

Creating Data Forms

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Collaborative Data Services (CDS)

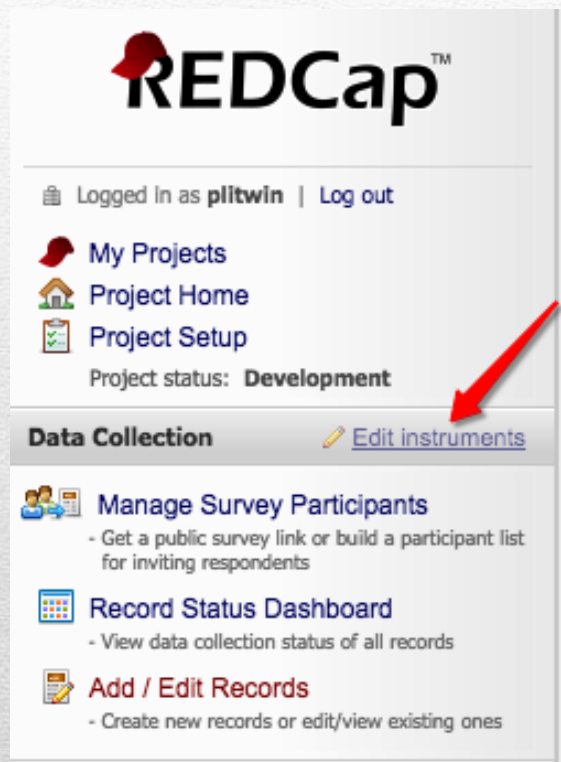
Agenda

- Creating a data form using the *designer*
 - Significance of the record_id field
 - Field types & properties
 - Required fields and validation
 - Calculations
 - Branching
 - Matrix fields
 - Action tags
 - Copying fields & choices and piping
 - Creating a form using the *data dictionary*
 - When to use the designer vs. data dictionary
 - Creating a codebook & PDFs of data forms
 - Development and production modes
 - Modifying production projects
 - Next Steps
-

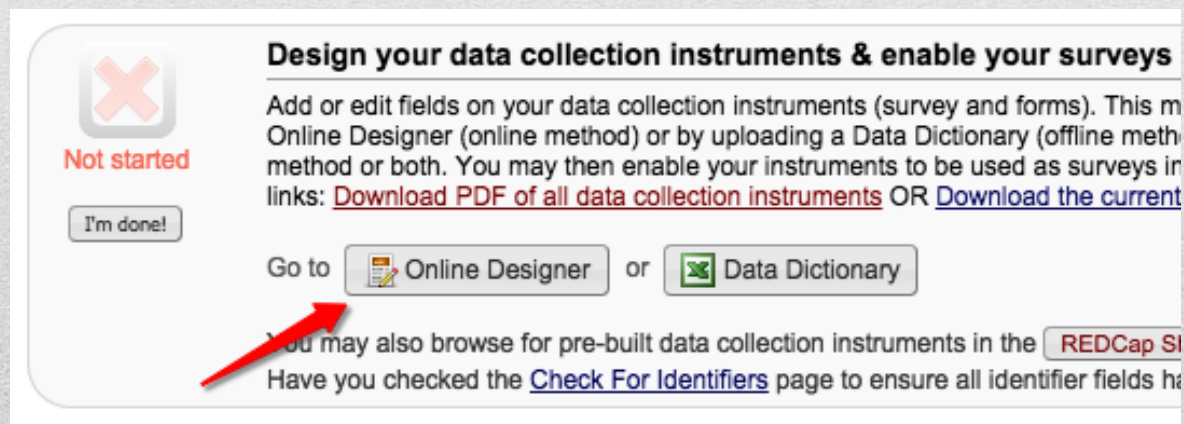
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Creating a data form using the designer

