

Data Management Practices in Health Research

Part I

- ▶ Introduction
- ▶ Designing the Data Storage Systems

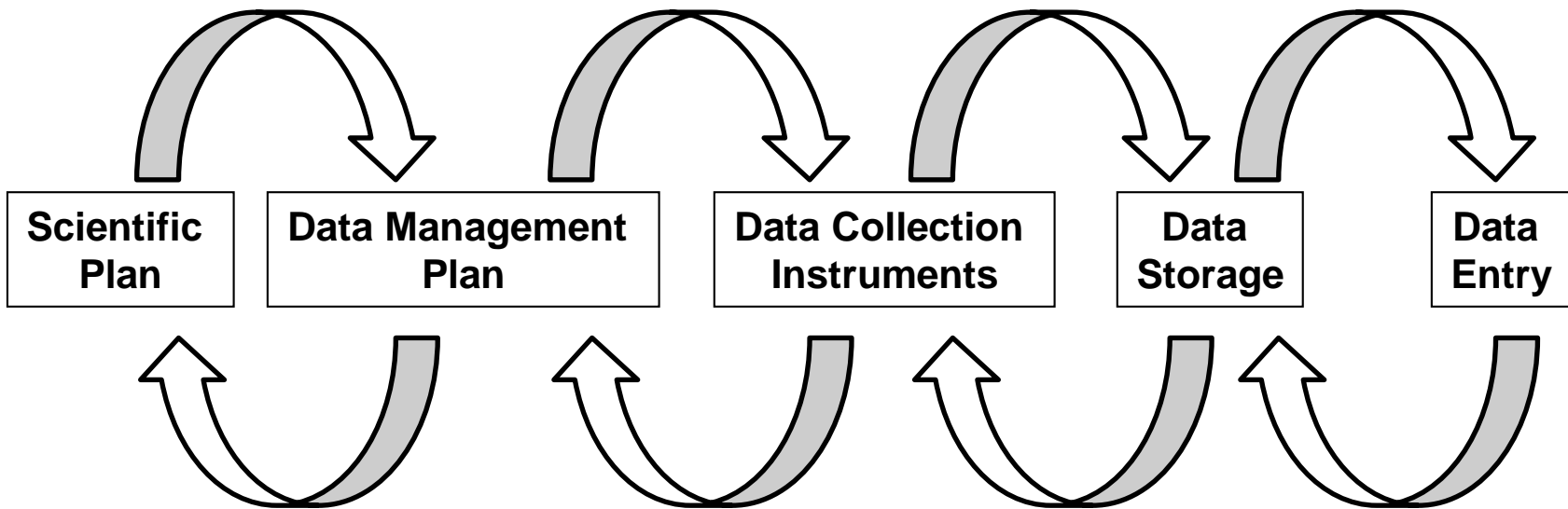
Brandon Guthrie, PhD
Departments of
Global Health & Epidemiology
University of Washington

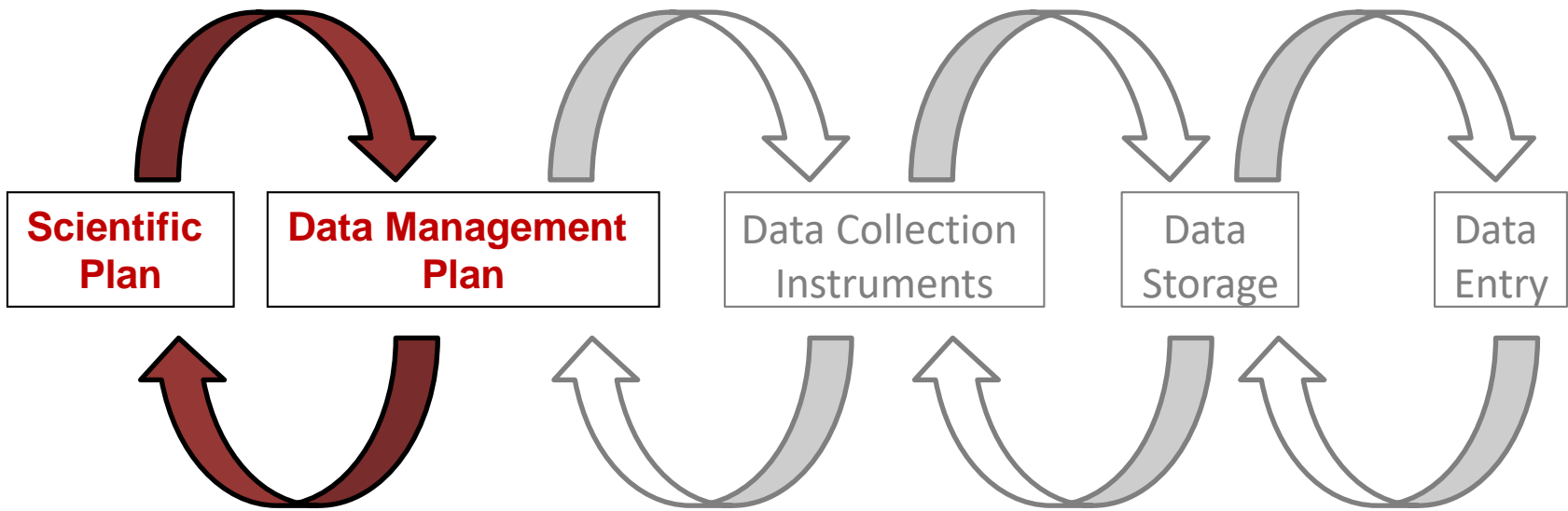
Relevance

- What is data management?
- Why is good data management important?
- Who is responsible for data management?
- How will progress be monitored

Ethical Obligations

- Maintain confidentiality
 - Data is only shared with authorized personnel
 - De-link data from identifiable information to the greatest extent possible
 - Collect the minimal amount of identifiable information
- Ensure data integrity
- Unlink (anonymize) data after set period of time
- All uses of data must be approved by IRB/ERC
- When in doubt, ask your IRB/ERC





Planning

- What are the aims of the study?
 - Data management must address all research aims
 - Anticipate future questions
- Descriptive, exploratory, or confirmatory
 - Scope of data collected
- How will the data be used?
 - Single analysis, regulatory approval, policy recommendations, etc.
- Who will interact with the data?

Planning

- Every study is different, but there are common themes:

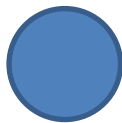
- Study design

- Observational or experimental?
- Cross-sectional?
- Prospective or retrospective?
- Longitudinal?

