Smartphone Ecological Momentary Assessment

Manual compiled by Peter Koval & Jennifer Makovec

Introduction

SEMA2 is a suite of software for designing and conducting smartphone-based survey research. ***SEMA2*** was designed specifically for ecological momentary assessment (EMA), also known as the experience sampling method (ESM), which typically involves administering a survey several times per day (at random times) over several days. However, ***SEMA2*** can also be used to administer surveys less frequently (e.g., once daily, as in daily diary studies), or on an ad hoc basis (i.e., participants launch the survey manually at any time). ***SEMA2*** stands for ***S***martphone ***E***cological ***M***omentary ***A***ssessment, Version ***2***. Following extensive testing of the initial version of *SEMA* in 2013-2014, ***SEMA2*** was developed in 2015 by researchers at **Australian Catholic University** and **Orygen-The National Centre of Excellence in Youth Mental Health**, in collaboration with a private software developer, **Boosted Human**. ***SEMA2*** includes a multitude of features that enable researchers to easily and intuitively create and administer smartphone surveys and easily access and analyse collected data.

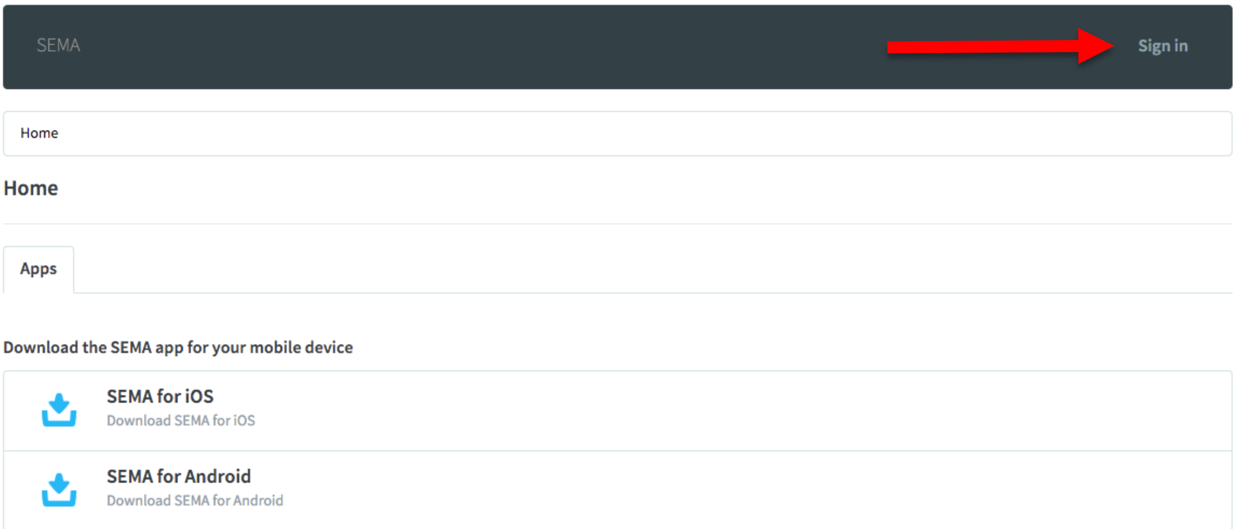
The following guide is a step-by-step guide for researchers wishing to create, deploy and administer a smartphone study using ***SEMA2***. A glossary containing definitions of **technical terms**, is included at the end of this guide. Clicking on a **technical term** will take you to its corresponding glossary entry.

Step-By-Step Guide for SEMA2

Step 1: To obtain access to ***SEMA2*** as a **team member** (i.e., admin / researcher access), you will need to be invited by a current **team member** (i.e., someone with admin / researcher access). For instructions on how to invite a new **team member** please see Step X on page X.

Step 2: You will receive an invitation to become a **team member** via e-mail. Please check your junk-mail/spam folder for an e-mail from sema@sema-surveys.com with the subject "You have been invited to administer the [*name of study*] program." This email will provide you with a Participant/Admin ID and Password.

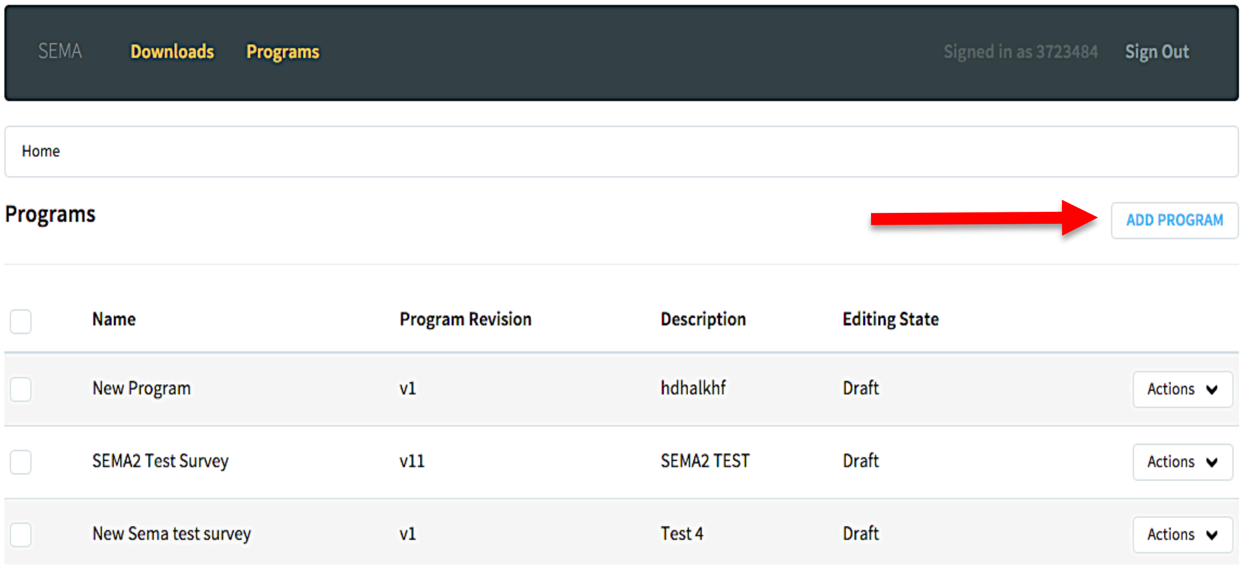
Step 3: By clicking on the "confirm access" link, you will be automatically redirected to the SEMA2 website. Alternatively, you can surf to **http://sema-surveys.com/home/** and sign in via top right corner (see *SCREENSHOT 1*), by entering your Admin ID and password.