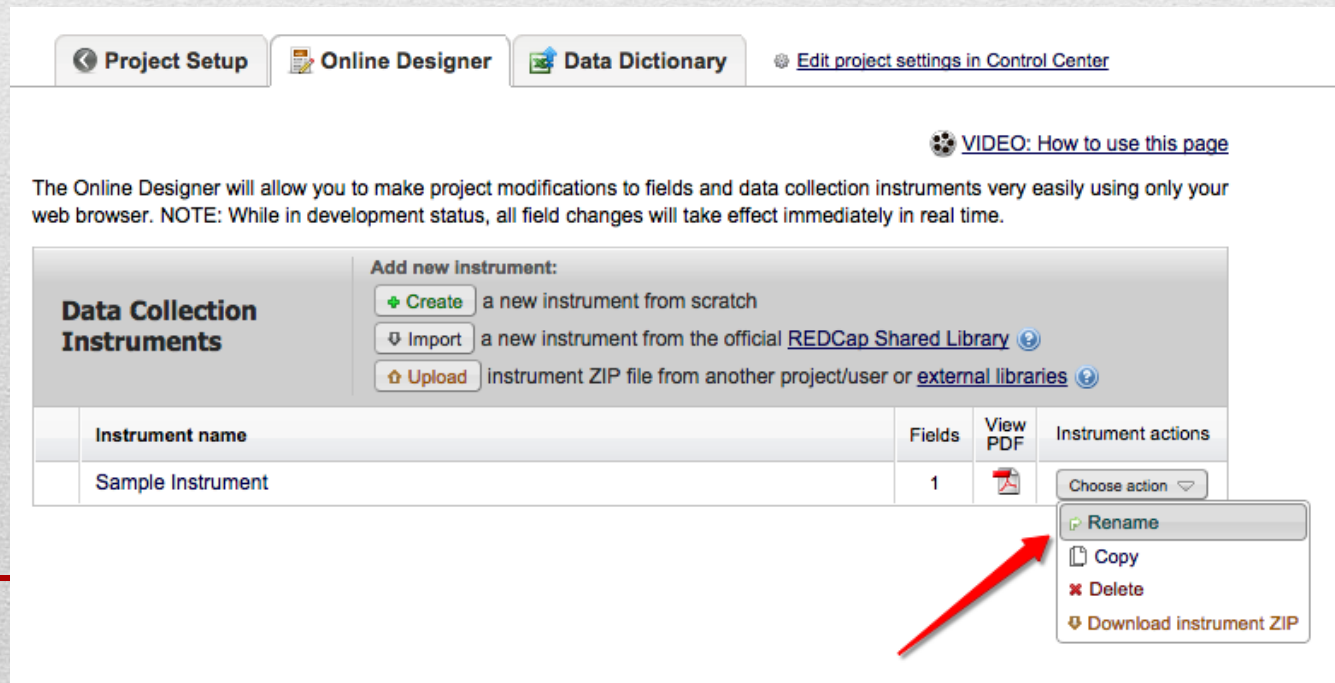


- Starting the designer
 - Click **Edit Instruments** link next to Data Collection on left-hand navigation bar
 - Click **Online Designer** button under Design your data collection instruments & enable your surveys under Project Setup tab



Initial Project

- For new projects using the Fred Hutch template, you will start with a single data collection instrument, **Sample Instrument**
- Do **not** delete this instrument; rename it instead



The screenshot shows the REDCap Online Designer interface. At the top, there are navigation tabs: "Project Setup", "Online Designer", "Data Dictionary", and a link "Edit project settings in Control Center". Below the tabs, there is a video link "VIDEO: How to use this page". A text block explains the Online Designer's purpose and includes a note about development status. The main section is titled "Data Collection Instruments" and contains a table with one instrument, "Sample Instrument". To the right of the table, there is a dropdown menu for "Instrument actions" which is open, showing options: "Rename", "Copy", "Delete", and "Download instrument ZIP". A red arrow points to the "Rename" option.

Project Setup Online Designer Data Dictionary [Edit project settings in Control Center](#)

[VIDEO: How to use this page](#)

The Online Designer will allow you to make project modifications to fields and data collection instruments very easily using only your web browser. NOTE: While in development status, all field changes will take effect immediately in real time.

Data Collection Instruments

Add new instrument:

- [Create](#) a new instrument from scratch
- [Import](#) a new instrument from the official [REDCap Shared Library](#)
- [Upload](#) instrument ZIP file from another project/user or [external libraries](#)

Instrument name	Fields	View PDF	Instrument actions
Sample Instrument	1		<div>Choose action Rename Copy Delete Download instrument ZIP</div>

Your first form

- It will always have the **record_id** field
- **Don't** delete this field; it is the primary key of your project.
- You may, however, rename it

Project Setup Online Designer Data Dictionary [Edit project settings in Control Center](#)

[VIDEO: How to use this page](#)

Ready to add fields

You may now begin adding fields to your data collection instrument below using the Online Designer. Alternatively, you may build your fields in the Data Dictionary (offline method) by clicking its tab above.

This module will allow you to create new data collection instruments/surveys or edit existing ones. Changes may be made by either using the **Online Designer** or **Upload Data Dictionary** (see tabs above), in which you may use either method or both. The Online Designer may help you get some initial fields/forms built quickly or to make quick edits, but using the Data Dictionary file may be more helpful if you will be adding a large number of fields for this project.