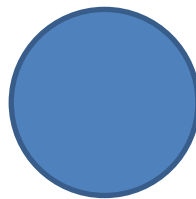
- Sample size



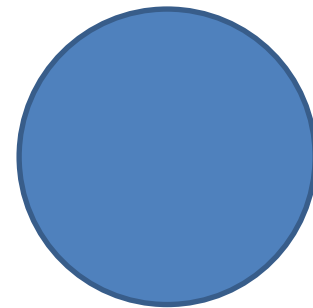
10



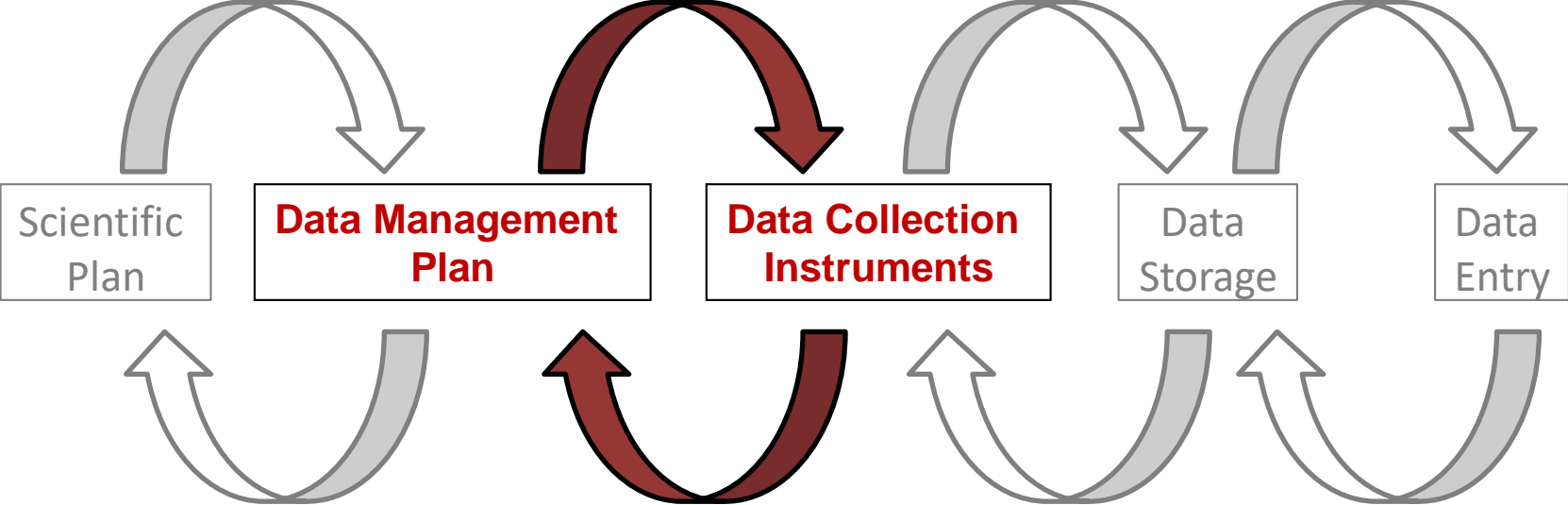
100



1,000



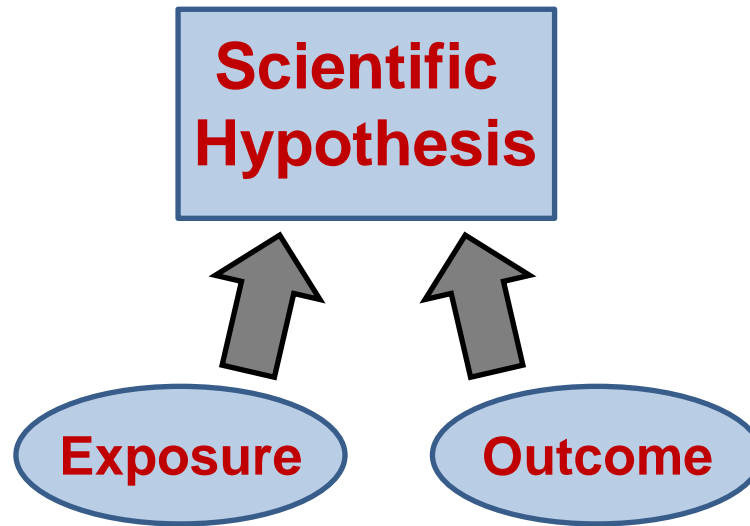
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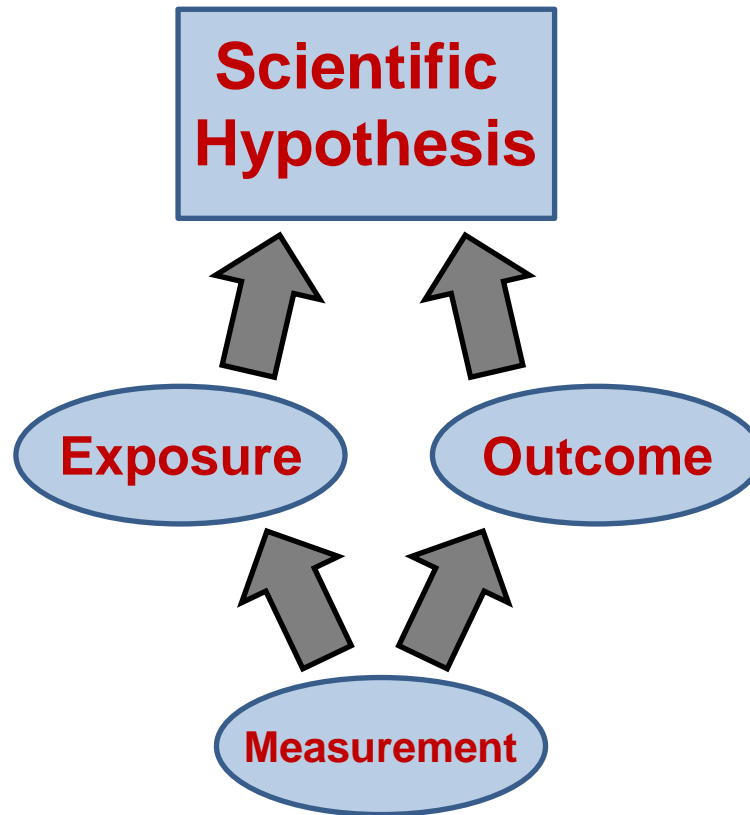
Measurement

**Scientific
Hypothesis**

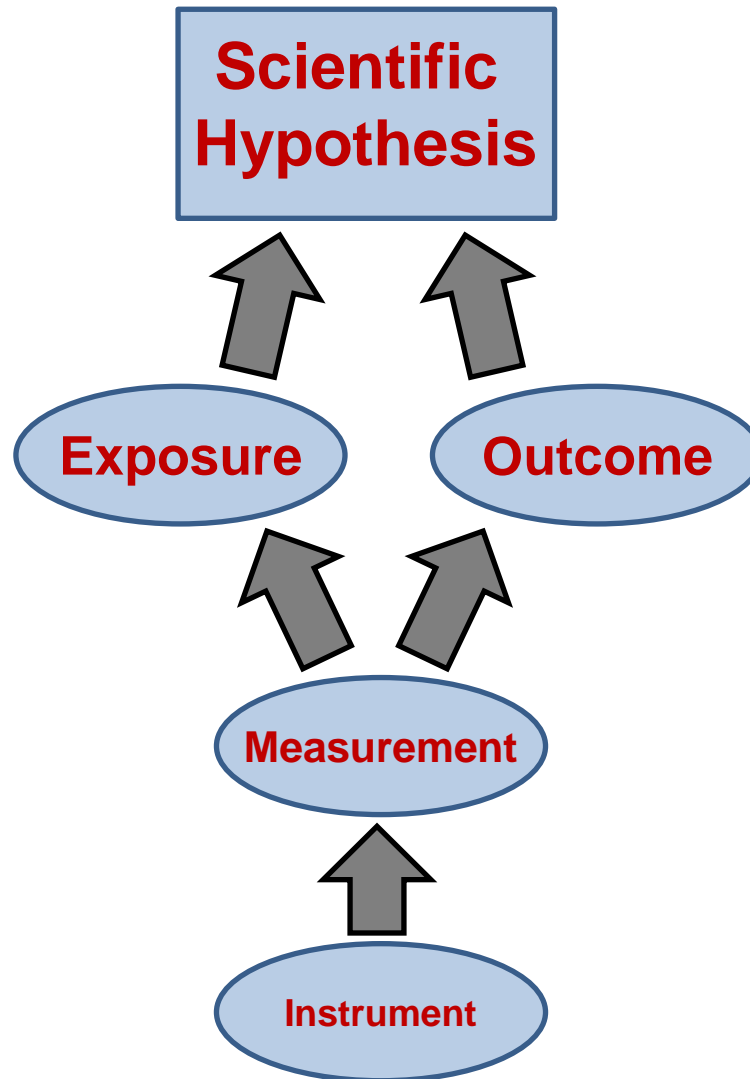
Measurement



Measurement



Measurement



Example

A study is being designed to determine if HIV-specific **immune responses** in exposed, uninfected people provides some **resistance to HIV infection**.

Study population: HIV-discordant couples

Design: Observational study with **longitudinal** follow-up

Sample size: 600 couples

Primary endpoint: HIV infection

Considerations

What types of data will be collected

- **Sociodemographic and behavioral**
- **Immunologic responses**

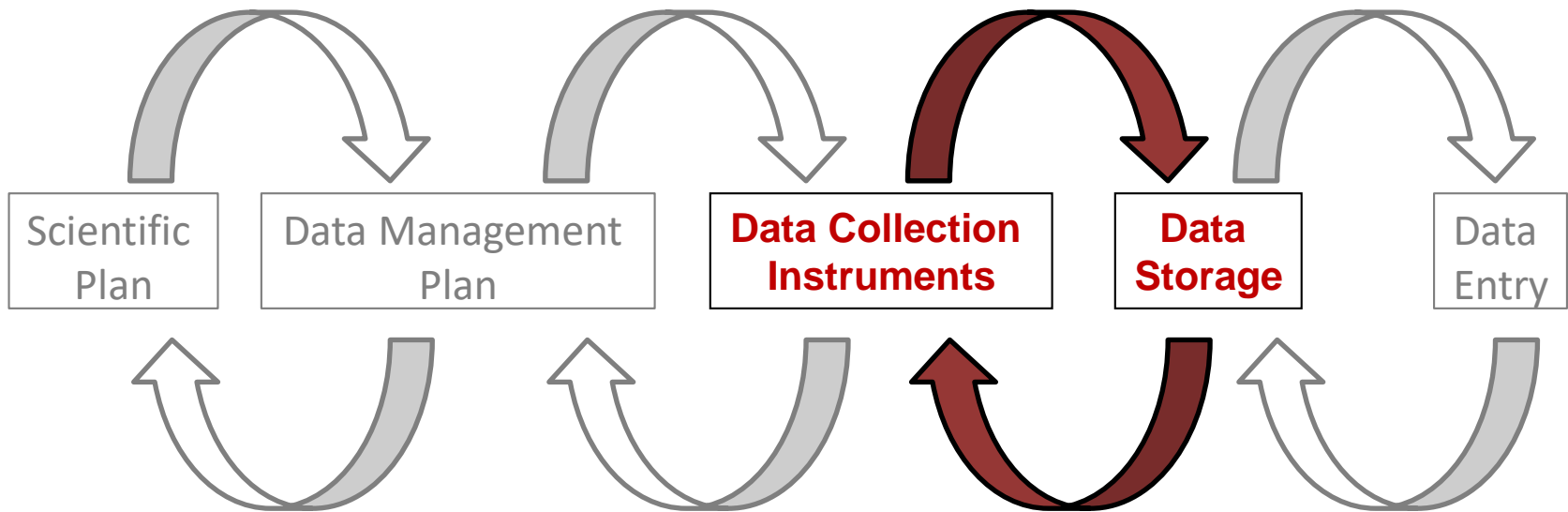
What instruments might be used

- **Questionnaires**
- **Lab assays**

What are some potential issues in managing these data?

- **Data from different sources**
- **Longitudinal follow-up**
- **Multiple people conducting data entry**

Design the Data Storage Systems



Motivation

- Put data into a format in which it can be **manipulated, analyzed, and disseminated**
- Requirements:
 - Efficient
 - Robust
 - Transparent and 'auditable'

Data storage

Why do I need to know this?

Data Flow

Questionnaire

Linked in Care

LINC DEMG-1

Demographics (DEMG-1)

Participant ID: (complete if participant enrolls)

Form Completion Date:

Randomization Group: 1 2 3

Demographics. This is an interviewer-administered questionnaire. Read each item aloud to the participant.

1 When were you born (if available)? OR What is your Age? years

2 Gender (This question is not interviewer-administered) female male

3 Are you married? yes no
3a. Please specify the type of marriage.
 traditional
 church
 legal/civil
 other, specify: _____

3b. [if male] Do you have more than one wife? yes no

Item 4 is for females only.

4 How many times have you been pregnant? times pregnant
If 0, go to item 5

4a. How many live births have you had? live births

4b. How many still births have you had? (child born lifeless) still births

5 How many living children do you have? (enter 0 if never pregnant) living children

6 How many years of school did you complete? (Don't count repeated levels) years of school

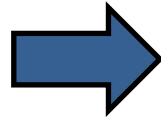
7 Do you earn an income? yes no
Go to item 7a if yes Go to item 8 if no

7a. What is your own monthly income? (average over the last three months) shillings

8 Describe your living situation.
 own home
 renting
 living with family
 military housing
 school housing
 other

8a. How much do you pay each month for housing? (rent, mortgage, etc.) shillings

Version 2.1, 11-Mar-2013 English Completed by: (initial/date) Entered by: (initial/date) Revised:



Data Entry Interface (front end)

LINC Study (Enrolled)

Demg Modify this instrument VIDEO: Basic data entry (16 min)

Download PDF of selected PDF download option

Adding new PTID 1511000218

Event Name: Enrollment (Arm 1: Arm 1)

PTID 1511000218

Version v2.1

Completed By

Completion Date Today

Visit Code

Begin Form Entry

1. When were you born (if available)? Today

Age

2. Gender female male

3. Are you married? Yes No

5. How many living children do you have?

6. How many years of school did you complete? (Do not count repeat levels)

7. Do you earn an income? yes no blank

8. Describe your housing situation.
 own home
 renting
 living with family
 military housing
 school housing
 other



Database Storage (back end)

Data Editor (Edit) - [Untitled]

File Edit Data Tools

de_marriage_type_other[4]

	ptid	de_complet-y	de_complet-e	de_visit-c-e	de_dob	de_age	de_gender	de_married	de_marriag-e	de_marriag-r	de_multipl-s	de_pregn-n-r	de_live_bi-r	de_still_b-r
1	1511000119	BLG	6/19/2013	0		35	1	1	3		0	1	0	0
2	1511000218	BLG	8/5/2013	0	5/8/1978	.	0	1	3		0	.	.	.
3	1511000219	kjh	6/20/2013	0	6/20/1978	.	0	1	4	common law	1	.	.	.

