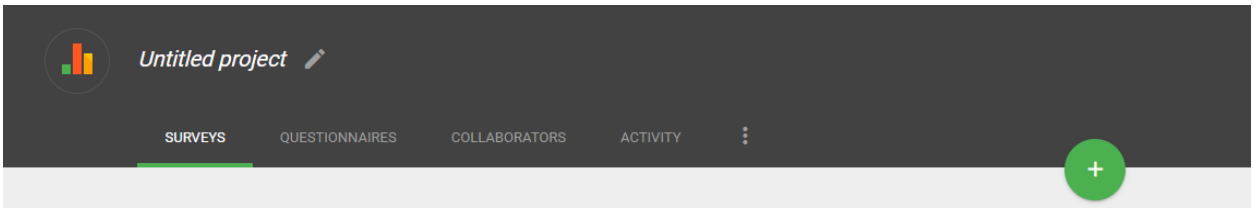


Once projects are associated with an account, *Surveda* will show users active projects as the landing page upon logging in. Projects will be organized by the last activity date, with the most recent activity listed first. Along with the project name and last activity date, this table also shows the number of running surveys associated with each project. If a project is no longer active, users can hover over the project and select the *Archive* button: . Archived projects can be accessed by using the dropdown menu on the top left of the page. Any archived projects retain associated questionnaires and data and can be moved back into the active state by hovering over the project and selecting the *Unarchive* button: .

3.2.2 Navigating the Project Page

Upon creating new project or navigating to an existing project page, users will have access to additional tabs and settings that will allow them to design, launch and manage surveys, create questionnaires, add collaborators and view activity associated with the account (Figure 7).

Figure 7. Surveda Project Page



The tabs are briefly described below and further explained in subsequent sections:

- **Surveys:** This page allows users to design, launch and monitor mobile phone surveys.
- **Questionnaires:** This page allows users to create, view and edit questionnaires associated with the project.
- **Collaborators:** This page allows users to add collaborators to a project and assign them roles based on levels of access needed on Surveda.
- **Activity:** This page shows users a log of all adjustments to surveys, questionnaires, collaborators or data access associated with the project.

3.3 Project Collaborators

Mobile phone surveys often require a team of staff who work collaboratively to ensure success across the phases of a project. Multiple members of the team will likely need to access a Surveda project, and the tool allows collaborators to be invited on a case-by-case basis. Collaborators can be helpful when multiple people are working on a project who have different roles and needs associated with accessing and utilizing Surveda. For example, a manager may want to grant access to a staff translator to upload question translations, or a statistician to export data and then analyze results. The level of access depends on the collaborator type. Table 1 below describes the three collaborator types.

Table 1. Collaborator Types on Surveda Projects

Collaborator Type	Description
Admin	Admins can design questionnaires, set the schedule, start a survey, stop a survey and make other changes to the survey design. Admins can also download all survey data and add additional collaborators. NCD MPS Staff: Project managers, lead POC(s)
Reader	Readers are granted read-only access to surveys, questionnaires and other project resources. Readers can also download a subset of survey data. (Subset includes results and disposition history of respondent) NCD MPS Staff: Statisticians
Editor	Editors have access to all Reader functions but can also design questionnaires, set the schedule, start a survey and make other changes to the survey design. Editors can also download a subset of survey data. (Subset includes results and disposition history of respondent) NCD MPS Staff: Translators, support staff

3.3.1 Adding, Reclassifying and Removing Collaborators

Collaborators can be added by navigating to the *Collaborator* tab on the *Projects* page. The account of the user who created the project will be automatically listed as the **owner** of the project, and their email will be associated with the owner's role. To invite additional collaborators, users can click the green plus sign in the top right of the page: . This will open the *Invite collaborators* popup window where the collaborators email can be entered, their role selected (see Table 1 above for role description) and the invite sent. Invites to collaborators can be sent automatically by Surveda by clicking *Send* after entering the email and selecting a role or by selecting *single use link* at the bottom of the popup window. This link will be automatically copied to the user's clipboard and should then be sent to the invited collaborator.

Users can choose to re-classify or remove collaborators at any time. Roles can be changed for individual collaborators by adjusting the assigned role in the dropdown menu next to the collaborators' email. Collaborators can be removed from a project by hovering over a row in the table and selecting the *Remove Collaborator* button: .

3.4 Creating Questionnaires

Questionnaires can be created and designed by accessing the *Questionnaires* tab within a project on Surveda. The *Questionnaire* page will list current questionnaires available for the selected project, with information including the questionnaire name, last date of modification and modes enabled within the questionnaire. If no surveys have been created, users can create a new questionnaire by selecting the ⊕ button. After creating a questionnaire, it will automatically be given the name of "Untitled questionnaire." Users should rename the questionnaire based on the topic area associated with the set of questions (for example, in Figure 2, a questionnaire could be renamed "Diabetes Questionnaire" if used in the Diabetes Survey). A description can also be added by selecting "Add description" and could include the date of creation, version number or any other information that would help further describe the questionnaire.

The questionnaire builder page is split into two parts (Figure 8). On the left are settings associated with the questionnaire, including languages and modes. On the right is the question builder where users will add questions to the questionnaire.

When errors are found in a questionnaire or users have provided incomplete information when building the questionnaire, users will see this symbol, ●, or text with **this font color**. To complete a questionnaire, all ● must be missing beside each language and mode in the questionnaire.

Questionnaire design requires the following inputs: selection of the primary language, the addition of other languages that the survey will be administered in and the selection of the modes that will be used to deploy the surveys (SMS, IVR and/or mobile web). Once these have been selected, users can proceed in defining questions. The following sections will guide users in creating a questionnaire including available settings for the questionnaire, how to add questions, how to export and import questions and using Surveda for testing questionnaire functions.

3.4.1 Questionnaire Settings

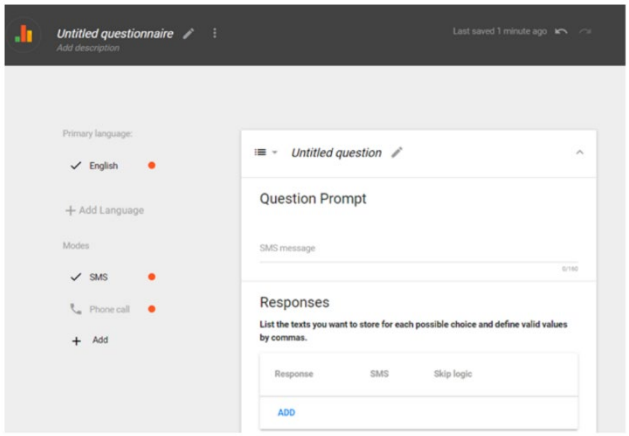
After creating a questionnaire, Surveda automatically populates the settings to be in a single language, English, and with two modes, SMS and Phone call. These settings can be adjusted at any time during the questionnaire development process but should not be adjusted once a data collection exercise is launched as the removal of languages or adjustment of modes could impact data quality and functioning of the survey.

Language(s): To add a language, click "Add Language" and type in the name of the language. The language selection dropdown is populated using the ISO639-3 list. Official language names may differ from their common names in certain settings, so users may need to cross-reference names with the ISO639-3 list. Once two or more languages are added to a questionnaire, the user will see a break in the setting panel with a *Primary language* and *Other languages* section differentiated. The *Primary language* will be the lingua franca (i.e., a language that is widely spoken and understood by a broad section of the population). This should be a language that often mirrors the style of government communications, which can help build trust and encourage participation. Additional languages in the *Other languages* section should include any

additional languages spoken in the setting of the survey. Users should consider all possible languages that respondents may be comfortable interacting with when designing the questionnaire. When two or more languages are added to a questionnaire, users can adjust the primary language by clicking the ↑ next to a language in the *Other languages* section. To remove a language, click the ⓧ next to the language name.

Mode(s): To add a mode, click + Add and select the desired mode. Users can create a survey with any combination of the three modes (SMS, Phone call, Mobile web) with a single mode, two modes or three modes. Modes can also be deleted by clicking the ⓧ next to the mode name. Each mode has specific parameters and requirements for building a questionnaire that utilizes the method of communication with respondents.

Figure 8. Surveda Questionnaire Builder



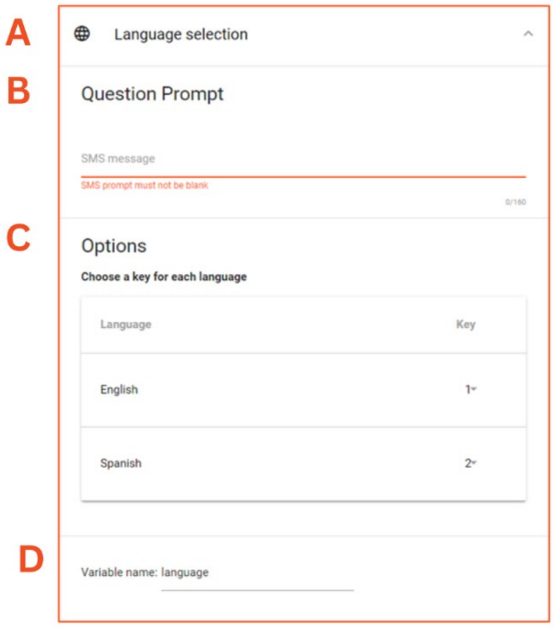
3.4.2 Adding Questions

After creating a new questionnaire, one blank question named *Untitled question* is added to the right side of the page, the questionnaire builder module. If users adjust the settings and have two or more languages included in the questionnaire, an additional question named *Language selection* will be added to the top of the questionnaire. This will be the first question that respondents will receive and will set the language for the remainder of the survey. Each question added to a questionnaire has specific parameters that must be designated by users. Any missing information will result in errors and label the questionnaire as incomplete. Any text with **this font color** highlights areas with missing information.