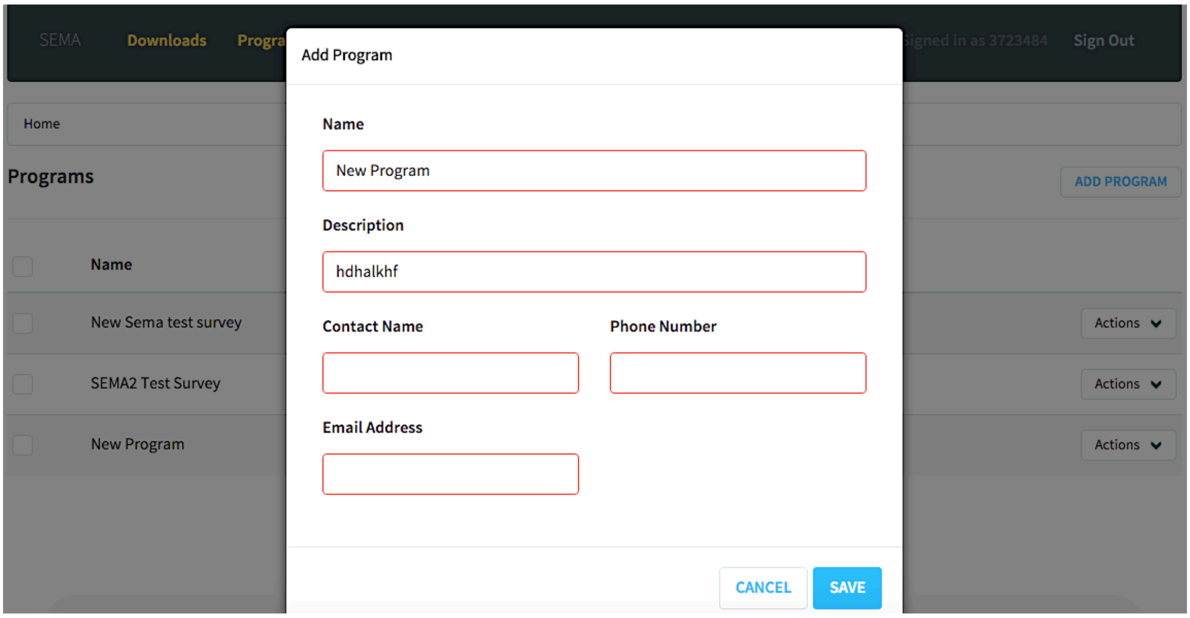
SCREENSHOT 1

Step 4: Once logged in, to create a new study click on the **ADD PROGRAM** button at the top right of the screen (*SCREENSHOT 2*). The Add Program dialogue box will appear and ask you to complete the following fields (*SCREENSHOT 3*):

- Name: Label your study (e.g., *Test Study*)
- Description: Provide a description of the study (e.g., *Jenifer's test study 2016*)
- Contact Name, Phone Number, E-mail Address: Enter contact details to be displayed to participants via the ***SEMA2*** smartphone app
- To finalize your changes, click **SAVE**

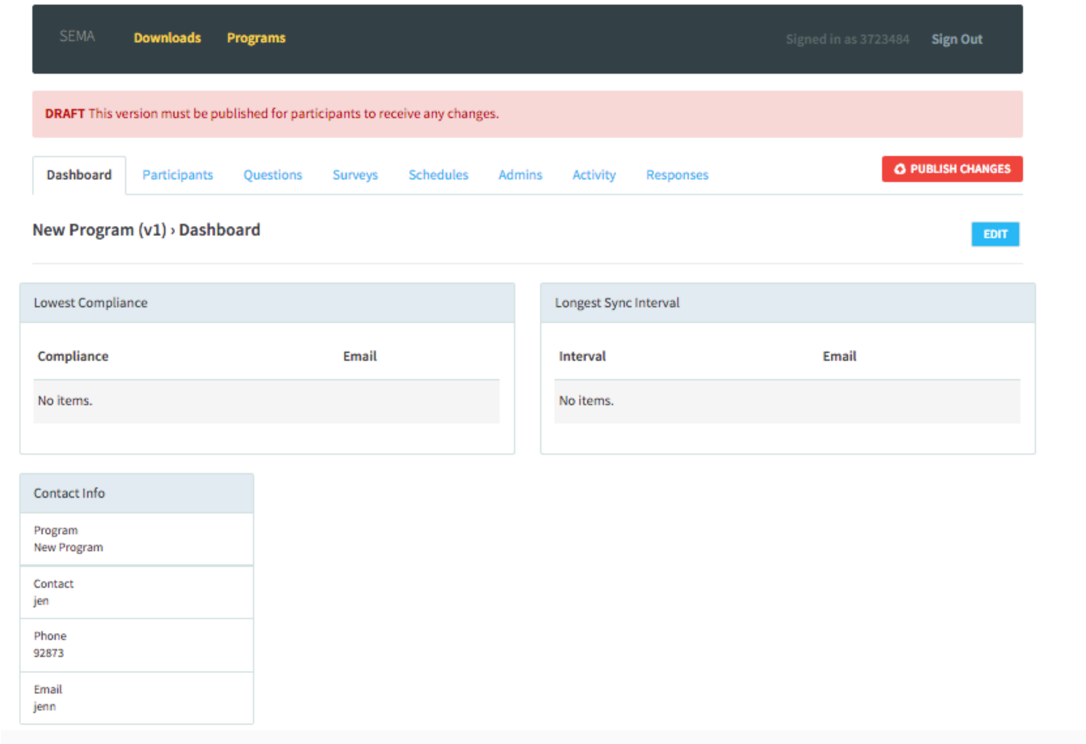


SCREENSHOT 2



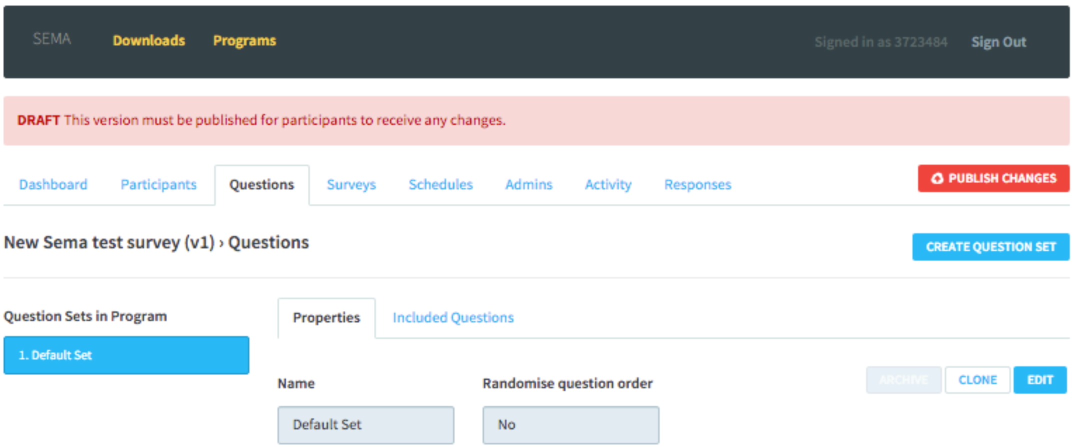
SCREENSHOT 3

Step 5: Your newly created **program** will appear at the bottom of the **program list**. Clicking on the name of the newly created program will take you to the **dashboard** tab, which displays the program summary including **lowest compliance**, **sync intervals** and contact information (see *SCREENSHOT 4*). See glossary for more information regarding these terms. Other program details can be accessed and edited by clicking on one of the other tabs (e.g., **participants**, **questions**, **surveys**, etc.) shown to the right of the dashboard tab (*SCREENSHOT 4*). The following steps describe what to do in each of these other program tabs.