Vars: 26 Obs: 3 Filter: Off Mode: Edit CAP NUM

Data storage: options

- Excel
- Epi Info
- Access
- REDCap
- Open Data Kit (ODK)
- Other applications
 - Open source systems (Open Clinica)
 - Custom built systems

REDcap versus ODK

REDcap Mobile App

Pros

- Designed for epi study designs
- Strong project management
- Easy setup
- Integrates with standard entry
- HIPPA compliant

Cons

- Designed for epi study designs
- Limited error checking logic
- Poor user interface
- Limited control of user rights
- Some data synchronization problems

ODK

Pros

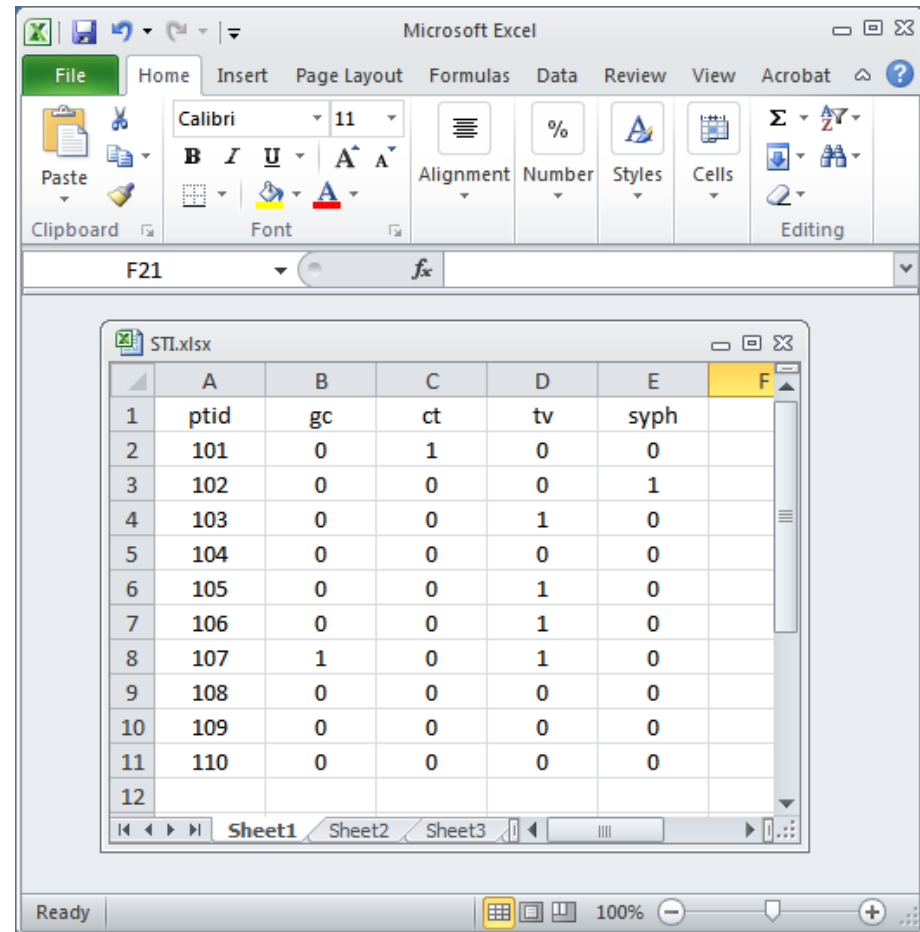
- High degree of flexibility
- Flexible error checking logic
- Excellent user interface
- Accommodates broad range of data types

Cons

- High degree of flexibility
- HIPPA compliance not guaranteed
- Setup/administration more complicated
- More challenging data management
- Longitudinal records not possible

Choice of Data Storage Systems

- Simple options may work for basic data storage needs
- Easy to setup
- Compatible and transferable



The screenshot shows the Microsoft Excel interface with a spreadsheet titled 'STL.xlsx'. The spreadsheet contains a table with 12 rows and 6 columns (A-F). The data is as follows:

	A	B	C	D	E	F
1	ptid	gc	ct	tv	syph	
2	101	0	1	0	0	
3	102	0	0	0	1	
4	103	0	0	1	0	
5	104	0	0	0	0	
6	105	0	0	1	0	
7	106	0	0	1	0	
8	107	1	0	1	0	
9	108	0	0	0	0	
10	109	0	0	0	0	
11	110	0	0	0	0	
12						

Choice of Data Storage Systems

As complexity of the data increases, more sophisticated approaches are needed

The screenshot displays the Microsoft Excel interface with three data tables open. The first table, 'Demographics.xlsx', contains demographic data for 11 patients. The second table, 'CD4_count.xlsx', shows CD4 counts for the same 11 patients. The third table, 'STL.xlsx', shows various clinical variables for the same 11 patients.

	A	B	C	D	E	F
1	ptid	age	gender	hiv	partners	
2	101	21	m	0	3	
3	102	30	m	1	8	
4	103	53	f	0	2	
5	104	32	f	0	1	
6	105	37	f	0	5	
7	106	22	m	1	13	
8	107	27	f	1	3	
9	108	40	f	0	4	
10	109	28	f	1	1	
11	110	21	m	1	2	
12						

	A	B	C
1	ptid	cd4	
2	102	113	
3	106	421	
4	107	240	
5	109	387	
6	110	511	
7			
8			

	A	B	C	D	E
1	ptid	gc	ct	tv	syph
2	101	0	1	0	0
3	102	0	0	0	1
4	103	0	0	1	0
5	104	0	0	0	0
6	105	0	0	1	0
7	106	0	0	1	0
8	107	1	0	1	0
9	108	0	0	0	0
10	109	0	0	0	0
11	110	0	0	0	0
12					

Data Storage: General Principles

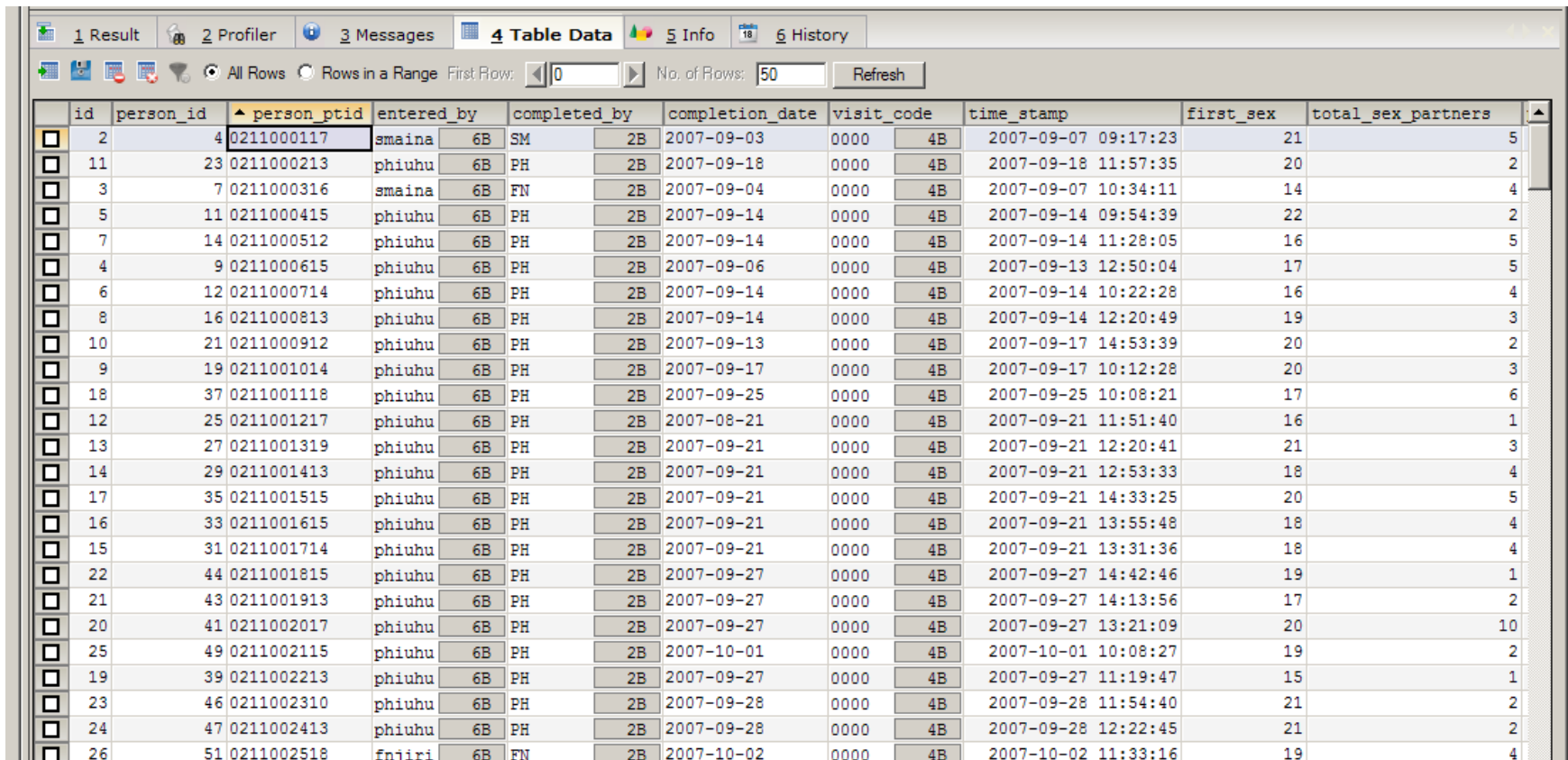
- The **complexity** of the system should be **matched with the type of data** being collected:
 - cross-sectional or longitudinal
 - number of forms
 - number of participants
 - number of study sites
 - number of people performing data entry

Data Storage: General Principles

- Data should be stored in a database
 - ideally, the database should be accessible using **SQL**
 - it should be possible to easily **export data** in **standard formats** (tab or comma separated text file, excel, etc.)