Apart from the auto-generated *Language selection* question, users have the ability to add steps to the questionnaire with four different classifications. The *Language selection* and other question types are described in detail below.

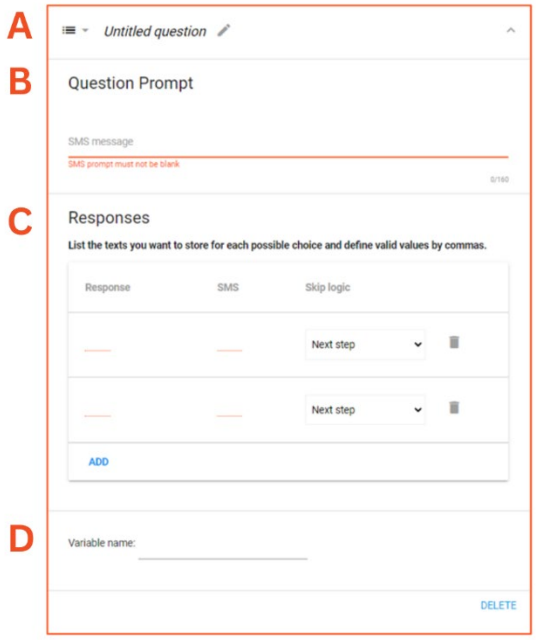
Language selection (Figure 9): The language selection question on Surveda is split into four main parts – question name (A), question prompt (B), options (C) and variable name (D). The question name (A) is automatically populated as *Language selection* but can be changed to any text that is useful for survey managers to understand what is being asked. Question names can never be blank. The question name is never shown to respondents in any survey mode and is only used for question organization in the questionnaire builder. The question prompt (B) is the text that respondents will see or hear when participating in a survey and must not be blank. The options (C) are the response entries that will be deemed acceptable by Surveda. For the *Language selection* question, the *Key*, or the response that corresponds with each language option across modes, is set based on the number of languages the user added in the questionnaire settings. The *Key* can be adjusted by clicking the down arrow next to the number for each language and selecting from the list. The last aspect of this question is the variable name (D) which is the name that will appear with data collected via this question in the data outputs from Surveda. Variable names should be kept as alphanumeric entries and best practices include using all lowercase, camelCase or snake_case formats.

Figure 9. Language Selection Question



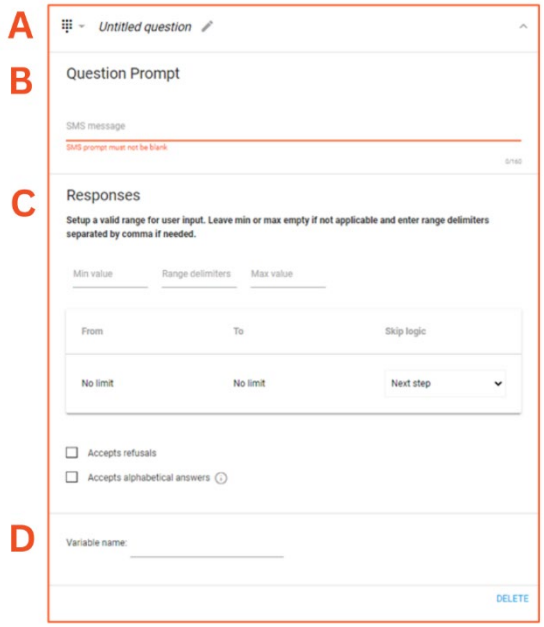
Multiple choice (Figure 10): Multiple choice questions ask respondents to select one of several pre-defined responses. The format of these questions is the same as that of the *Language selection* question with users able to adjust the question name (A), question prompt (B), response option (C) and variable name (D). Each time a new multiple-choice question is added, all elements will be blank except for the *Untitled question* question name. All elements will need to be populated to ensure that the question is complete. When determining responses (C), users define both the *Response* (what will show up in the data file) and the *SMS/Phone call/Mobile web* (what a respondent would reply with to correspond to the indicated response). In the response option section, users will be able to define *Skip logic* that determines the question that a respondent will answer next based on how they answered the previous question. Users can delete multiple choice questions at any time by selecting **DELETE** on the bottom right of the question builder.

Figure 10. Multiple Choice Question



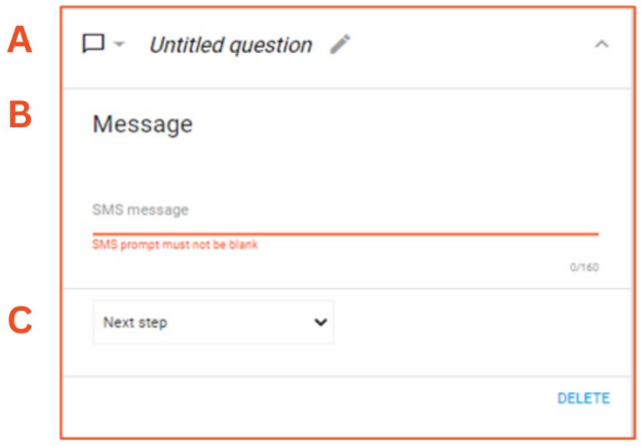
Numeric (Figure 11): Numeric questions are suitable for questions that require a numerical question, such as “What is your age?”. Numeric questions follow a similar format to that of multiple-choice questions with the question name (A), question prompt (B), responses (C) and variable name (D) elements available for users to edit. When determining validity rules for numeric user responses (C), users are able to set the minimum accepted value, maximum accepted value and optional range delimiters. All of these can be left blank if there are no limits, or users can choose to have only a lower or upper bound by filling out either the minimum or maximum accepted value. Range delimiters can be used to guide skip logic rules within a questionnaire and help split numeric entries into distinct categories. For example, if a user allows for entries greater than 0 and less than 120 for age, a range delimiter may be set as 18 which would allow respondents to be put into age categories of 0-17 years and 18-120 years. This could be useful to end the survey for respondents under 18 years of age if it is a survey aimed at adults. Additional options exist for numeric questions that include the ability to accept refusals and alphabetical answers. If respondents are able to refuse to answer the question, users can select this option and define the entry that would be recorded as a valid refusal. If users select the *Accept alphabetical answers* box (only an option for SMS questionnaires), respondents can reply to the question with written numbers as valid responses (e.g. “one” or “fifty-five”) up to one hundred. This option is not available for all languages.

Figure 11. Numeric Question



Explanation (Figure 12): Explanation question types can be used for situations where messages may need to be sent to respondents that do not require a response. These question types require a question name (A), message text (B) and skip logic (C). The question name and message text follow the same format as other question types. The skip logic element (C) requires users to select the question that will appear after this explanation is sent to respondents. The dropdown menu will allow users to select from a list of existing questions.

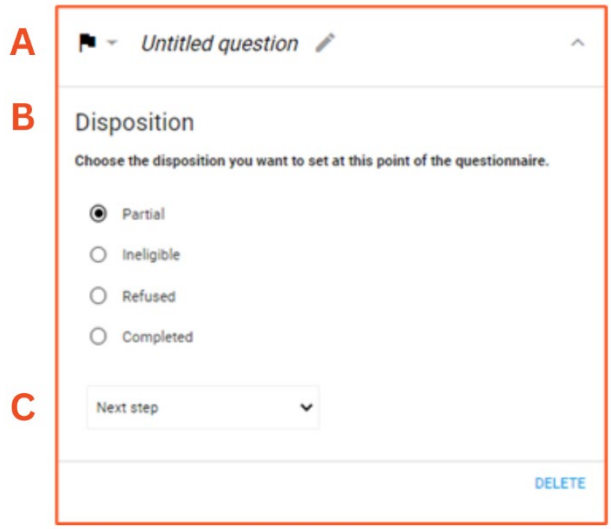
Figure 12. Explanation Question



⚑ **Flag (Figure 13):** Flag question types can be used to determine dispositions that should be applied to respondents based on their location in a questionnaire. These question types require a question name (A), disposition (B) and skip logic (C). Users must select a disposition to be applied to a respondent (B) from an option list of partial, ineligible, refused and completed. These dispositions will be highlighted in the data output from Surveda associated with each respondent. After selecting a disposition, users may define the skip logic (C) to determine the question that will appear after this disposition assignment step.

The above sections provide guidance on developing questions using all available options in the questionnaire builder tool on Surveda. Each of the steps will need to be repeated for each language and mode used in a questionnaire, and all ● or **orange text** must be missing for a questionnaire to be considered complete. Specific settings are required based on modes used and will be described in the section below.