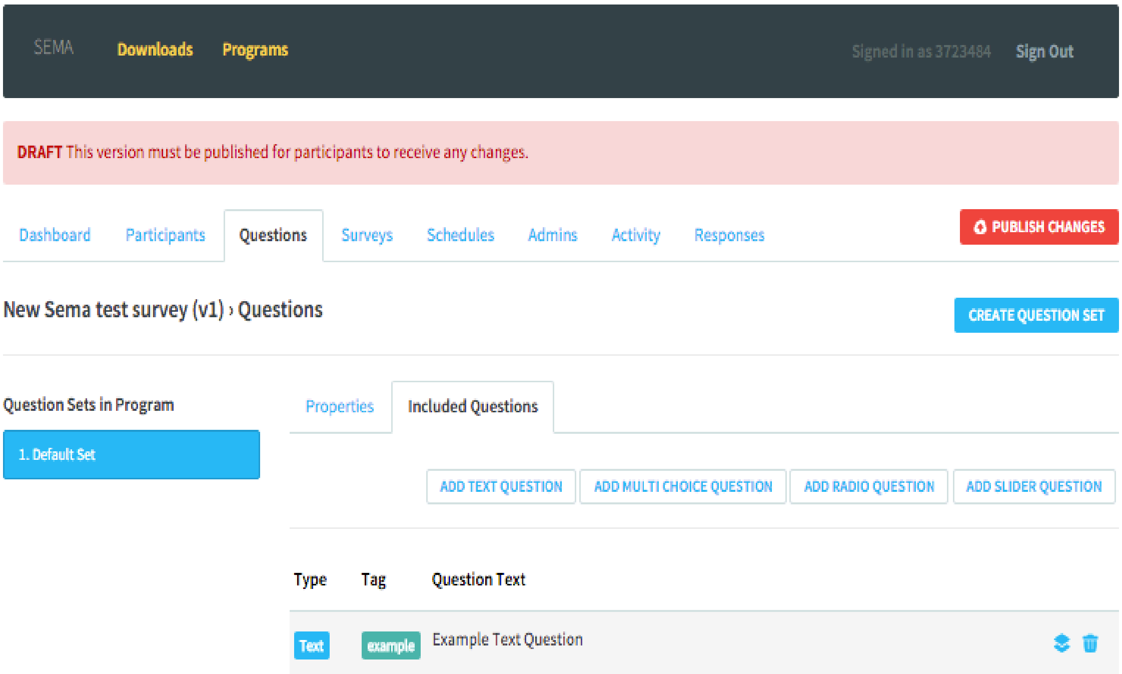
SCREENSHOT 4

Step 6: To create questions for your survey, select the **questions** tab. A default **question set** is included. The properties tab displays the question set name ("Default Set") and whether the order of questions in the set is **randomized** (see *SCREENSHOT 5*). These properties can be edited later (see **Step 8**).



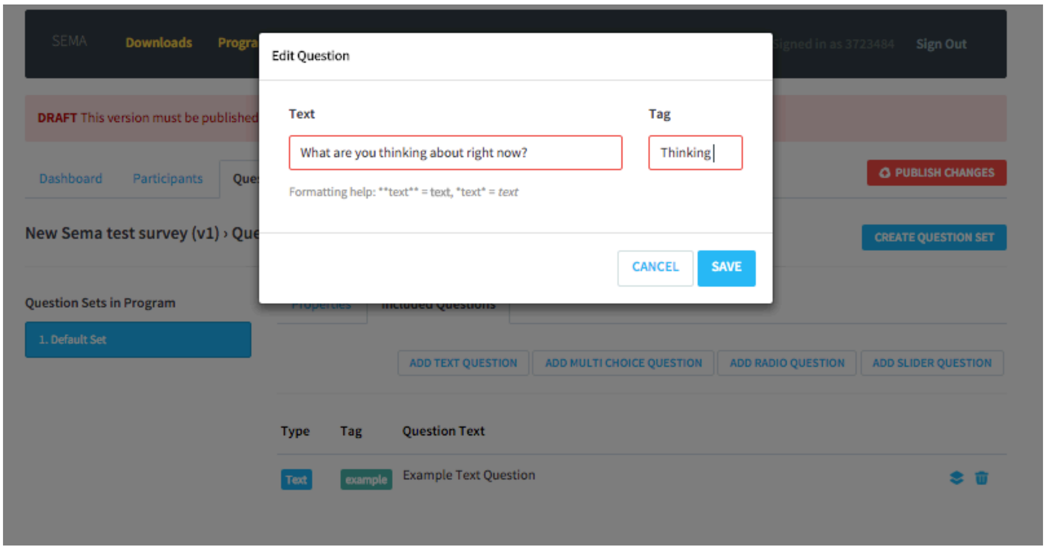
SCREENSHOT 5

Step 7: Click on the **included questions** tab (see *SCREENSHOT 6*).



SCREENSHOT 6

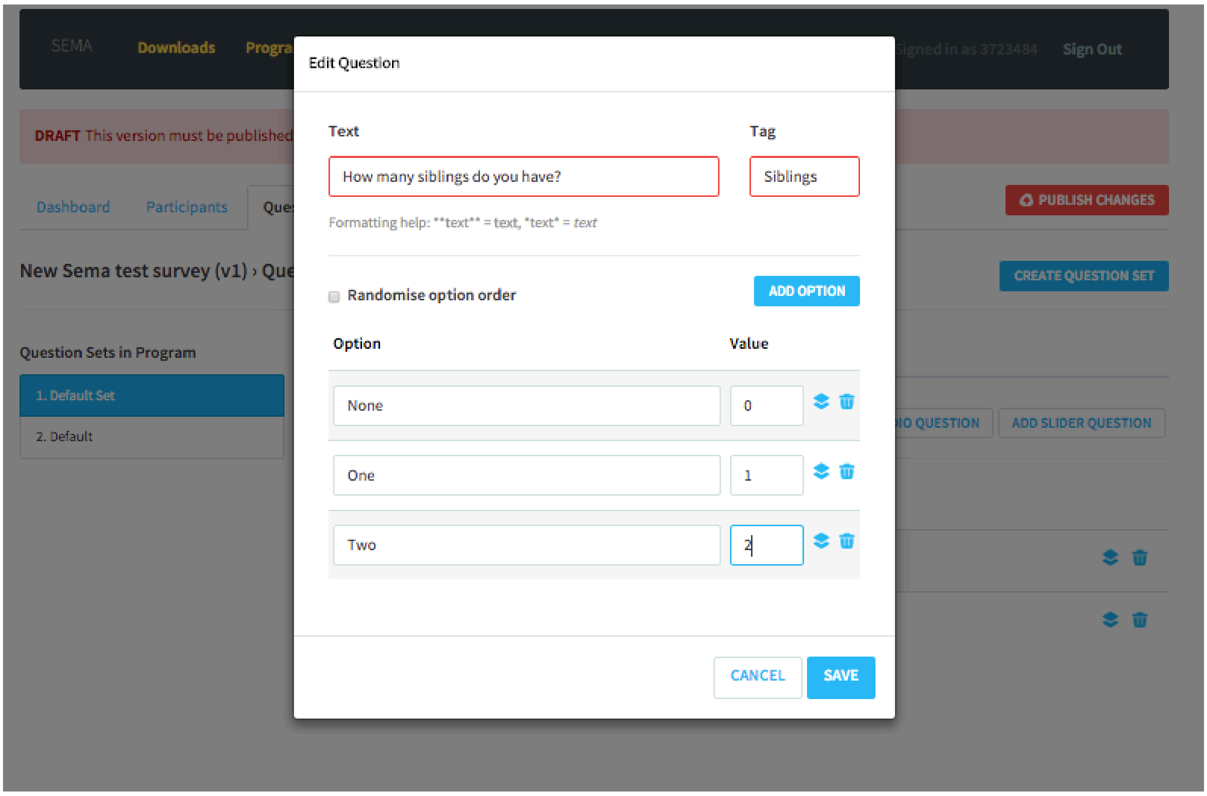
- To add a **text question**, which allows participants to respond freely by typing an answer using their smartphone keyboard, click **ADD TEXT QUESTION**
- The edit question dialogue box will appear. Enter your question text (e.g., "what are you thinking about right now?") and a **tag**, a short but informative label, which is used as the column header in output data (e.g., "thinking"), see *SCREENSHOT 7*.