Data Storage: Back-end Structure

- The “back end” of your data entry system should be a well designed database



The screenshot shows a database management tool interface with a table of data. The table has the following columns: id, person_id, person_ptid, entered_by, completed_by, completion_date, visit_code, time_stamp, first_sex, and total_sex_partners. The data is displayed in a grid format with alternating row colors. The first row is highlighted, and the 'person_ptid' column is selected.

id	person_id	person_ptid	entered_by	completed_by	completion_date	visit_code	time_stamp	first_sex	total_sex_partners
2	4	0211000117	smaina	6B SM	2B 2007-09-03	0000 4B	2007-09-07 09:17:23	21	5
11	23	0211000213	phiuhu	6B PH	2B 2007-09-18	0000 4B	2007-09-18 11:57:35	20	2
3	7	0211000316	smaina	6B FN	2B 2007-09-04	0000 4B	2007-09-07 10:34:11	14	4
5	11	0211000415	phiuhu	6B PH	2B 2007-09-14	0000 4B	2007-09-14 09:54:39	22	2
7	14	0211000512	phiuhu	6B PH	2B 2007-09-14	0000 4B	2007-09-14 11:28:05	16	5
4	9	0211000615	phiuhu	6B PH	2B 2007-09-06	0000 4B	2007-09-13 12:50:04	17	5
6	12	0211000714	phiuhu	6B PH	2B 2007-09-14	0000 4B	2007-09-14 10:22:28	16	4
8	16	0211000813	phiuhu	6B PH	2B 2007-09-14	0000 4B	2007-09-14 12:20:49	19	3
10	21	0211000912	phiuhu	6B PH	2B 2007-09-13	0000 4B	2007-09-17 14:53:39	20	2
9	19	0211001014	phiuhu	6B PH	2B 2007-09-17	0000 4B	2007-09-17 10:12:28	20	3
18	37	0211001118	phiuhu	6B PH	2B 2007-09-25	0000 4B	2007-09-25 10:08:21	17	6
12	25	0211001217	phiuhu	6B PH	2B 2007-08-21	0000 4B	2007-09-21 11:51:40	16	1
13	27	0211001319	phiuhu	6B PH	2B 2007-09-21	0000 4B	2007-09-21 12:20:41	21	3
14	29	0211001413	phiuhu	6B PH	2B 2007-09-21	0000 4B	2007-09-21 12:53:33	18	4
17	35	0211001515	phiuhu	6B PH	2B 2007-09-21	0000 4B	2007-09-21 14:33:25	20	5
16	33	0211001615	phiuhu	6B PH	2B 2007-09-21	0000 4B	2007-09-21 13:55:48	18	4
15	31	0211001714	phiuhu	6B PH	2B 2007-09-21	0000 4B	2007-09-21 13:31:36	18	4
22	44	0211001815	phiuhu	6B PH	2B 2007-09-27	0000 4B	2007-09-27 14:42:46	19	1
21	43	0211001913	phiuhu	6B PH	2B 2007-09-27	0000 4B	2007-09-27 14:13:56	17	2
20	41	0211002017	phiuhu	6B PH	2B 2007-09-27	0000 4B	2007-09-27 13:21:09	20	10
25	49	0211002115	phiuhu	6B PH	2B 2007-10-01	0000 4B	2007-10-01 10:08:27	19	2
19	39	0211002213	phiuhu	6B PH	2B 2007-09-27	0000 4B	2007-09-27 11:19:47	15	1
23	46	0211002310	phiuhu	6B PH	2B 2007-09-28	0000 4B	2007-09-28 11:54:40	21	2
24	47	0211002413	phiuhu	6B PH	2B 2007-09-28	0000 4B	2007-09-28 12:22:45	21	2
26	51	0211002518	fniri	6B FN	2B 2007-10-02	0000 4B	2007-10-02 11:33:16	19	4

REDCap Demonstration

<https://redcap.iths.org>

REDCap - Mozilla Firefox

File Edit View History Bookmarks Tools Help

REDCap

https://redcap.iths.org/redcap/

uw epidemiology

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REDCap™

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Welcome to REDCap!

REDCap is a secure, web-based application for building and managing online surveys and databases. Using REDCap's stream-lined process for rapidly developing projects, you may create and design projects using 1) the online method from your web browser using the Online Designer; and/or 2) the offline method by constructing a 'data dictionary' template file in Microsoft Excel, which can be later uploaded into REDCap. Both surveys and databases (or a mixture of the two) can be built using these methods.

REDCap provides automated export procedures for seamless data downloads to Excel and common statistical packages (SPSS, SAS, Stata, R), as well as a built-in project calendar, a scheduling module, ad hoc reporting tools, and advanced features, such as branching logic, file uploading, and calculated fields.

Learn more about REDCap by watching a [brief summary video \(4 min\)](#). If you would like to view other quick video tutorials of REDCap in action and an overview of its features, please see the [Training Resources](#) page.

Please note that any publication that results from a project utilizing REDCap should cite grant support ([UL1 RR025014 from NCR/NIH](#)).

NOTICE: If you are collecting data for the purposes of human subjects research, review and approval of the project is required by your Institutional Review Board.

If you require assistance or have any questions about REDCap, please contact [ITHS REDCap Administrator](#).

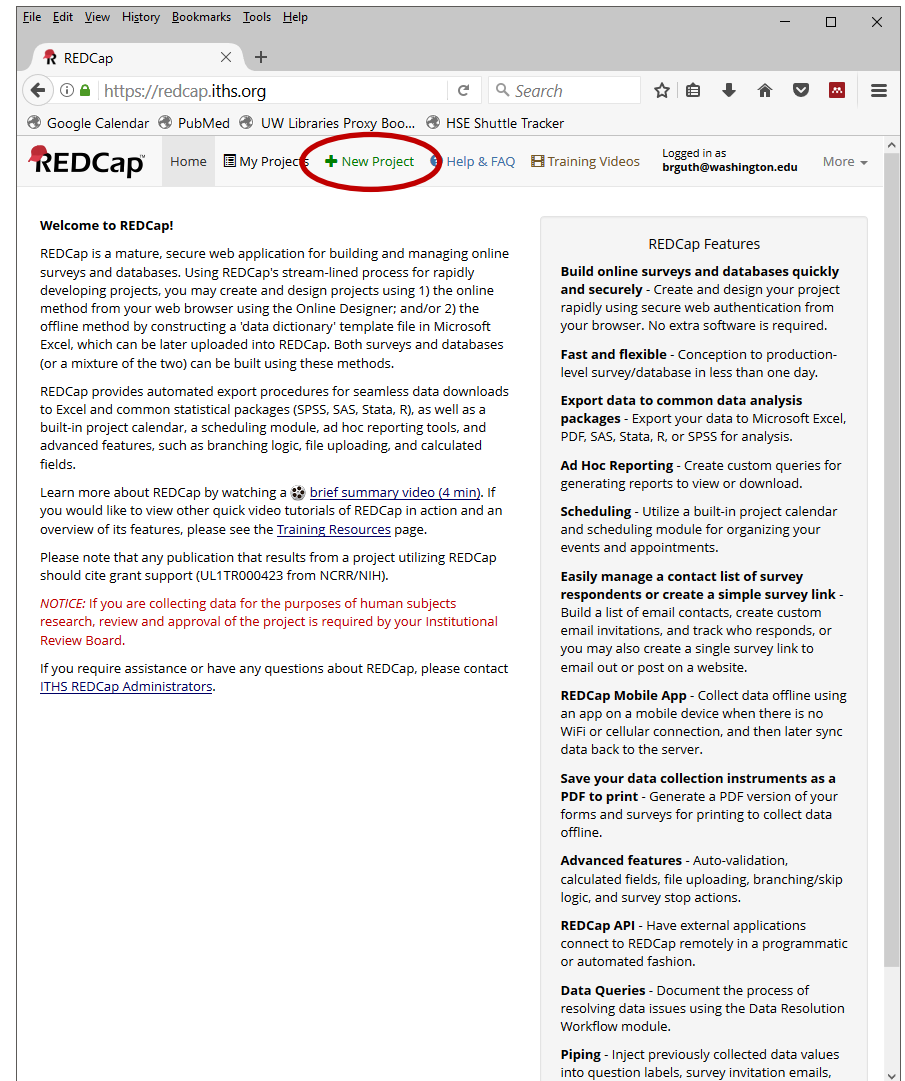
REDCap Features

- Build online surveys and databases quickly and securely** - Create and design your project rapidly using secure web authentication from your browser. No extra software is required.
- Fast and flexible** - Conception to production-level survey/database in less than one day.
- Export data to common data analysis packages** - Export your data to Microsoft Excel, PDF, SAS, Stata, R, or SPSS for analysis.
- Ad Hoc Reporting** - Create custom queries for generating reports to view or download.
- Scheduling** - Utilize a built-in project calendar and scheduling module for organizing your events and appointments.
- Easily manage a contact list of survey respondents or create a simple survey link** - Build a list of email contacts, create custom email invitations, and track who responds, or you may also create a single survey link to email out or post on a website.
- Send files to others securely** - Using "Send-It", upload and send files to multiple recipients, including existing project documents, that are too large for email attachments or that contain sensitive data.
- Save your data collection instruments as a PDF to print** - Generate a PDF version of your forms and surveys for printing to collect data offline.
- Advanced features** - Auto-validation, calculated fields, file uploading, branching/skip logic, and survey stop actions.
- REDCap API** - Have external applications connect to REDCap remotely in a programmatic or automated fashion.

REDCap Software - Version 4.9.7 - © 2012 Vanderbilt University

Find: Next Previous Highlight all Match case

REDCap Demonstration



The screenshot shows the REDCap website interface in a web browser. The browser's address bar displays <https://redcap.iths.org>. The navigation menu includes Home, My Projects, **+ New Project** (highlighted with a red circle), Help & FAQ, Training Videos, and a user profile for `brguth@washingt...edu`. The main content area is titled "Welcome to REDCap!" and provides an overview of the application's capabilities, including data export, project management, and security. A sidebar on the right lists various features such as "Build online surveys and databases quickly and securely", "Fast and flexible" reporting, "Export data to common data analysis packages", "Ad Hoc Reporting", "Scheduling", "Easily manage a contact list of survey respondents or create a simple survey link", "REDCap Mobile App", "Save your data collection instruments as a PDF to print", "Advanced features", "REDCap API", "Data Queries", and "Piping".

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- Export data to common data analysis packages** - Export your data to Microsoft Excel, PDF, SAS, Stata, R, or SPSS for analysis.
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- Easily manage a contact list of survey respondents or create a simple survey link** - Build a list of email contacts, create custom email invitations, and track who responds, or you may also create a single survey link to email out or post on a website.
- REDCap Mobile App** - Collect data offline using an app on a mobile device when there is no WiFi or cellular connection, and then later sync data back to the server.
- Save your data collection instruments as a PDF to print** - Generate a PDF version of your forms and surveys for printing to collect data offline.
- Advanced features** - Auto-validation, calculated fields, file uploading, branching/skip logic, and survey stop actions.
- REDCap API** - Have external applications connect to REDCap remotely in a programmatic or automated fashion.
- Data Queries** - Document the process of resolving data issues using the Data Resolution Workflow module.
- Piping** - Inject previously collected data values into question labels, survey invitation emails,

+ Create a new REDCap Project

You may begin the creation of a new REDCap project on your own by completing the form below and clicking the Create Project button at the bottom. **Your project will not be created immediately**, but your request will be quickly reviewed by a REDCap administrator, after which you will be notified via email when the project has been created.