Figure 13. Flag Question



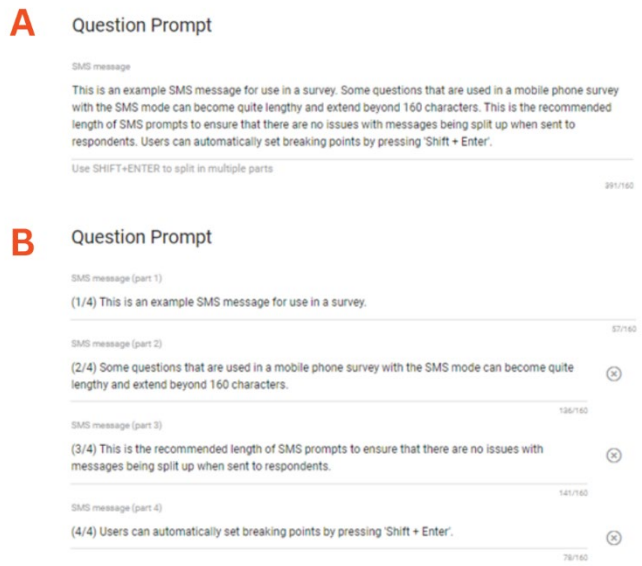
3.4.3 Question Settings and Differences by Mode

Users can further improve questionnaires developed in *Surveda* by fully utilizing the strengths of each mode they plan to use in a survey. IVR, SMS and Mobile Web questionnaires each have different settings that can be programmed to improve questionnaire functions.

SMS: Questionnaires using the SMS mode can split up individual questions across multiple messages sent to respondents. SMS question prompts are recommended to stay at or below 160 characters, including spaces. Messages above this limit may experience issues when sent to respondents, resulting in out-of-order texts and prompts split in the middle of words (Figure 14, A). Surveda allows users to define question prompt splits by pressing 'Shift + Enter' (Figure 14, B). When splitting question prompts in Surveda, it is recommended to add the order of the messages to the start of the prompt (for example, (1/4), (2/4), etc.). At the end of the

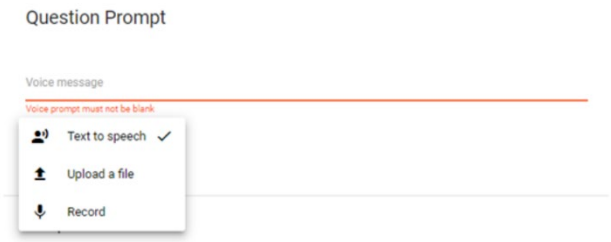
questionnaire, users have two remaining settings to complete in the *SMS settings* section. The first is to set an error message that will be displayed any time a respondent replies with a response outside of the allowable range (not a defined response for multiple choice questions or out of the acceptable range for numeric questions). The second is to set a thank you message that will be sent as the final correspondence to each participant in the survey.

Figure 14. SMS Question Prompt Settings



Phone call: Questionnaires using the phone call, or IVR, mode require users to both define the voice message text and the way that questions will be narrated to participants. The three options are: 1) Text to speech – voice message text will be read verbatim by a computer-generated voice, 2) Upload a file – users can upload pre-recorded audio files of question prompts in mp3 format and 3) Record – users can record audio directly within Surveda (Figure 15). Similarly to the SMS mode, questionnaires utilizing IVR are required to define both the error message and thank you message for participants. Each of these settings, located at the end of the questionnaire, also require users to select one of the three ways that text will be voiced to participants.

Figure 15. IVR Question Prompt Settings



Mobile web: Questionnaires using the mobile web mode allow users to format font within the questionnaire prompt and can include **bold**, *italicized* and underlined text (Figure 16). This allows for emphasis to be placed on important aspects of the question and gives users more control over what respondents see when participating in a mobile web survey. At the end of the questionnaire, users have additional settings they are required to set for mobile web questionnaires. Primary and secondary colors, shown throughout the mobile web survey in a browser window, can be set using the HEX code for the desired colors. Beyond these styling settings, the following messages must be defined for this mode:

- *Error message:* message to be shown to participants if they enter a response that is not valid
- *Thank you message:* final thank you text to be shown to all participants
- *Title:* title of questionnaire that will be shown when participants initially engage with the mobile web survey link
- *Intro message:* introduction message to be shown alongside the questionnaire title
- *SMS message:* SMS message text that will be sent alongside the mobile web survey link
- *'Survey is over' message:* message to indicate to participants that the mobile web survey is complete
- *'Survey already taken' message:* message to show to participants when they click on the mobile web survey link after having already completed the survey

Above the mode-specific settings at the end of the questionnaire, two toggle switches are available to users and include *Quota completed steps* and *Partial relevant*. Depending on user preferences, these toggle switches will prompt further required parameters described below.

Figure 16. Mobile Web Question Prompt Settings

Quota completed steps: Users can toggle this feature if they plan on setting specific quotas for subgroups within the respondent population. These may include strata such as age and sex categories and defined sample sizes specific to each stratum. By using this feature, questionnaire designers can define the message that will be given to respondents who are in a quota that is already filled once it has been determined that they fit into that full stratum.

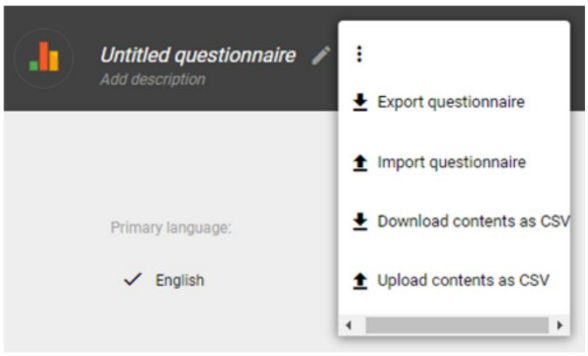
Partial relevant: By toggling this feature, users can set the level at which a participant has to move through the questionnaire before they are considered a partial complete. Users will need to ensure that the following three elements are considered to fully utilize this feature:

- *Relevant steps:* Question that should be counted towards the quota of a respondent being defined as a partial complete can be toggled by selecting the ★ next to the question name. Once a question is toggled, it is indicated by a color change in the icon to ★. Relevant steps can be defined in any manner decided by the questionnaire designer but typically include all questions that every respondent has the ability to answer (i.e., does not include any that may be skipped due to skip logic).
- *Min relevant steps:* Users can define the number of relevant steps (selected using the steps in the above bullet) that a respondent must reach to be defined as a partial complete in the dataset. This value must be less than or equal to the total number of starred relevant steps.
- *Ignored values*: These are responses to relevant steps that will not be counted in the *Min relevant steps* calculation. Typical values include refused, skip, etc. that, while they did have users engage with the question, they do not provide an informative answer to the question.

3.4.4 Importing and Exporting Questionnaires

To allow users to re-use questionnaires across projects, Surveda includes a feature for importing and exporting questionnaires in both CSV and .zip formats (Figure 17). To do so, users can select the three vertical dots next to the questionnaire title and select the desired feature. To utilize skip logic, audio files and additional settings that have been added to a questionnaire, users should select the *Export questionnaire* and *Import questionnaire* options as these retain audio files attached to the questions
whereas the CSV outputs only include the prompt and response text across all languages.

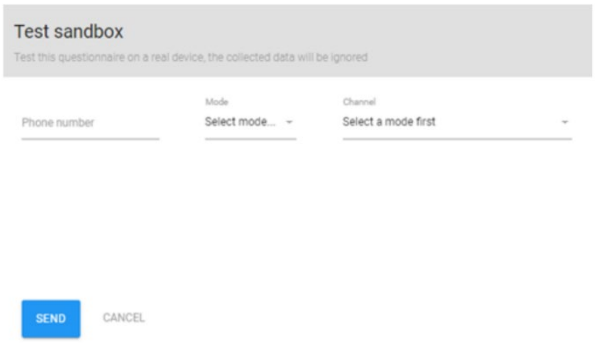
Figure 17. Questionnaire Import/Export Feature



3.4.5 Testing Questionnaires in *Surveda* Simulators

Once questionnaires have been fully completed and no ● or **orange text** remains, users can begin testing the functions of the questionnaire using the testing sandbox. This is a feature of Surveda that allows users to test questionnaires both on real devices and a simulated device within the web browser. To use the test simulator, users select the , or , icon at the top right of the page. This will display the test sandbox popup window (Figure 18). Users can enter a phone number to send the survey to, select the mode and select the channel that will handle the phone call or SMS. This testing method will directly replicate the real-world application of the survey in a testing mode where no data will be saved on the server. If users do not have a channel set up or want to test within the web browser, they can leave the phone number entry blank, select the desired mode and select *Simulation* under the channel dropdown menu.