SCREENSHOT 7

- To add a **slider question,** click **ADD SLIDER QUESTION**. This type of question allows participants to move a visual slider to indicate their response on a continuous scale ranging from a minimum to a maximum value.

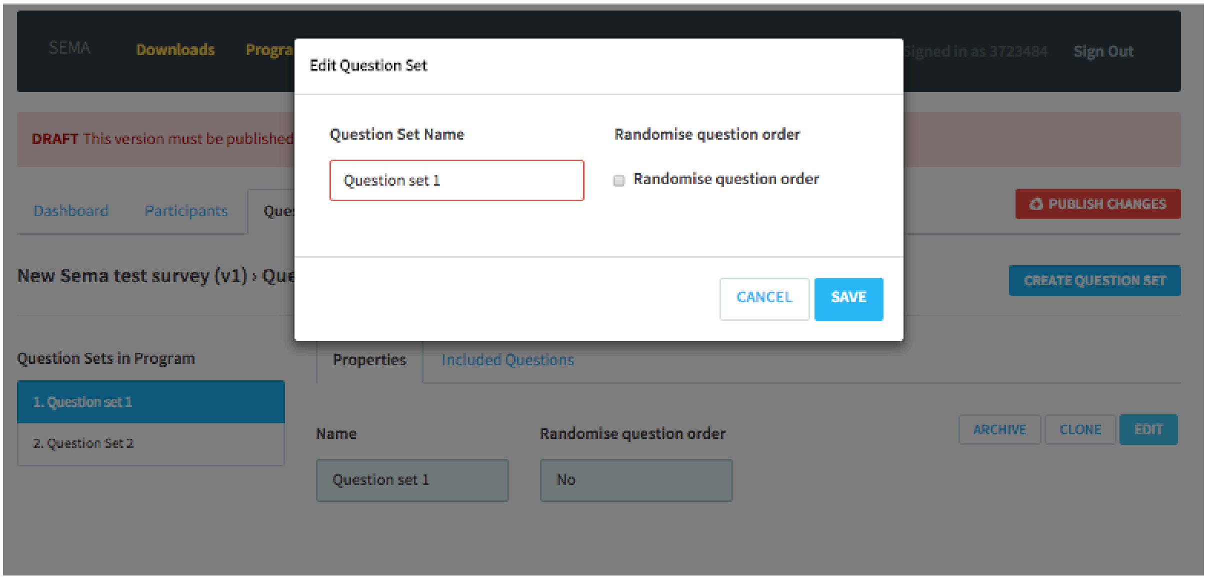
- Assign minimum and maximum values and labels for your slider response scale.
- Complete the same processes to add **radio question** or **multiple-choice** questions.
- For radio and multiple-choice questions, add response options by clicking **ADD OPTION**
- This allows you to add as many response options as you like. Values associated with each response option can be modified, if required. For example if your question is "how many siblings do you have?" the numerical value associated with the response option "none", can be edited to be "0" (see *SCREENSHOT 8*).



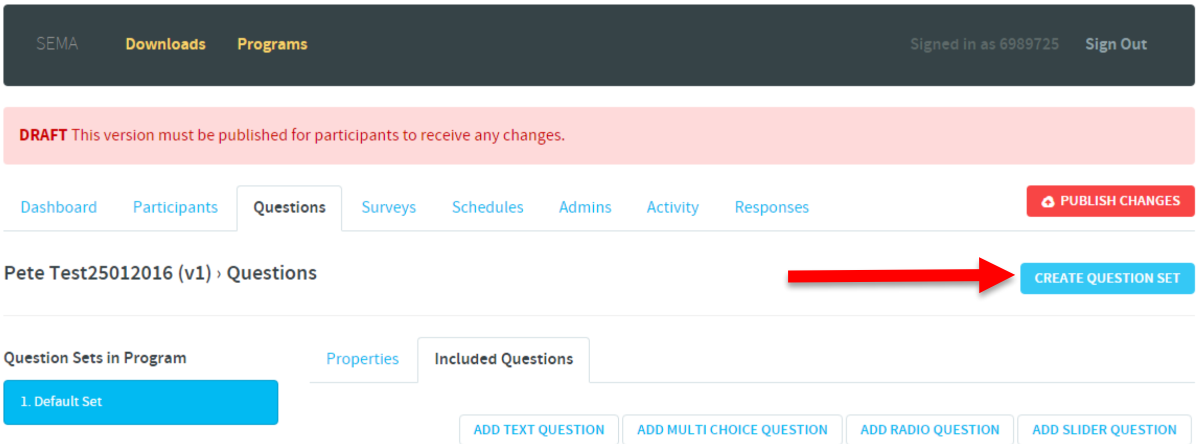
SCREENSHOT 8

Step 8: To edit properties of a **Question Set**, click on the "properties" tab and then click **EDIT**

- Enter a name for your Question Set in the "Question Set Name" textbox.
- To randomize the presentation order of questions within the Question Set, check the "randomize question order" box (see *SCREENSHOT 9*).
- To add additional question sets, click **CREATE QUESTION SET** (see *SCREENSHOT 10*).