Project title:
Title to be displayed on project webpage

Purpose of this project:
How will it be used?

Project notes (optional):
Comments describing the project's use or purpose that are displayed on the My Projects page.

Start project from scratch or begin with a template?

- Create an empty project (blank slate)
- Upload a REDCap project XML file (CDISC ODM format) [?](#)
- Use a template (choose one below)

★ **Choose a project template** (comes pre-filled with fields, forms/surveys, and other settings)

<small>select template</small>	Template title (sorted by title)	Template description
<input type="radio"/>	Basic Demography	Contains a single data collection instrument to capture basic demographic information.
<input type="radio"/>	Classic Database	Contains six data entry forms, including forms for demography and baseline data, three monthly data forms, and concludes with a completion data form.
<input type="radio"/>	CTCAE v4.03 Adverse Events Log	Contains a single survey for logging Adverse Events using the Common Terminology Criteria for Adverse Events (CTCAE). This tool is often used for oncology research studies. This template is based on version 4.03 of the CTCAE.
<input type="radio"/>	Human Cancer Tissue Biobank	Contains five data entry forms for collecting and tracking information for cancer tissue.

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Project title:
Title to be displayed on project webpage

Purpose of this project
How will it be used?

Name of P.I. (if applicable):
First name MI Last name

Email of P.I. (if applicable):

Name of P.I. as cited in publications (if applicable): (e.g.)

IRB number (if applicable):

Please specify:

- Basic or bench research
- Clinical research study or trial
- Translational research 1 (applying discoveries to the development of trials and studies in humans)
- Translational research 2 (enhancing adoption of research findings and best practices into the community)
- Behavioral or psychosocial research study
- Epidemiology
- Repository (developing a data or specimen repository for future use by investigators)
- Other

Project notes (optional):
Comments describing the project's use or purpose that are displayed on the My Projects page.

Start project from scratch or begin with a template?

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REDCap × +

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REDCap Home My Projects **New Project** Help & FAQ Training Videos

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How will it be used?

Purpose of this project: Research

Name of P.I. (if applicable): Brandon L Guthrie
First name MI Last name

Email of P.I. (if applicable): brguth@u.washington.edu

Name of P.I. as cited in publications (if applicable): Guthrie BL (e.g., Harris PA)

IRB number (if applicable):

Please specify:

- Basic or bench research
- Clinical research study or trial
- Translational research 1 (applying discoveries to the development of trials and studies in humans)
- Translational research 2 (enhancing adoption of research findings and best practices into the community)
- Behavioral or psychosocial research study
- Epidemiology
- Repository (developing a data or specimen repository for future use by investigators)
- Other


Project notes (optional):
Comments describing the project's use or purpose that are displayed on the My Projects page.

Start project from scratch or begin with a template?


- Create an empty project (blank slate)
- Upload a REDCap project XML file (CDISC ODM format) ?
- Use a template (choose one below)

★ **Choose a project template** (comes pre-filled with fields, forms/surveys, and other settings)

<small>select template</small>	Template title (sorted by title)	Template description
<input type="radio"/>	Basic Demography	Contains a single data collection instrument to capture basic demographic information.
<input type="radio"/>	Classic Database	Contains six data entry forms, including forms for demography and baseline data, three monthly data forms, and concludes with a completion data form.
<input type="radio"/>	CTCAE v4.03 Adverse Events Log	Contains a single survey for logging Adverse Events using the Common Terminology Criteria for Adverse Events (CTCAE). This tool is often used for oncology research studies. This template is based on version 4.03 of the CTCAE.
<input type="radio"/>	Human Cancer Tissue Biobank	Contains five data entry forms for collecting and tracking information for cancer tissue.



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Listed below are the REDCap projects to which you currently have access. Click the project title to open the project. [Read more](#)

My Projects [Organize](#)

Project Title	Records	Fields	Instrument	Type	Status
LINCp_Screening	123	36	2 forms		
LINCp_Enrolled	100	191	7 forms		
PRIME-K	0	29	1 form		
CAT_Screening	0	8	1 form		
Demo Project	2	18	3 forms		
Test_Project	1	162	6 forms		
LINCra	64	217	5 forms		
LINC Study (Enrolled)	396	236	10 forms		
LINC Study (Screened)	451	32	2 forms		
GH Toolkit	5	116	2 forms		
REDCap Exercise	10	55	6 forms		
ECS Study (Enrolled)	264	224	9 forms		
ODK test	4	8	1 form		
ECS Study (Screened)	417	34	2 forms		
HIV and Hepatitis C among PWID in Nairobi	228	186	1 form		
REDCap Mobile Exercise	8	11	1 form		
REDCap Exercise (Afya Bora)	1	55	6 forms		
SPEED_Abstraction	1	7	2 forms		

The projects listed below are public and are accessible by anyone. No authentication (i.e. username/password) is required to access them directly.

Public Projects

Example Survey

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My Projects
Project Home
Project Setup
Project status: Development

Data Collection [Edit Instruments](#)

Scheduling
- Generate schedules for the calendar using your defined events

Record Status Dashboard
- View data collection status of all records

Add / Edit Records
- Create new records or edit/view existing ones

Applications

- Calendar
- Data Exports, Reports, and Stats
- Data Import Tool
- Data Comparison Tool
- Logging
- Field Comment Log
- File Repository
- User Rights and DAGs
- API and API Playground
- REDCap Mobile App
- ITHS REDCap User Mailing List
- Free REDCap Classes
- ITHS REDCap (User) FAQ

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

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Demo Project

[Project Home](#) [Project Setup](#) [Other Functionality](#) [Project Revision History](#)

Project status: Development Completed steps 0 of 8

Enable if you are collecting longitudinal data (multiple visits)

Main project settings

Not started

Use surveys in this project? [?](#) [VIDEO: How to create and manage a survey](#)
 Use longitudinal data collection with defined events? [?](#)

Enable if you want to repeat instruments or entire events

Design your data collection instruments

Not started

Add or edit fields on your data collection instruments. This may be done by either using the Online Designer (online method) or by uploading a Data Dictionary (offline method). Quick links: [Download PDF of all instruments](#) OR [Download the current Data Dictionary](#)

Go to or

You may also browse for pre-built data collection instruments

Have you checked the [Check For Identifiers](#)?

Enable if you want REDCap to automatically assign unique ID numbers

Define your events and designate instruments for them

In progress

Create events for re-using data collection instruments

Go to or

Enable optional modules and customizations

Optional

Repeatable instruments and events? [?](#)
 Auto-numbering for records? [?](#)
 Scheduling module (longitudinal only) [?](#)
 Randomization module? [?](#)
 Designate an email field to use for invitations to survey participants? [?](#)
 Twilio SMS and Voice Call services for surveys? [?](#)

Optional

Repeatable instruments and events ?


Auto-numbering for records ?

Scheduling module (longitudinal only) ?

Randomization module ?

Designate an email field to use for invitations to survey participants ?


Twilio SMS and Voice Call services for surveys ?

 **Set up project bookmarks (optional)**

Optional

You may create custom bookmarks to webpages that exist inside or outside of REDCap. These bookmarks will be seen as links on the left-hand project menu and can be accessed at any time by users who are given privileges to do so. Every project bookmark has custom settings that allow one to control its appearance and behavior.


Go to

 **User Rights and Permissions**

Optional

You may grant other users access to this project or edit the user privileges of current users on this project by navigating to the User Rights page. Additionally, if you wish to limit user access to certain records/responses for this project, you may want to use Data Access Groups, in which only users within a given Data Access Group can access records created by users within that group.


Go to or

 **Test your project**

Not started

It is important to test your project before moving to production. Try creating test records, performing calculations. Then export the data to Excel or a statistical software package and test a participant by using the data yourself. If other project modules will be used regularly, test them out a bit too. The best way to test your project is to use it as if you were entering real production data, and it is always helpful to have colleagues (especially team members) take a look at your project to get a fresh set of eyes looking at it.


Move to production only after you have thoroughly tested the project and are ready to 'go live'

 **Move your project to production status**

Not started

Move the project to production status so that real data may be collected. Once in production, you will not be able to edit the project fields in real time anymore. However, you can make edits in Draft Mode, which will be auto-approved or else might need to be approved by a REDCap administrator before taking effect.

Go to



Try it out!

1. Create a new project
2. Setup to project
 - Choose a longitudinal design
 - Decide whether you will assign ID numbers or whether you will let REDCap assign IDs (you can change this later)
 - Decide whether you will use repeating events/instruments (you can change this later)

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Log out
My Projects
Project Home
Project Setup
Project status: **Development**

Data Collection [Edit instruments](#)

Scheduling
- Generate schedules for the calendar using your defined events

Record Status Dashboard
- View data collection status of all records

Add / Edit Records
- Create new records or edit/view existing ones

Applications

- Calendar
- Data Exports, Reports, and Stats
- Data Import Tool
- Data Comparison Tool
- Logging
- Field Comment Log
- File Repository
- User Rights and DAGs
- API and API Playground
- REDCap Mobile App
- ITHS REDCap User Mailing List
- Free REDCap Classes
- ITHS REDCap (User) FAQ

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

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Demo Project

[Project Home](#) [Project Setup](#) [Other Functionality](#) [Project Revision History](#)

Project status: **Development** Completed steps **0** of **8**

Main project settings

Not started

Enable Use surveys in this project? [?](#) [VIDEO: How to create and manage a survey](#)

Disable Use longitudinal data collection with defined events? [?](#)

Design your data collection instruments

Not started

Add or edit fields on your data collection instruments. This may be done by either using the Online Designer (online method) or by uploading a Data Dictionary (offline method). Quick links: [Download PDF of all instruments](#) OR [Download the current Data Dictionary](#)

Go to or

You may also browse for pre-built data collection instruments in the [REDCap Shared Library](#)

Have you checked the [Check For Identifiers](#) page to ensure all identifier fields have been tagged?

Define your events and designate instruments for them

In progress

Create events for re-using data collection instruments and/or set up scheduling.