Figure 18. Test Sandbox Pop-up



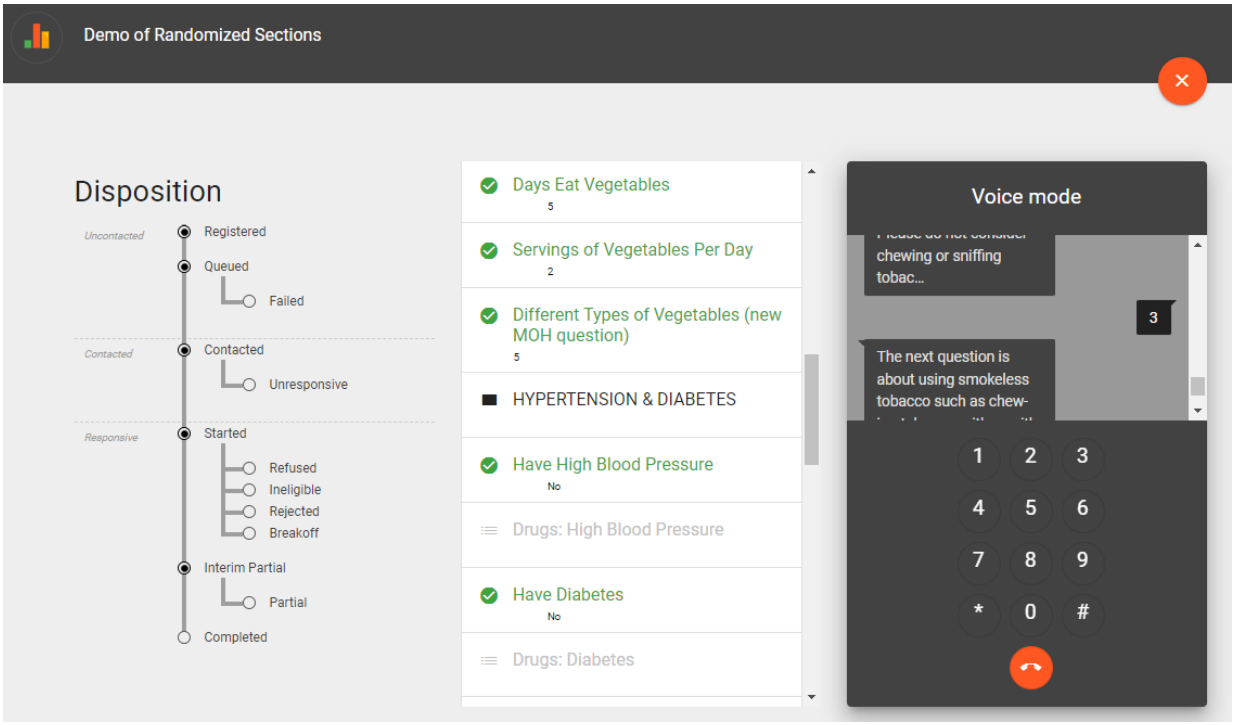
The online simulation window is shown in Figure 19. This simulator works for all modes in a questionnaire and was developed to match the real-world scenario of taking the survey on mobile devices as closely as possible. The simulator is split into three parts – the disposition flow on the left, the survey location and responses in the center and the phone simulator on the right. SMS and Mobile Web questionnaires will display prompt text as it would display on a mobile device and IVR questionnaires will both play the audio how the respondent would hear it on a mobile device and show the question text in the phone simulator so that the simulator user can follow along and check translations and audio files in-depth. Responses are recorded in the center section which allows users to check that responses options correspond to the response

that the simulator received and also serves as an outline for the overall flow of the questionnaire. As users move through the questionnaire in the simulator, they can follow along in the left section as the disposition changes.

This is useful to check the designation of respondents as they fall into categories such as:

- *Refused* if they do not consent to participate
- *Ineligible* if they enter an age below the minimum age of the target population
- *Breakoff* if they answer some questions and end the survey
- *Partial* if they answer the minimum required steps questions to be deemed a partial complete (see previous section describing this setting)
- *Complete* if they answer all questions

Figure 19. Surveda Questionnaire Simulator



3.5 Creating Surveys

This section provides guidance and best practices for designing and launching surveys for SMS, IVR and Mobile Web using Surveda. Surveys are the set of parameters used in running a data collection exercise and their design in Surveda is a crucial step in the process of running a mobile phone survey. When on the project page, users can create a new survey by selecting the *Surveys* tab and clicking the ⊕ button on the top right of the page. All new surveys are titled *Untitled* Survey or *Untitled Panel* Survey, and users should rename them based on the focus area of the survey. This section outlines the steps required to create and configure a survey before a survey can be started. Steps include:

- Select a questionnaire
- Select mode and channels
- Upload the list of respondents
- Set up a schedule
- Set up cutoff rules

3.5.1 Survey Types

Surveda allows users to create two types of surveys – a single, standard survey and a panel survey. Single surveys are the most common type used in mobile phone surveys and represent a one-time, cross-sectional survey. These surveys will have a single list of respondents and will typically run until the respondent list is exhausted, quotas are filled or a survey administrator stops the survey.

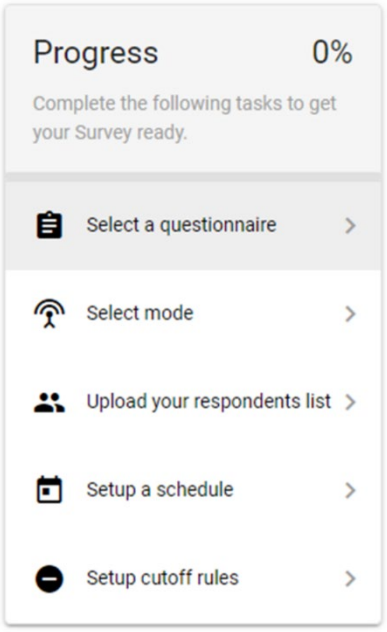
Panel surveys are often used for longitudinal studies. These allow users to repeat the same set of questions to a group of respondents for a user-defined period. This allows for the ability to track changes in survey indicators among a particular population. In Surveda, the panel surveys behave as a group of surveys that inherit settings from the previous one. The surveys that belong to a panel survey are called waves.

The main differences between panel surveys and standard surveys are that panel surveys do not have cutoff rules (i.e., targets or quotas) and that panel surveys cannot run mode or questionnaire comparisons.

3.5.2 Survey Settings

Survey settings depend on the type of survey that is being created. Standard surveys require users to define parameters in five sections, and panel surveys require parameter definitions in four sections. The common settings requirements include selecting a questionnaire to use in the survey, the mode(s) of data collection, the list of respondents to be contacted and the schedule of data collection. Standard surveys allow users to adjust an additional setting which sets specific cutoff rules for user-defined strata in the survey. Progress in setting up a survey can be observed in the *Survey Settings Progress Panel* on the left side of the page (Figure 20). These settings and the requirements for each are described in detail below.

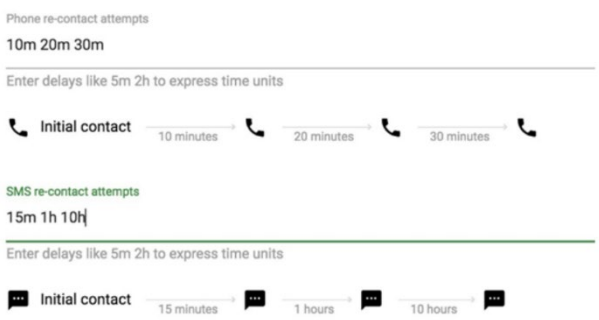
Figure 20. Survey Settings Progress Panel



Select a questionnaire: Users must select a questionnaire to be sent over the survey channels to every respondent. All questionnaires associated with the project that a user is currently working on will be available for use in the survey. Any questionnaires with ● to the right of the questionnaire name are incomplete and a survey cannot be launched until the issues are resolved. When creating a standard survey, users have the option of checking a box above the questionnaire names that allows for a comparison to be run with different questionnaires. This will allow users to compare questionnaire performance with two or more questionnaires. If selected, radio buttons next to questionnaires will switch to checkboxes and will allow users to select all questionnaires that they would like to compare performance on. The toggling of this feature will also create a new settings step in the left progress panel called *Comparisons*.

Select mode: Users must select the primary mode of data collection and, if desired, a fallback mode if respondents do not engage with or complete a survey in the primary mode. Similarly to the questionnaire settings, users can toggle an option to allow for a comparison between different primary and fallback mode combinations to contrast performance between modes and combinations of modes. Once an initial primary/fallback mode combination is defined, users can click + and add additional combinations as desired. The toggling of this feature will also lead to the *Comparisons* step being added to the left progress panel.

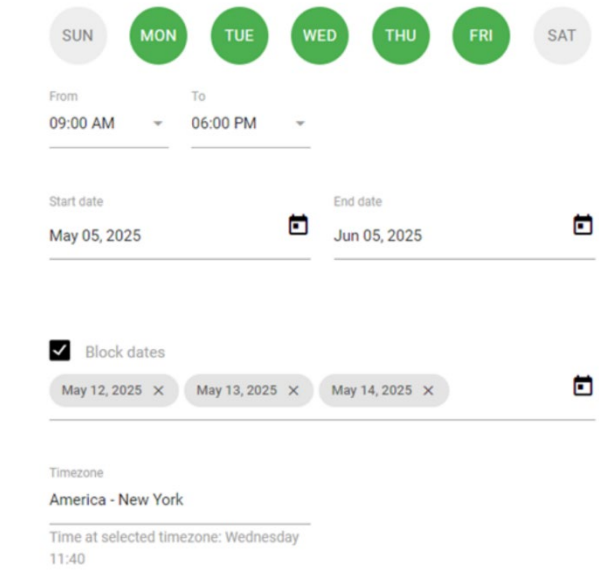
Figure 21. Survey Re-contact Settings



Upload the respondents list: Users must upload a CSV file containing the phone numbers of the respondents that will be contacted in the survey. The upload file must be in the CSV format with one column containing phone numbers in a standardized format that is known to be accepted by the survey channel. After uploading the respondent list, users must define the channel that will be used to contact them via each mode. The channel list will be automatically populated based on how a user has set up their project. Users can add or remove respondents as needed by selecting *ADD MORE RESPONDENTS* or *REMOVE RESPONDENTS* at the bottom of the section.