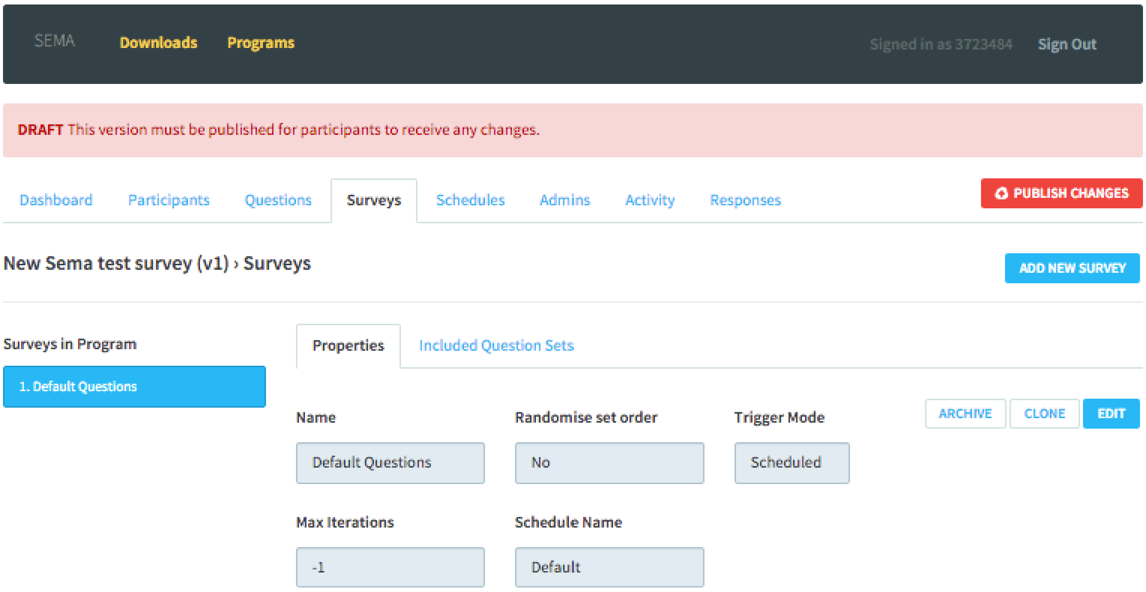


SCREENSHOT 9



SCREENSHOT 10

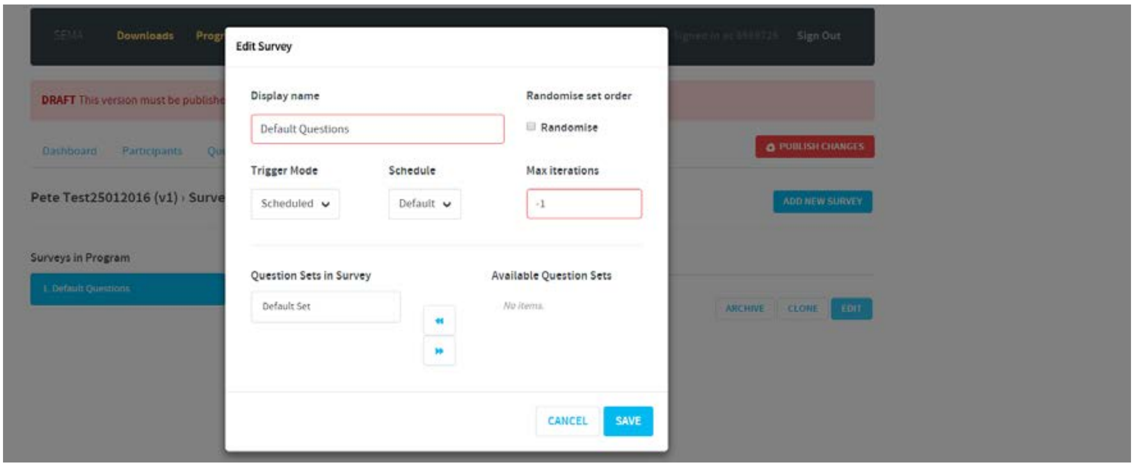
Step 9: Now you can decide which question sets you would like to include in your survey, select the "surveys" tab. This will display the survey properties which you can edit by clicking **EDIT** on the right side of screen (see *SCREENSHOT 11*).



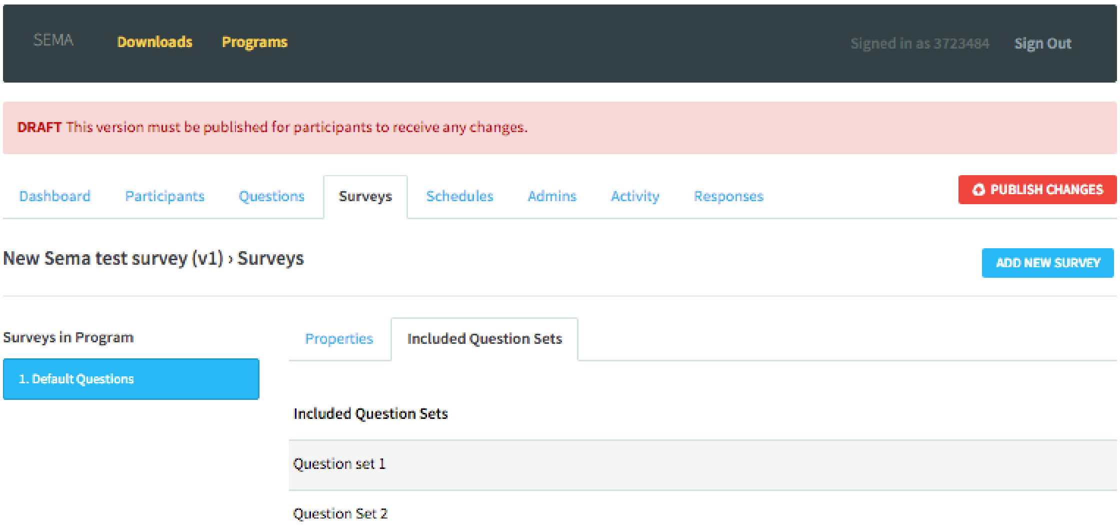
SCREENSHOT 11

The "Edit Survey" dialogue box will appear (See *SCREENSHOT 12*), in which you need to complete the following fields:

- Display Name: label your survey, this will be displayed to participants.
- Randomise set order: Check the "randomise" box to present question sets within this survey in a random order at each survey presentation.
- **Trigger mode**: select from **Ad Hoc** or **Scheduled** surveys.
- **Schedule**: select the schedule to apply to this survey. At this stage only the "default" schedule will be available because you have not yet created any other schedules (see **Step 10**).
- **Max Iterations**: enter the number of times the each participant will be prompted to complete a survey. For example, if you wanted the participants to be sent a survey 50 times, you would enter the number 50. For infinite iterations enter –1.
- Question Sets in Survey: Select which question sets to include in this survey using the blue arrows to move question sets listed in "Available Question Sets" in or out of "Question Sets in Survey" box (see *SCREENSHOT 12*).
- The "Included Question Sets" tab allows you to view the question sets in a survey (See *SCREENSHOT 13*).
- To create a new survey click **ADD NEW SURVEY**