This page allows you to build and customize your data collection instruments one field at a time. You may add new fields or edit existing ones. New fields may be added by clicking the **Add Field** buttons. You can begin editing an existing field by clicking on the **Edit** icon. If you decide that you do not want to keep a field, you can simply delete it by clicking on the **✖ Delete** icon. To reorder the fields, simply **drag and drop** a field to a different position within the form below. NOTE: While in development status, all field changes will take effect immediately in real time.

[Return to list of instruments](#)

Current instrument: **Demographics** [Preview instrument](#)

Variable: record_id

Subject Id

NOTE: The field above is the record ID field and thus cannot be deleted or moved. It can only be edited.

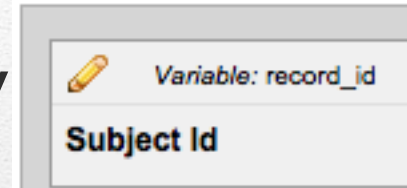
[Add Field](#) [Add Matrix of Fields](#)

Editing data forms in Designer

- Something to consider...
 - There is **no** save or cancel button for schema changes
 - All changes are immediate (when in development mode)
 - Thus, if you are making major changes, before you start...
 - You may want to make a backup copy of form
 - Or download and save data dictionary
-

Editing a field

- Clicking the pencil icon next to a field, brings you to the **Edit Field** dialog
- This dialog will vary depending on the **Field Type** selected



Edit Field ✕

You may add a new project field to this data collection instrument by completing the fields below and clicking the Save button at the bottom. When you add a new field, it will be added to the form on this page. For an overview of the different field types available, you may view the [Field Types video \(4 min\)](#)

Field Type: Text Box (Short Text) ⌵

Field Label [How to use Piping](#)
Subject Id

Variable Name (utilized during data export)
record_id ☐ Enable auto naming of variable based upon its Field Label?
ONLY letters, numbers, and underscores

Validation? (optional) --- None --- ⌵

Identifier? ☒ No ☐ Yes
Does the field contain identifying information (e.g., name, SSN, address)?

Field Annotation [@ Learn about Action Tags](#)

Explanatory notes - not displayed on any page ?

Save **Cancel**

Adding a field

- Clicking the **Add Field** button, brings you to the **Add New Field** dialog
- This dialog will again vary depending on the **Field Type** selected

Add Field

Add New Field

You may add a new project field to this data collection instrument by completing the fields below and clicking the Save button at the bottom. When you add a new field, it will be added to the form on this page. For an overview of the different field types available, you may view the [Field Types video \(4 min\)](#)

Field Type: Text Box (Short Text) ▾

Field Label

[How to use Piping](#)

Variable Name (utilized during data export)

☐ Enable auto naming of variable based upon its Field Label?

ONLY letters, numbers, and underscores

Validation? (optional) ---- None ---- ▾

— or —

Enable searching within a biomedical ontology ?

-- choose ontology to search -- ▾

Required?* ☒ No ☐ Yes

* Prompt If field is blank

Identifier? ☒ No ☐ Yes

Does the field contain identifying information (e.g., name, SSN, address)?

Custom Alignment Right / Vertical (RV) ▾

Align the position of the field on the page

Field Note (optional)

Small reminder text displayed underneath field

Field Annotation [Learn about Action Tags](#)

Explanatory notes - not displayed on any page ?

Save

Cancel

Field Types

- Standard fields
 - **Text Box**
 - REDCap supports autocomplete based on biomedical ontologies (e.g., ICD-10 codes).
 - **Notes Box** – paragraph of text
 - **Calculated Field** – numeric calculation
 - **Multiple Choice – Drop-down List** (Single Answer)
 - **Multiple Choice – Radio buttons** (Single Answer)
 - **Checkboxes** (Multiple Answers)
 - **Yes – No** – yes/no radio button
 - **True – False** – true/false radio button
 - **Signature** – draw signature with mouse or finger
 - **File Upload** – attach documents to form
 - **Slider / Visual Analog Scale** – slider from 1 to 100
 - **Descriptive Text** – does not capture data
 - **Begin New Section** – also does not capture data
 - **Dynamic Query** (SQL) – dropdown hooked up to another project. Requires admin to setup
 - **Matrix fields** – adds a group of radio button or checkbox fields sharing same set of responses
-