Set up a schedule: Users must set the schedule for days, times and dates when respondents may be contacted to participate in the survey (Figure 22). Days of the week on which contacts will be attempted can be set by clicking on the desired day – green days are included in the schedule and grey are not. After selecting the days of the week, users must determine the appropriate contact time window when contacts can begin (*From*) and when they should end (*To*). Running dates of the survey can then be set by clicking the calendar icon for *Start date* and *End date*. If users want to have *Block dates*, or days on which no contacts should be made to respondents, they can toggle the *Block dates* option and use the popup calendar to mark the days with no contacts. Users must also select the time zone in which the survey will take place as this will correspond to the settings defined above. The final settings that users must define are the number and timing of recontact attempts for each mode utilized in a survey. Figure 19 shows an example set of re-contact settings. For each mode, users can enter numeric values followed by d (days), h (hours) and/or m (minutes) to define both the number of and delay between contact attempts. Based on what is entered, an overview of the contact settings will be shown below each mode.

Figure 22. Survey Schedule Settings



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Setup cutoff rules: Cutoff rules can be defined only for standard surveys. This setting allows users to define a stopping threshold for the survey that depends on either the overall number of completed surveys or the number of completed surveys by user-defined strata. If either of these options are selected, users can also toggle the *Count partials as completed* checkbox to allow partially completed surveys to count in the completed tally. Users can also select *No cutoff* if they want the survey to run for all dates included in the schedule without stopping early based on the number of completes. If the *Quotas for completes* option is selected, a popup box will appear and will ask users to choose the questionnaire answers that will be used to define quotas. These typically include variables that code sex and age. If a numeric variable is selected, such as age, users will enter comma-separated values to create ranges (i.e., 18,30,45,120 for age bins of 18-29, 30-45 and 45-120 years). After selecting all desired variables, the quotas section of the settings will now include all combinations of the answer choices for the selected variable(s). This allows users to set stratum specific quotas that will define when the data from a specific subpopulation of respondents is considered filled.

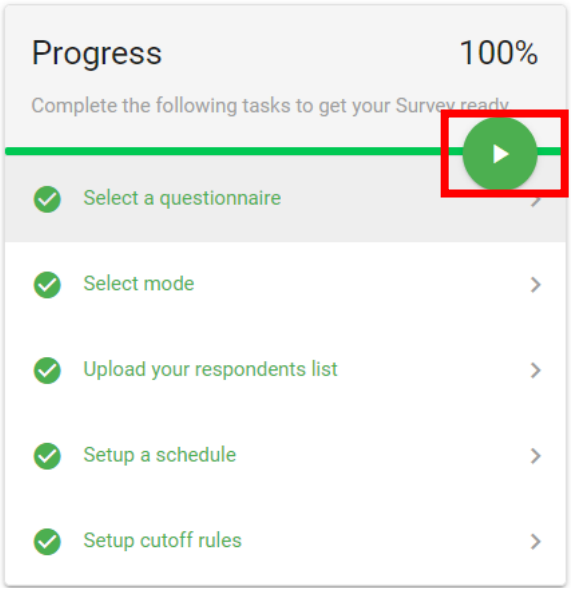
Comparisons: If a standard survey is being designed and if users have selected either or both comparison options in the *Select a questionnaire* or the *Select mode* settings modules, the *Comparisons* settings section will be available at the end of the page. This allows users to allocate the respondents into different modes and questionnaires to compare performance. Allocations are defined as percentages of the entire population of respondents from the uploaded respondent list and must add up to 100% across the comparison scenarios.

Once the progress bar shows fully complete and 100% in the top right of the progress panel, users may launch a survey and begin the data collection process.

3.6 Launching a Survey

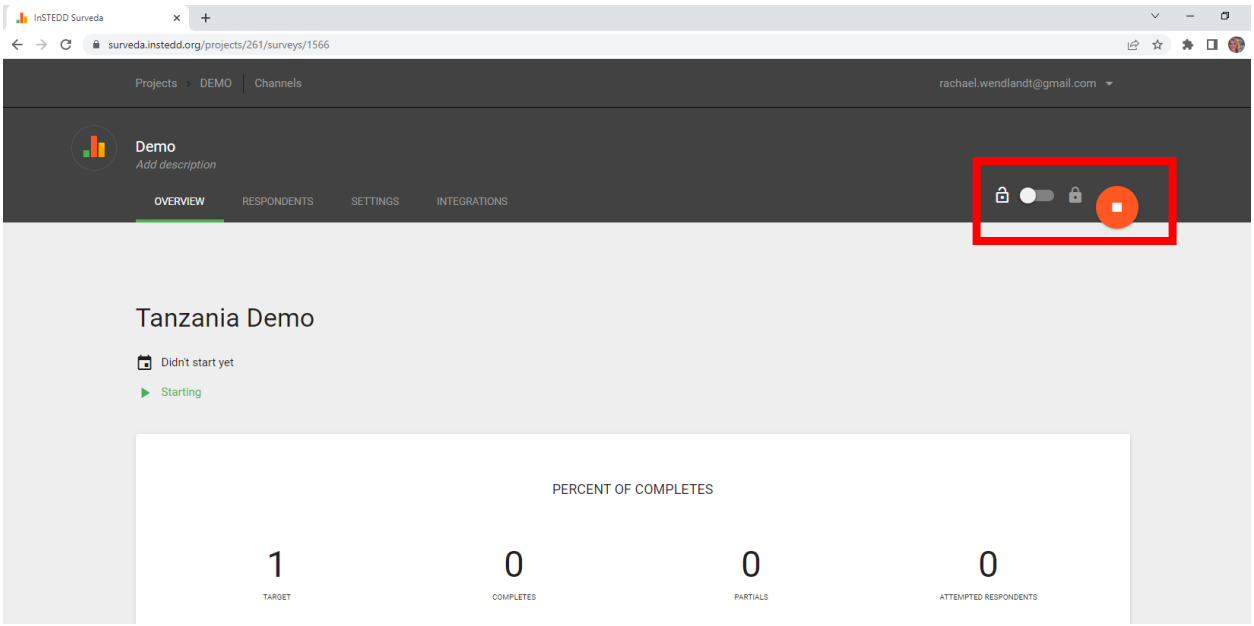
A survey is a set of parameters for how to administer the questionnaire to respondents. As mentioned, these parameters include selecting the questionnaire, selecting the mode(s), uploading the respondents list, setting the schedule and setting the cutoff rules. The user can launch the survey by pressing the green play button (Figure 23).

Figure 23. Surveda Launch Page



After the survey is launched, it can be stopped by clicking on the red stop button (Figure 24). In the "Admin" role, the survey can be locked so that no other users may stop the survey. The survey can be locked by toggling over the 'lock' button and selecting the button for the survey to be locked.

Figure 24. Stop and Lock Survey Page



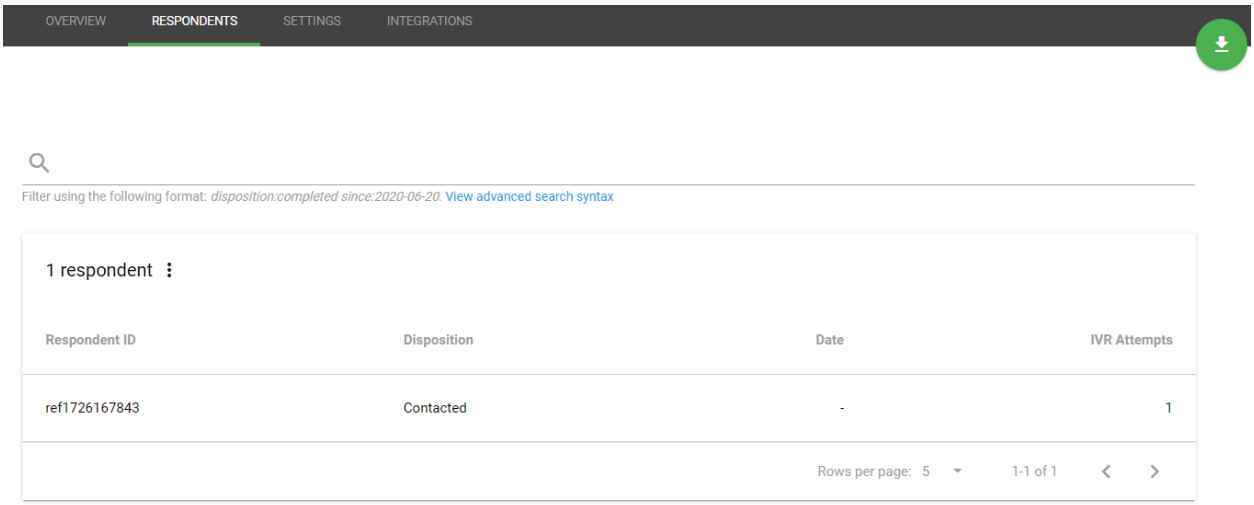
3.6.1 Overview of Launched Survey

Once the survey has been launched, Surveda offers the users the following information to view: Overview, Respondents, Settings and Integrations.