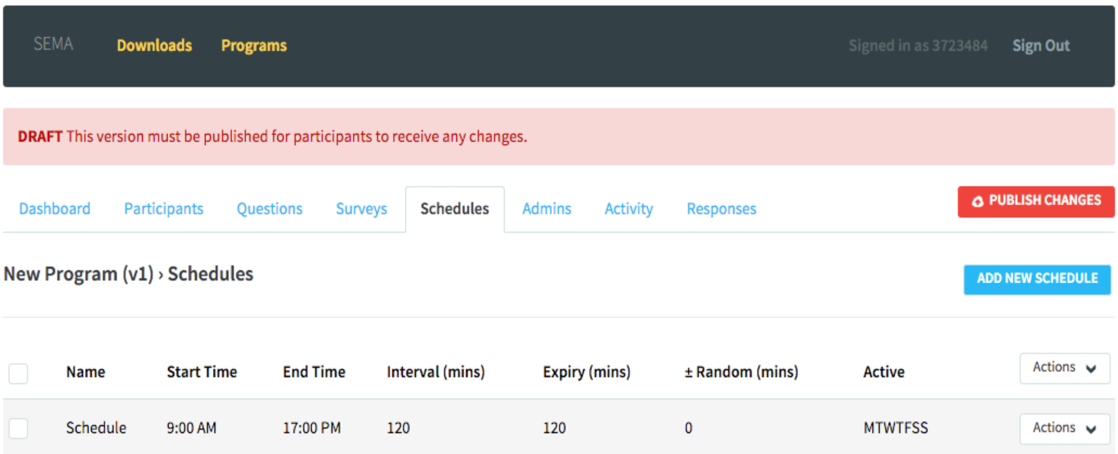


SCREENSHOT 12



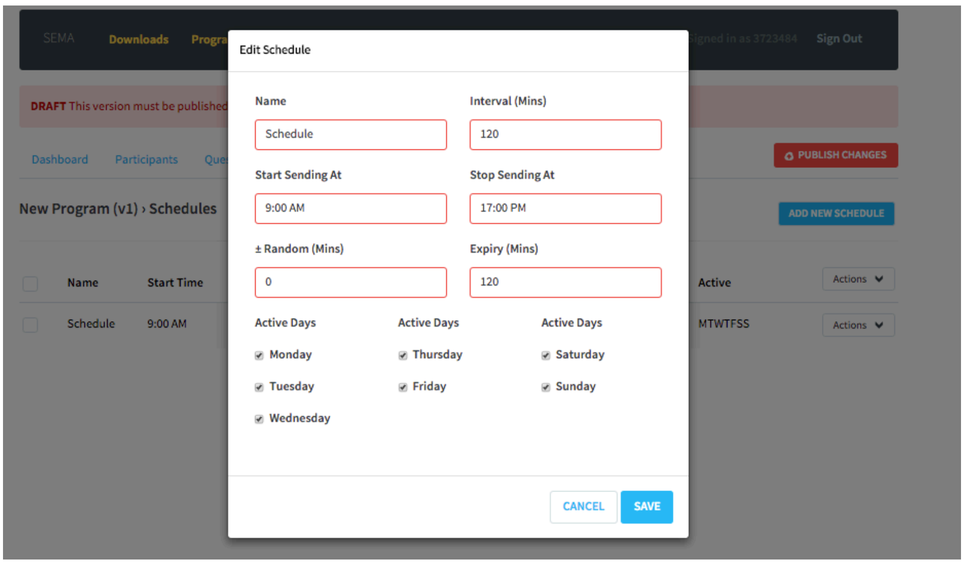
SCREENSHOT 13

Step 10: You can now assign schedules for your survey. Start by selecting the **Schedules** tab, which will display a default schedule. To edit the schedule, click on it (See *SCREENSHOT 14*).



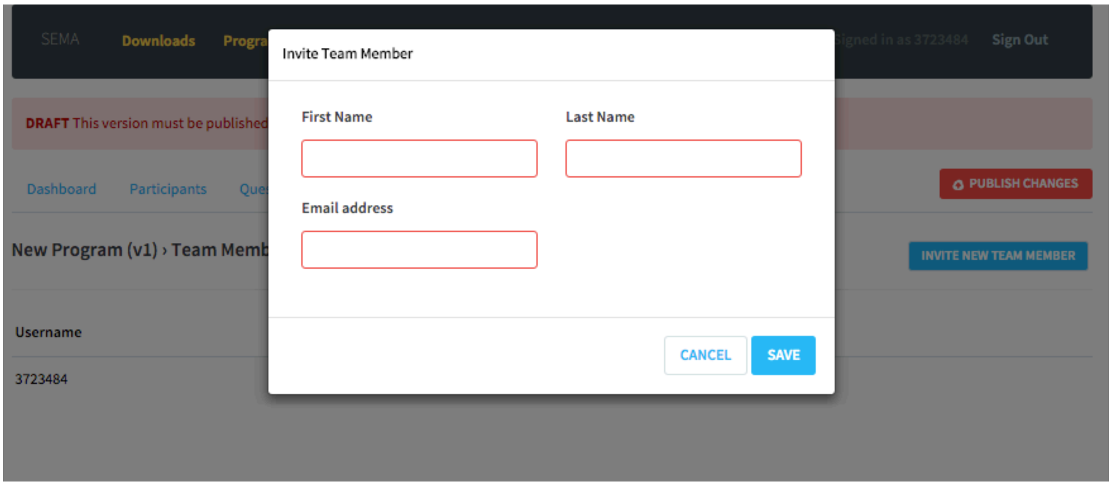
SCREENSHOT 14

- The “Edit Schedule” dialogue box will appear (See *SCREENSHOT 15*), where you will need to complete the following fields:
- Name: Give your schedule a descriptive name (e.g., “Mon-Fri 9am-9pm”)
- **Interval** (Mins): set the amount of time in minutes between survey iterations (e.g., 90 = participants are prompted to complete a survey every 90 minutes).
- Start Sending At: select from the drop-down menu the time of day after which participants will start being prompted to complete surveys
- Stop Sending At: select from the drop-down menu the time of day after which participants will stop being prompted to complete surveys
- **± Random** (Mins): set the amount of random variation in minutes to vary the interval between surveys (e.g., If the Interval = 90; and ± Random = 15; participants will be prompted to complete surveys every 75-will be prompted every 90 ± 10 minutes to complete a survey every 80-100 minutes. The exact interval between two surveys will vary randomly (by up to 10 minutes) around an average of approx. 90 minutes.
- **Expiry** (mins): enter the amount of time in minutes that participants are allowed to complete their responses to a survey before it expires. Two additional audio reminders will be triggered if a participant has not completed a survey within the expiry period. The first reminder is triggered after approx. half the expiry time has elapsed and the second reminder is at the end of the expiry time. It is advisable to set the expiry time to be shorter than the minimum possible duration between two surveys (i.e., Interval –±Random) to avoid possible overlap between consecutive surveys.
- Active Days: Check days on which participants should be prompted to complete the survey.
- To create another schedule (for another survey), click **ADD NEW SCHEDULE**



SCREENSHOT 15

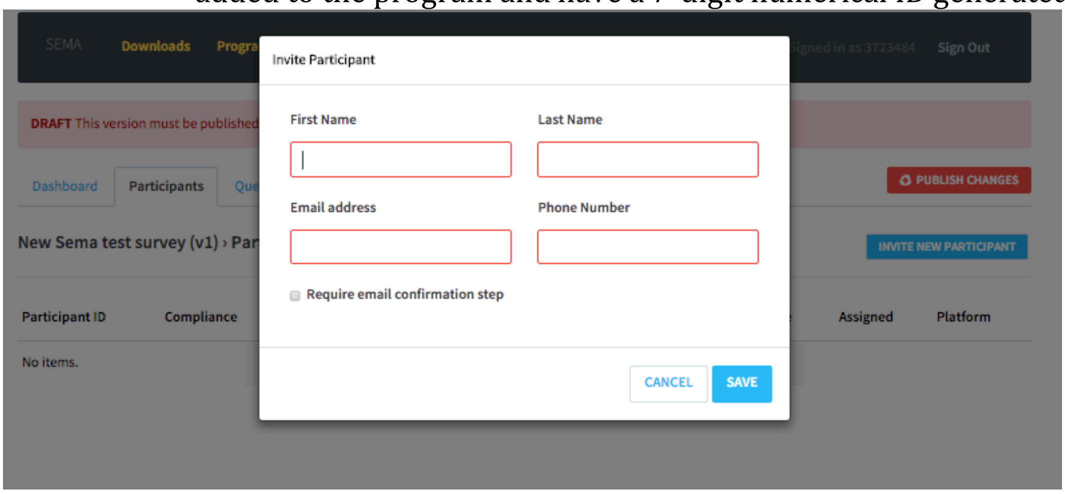
Step 11: To give other researchers admin access to your program (i.e., ability to edit questions, schedules, surveys, invite participants, etc.), select the "Admins" tab and click on INVITE NEW TEAM MEMBER. The "Invite Team Member" dialogue box will appear (See *SCREENSHOT 16*), where you must enter the person's First Name, Last Name and Email Address. After clicking "save" an automated e-mail will be sent to the nominated e-mail address containing instructions to register as a team member and including an admin username and password. A program can have an unlimited number of team members.