Field Properties

- **Field Type** – type of field
 - **Field Label** – the prompt the user sees
 - **Variable Name** – the field name used at export and when branching and piping; *must be unique across entire project*
 - **Validation** – simple validation
 - **Required** – is field mandatory in order to save record?
 - **Identifier** – does this contain PII?
 - **Custom Alignment** – positions field (answers) on page
 - **Field Note** – help text displayed underneath field in smaller font
 - **Field Annotation** – note to designer or way to designate special field status; not displayed to data entry user
-

Required fields, identifier, & validation

- **Required**
 - Any field can be marked as required
 - Can be over-ruled by user at data entry time
 - **Identifier**
 - Any field can be marked as Identifier
 - Will be stripped from exports (unless user has see "full data set" right)
 - **Validation**
 - Only for textbox fields
 - Constrain user to entering valid date, integer, number, email address, phone number, zipcode, etc.
 - You can also specify min and max values for numeric/date types; but boundaries can be overridden at data entry time
-

Calculations

- Numeric calculations
 - **No text or date calculations!**
 - *Possible workarounds:* use branching logic to display alternate text messages; use Data Entry Triggers (a programming extension) for date calculations
 - Reference field names using **[field_name]** syntax
 - Can reference fields on other forms!
 - *When using longitudinal project (discussed in 301 seminar), you need to modify this syntax if field is from a different event*
 - REDCap has a number of numeric, datetime, and boolean functions to support calculations (and branching, reports, and DQRs)
-

Copy value of field from another data form

[bas_height]

BMI Calculation (lbs/inches)

- Without rounding

```
([bas_weight]/([bas_height]*[bas_height]))*703
```

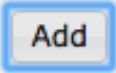





- With rounding

```
round((([bas_weight]/([bas_height]*[bas_height]))*703,1)
```

Action Tags

- Added to REDCap in version 6.7
 - Goes in Field Annotation property of field
 - More added in version 7.6

All available action tags and their descriptions:

	@HIDDEN	Hides the field on both the survey page and the data entry form. Field will stay hidden even if branching logic attempts to make it visible.
	@HIDDEN-FORM	Hides the field only on the data entry form (i.e., not on the survey page). Field will stay hidden even if branching logic attempts to make it visible.
	@HIDDEN-SURVEY	Hides the field only on the survey page (i.e., not on the data entry form). Field will stay hidden even if branching logic attempts to make it visible.
	@READONLY	Makes the field read-only (i.e., disabled) on both the survey page and the data entry form so that its value cannot be changed.
	@READONLY-FORM	Makes the field read-only (i.e., disabled) only on the data entry form (i.e., not on the survey page) so that its value cannot be changed.
	@READONLY-SURVEY	Makes the field read-only (i.e., disabled) only on the survey page (i.e., not on the data entry form) so that its value cannot be changed.

Action Tags

- Version 7.6 added additional action tags, including
 - @HIDEBUTTON – use to hide today/now button for a date/time field
 - @HIDECHOICE – use to retire one or more choices for a multiple-choice field (radio, drop-down, checkbox)
 - @MAXCHECKED – specify max no. of checkboxes that can be checked
 - @MAXCHOICE – causes choice to be disabled after so many records have selected the choice
 - @NONE OF THE ABOVE – allows for a checkbox to designate one (or more than one) choice that is mutually exclusive of all other choices
 - @CHARLIMIT, @WORDLIMIT – for text & notes fields
 - @RANDOMORDER – randomizes order of choices
-

Branching



- You can use Drag-N-Drop or Advanced syntax

too complex.

Choose method below for the following field: **os_foodallergy** - *Do you have any food allergies, food intolerances...*

☐ **Advanced Branching Logic Syntax** [\(How do I use the advanced syntax?\)](#)

Show the field ONLY if...

— OR —

☒ **Drag-N-Drop Logic Builder**

Displaying field choices for the following data collection instrument:
Online Screener

Field choices from other fields
(drag a choice below to box on right)

subject_id = (define criteria)

os_pg1 = Yes (1)

→

Show the field ONLY if...

☒ ALL below are true
☐ ANY below are true

Branching

- Example: displaying or hiding pregnancy question

☐ **Advanced Branching Logic Syntax** [\(How do I use the advanced syntax?\)](#)

Show the field ONLY if...

[brn_gender] = '1'

— OR —

☒ **Drag-N-Drop Logic Builder**

Displaying field choices for the following data collection instrument:

Branching Demo

Field choices from other fields
(drag a choice below to box on right)

demo_firstname_val_branch = (define criteria)	→
dem_lastname_val_branch = (define criteria)	→
brn_gender = female (1)	→
brn_gender = male (2)	→
brn_gender = prefer not to answer (3)	→
dem_dob_val_branch = (define criteria)	→

Drag and Drop

Show the field ONLY if...