Overview Tab: Here the user can see the date that the survey was launched, the targeted number of completes, the number of complete and partial interviews and the number of respondents who were dialed/contacted. In addition, the overview tab shows the recontact attempt histogram, the success rate gauge, the queue size chart and the dispositions table.

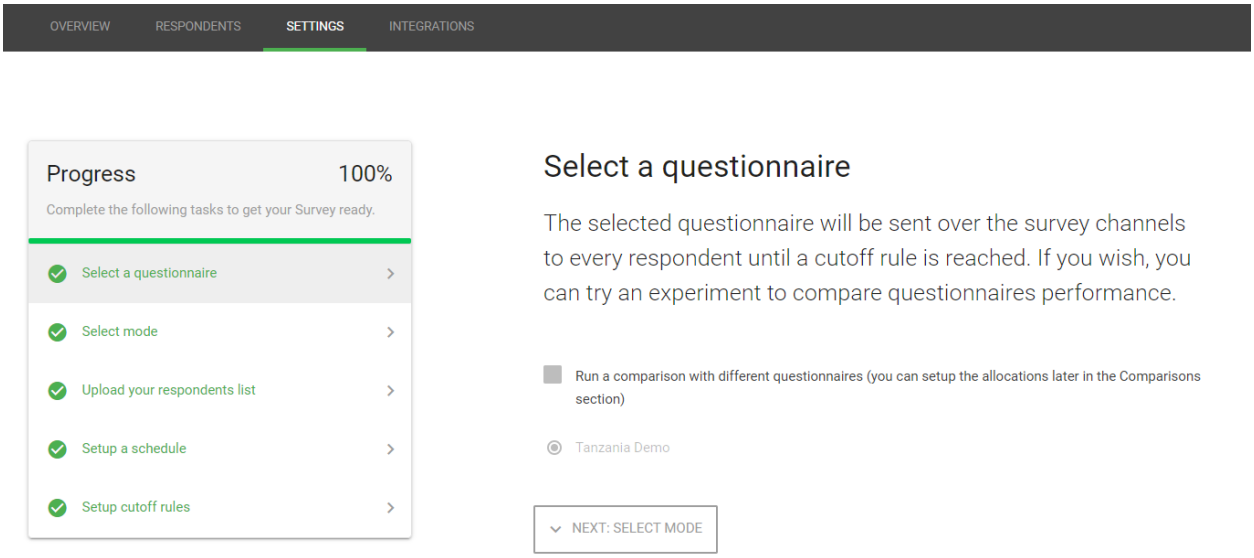
Respondents Tab (Figure 25): Here the user can see information about the respondents, including each respondent's disposition, the date they were last contacted and their place in the recontact attempts schedule. The user is also able to download real-time data from this tab at any point in data collection.

Figure 25. Respondents Tab



Settings Tab (Figure 26): This tab displays the parameters from the survey set up.

Figure 26. Settings Tab



Integrations Tab: The Integrations tab lets users connect their surveys to external tools like SMS services or data analysis platforms. Users can set up these connections to automatically send or receive data, making it easier to manage surveys and analyze results.

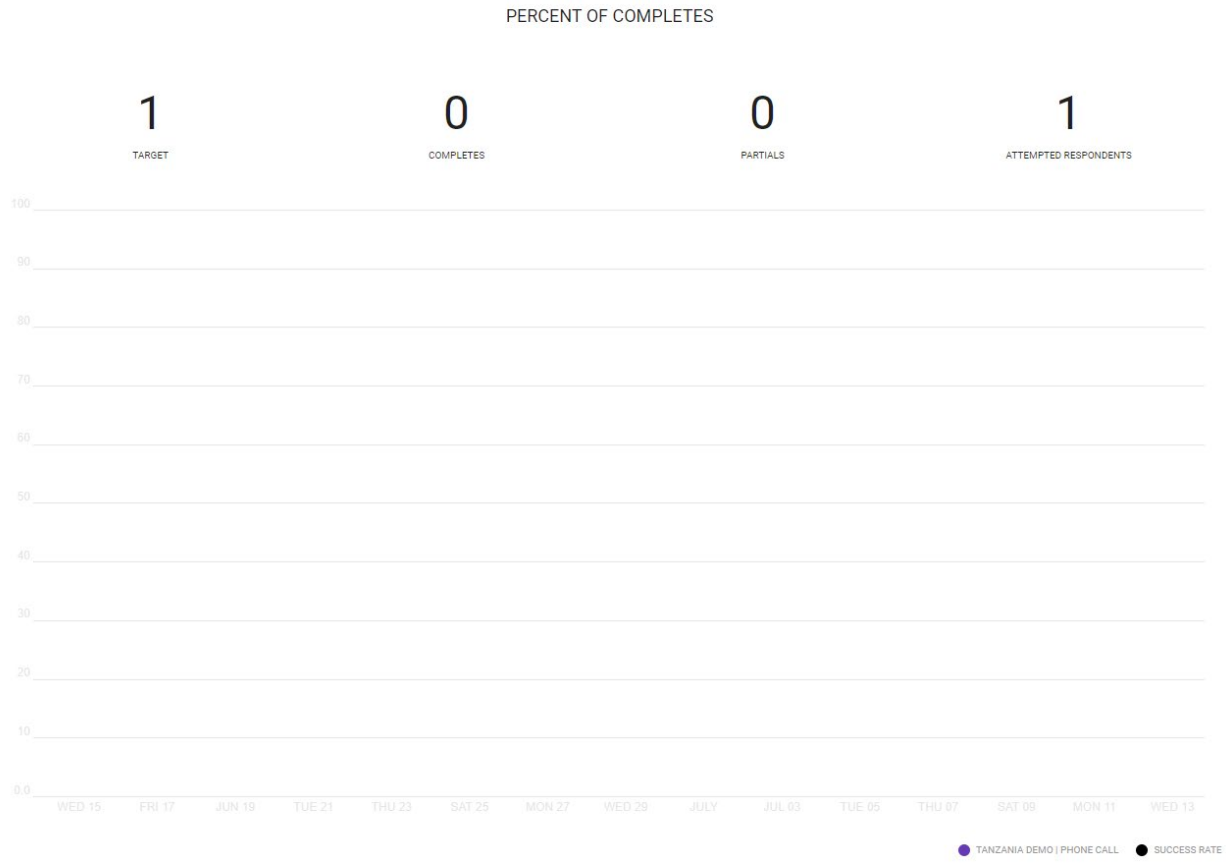
3.7 Survey Monitoring

3.7.1 Using the Data Dashboard

One of the key features of Surveda is the ability to monitor data in real time within the Surveda user interface, by selecting the Overview Tab (**Figure 27**).

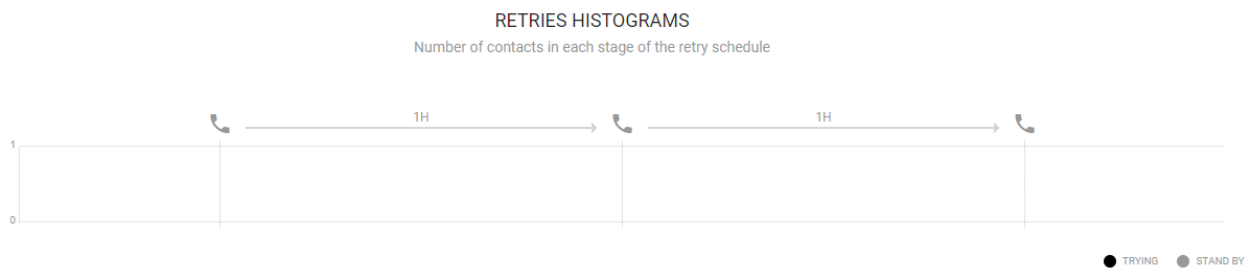
Within this tab, there is a line chart that displays the number of completed interviews within each quota.