SCREENSHOT 16

Step 12: To invite participants to complete your study, select the "Participants" tab and click INVITE NEW PARTICIPANT. This will open the "Invite Participant" dialogue box (see *SCREENSHOT 17*), in which you must enter the participant's First Name, Last Name, Email Address and Phone Number. After clicking "Save" an invitation e-mail containing login details will be automatically sent to the participant. Note that only the participant's Email Address is displayed in the participant list.

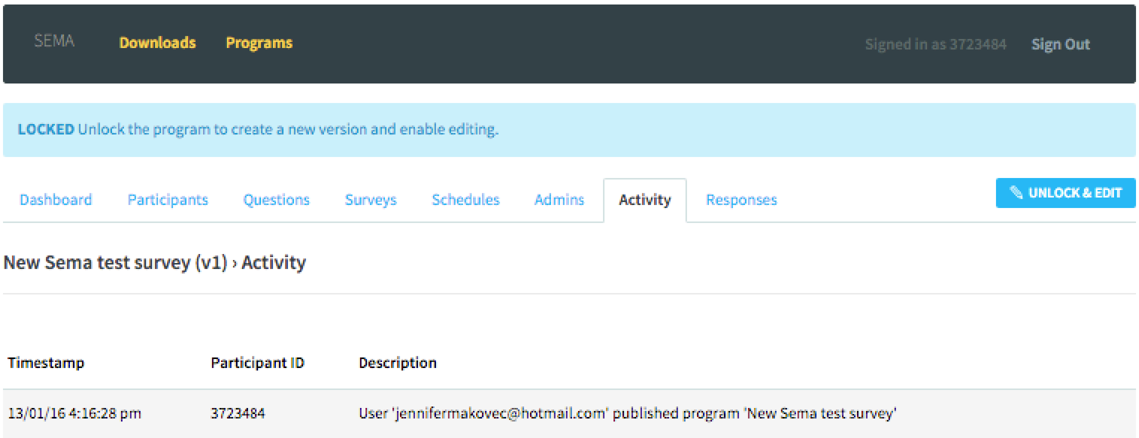
- When the "Require email confirmation step" box is checked, new participants will not be added to the program until they confirm their enrolment by clicking on a "confirm enrolment" link contained in the invitation e-mail. If left unchecked, participants will immediately be added to the program and have a 7-digit numerical ID generated.



SCREENSHOT 17

Step 13: At this stage your program is still in draft mode. To make the program go live and become available to participants click **PUBLISH CHANGES**. To make changes to your program after it is published, click **UNLOCK & EDIT** at any time. Unlocking a published program will create a new **Version** of the program.

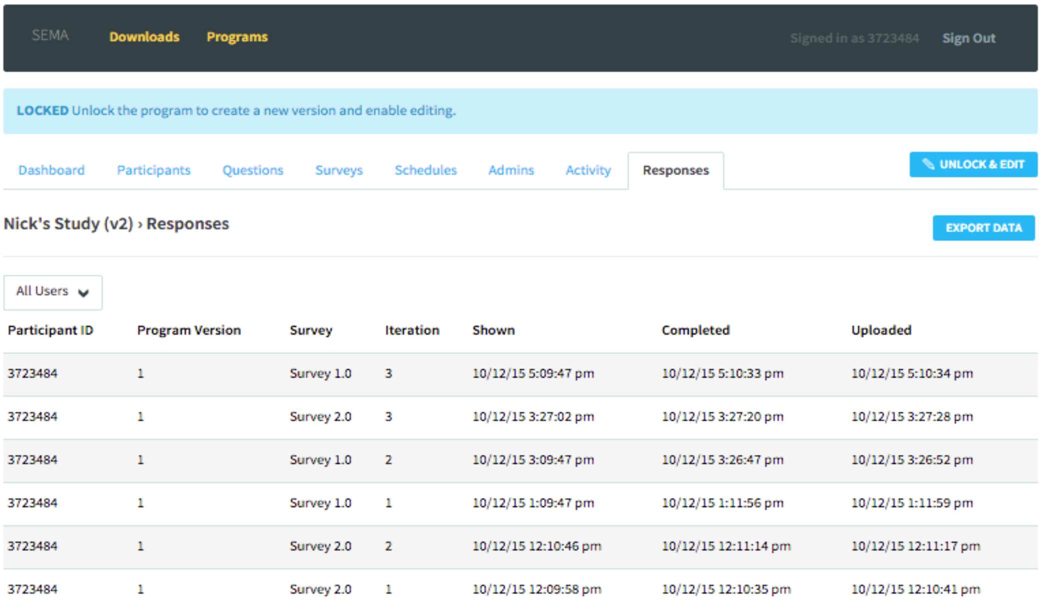
Step 14: After your survey has been active for a period of time you can view recent activity recorded on the server by clicking on the "Activity" tab (*SCREENSHOT 18*). This displays several of the most recent events recorded on the server (e.g., new version of program published, participant's device synced with the server, etc.).



SCREENSHOT 18

Step 15: Data entered by participants can be found in the **Responses** tab. This displays the **Participant ID**, **Program Version**, **iteration**, and the **Shown**, **Completed** and **Uploaded** timestamps. To review a response in detail, click anywhere in the corresponding row (see *SCREENSHOT 19*).

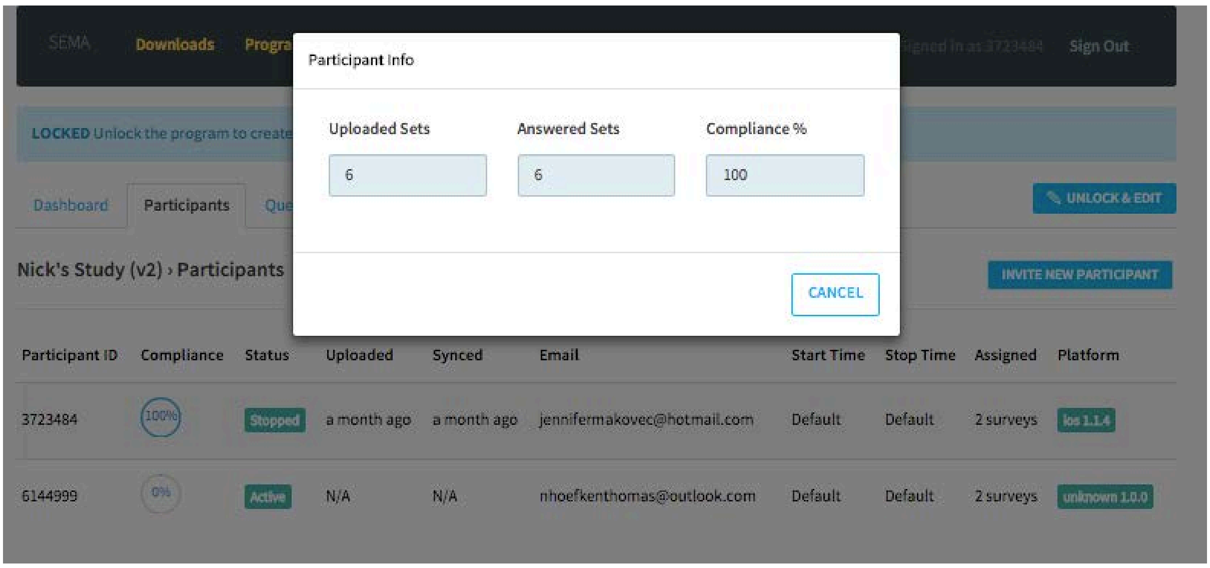
- To download the data as in .csv format, click **EXPORT DATA**. An e-mail will be sent to the email address linked to your SEMA2 user account containing a zipped folder with separate data files for each Program Version.