Go to or

Enable optional modules and customizations

Optional

Enable Repeatable instruments and events [?](#)

Enable Auto-numbering for records [?](#)

Disable Scheduling module (longitudinal only) [?](#)

Enable Randomization module [?](#)

Enable Designate an email field to use for invitations to survey participants [?](#)

Enable Twilio SMS and Voice Call services for surveys [?](#)

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Log out
My Projects
Project Home
Project Setup
Project status: **Development**

Data Collection [Edit instruments](#)

Scheduling
- Generate schedules for the calendar using your defined events

Record Status Dashboard
- View data collection status of all records

Add / Edit Records
- Create new records or edit/view existing ones

Applications

- Calendar
- Data Exports, Reports, and Stats
- Data Import Tool
- Data Comparison Tool
- Logging
- Field Comment Log
- File Repository
- User Rights and DAGs
- API and API Playground
- REDCap Mobile App
- ITHS REDCap User Mailing List
- Free REDCap Classes
- ITHS REDCap (User) FAQ

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

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Demo Project

[Project Home](#) [Project Setup](#) [Online Designer](#) [Data Dictionary](#)

[Create snapshot of instruments](#) [VIDEO: How to use this page](#)
Last snapshot: never ?

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.

Add new instrument:

Data Collection Instruments

- 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
Demographics	8		Choose action

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Log out
My Projects
Project Home
Project Setup
Project status: **Development**

Data Collection [Edit instruments](#)

Scheduling
- Generate schedules for the calendar using your defined events

Record Status Dashboard
- View data collection status of all records

Add / Edit Records
- Create new records or edit/view existing ones

Applications

- Calendar
- Data Exports, Reports, and Stats
- Data Import Tool
- Data Comparison Tool
- Logging
- Field Comment Log
- File Repository
- User Rights and DAGs
- API and API Playground
- REDCap Mobile App
- ITHS REDCap User Mailing List
- Free REDCap Classes
- ITHS REDCap (User) FAQ

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

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Demo Project

[Project Home](#) [Project Setup](#) [Online Designer](#) [Data Dictionary](#)

[Create snapshot of instruments](#) [VIDEO: How to use this page](#)
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Instrument name	Fields	View PDF	Instrument actions
Demographics	8		Choose action
Add instrument here			



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 Log out

My Projects
 Project Home
 Project Setup

Project status: **Development**

Data Collection [Edit instruments](#)

Scheduling
 - Generate schedules for the calendar using your defined events

Record Status Dashboard
 - View data collection status of all records

Add / Edit Records
 - Create new records or edit/view existing ones

Applications

- Calendar
- Data Exports, Reports, and Stats
- Data Import Tool
- Data Comparison Tool
- Logging
- Field Comment Log
- File Repository
- User Rights and DAGs
- API and API Playground
- REDCap Mobile App
- ITHS REDCap User Mailing List
- Free REDCap Classes
- ITHS REDCap (User) FAQ

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

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Demo Project

[Project Home](#)
[Project Setup](#)
[Online Designer](#)
[Data Dictionary](#)

[Create snapshot of instruments](#)
[VIDEO: How to use this page](#)

Last snapshot: never

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

Click to modify instrument
 Add new fields/questions to the instrument or modify existing ones.

[Add new fields/questions to the instrument or modify existing ones.](#)
[Add new fields/questions to the instrument or modify existing ones.](#)
[Add new fields/questions to the instrument or modify existing ones.](#)

Instrument name	Fields	View PDF	Instrument actions
Demographics	8		Choose action

New instrument name: [Create](#) [Cancel](#)

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 Log out

My Projects
 Project Home
 Project Setup
 Project status: **Development**

Data Collection [Edit instruments](#)

Scheduling
 - Generate schedules for the calendar using your defined events

Record Status Dashboard
 - View data collection status of all records

Add / Edit Records
 - Create new records or edit/view existing ones

Applications

- Calendar
- Data Exports, Reports, and Stats
- Data Import Tool
- Data Comparison Tool
- Logging
- Field Comment Log
- File Repository
- User Rights and DAGs
- API and API Playground
- REDCap Mobile App
- ITHS REDCap User Mailing List
- Free REDCap Classes
- ITHS REDCap (User) FAQ

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

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Demo Project

Project Home | Project Setup | **Online Designer** | Data Dictionary

[Create snapshot of instruments](#) | [VIDEO: How to use this page](#)
 Last snapshot: never ?

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.

Add new instrument:

Data Collection Instruments

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

[Download instrument as PDF](#)

Instrument name	Fields	View PDF	Instrument actions
Demographics	8		Choose action

New instrument name: [Create](#) [Cancel](#)

Try it out!

1. Start your first form/instrument

- Option 1: Use the default form (you will likely want to rename the form)
- Option 2: Create a new form
 - Create the form
 - Create the first variable and make it the variable you will use for the ID number
 - Move your new form to the first in the instrument order
 - Delete the default form

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My Projects
Project Home
Project Setup
Project status: **Development**

Data Collection [Edit instruments](#)

Scheduling
- Generate schedules for the calendar using your defined events

Record Status Dashboard
- View data collection status of all records

Add / Edit Records
- Create new records or edit/view existing ones

Applications

- Calendar
- Data Exports, Reports, and Stats
- Data Import Tool
- Data Comparison Tool
- Logging
- Field Comment Log
- File Repository
- User Rights and DAGs
- API and API Playground
- REDCap Mobile App
- ITHS REDCap User Mailing List
- Free REDCap Classes
- ITHS REDCap (User) FAQ

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

[Contact REDCap administrator](#)

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[Project Home](#) [Project Setup](#) [Online Designer](#) [Data Dictionary](#)

[Create snapshot of instruments](#) [VIDEO: How to use this page](#)
Last snapshot: never ?



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: **Form1** [Preview instrument](#)

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

UW Libraries Proxy B... 94.9 KUOW: Seattle's... PubMed Home #6 Avenue Flats CAT study data entry Overview | TREE Dist... XC Cabin Creek (xcca... Commons Status Que...



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Log out

My Projects
Project Home
Project Setup
Project status: Development

Data Collection [Edit](#)

Scheduling
- Generate schedules for the calendar using your defined events

Data Collection Instruments:
Demographics

Applications

- Calendar
- Data Export Tool
- Data Import Tool
- Data Comparison Tool
- Logging
- File Repository
- User Rights
- Graphical Data View & Stats
- Report Builder
- ITHS REDCap List

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

If you are experiencing problems, please contact your [REDCap administrator](#)

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 automatically be appended to the form on this page. For an overview of the different field types available, you may view the [Field Types video \(5 min\)](#).

Field Type:

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REDCap - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Demo Project | REDCap

https://redcap.iths.org/redcap/redcap_v4.9.7/Design/online_designer.php?pid=690&formlocation=after&formplace=demographics&page=form1&new uw epidemiology

UW Libraries Proxy B... 94.9 KUOW: Seattle's... PubMed Home #6 Avenue Flats CAT study data entry Overview | TREE Dist... XC Cabin Creek (xcca... Commons Status Que...

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My Projects
Project Home
Project Setup
Project status: Development

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Demo Project

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 automatically be appended to the form on this page. For an overview of the different field types available, you may view the [Field Types video \(5 min\)](#).

Field Type:

- Select a Type of Field ----
- Text Box (Short Text)
- Notes Box (Paragraph Text)
- Calculated Field
- Multiple Choice - Radio Buttons (Only One Answer)
- Multiple Choice - Drop-down List (Only One Answer)
- Checkboxes (Check All That Apply)
- Yes - No
- True - False
- Slider / Visual Analog Scale
- File Upload (for users to upload files)
- Descriptive Text (with optional Image/File Attachment)

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Find: Next Previous Highlight all Match case

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Log out
My Projects
Project Home
Project Setup
Project status: **Development**

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Data Collection Edit
Scheduling
Record Status Dashboard
Add / Edit Records
Applications
Calendar
Data Exports, Reports, &
Data Import Tool
Data Comparison Tool
Logging
Field Comment Log
File Repository
User Rights and DA
API and API Playgro
REDCap Mobile App
ITHS REDCap User Maili
Free REDCap Classes
ITHS REDCap (User) FAC
Help & Information
Help & FAQ
Video Tutorials
Suggest a New Feature
Contact REDCap admini

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, Number, Date/Time, ...)

Field Label [How to use Piping](#)
Participant ID

Action Tags / Field Annotation (optional)
[Learn about Action Tags](#) or [using Field Annotation](#)

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

Validation? (optional) Integer
Minimum:
Maximum:
- 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

Save Cancel

VIDEO: How to use this page
add new fields or edit field by clicking on the delete icon. To reorder the instrument status, all field

Data Storage: General Principles

- Design database to fit the structure of the forms
- Use **standardized variable names**
 - easily understandable
 - consistent with other studies

Data Storage: General Principles

- All records indexed by **participant ID number** (PTID) and visit code
- **Time stamp** for data entry should be used
- Follow **consistent coding scheme**
no = 0 yes = 1 not known = 9999
- **Ordinal categories** should retain logical ordering
less than primary education = 1
primary education = 2
secondary or higher education = 3

Data Coding

Think carefully how you will store the data

“What is your partner’s HIV status”

ptid	partner_hiv
1	Positive
2	Positive
3	p
4	HIV+
5	Neg
6	n
7	NA
8	dont know

Data Coding

- For analysis, your data should be numerically coded:
 - 0 = no
 - 1 = yes
- You will need to determine how data will be entered on the questionnaire

Option 1

HIV results: (0=Neg, 1=Pos)

Option 2

HIV results: Negative Positive

Data Coding

Think carefully how you will store the data

“What is the participant’s gender?”

Data Coding

- Where appropriate, **provide flexibility** in responses while **ensuring consistency**
- Anticipate **data entry challenges**

What concerns do you have about starting antiretroviral therapy in the future?
(mark all that apply)

- cost of therapy
- side effects
- disclosure of HIV status
- challenge of adhering to therapy
- lack of support
- transportation to treatment center
- want to have children before starting
- interaction with other drugs
- other, specify: _____

What is your partner's HIV status?