☒ ALL below are true

☐ ANY below are true

brn_gender = female (1) ✖

Branching

- Checking if a field is not null (answered)

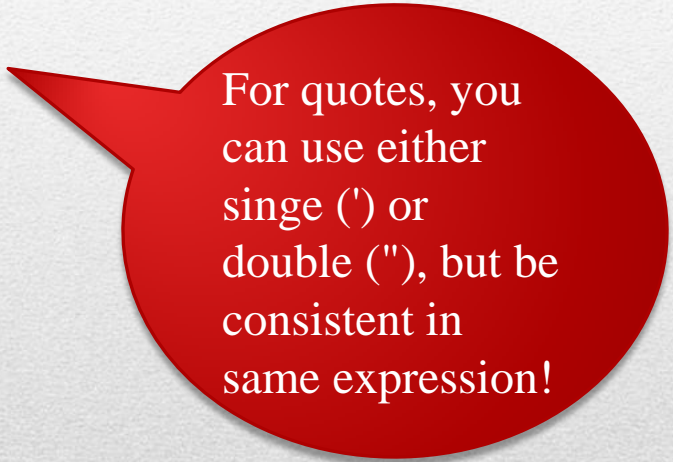
```
[os_6appt] <> "
```

- Checking if a field is null

```
[os_6appt] = "
```



- Referencing checkbox field

```
[enr_race(6)] = '1'
```



For quotes, you can use either single (') or double ("), but be consistent in same expression!

Matrix Fields




 **Edit Matrix of Fields** 

You may add or edit a matrix (i.e. grid) of project fields on this data collection instrument by completing the fields below. By providing all necessary info below and clicking Save, the new matrix of fields will be added to the form on this page. A Field Label and Variable name must be provide for each field in the matrix, and you must also set the Choices (i.e. matrix column headers) and answer format (Single Answer vs. Multiple Answers) for the entire matrix. [View a matrix example](#) or [Read more about matrix fields on the Help & FAQ](#).

Section Header Text (optional)

Matrix Rows
Each row represents a different field with its own label and variable name.

☐ Enable auto naming of variable based upon its Field Label?

Field Label	Variable Name <small>ONLY letters, numbers, and underscores</small>	Required?	Field Annotation ?
<input type="text" value="Happiness"/>	<input type="text" value="happiness"/>	<input type="checkbox"/>	<input type="text" value=""/> 
<input type="text" value="Sadness"/>	<input type="text" value="sadness"/>	<input type="checkbox"/>	<input type="text" value=""/> 
<input type="text" value="Anger"/>	<input type="text" value="anger"/>	<input type="checkbox"/>	<input type="text" value=""/> 

Add another row

Matrix Column Choices
Choices (one choice per line)

[How do I manually code the choices?](#)

Other Matrix Info
Answer Format:

Ranking: [What is a ranked matrix of fields?](#)
☐ Allow only 1 choice to be selected per column (radio buttons only)
Matrix group name: ONLY letters, numbers, and underscores
 [What is a matrix group name?](#)

Save **Cancel**

Copying fields & choices

- Copy field



- Copy choices

Choices (one choice per line) [Copy existing choices](#)

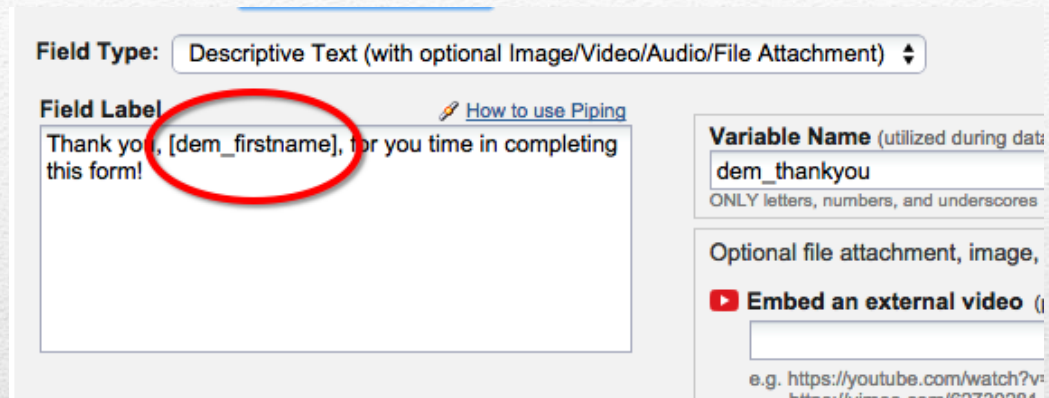
0, No
1, Yes

Piping

- Allows you to copy the value from one field into various other places on a form
 - Field Label
 - Field Note
 - Section Header
 - Matrix field column headers
 - Option labels for multiple choice fields (radio, drop-down, checkbox)
 - Slider field labels (i.e. text displayed above slider bar)
 - Custom record locking text (if defined, displayed at bottom of form)
 - Survey Instructions
 - Survey Completion Text
 - Survey invitation emails (sent via Participant List or Automated Invitations) - includes both subject and message
 - ...
 - Simply use same syntax as when referring to fields in calculations and branching, i.e. [field_name]
-

