Getting Started with Survey Design Using Research Electronic Data Capture (REDCap)

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Objectives of this module

- Build a survey using Research Electronic Data Capture (REDCap)

This module will show you how to:

- Start building a survey
- Use different question/answer formats
- Use skip-logic
- Use piping
- Use validation
Special Notes about REDCap

Only people with UNMC IDs will be allowed to access the specific website mentioned in this presentation. If your institution has REDCap, please refer to your home institution’s REDCap page to log in.
Special Notes about REDCap

This module will only go over the basics of how to design a survey. Please thoroughly read REDCap’s instructions regarding rules related to IRB, data collection, moving projects to production status, fees, etc.

For more information about REDCap and other research IT needs, please visit UNMC’s Research Information Technology Office (RITO) page:
https://www.unmc.edu/vcr/rito/
Special Notes about REDCap

You will notice that REDCap has many ‘How To’ videos throughout its website. These videos are a great way to help you learn how to use REDCap. There won’t be too much emphasis on those videos in this tutorial, but know that they are highly recommended if you want to learn more about REDCap!
To begin, go to (note this link is specific to UNMC):
https://unmcredcap.unmc.edu/redcap/index.php

Enter your UNMC user ID and password (same as your email), then click “Log In”. If you haven’t used REDCap before, you may have to verify your account via email. Simply follow the instructions REDCap gives.
You will be taken to your home page which lists your projects (or a Welcome page if this is your first time using REDCap). To create a new project, click “New Project”
Type in a Project Title, select the Purpose of your project, select “Create an empty project” and then click “Create Project.”
You will now see your project’s home page. To start designing your survey, click “Online Designer”
You now see the home page for the surveys for this project.

To change the name of your survey (the default is “My First Instrument”), click the “Choose Action” button and select “Rename”.
Type in the new instrument name you want and then click “Save”.
Click on your new survey name to start building your survey.
Your survey has a default variable, which is the record ID. This is required for all surveys. To add a new variable, click the “Add Field” Button.
The first item you must specify is the field type. This presentation will not cover all field types, but will introduce you to a few to get comfortable using the software.

It is highly recommended that you watch the “Field Types Video” to learn more about what REDCap can do – it may save you from unnecessary headaches in the future!
Our first survey item will be a multiple choice question using radio buttons. Radio buttons only allow a respondent to choose a single response.

If you want to allow survey respondents to select multiple responses to a question, use the Checkboxes type, but be sure to test this out thoroughly as exported checkbox data can be tricky (hard to distinguish between boxes that were purposefully left unchecked and missing data (i.e. someone didn’t answer multiple questions, including the checkbox question)).
Type in your survey question or prompt in the Field Label box (make up any question that has more than two answers).
Type in your answer choices in the Choices box, limiting only one choice to each line.
Once you click out of the choices box, REDCap will automatically assign numbers to each choice. You will be given choices to export the data as numbers-only (raw data) or the values you typed in (labels).
Give this item a variable name, using only letters, numbers, and underscores. This is the variable name that will be in your exported dataset, which will be a column of data containing survey respondent's data (one row for each respondent) related to this question.

When finished, click “Save”.
You new survey item has been added to your survey. You can always go back and modify the questions, answer choices, layout, etc., by clicking on the pencil in that survey item’s box.

Let’s try it once. Say we don’t like how the answer choices are far off to the right, and we want them to be directly below the question. Click the pencil to start editing.
As you can see, it takes us back to the same screen we were on. You can modify the question/prompt, answer choices, variables names, etc. We will modify the alignment of the answers on the survey by choosing “Left/Vertical (LV)” in the drop down menu for Custom Alignment. Then click save.
Notice that the answers now appear directly below the question. Let’s try a different type of survey item by clicking “Add Field”. You can choose either “Add Field” button, and then later re-arrange the order of the questions by just dragging-and-dropping on this online designer home page.
This time we’ll try a simple yes/no question.
Type in your question in the Field Label box, your variable name in the Variable Name box, and click “Save”.