* must provide value



positive



negative



not known



blank

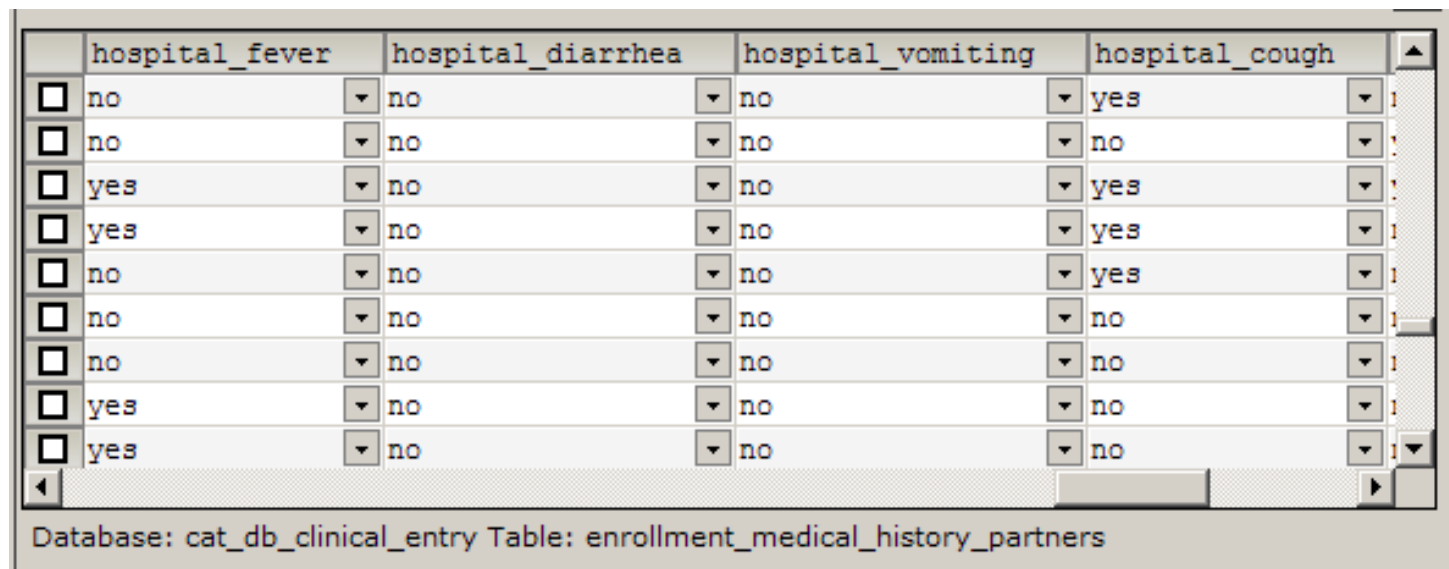
reset

Data Storage: General Principles

- Separate variables are needed for each option in “check all that apply items”

Which of the above symptoms prompted you to seek care:

fever diarrhea vomiting cough



The screenshot shows a database table with the following structure and data:

	hospital_fever	hospital_diarrhea	hospital_vomiting	hospital_cough
<input type="checkbox"/>	no	no	no	yes
<input type="checkbox"/>	no	no	no	no
<input type="checkbox"/>	yes	no	no	yes
<input type="checkbox"/>	yes	no	no	yes
<input type="checkbox"/>	no	no	no	yes
<input type="checkbox"/>	no	no	no	no
<input type="checkbox"/>	no	no	no	no
<input type="checkbox"/>	yes	no	no	no
<input type="checkbox"/>	yes	no	no	no

Database: cat_db_clinical_entry Table: enrollment_medical_history_partners

Check all that apply

Which of the above symptoms prompted you to seek care:

- fever diarrhea vomiting cough

Option 1: Checkboxes

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: Checkboxes (Multiple Answers)

Field Label: [How to use Piping](#)
Which of the above symptoms prompted you to seek care:

Choices (one choice per line) [Copy existing choices](#)
1, fever
2, diarrhea
3, vomiting
4, cough
[How do I manually code the choices?](#)

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

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

Option 2: Matrix

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](#).

Matrix Header Text (optional)
Which of the above symptoms prompted you to seek care:

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 ONLY letters, numbers, and underscores	Required?* <input type="checkbox"/>	Field Annotation ?
fever	hosp_fev	<input checked="" type="checkbox"/>	<input type="text"/> ✖
diarrhea	hosp_diarr	<input checked="" type="checkbox"/>	<input type="text"/> ✖
vomiting	hosp_vom	<input checked="" type="checkbox"/>	<input type="text"/> ✖
cough	hosp_cough	<input checked="" type="checkbox"/>	<input type="text"/> ✖

Add another row

Matrix Column Choices
Choices (one choice per line)

Other Matrix Info
Answer Format:

Save Cancel

Check all that apply

Which of the above symptoms prompted you to seek care:

fever diarrhea vomiting cough

Option 1: Checkboxes

Which of the above symptoms prompted you to seek care:
* must provide value

fever
 diarrhea
 vomiting
 cough

Option 2: Matrix

Which of the above symptoms prompted you to seek care:

	yes	no	
fever <small>* must provide value</small>	<input type="radio"/>	<input checked="" type="radio"/>	reset
diarrhea <small>* must provide value</small>	<input checked="" type="radio"/>	<input type="radio"/>	reset
vomiting <small>* must provide value</small>	<input type="radio"/>	<input checked="" type="radio"/>	reset
cough <small>* must provide value</small>	<input checked="" type="radio"/>	<input type="radio"/>	reset

The screenshot shows a data table with the following columns: ptid, hosp__1, hosp__2, hosp__3, hosp__4, hosp_fev, hosp_diarr, hosp_vom, hosp_cough. The first row contains the values: 1, 1411999999, 0, 1, 0, 1, 0, 1, 0, 1. Below the table is a status bar with the text: Ready, Vars: 9, Obs: 1, Filter: Off, Mode: Edit, CAP, NUM.

ptid	hosp__1	hosp__2	hosp__3	hosp__4	hosp_fev	hosp_diarr	hosp_vom	hosp_cough	
1	1411999999	0	1	0	1	0	1	0	1

Ready Vars: 9 Obs: 1 Filter: Off Mode: Edit CAP NUM

Data Storage: Minimizing Errors

- Use **drop-down menus** and **check boxes**
- **Hide fields** that are not applicable
 - example: don't show oral contraceptive use for male participants
- **Include error checking** at point of entry to prevent common errors
 - missing data
 - data inconsistencies
 - impossible values

Data Storage: Variable Names

- Avoid excessively long variables .
 - Should be less than 26 characters
- Consider only using lower case letters.
- Avoid numbers at the beginning and end of variable name
- Use “_” to improve readability
- Use consistent abbreviations:
 - yr (years)
 - oth (other)
 - sp (specify)
 - ptr (partner)
- Follow consistent patterns:
 - barrier_other
 - barrier_other_sp
- Consider consistent use of prefixes to group variables

Try it out: REDCap Exercise

Category	Questionnaire Items	Baseline	Follow-up
Demographics	Date of birth	X	
	Gender	X	
	What is your marital status?	X	
	What is the legal nature of your marriage?	X	
	Last month, did you earn an income?	X	
	Last month, what was your income?	X	
	Have you had an income every month for the last 3 months?	X	
	Do you have regular employment?	X	
	Classify your type of employment:	X	
Care/Treatment Attitudes	How likely are you to go to a Comprehensive Care Center in the next 3 months?	X	X
	What do you think the benefits of antiretroviral therapy are? <i>select all that apply:</i> improve current health improve job opportunities prevent future health problems reduce the risk of transmitting to a partner live longer other look healthier	X	X
Engagement in Care	Since enrolling in this study, did you go to a Comprehensive Care Center, or other clinic providing care for HIV.		X
	When was your first visit to the Comprehensive Care Center or clinic?		X
	Since you started this study, have you ever taken any antiretroviral medications? (if female, exclude ARVs to prevent mother-to-child transmission)		X
	When did you first start these antiretroviral medications?		X
	Are you currently taking any antiretroviral medications?		X
	What medications are you currently taking? <i>Mark all medications named:</i> Nevirapine (Viramune) Stavudine (D4T) Nelfinavir Combination therapy (e.g., Triomune) Zidovudine (AZT) Indinavir Tenofovir (TDF) Lamivudine (3TC) Efavirenz (Sustiva) Other Kaletra Not Known		X

Category	Laboratory Results	Baseline	Follow-up
CD4 Results	CD4 count (available 1 week after enrollment)	X	X
Viral Load Results	Viral load (available after all follow-ups are completed)		X

Branching logic (aka skip patterns)

File Edit View History Bookmarks Tools Help

Demo Project | REDCap

https://redcap.iths.org/redcap_v6.0.1/Design/online_designer.php?pid=690&page=demographics

PubMed Home UW Libraries Proxy B... User Management FAQ

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

If you are experiencing problems, please contact your REDCap administrator.