Piping Example

- Designer




Field Type: Descriptive Text (with optional Image/Video/Audio/File Attachment) ▾

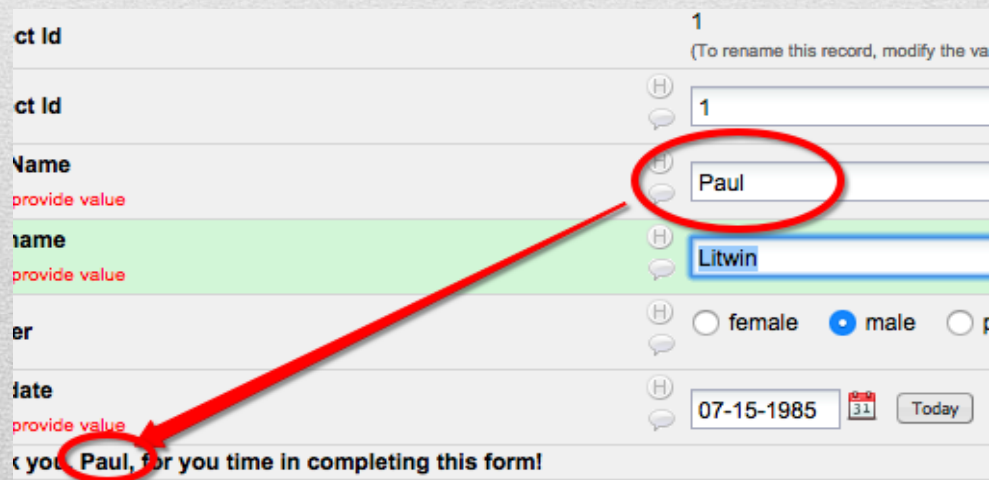
Field Label: Thank you, [dem_firstname], for you time in completing this form! [How to use Piping](#)


Variable Name (utilized during data): dem_thankyou
ONLY letters, numbers, and underscores

Optional file attachment, image, video, or audio

 Embed an external video (URL)
e.g. https://youtube.com/watch?v=...
http://image.com/62720284

- Data entry time



ct Id	1 (To rename this record, modify the va
ct Id	1
Name provide value	Paul
name provide value	Litwin
er	<input type="radio"/> female <input checked="" type="radio"/> male <input type="radio"/>
late provide value	07-15-1985  Today
Thank you, Paul, for you time in completing this form!	

Variable naming

- **Recommendation**

- Use a short 2/3/4 letter prefix that represents the form name and an underscore before every field name (exception: don't use for record_id field)

```
dem_firstname  
bas_weight  
fu6_smoking
```

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Data Dictionary

- Everything discussed using Designer can also be done using the downloaded data dictionary
 - You can develop projects using either...
 - Designer
 - Data Dictionary
 - or both!
 - My style
 - I like to use Designer most of the time
 - But I use the Data Dictionary when I need to create similar fields multiple times on same form or on different forms or fix a bunch of fields because a change in field name used in branching logic in multiple places
-

Data Dictionary

[← Project Setup](#) [📄 Online Designer](#) [📊 Data Dictionary](#) [⚙️ Edit project settings in Control Center](#)

 [VIDEO: How to use this page](#)


This module will allow you to create new data collection instruments/surveys or edit existing ones. Changes may be made by either using the **Online Designer** or **Upload Data Dictionary** (see tabs above), in which you may use either method or both. The Online Designer may help you get some initial fields/forms built quickly or to make quick edits, but using the Data Dictionary file may be more helpful if you will be adding a large number of fields for this project.


This module may be used for making changes to the project, such as adding new fields or modifying existing fields, by using an offline method called the Data Dictionary. The Data Dictionary is a specifically formatted CSV (comma delimited) file within which you may construct your project fields and afterward upload the file here to commit the changes to your project.