SCREENSHOT 19

Step 16: To view detailed information about participants, click on the "Participants" tab, which displays the following information:

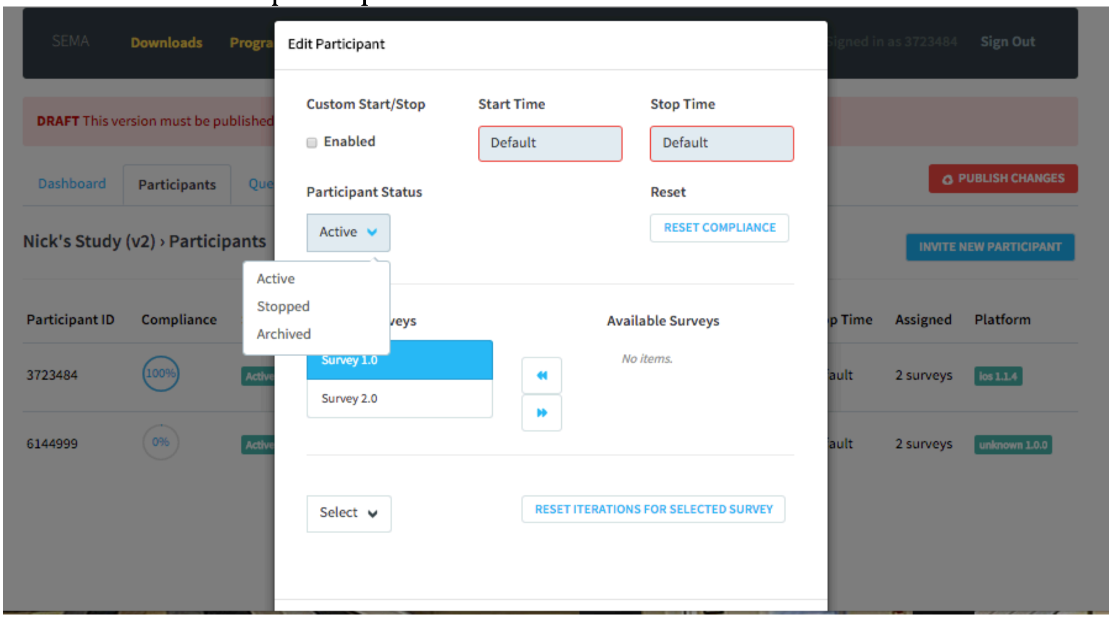
- **Compliance**: the percentage of surveys completed by the participant to date. To see detailed information on which Compliance is based, click on the compliance to display the "Participant Info" dialogue box (See *SCREENSHOT 20*). Compliance is calculated by dividing the number of **Answered Sets** by the number of **Uploaded Sets**.
- **Status**: a participant's status can be set to **Active**, **Stopped** or **Archived**
- **Platform**: displays the version of the SEMA2 app currently being used by a participant.



SCREENSHOT 20

Step 17: To edit **Participant Status**, **Surveys Assigned**, **Start Time**, or **Stop Time** for an individual participant, click anywhere in the participant's row other than on the compliance value to display the "Edit Participant" dialogue box (see *SCREENSHOT 21*). Here, you can alter the following fields:

- Check "Enabled" under **Custom Start/Stop** box to tailor the survey schedule to an individual participant's requirements.
- Status (active, stopped, archived)
- Surveys you would like to assign them by using the blue arrows to select from available surveys
- **Reset compliance**, this may be used if you want to reset the persons participation
- Reset iterations for selected survey, this may also be used if you want to reset participation



SCREENSHOT 21

GLOSSARY

Activity
Displays participant activity according to description and timestamp

Ad Hoc
Setting a survey to be delivered to a participant at varying times

Admins
Enables the listing of ‘new team members’ who can access and edit the program.

Assigned
The number of surveys assigned to a participant, available the participants tab.

Clone
Applies to the replication or copying of a program, question, survey or schedule.

Completed
Will display a time stamp if participant has completed the survey. You can click on the timestamp to view the participant’s responses to that survey. This can be found within the responses Tab.

Compliance
The rate at which participants are responding to surveys.

Dashboard
The window displaying lowest compliance, sync interval and contact information for your programs.

Export
This function will email a csv. file containing the output data to your nominated email address

Included Questions
This shows all questions included within a particular Question Set.

Iterations
The number of times a survey will be completed by a participant, setting this number to -1 will set an infinite number of iterations. In some cases, responses may decline over time with increasing iterations.

Platform
The type of software device the participant us using, for example ios 1.4.4. This is available under the participants tab.

Program

A program is the highest level grouping of questions within SEMA2, and will usually correspond to a research study. A program can contain multiple **surveys**.

Program List
A list of all the programs for which you are registered as a team member (i.e., programs for which you have admin access).

Program Version
The version of the program that the participant completed, this may be the first version you published, or subsequent surveys that you have altered or edited. Marked as (v1) (v2) etc.

Questions
Questions within a survey that can be created based on the type.

Text Question
(open response)

Slider Question
(with customizable min and max values and labels)

Radio Question
(select 1 of multiple options, which are customizable) allows only one response option.

Multiple Choice Question
(select 1 or more of multiple options, which are customizable) participants are able to select more than one option in this question type.

Question Set
The questions contained within surveys. Can be randomized.

Randomized
The questions within a survey will appear in a random order.

Reset Compliance
This will be used in the case of you wanting to reset participation for a particular person.

Scheduled
Setting a survey to be delivered to participant at fixed intervals. This is a property of a survey.

SEMA
Smartphone Ecological Momentary Assessment, Captures real-time survey data e.g., feelings, thoughts, symptoms, perceived behaviours.

Survey
Surveys within your ‘program’ that can be set to Ad Hoc or Scheduled

Status
Whether the participant is stopped or active in the study

Synced
The last time the participant uploaded their survey.

Tag
The label that will be displayed on your question in the data output
Add a tag, which is a short but informative label; for example if the question reads "how happy are you right now?" an appropriate label would be "happy". This is important because it will be the column header that will be displayed in the data output for the question response.

Team Member
A researcher that you invite to edit and view your survey results. You can add team members using the Admins tab.

Trigger Mode
Selecting the survey to be sent Ad hoc or scheduled

Unlock and Edit
Unlock program and make changes. Changes only become effective once program is 'published' as a new version.

V(1)
This is the label displayed in the dashboard that shows you the current program version, may be displayed as V (2) for version two etc.

Value
This is a numerical value assigned to the response for a question when using multiple choice or radio questions, for example, if the value for the response "happy" equals 1, the data output will display 1 for that response choice.

Notes:

Archive vs. clone: terminology and consistency
-In a question set window it says "archive" and "clone". However, in the included questions window it has symbols for delete and clone. In Schedules tab, these same functions are under the "actions" drop down menu. Basically, the same functions are labelled and presented differently in different windows, this can be a bit confusing.