Notice that you cannot change the choices when you select the “Yes – No” Field Type. If you would like to change the choices (e.g. add “Maybe”), then you would need to make use a Multiple-Choice type of question.
We’ll add another field to our survey, at the top of the survey. This will be a mandatory question that a survey respondent must answer to submit their survey. Since we have not designated the prior two questions as ‘required’, a survey respondent could submit their survey without answering those questions.
Tutorial Note:

To get the most out of this tutorial, use the same questions and variable names that are used in the following slides. Some of the concepts we will be covering are dependent on specific questions and variables names, so it will be easier to just follow the examples directly. After you finish the tutorial, you can create as many questions as you would like!
This question will be a multiple-choice drop-down list. Complete the Field Label, Choices, Variable Name and then click “Yes” where it asks if this should be a required field.

When everything is entered, click ‘Save’.
Notice that with the newest question, there is a warning in red underneath it that indicates the survey respondent must provide a value.
Let’s add another field under the newest question.
This time we’ll make the field type “Text Box”, which allows a person to type in their answer. Notice there are no choices you have to specify with this answer type. After entering the field label and variable name, click ‘Save’.
Now let’s say that we only want people to answer the question we just created, only if they responded a certain way to a preceding question. To do this, we will use “Branching Logic” or “Skip Logic”, which will only make a question appear if the survey respondent answered a specific way in an earlier question.

Click the branching logic symbol (green arrows) on the question you want to be contingent on a previous response.
It is the most straight-forward to use the Drag-N-Drop Logic Builder. In the “Field choices from other fields” panel, you will find all possible answer choices from your survey. The word to the left of the equal sign is the variable name associated with a question, and the word to the right of the equal sign indicates a specific answer to that question.

You simply drag responses from the left panel into the right panel to select them, which we will do on the next slide.
Here I have dragged over two responses to the question “How did you hear about this survey”: Coworker and Friend.

If you accidentally drag over a response you do not want, you can hit the red “X” next to it.

There is one problem here. Notice above our selection list, it says “Show the field ONLY if…”, and “All below are true” is selected. This is not good, because a respondent can only give one response to the ‘hear’ question, so they would never choose both ‘Coworker’ and ‘Friend’. In this case, no one would ever meet this branching logic criteria and thus no one would ever see this question.
To remedy this problem, click “ANY below are true”. This means if a respondent selects either Coworker or Friend, they will see this question.

You may notice that the Drag-N-Drop Logic Builder actively writes syntax in the Advanced Branching Logic Syntax above as you build your logic. If you are comfortable working directly with the syntax, you can edit it in the Advanced box.

Click save.
Notice that a red note appears next to this question now, indicating that branching logic exists. If you want to modify the branching logic, you simply hit the green arrows branching logic icon.
Let’s add one more field.
Choose “Text Box” as the Field Type. Enter your question in the Field Label and the Variable name.

Notice that in my question, I used “[name]”. Recall that ‘name’ was the variable name I chose for the previous question I created. If you put a variable name in square brackets, the value of that variable will appear in its place. For example, if a survey respondent answered “Brittany” to the last question, this question would read “What date did you hear about this survey from Brittany?” Using the value from one question in another question is referred to as Piping. Click the “How to use Piping” if you would like to learn more.
Here we will select a type of validation. I chose a date format, since we are asking about a date. When you select this validation type, it will only allow responses which are dates in the specified format. For dates, this is particularly helpful because it will add a small calendar next to the answer box so someone can just select the date on the calendar instead of typing it in.

After selecting your validation type, click “Save”.
In addition to the calendar option, there is a “Today” button which if pressed will enter today’s date.

Since we only want this question to appear if a respondent answered the prior question, let’s add branching logic to this question. Click the green arrows icon.
The branching logic on this one is a bit different than the last one, since the question we are basing this logic off of is open text. Here, we only want this question to appear if the prior question ‘name’ is not empty. Drag the ‘name = (define criteria)’ over to the right panel. The ‘not equal to’ symbol in this syntax is ‘<>’. We’ll leave the value after ‘<>’ blank, since we only want this question to appear if the value given to the name question is not equal to missing. In other words, this question will only appear if the respondent entered something in response to the ‘name’ question.

If you only wanted this question to appear when a specific value was given to the name question, you would type in that value box next to the ‘<>’ symbol.
That’s it for the survey design! Next we’ll explore how to ‘pilot’ your survey to see if it works as you expect.
Click the Project Setup Tab
Click “Enable” next to the words “Use surveys in this project”
After enabling surveys on your project, a new item appears in the menu bar to the left. Click “Manage Survey Participants”
You may get a notice box that pops up telling you to enable a survey. We will do this next. Click “Close”.
Previously we enabled surveys generally for our project. Here, we must specify which survey we are enabling. Click “Enable”.