Click the 'Browse' or 'Choose File' button below to select the file on your computer, and upload it by clicking the 'Upload File' button. Once your file has been uploaded, changes will NOT immediately be made but will be displayed and checked for errors to ensure that all the formatting in your Data Dictionary is correct before official changes are made to the project.

Need some help?
If you wish to view an example of how your Data Dictionary may be formatted, you may download the [Data Dictionary demonstration file](#), or you may view the [Data Dictionary Tutorial Video \(10 min\)](#). For help setting up your Data Dictionary, you may also see the instructions listed on the [Help & FAQ](#).

Steps for making project changes:

- 1.) [Download the current Data Dictionary](#) 
- 2.) Edit the Data Dictionary (see the [Help & FAQ](#) for help)
- 3.) Upload the Data Dictionary using the form below
- 4.) The changes will be made to the project after the Data Dictionary has been checked for errors

Upload your Data Dictionary file (CSV file format only)
Format for min/max validation values for date and datetime fields: 
 No file chosen

Data Dictionary

- Each column maps to a property in the designer
 - Download and upload using CSV format
 - Not TSV!
 - Not Excel!
-

Data Dictionary (1 of 2)

	A	B	C	D	E	F	G	H	I	J
1	Variable / Field	Form Name	Section Head	Field Type	Field Label	Choices, Calc	Field Note	Text Validation	Text Validation	Text Validation
2	record_id	demographics		text	Subject Id					
3	dem_firstname	demographics		text	First Name					
4	dem_lastname	demographics		text	Last name					
5	dem_gender	demographics		radio	Gender	1, female 2, male 3, prefer not to answer				
6	dem_dob	demographics		text	Birthdate			date_mdy	1/1/60	1/1/85
7	dem_thankyou	demographics		descriptive	Thank you, [dem_firstname], for you time in completing this form!					
8	happy1_align	alignment_demo		yesno	Are you happy?	RV				
9	hungry_align	alignment_demo		yesno	Are you hungry?	RH				
10	thirsty_align	alignment_demo		yesno	Are you thirsty?	LV				
11	angry_align	alignment_demo		yesno	Are you angry?	LH				
12	demo_firstname	validation_demo		text	First Name					
13	dem_lastname	validation_demo		text	Last name					
14	dem_gender	validation_demo		radio	Gender	1, female 2, male 3, prefer not to answer				
15	birthdate_ba	validation_demo		radio	Birthdate (gi/go)					
16	dem_dob_val	validation_demo		text	Birthdate (with validation)			date_mdy	1/1/60	1/1/85
17	age	validation_demo		text	Age		Enter an integer	integer	18	65
18	email	validation_demo		text	Email			email		
19	mobile_phone	validation_demo		text	Mobile phone		Enter a valid	phone		
20	bmi_weight	bmi		text	Weight (in pounds)			number	50	300
21	bmi_height	bmi		text	Height (in inches)			number	48	200
22	bmi_bmi	bmi		calc	BMI	([bmi_weight]/([bmi_height]*[bmi_height]))*703				
23	bmi_bmi2	bmi		calc	BMI	round([bmi_weight]/([bmi_height]*[bmi_height]),1) With rounding to 1 decimal place				
24	bmi_bmi3	bmi		calc	BMI	round([bmi_weight]/([bmi_height]*[bmi_height]),1) With rounding to 1 decimal place				
25	race	checkbox_branching_demo		checkbox	Race	White, White (A person having origins in any of the original people				
26	race other	checkbox_branching_demo		text	Other race					

Data Dictionary (2 of 2)

[illegible]

Data Dictionary

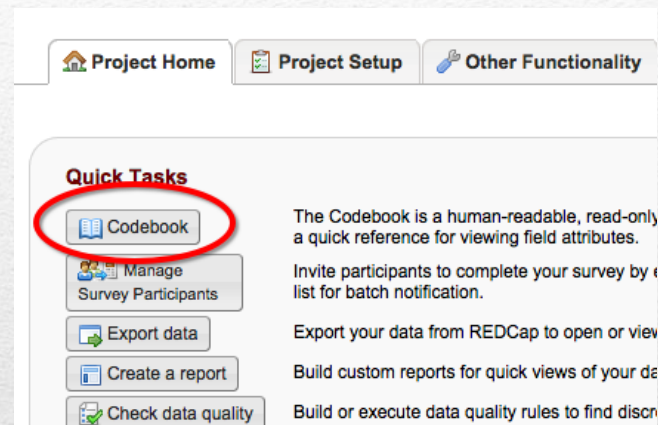
- Uploading Changes
 - REDCap will list out any errors and/or warnings before you can commit your changes
 - Don't forget to click **Commit Changes**
-