Figure 27. Overview Tab



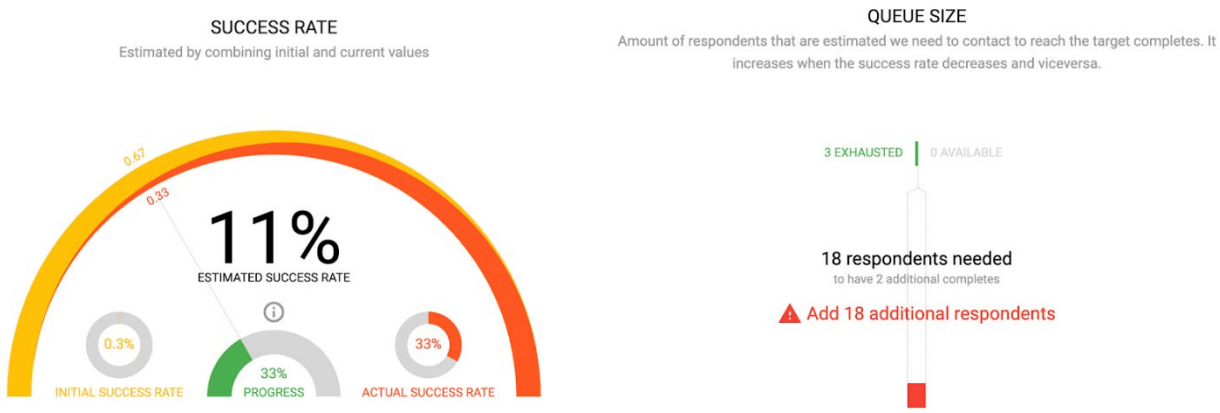
Next is the retries histogram (Figure 28), which displays where each respondent falls within the recontact protocol.

Figure 28. Retries Histogram



Next are the success rate gauge and the queue size chart (Figure 29).

Figure 29. Success Rate and Queue Size Chart



The success rate gauge shows several different indicators of success rates, including:

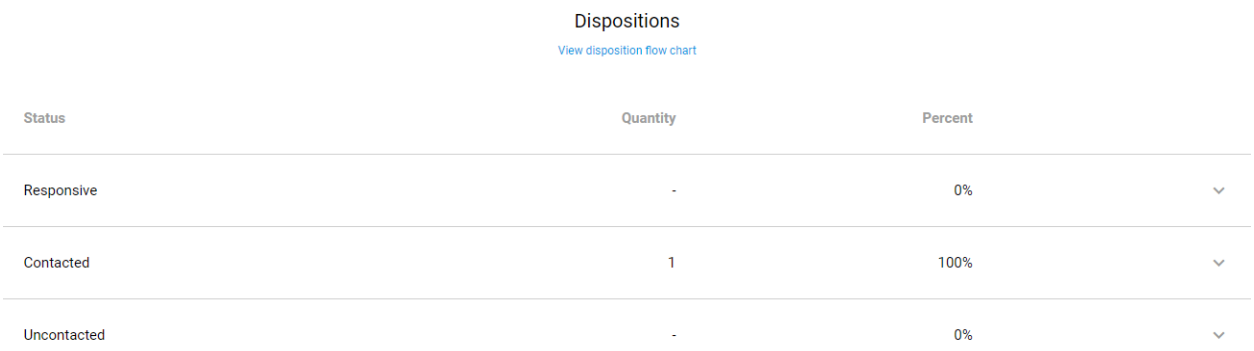
- **Initial success rate**: The initial success rate is defined as 0.28%.
- **Progress:** The progress is the number of Completed dispositions (if the "count partials as complete" setting is enabled in the survey settings, then Partial dispositions will also be included) relative to the completion goal. Thus, the formula is: Completed{+Partial}/Completion Goal.
- **Actual Success Rate:** The actual success rate is calculated by dividing the number of respondents with Completed dispositions (if the "count partials as complete" setting is enabled in the survey settings, then Partial dispositions will also be included) by the total number of cases that are no longer eligible for further contact, or 'exhausted' cases. Thus, the formula for the actual success rate is: Completed{+Partial} / Total Finalized Cases.
- **Estimated success rate**: This is an average between the initial success rate and the actual success rate weighted by the survey's progress. Thus, the formula is: *ActualSuccessRate*Progress + InitialSuccessRate*(1-Progress)*

The queue size chart estimates the number of respondents necessary to contact to reach the target number of completes based on the current actual success rate. The main information in this chart includes:

- **Exhausted:** The number of respondents that completed all their retries.
- **Available:** The number of respondents that remain "incomplete", meaning that they have received some contact attempts but not all of them yet or that they have been registered within Surveda but have not received any contact attempts yet. The formula for the available respondents is: *TotalSampleUploaded - Exhausted*.
- **Respondents needed:** The estimated number of respondents needed to meet the target. The formula for respondents needed is: *EstimatedSuccessRate *(Target - Completed{+Partial})*
- **Additional respondents:** In cases where the available respondents are not enough to reach the target, Surveda will inform the user of the number of additional respondents needed to reach the target. The formula for additional respondents is: *RespondentNeeded – Available*.

Lastly, Surveda's dashboard displays the disposition chart (Figure 30). The disposition chart shows the number of respondents contained within each disposition, broken down by "responsive," "contacted" and "uncontacted" disposition groups.

Figure 30. Disposition Chart



Why is this disposition chart important for users and how can they best utilize it for survey monitoring?

The disposition chart in Surveda is important for users because it provides a clear breakdown of how respondents interact with the survey, helping to track progress, identify trends and optimize data collection strategies. It shows the number of completed, partial, refused or unreachable cases; it also shows participants that are non-contacts and refusals to help see response goals and how to modify survey parameters for better engagement.

4. Data Outputs

4.1 Data Output Files

Survey data can be exported from Surveda to calculate survey weights, perform data analysis, process incentives and understand survey processes from MPS data collection. Surveda supports data output via four distinct files:

1. **Survey Results File:** A file containing the survey responses, with one record for each respondent and one column for each variable.
2. **Disposition History File:** A file containing the full history of disposition codes for each respondent over time. It contains one line for each time the disposition of a respondent changed.
3. **Interactions File:** A file that contains a complete record of all actions for each phone number. This includes paradata, or data about the data collection process, with timestamps for each interaction between respondents and Surveda.
4. **Incentives File:** A file containing the phone numbers of completed cases to process incentives.

Each file type is available for download in a comma-delimited value (CSV) format, which is a common file format used with applications such as Microsoft Excel and Tableau, as well as statistical packages including Stata, R, SAS or EpiInfo. These files are also available using a direct link URL which can allow for real-time data access by software. The following sections describe these file types in more detail.

4.1.1 Survey Results File

The survey results file includes a row for each respondent and columns for each of the questions as well as additional metadata. This is a convenient format for conducting analysis.

The survey results file includes the following information (Table 2):

Table 2. Survey Results File Information

Name	Variable ID	Description	Mode (All, IVR, SMS, Mobile Web)
Respondent ID	respondent_id	A unique identifier for the respondent. Note that this is not the phone number. The phone number is not included in the file to protect respondent privacy.	All
Final Disposition	disposition	The final disposition code for the particular respondent.	All

Response Timestamp	date	The date and time when each response was received by Surveda as Universal Time Coordinated (UTC).	All
Modes	modes	The mode(s) in which the respondent participated in the interview.	All
User sent stop message	user_stop	For SMS surveys, this column will indicate whether a respondent sent a “STOP” message, indicating that they would like to stop receiving messages.	SMS
Total call time	total_call_time	For IVR surveys, this column will indicate the total amount of time it took each respondent to complete the interview.	IVR
IVR Attempts	ivr_attempts	For IVR surveys, this column will indicate the number of retries the respondent received.	IVR
Total Sent/Received SMS	total_sent_sms total_received_sms	For SMS surveys, this column will indicate the number of text messages that were sent by the channel and those that were received by Surveda.	SMS
SMS Attempts	sms_attempts	For SMS surveys, this column will indicate the number of SMS retries the respondent received.	SMS
Mobile Web Attempts	mobileweb_attempts	For Mobile Web surveys, this column will indicate the number of Mobile Web retries the respondent received.	Mobile Web
Section Order	section_order	If the questionnaire utilized contained topic randomization, this column will list the order of the topics as the respondent received them.	All
Sample File	sample_file	The file name of the respondent list used in the survey.	All

Partial Relevants	p_relevants	If the questionnaire utilized contained questions marked as relevant for considering partials as complete surveys, this column will show the number of those questions that were answered by the respondent.	All
Survey Data	Variable names will match those defined in the questionnaire builder	Each column contains data from a separate question. The column header is the variable name that was created during the questionnaire design. The values are the actual responses the questionnaire designer defines, not the value that the respondent entered through SMS, IVR or mobile web. To make analysis easier for multilingual surveys, the value of the exported response is the same for every language.	All

4.1.2 Disposition History File

The disposition history file contains a row for each interim disposition code and final disposition code assigned for each respondent. This file is useful for tracking how an individual respondent interacts with the tool. Table 3 lists the supported disposition codes. Figure 31 shows the process for disposition changes throughout the life of the survey.