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On this page, you will see many different options you can modify for your survey. We will use all of the defaults for this tutorial, but feel free to read through them, modify some, and see how they affect your survey. For now, scroll to the bottom of this screen and click “Save Changes”.
If you want to return to the previous screen with the options for your survey, just click the “Survey Settings” button.

To get a link to our survey to send out to people (or use yourself) to test the survey out, click “Manage Survey Participants”.
Click this clipboard button to copy your survey’s URL. Paste it into a new internet tab or browser to see what your survey looks like!

IMPORTANT: What we are doing right now is using the URL to TEST the survey to make sure it works as expected. If you want to use the survey to collect actual data, your project must be moved into production!
This is what our survey looks like. Notice that only three questions appear. That is because the other two questions will only appear if questions are answered a specific way.

I know that answering the first question with either “Coworker” or “Friend” should make a new question appear, so I will answer “Coworker”.

Please complete the survey below.

Thank you!

How did you hear about this survey?
- [ ] Email
- [ ] Internet
- [ ] Coworker
- [ ] Friend

What is your favorite National Park?
- [ ] Glacier
- [ ] Yellowstone
- [ ] Tetons
- [ ] Yosemite

In the last year, have you received a flu shot?
- [ ] Yes
- [ ] No

Submit
It looks like our branching logic worked because a new question appeared!

Once you type anything into the second question/prompt, the third question appears. Notice that the third question has _____ instead of “Josie”. The name “Josie” will appear where the line is as soon as you click the box to answer the date question (or the calendar).
If you try to type anything into the third question response box that is not in M-D-Y format, you will receive this alert. This happened because we put validation constraints on this question to ensure that this question is answered in a specific format.
Finish completing the survey and then click submit. Complete the survey a few times (by repasting the survey URL) with different responses, so you have at least a handful of responses. This will give you something more substantive to look at when we do the data export.
Return to your REDCap page and click “Data Exports, Reports, and Stats”.
Click the “View Report” button to see all of your survey data in a table online.
Notice that each column is associated with a survey question, and each row contains data from one survey respondent. Note that the numbers in parentheses correspond to the choice-number, and does not represent a quantity. If you export the data as raw values, only the numbers in parentheses will appear, not words associated with those numbers.

If you would like to download this data, click the “Export Report” button.
Here are the options you are given to export the data. The difference in the first two formats is whether your multiple choice question values are displayed as numbers only (raw data) or their actual choice values that you defined (labels).

There are also de-identification options you may select from. This of course is not relevant now since we are just testing our survey with fake data.

Let’s select CSV/Microsoft Excel (labels) and click “Export Data”.

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Data Exports, Reports, and Stats

Data export was successful!

The data export was successful, and your data is now ready to be downloaded. Click the download icon(s) below on the right to download your data file. If exporting to a specific statistical analysis package, you will additionally need to download the syntax file that is provided for that stats package. For more details, follow the instructions in the box below.

Citation Notice

Please cite the REDCap project when publishing manuscripts (citation information and template methods language are available here).

CSV / Microsoft Excel (labels)

You may download the survey results in CSV (comma-separated) format, which can be opened in Excel. You have the choice of downloading the data either with the full headers and answer labels or just with the answer codes (i.e. raw data).

NOTE: If you are using a version of Microsoft Excel prior to Excel 2007, due to limitations the data will only be read to 255 columns when opened.

Click this icon to open or save the file
This is what the sheet will look like. The cells with “#####” happen because the width isn’t wide enough. Make the column wider to see the values.
If you are a SAS user, you may download your data in a format that is ready to be analyzed in SAS.
With the SAS download option, be sure to follow the directions carefully. If you do, you will get the data in a CSV file, and also SAS code which will read in your data from that CSV file, and contains all of the Proc Format coding and variable labels so you don’t have to create those manually!
Data Collection

You can easily modify your survey during this pre-production stage if you find any glitches or problems with your survey. Continue to test out your survey as you improve it.

All of the data you have collected to test your survey can easily be wiped when you’re ready to collect real data and move your survey into production.
Contact information

If you have any questions related to the content of this presentation, or have noticed that this presentation needs to be updated due to changes in the format of the REDCap website, please contact Kaeli Samson at kksamson@unmc.edu.