Agenda

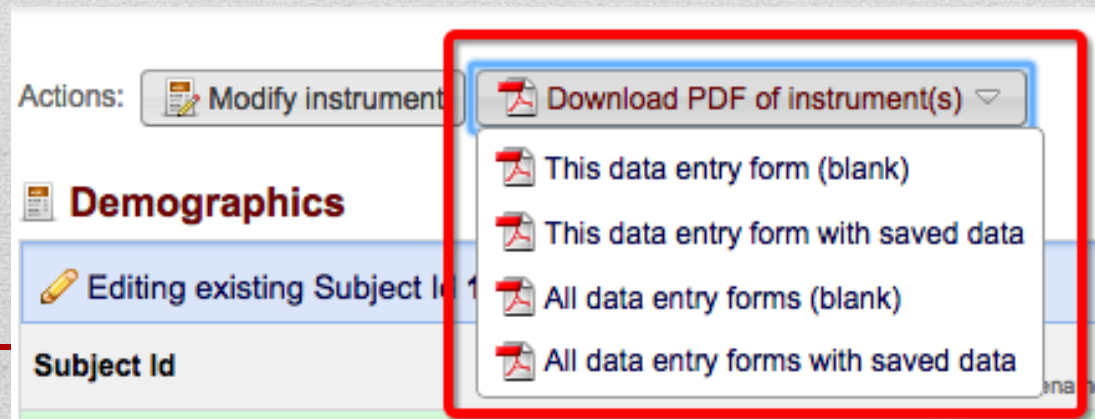
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Codebook & PDFs

- Codebook



- PDFs of forms (with or without data)
 - Open form (in data collection mode)



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Development & Production Modes


- On Project Home screen


Project Dashboard

The tables below provide general dashboard information, such as a list of all users with access to this project, general project statistics, and upcoming calendar events (if any).

 **Current Users**

User	Expires
plitwin (Paul Litwin)	never

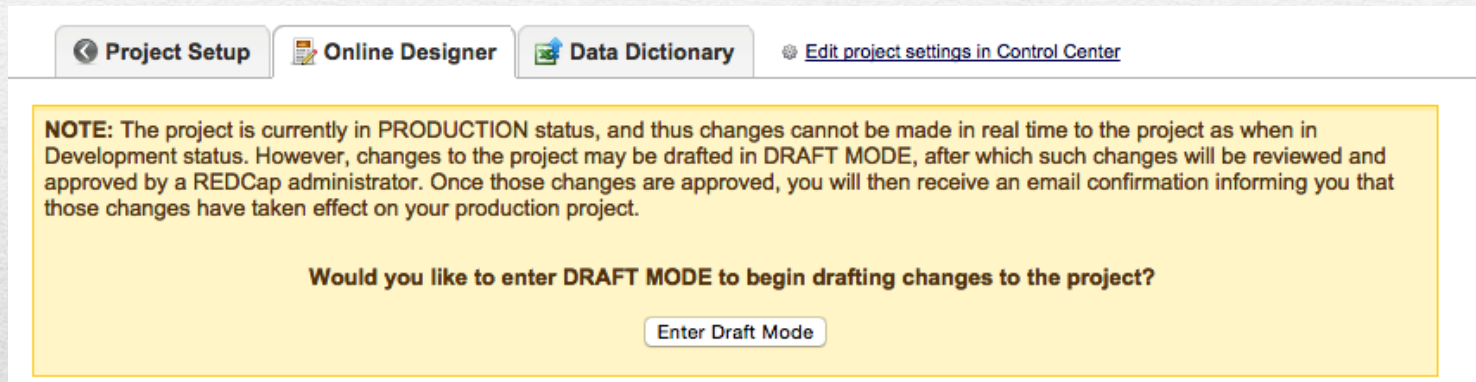
 **Project Statistics**

Records in project	1
Most recent activity	07/15/2015 9:48am
Space usage for docs	0.00 MB
Project status	 Development

- You can do anything in Development mode
-

Development & Production Modes

- Once in Production Mode
 - Click on Online Designer from Project Setup tab



- Changes will be held in draft mode and need to be **submitted & approved** before going live (production)
- CDS approves all production changes (except for automatically approved ones!)
 - This is for your data safety!

This topic discussed in much greater detail in RC 302 class

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-

More Information

- Visit <http://redcap.fredhutch.org> (Fred Hutch instance)
 - Or email redcap@fredhutch.org
 - Also...
 - <http://project-redcap.org> (Vanderbilt REDCap site)
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Thank you!

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Collaborative Data Services (CDS)