Table 3. Disposition Codes in Surveda

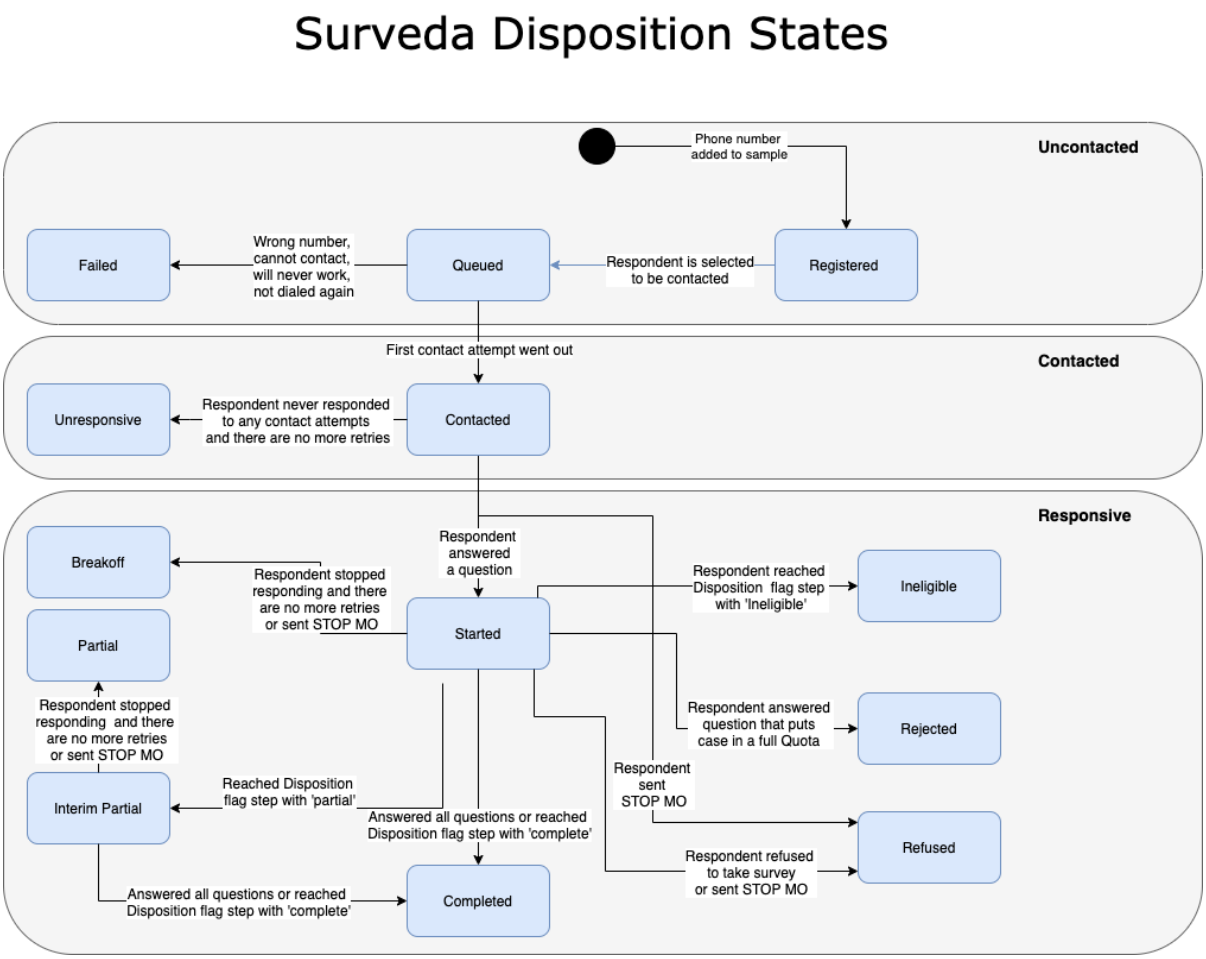
Disposition Code	Description
Registered	Surveda has processed the phone number from the uploaded sample file, and it is part of the survey, but has not yet been selected to be contacted
Queued	Surveda has processed the phone number from the uploaded sample file, and it is part of the survey and has been selected to be contacted
Failed	Unable to contact
Contacted	Contacted, but has not replied
Unresponsive	Never responded to any contact attempts and there are no additional retries
Started	Answered a question

Disposition Code	Description
Ineligible	Did not meet eligibility requirements as configured by the questionnaire designer
Rejected	Eligible to participate, but in a target that is already filled
Refused	Refused to participate in survey
Completed	Contacted all questions in the survey
Breakoff	Answered a question and then never responded again and there are no additional retries
Partial	Contacted and completed up to a specific question (if configured by the questionnaire designer)
Interim Partial	Contacted and answered at least one question and still has remaining contact attempts

The disposition history file includes the following variables:

- **Respondent ID:** A unique identifier for the respondent
- **Disposition Code:** A standard code to describe the state of the case
- **Mode:** The mode used (SMS/phone call/mobile web)
- **Timestamp:** The timestamp of the event as UTC

Figure 31. Surveda Disposition States



4.1.3 Interactions File

The interaction file is the complete record of all actions for each phone number. It includes everything from the disposition history file (see above) with additional metadata and paradata. The complete record of a participant's engagement with the survey includes paradata, or data describing the response, of each response and corresponding contact attempt and mode.

The columns included in the file are:

- **ID:** This is a numeric entry that sorts the actions by timestamp. For example, 1 is the first action, 2 is the second action, etc.
- **Respondent ID:** A unique ID for the respondents. As in the other files, this ID is hashed. 'Hashed' means that the respondent ID has been transformed using a function to obscure the original value; it's not easily reversed which makes it a good way to keep the respondent IDs secure.
- **Mode:** The mode used
- **Channel:** The name of the channel used to execute the call
- **Disposition:** The disposition of the case after this action

- **Action Type:** Contact Attempt / Disposition Changed / Prompt / Response / Error
- **Action Data:** Depending on the action type, this column contains the following:
    - **Contact Attempt:** success or failed, along with the reason
    - **Question:** the name of the question
    - **Response:** the value of the response
- **Timestamp**: The date and time when the action finished

The Interactions File will vary by country due to differences in MNO ISDN codes. The above description is a generalization. See each country's Interactions File Data Dictionary for complete information.

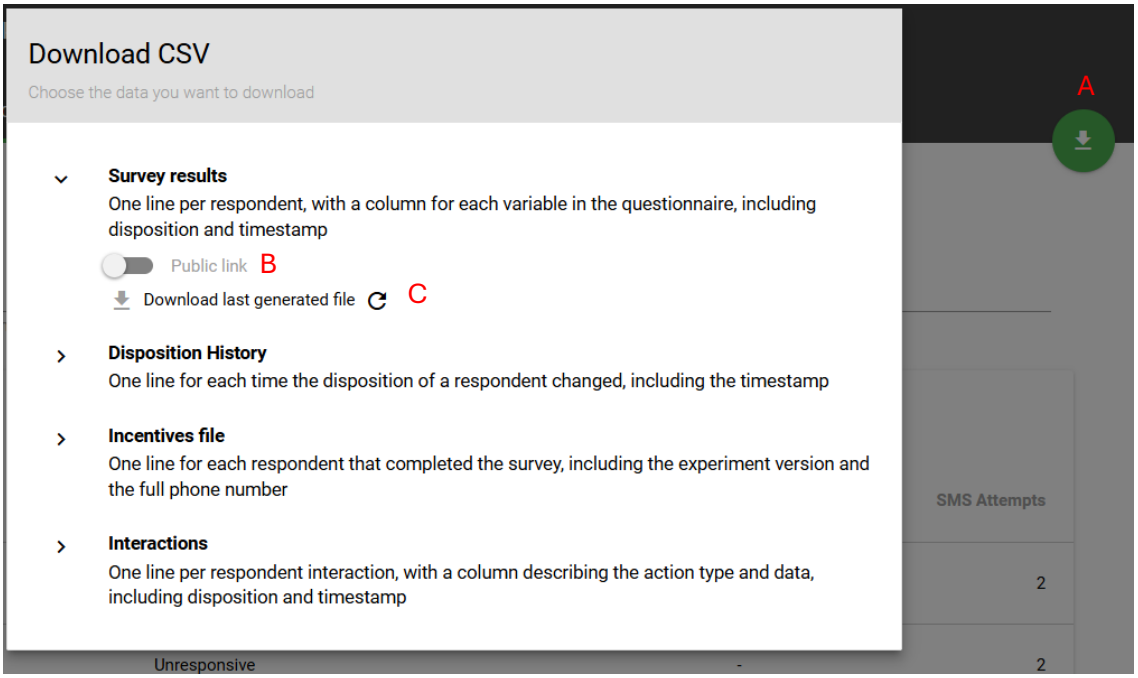
4.1.4 Incentives File

The incentives file includes the phone numbers of the cases that have completed the survey, the questionnaire and the mode of the survey that was completed and the completion date.

4.2 Ways to Access Data

Surveda allows users two main ways to access data collected during and associated with a survey: downloading CSV files and accessing via a public link. Data outputs can be accessed by navigating to the *Respondents* tab of a running or completed survey and by clicking on the green download button on the top right of the page (Figure 32, A). Both methods are described below.

Figure 32. Downloading Survey Data



- **CSV Files:** CSV file outputs can be accessed by clicking the regenerate file icon (circle arrow, Figure 32, C) and selecting the download icon. Clicking the regenerate file icon will refresh the csv download file to have the most recent data included. The most recently generated file will always be available to download and the time of last generation will be shown next to the regenerate file icon.

- **Public Link:** Public link outputs can be accessed by clicking the link icon (Figure 32, B). If users haven't accessed this menu before, each data output file can be toggled to allow for public access through a link. Toggling these options will create a unique URL that, when pasted into a browser or used as a direct link in statistical software, will download or pull the latest data from the survey for the requested file.