Demographics Information

Add Field Add Matrix of Fields

Variable: first_name
First Name

Add Field Add Matrix of Fields

Variable: last_name
Last Name

Add Field Add Matrix of Fields

Variable: dob
Date of Birth Today Y-M-D

Add Field Add Matrix of Fields

Variable: sex
Gender

Add Field Add Matrix of Fields

Variable: address
Street, City, State, ZIP Expand

Add Field Add Matrix of Fields

Variable: phone_number
Phone number

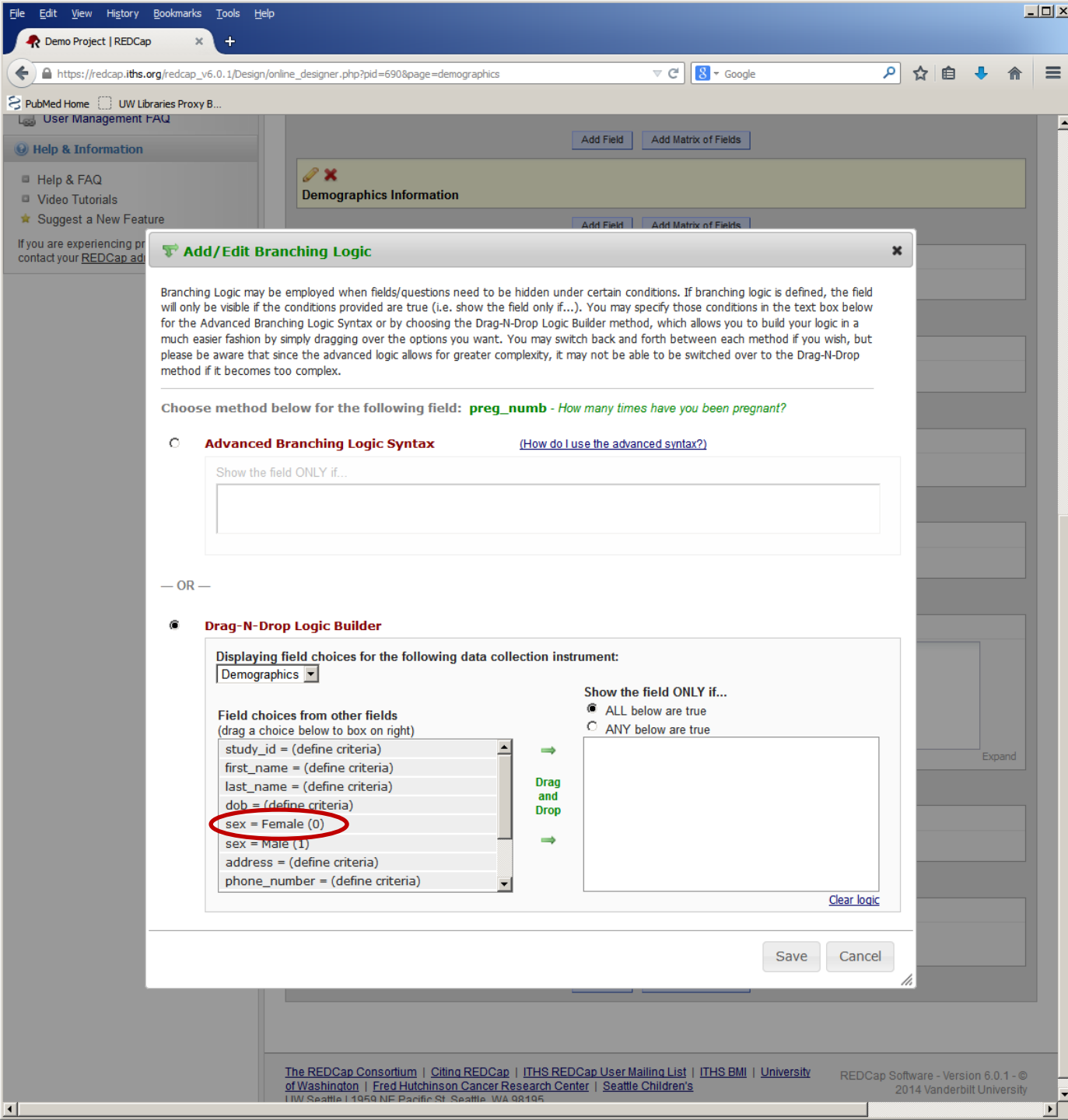
Add Field Add Matrix of Fields

Variable: preg_num
How many times have you been pregnant?
* must provide value

Add Field Add Matrix of Fields

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UW Seattle | 1959 NE Pacific St, Seattle, WA 98195



Add/Edit Branching Logic

Branching Logic may be employed when fields/questions need to be hidden under certain conditions. If branching logic is defined, the field will only be visible if the conditions provided are true (i.e. show the field only if...). You may specify those conditions in the text box below for the Advanced Branching Logic Syntax or by choosing the Drag-N-Drop Logic Builder method, which allows you to build your logic in a much easier fashion by simply dragging over the options you want. You may switch back and forth between each method if you wish, but please be aware that since the advanced logic allows for greater complexity, it may not be able to be switched over to the Drag-N-Drop method if it becomes too complex.

Choose method below for the following field: **preg_numb** - *How many times have you been pregnant?*

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:

Demographics

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

- study_id = (define criteria)
- first_name = (define criteria)
- last_name = (define criteria)
- dob = (define criteria)
- sex = Female (0)**
- sex = Male (1)
- address = (define criteria)
- phone_number = (define criteria)

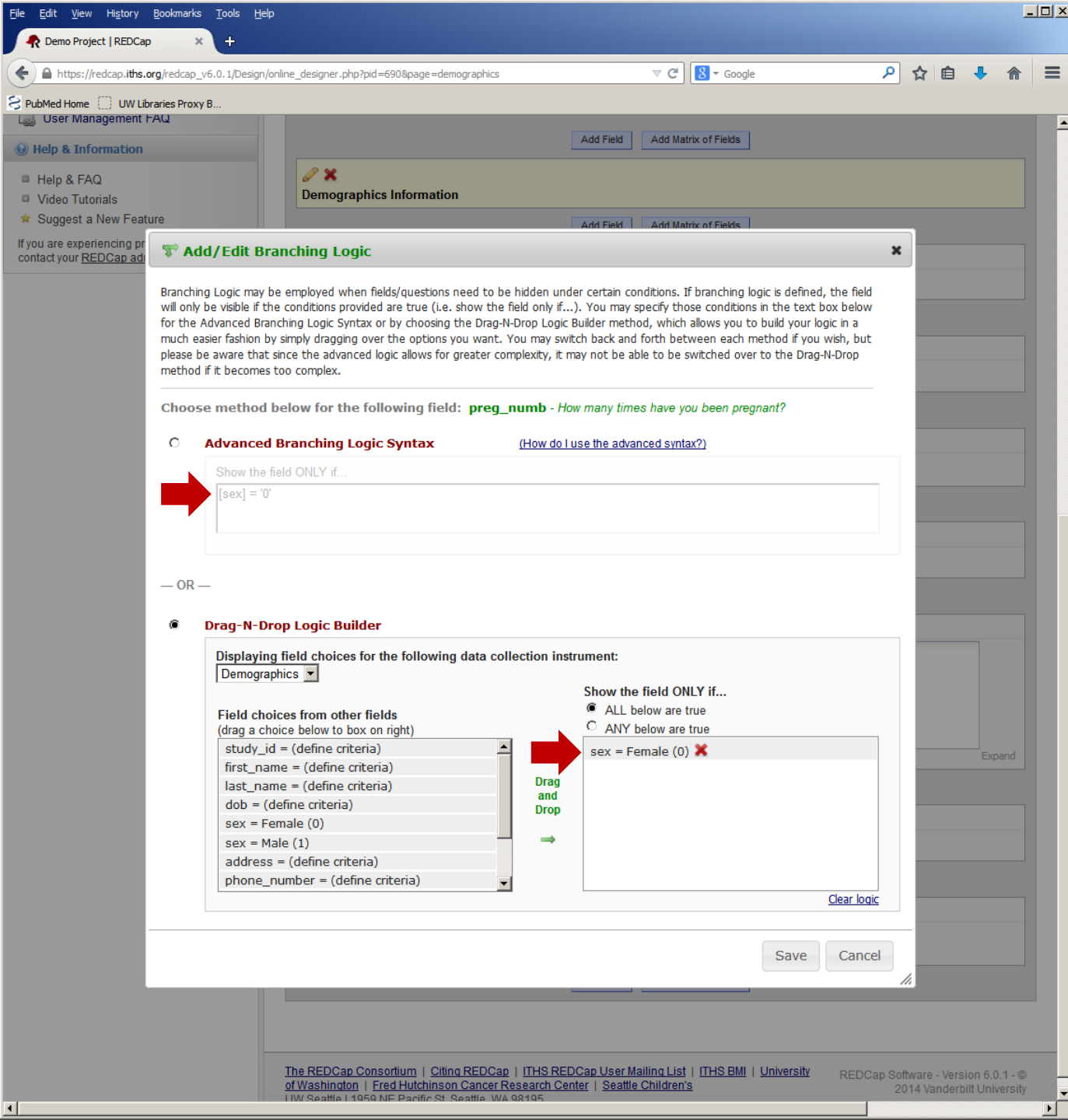
Drag and Drop

Show the field ONLY if...

- ALL below are true
- ANY below are true

[Clear logic](#)

Save Cancel



Add/Edit Branching Logic

Branching Logic may be employed when fields/questions need to be hidden under certain conditions. If branching logic is defined, the field will only be visible if the conditions provided are true (i.e. show the field only if...). You may specify those conditions in the text box below for the Advanced Branching Logic Syntax or by choosing the Drag-N-Drop Logic Builder method, which allows you to build your logic in a much easier fashion by simply dragging over the options you want. You may switch back and forth between each method if you wish, but please be aware that since the advanced logic allows for greater complexity, it may not be able to be switched over to the Drag-N-Drop method if it becomes too complex.

Choose method below for the following field: **preg_numb** - *How many times have you been pregnant?*

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

Show the field ONLY if...

[sex] = '0'

— OR —

Drag-N-Drop Logic Builder

Displaying field choices for the following data collection instrument:

Demographics

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

- study_id = (define criteria)
- first_name = (define criteria)
- last_name = (define criteria)
- dob = (define criteria)
- sex = Female (0)
- sex = Male (1)
- address = (define criteria)
- phone_number = (define criteria)

Drag and Drop
→

Show the field ONLY if...

ALL below are true
 ANY below are true

sex = Female (0) ✖

[Clear logic](#)

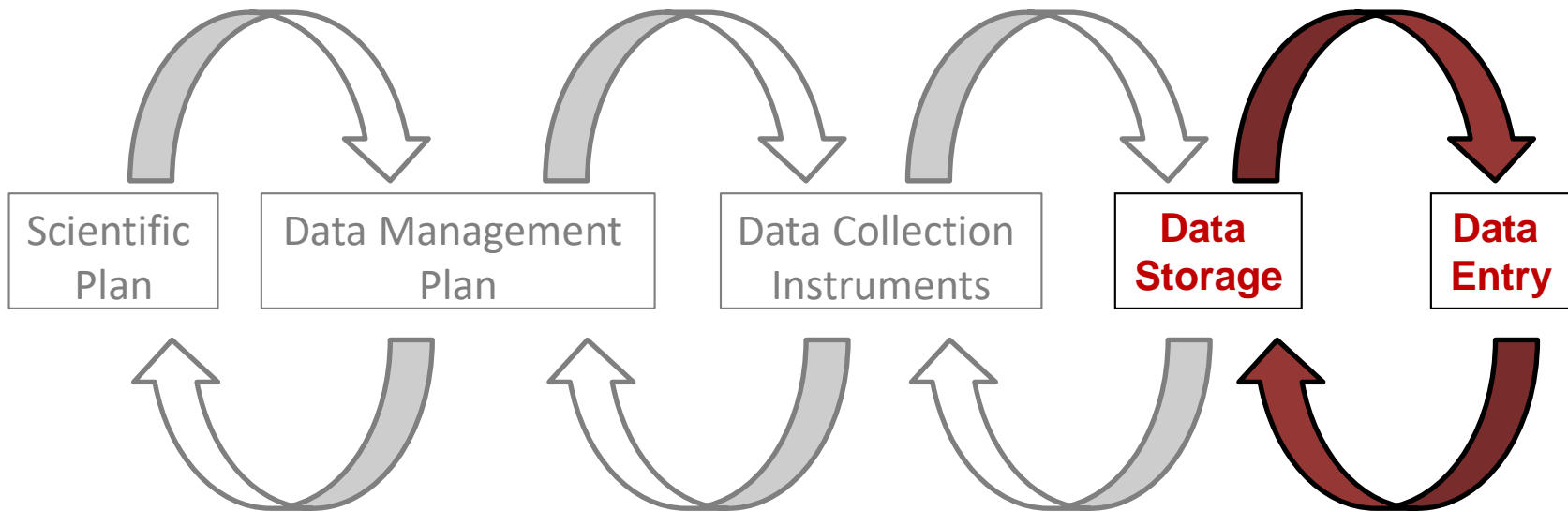
Save Cancel

Data Management Practices in Health Research

Part II

- ▶ Managing data collection, storage, and dissemination

Managing the Operation



Demo Project | REDCap - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Demo Project | REDCap

https://redcap.iths.org/redcap/redcap_v4.9.7/ProjectSetup/index.php?pid=690

UW Libraries Proxy B... 94.9 KUOW: Seattle's... PubMed Home #6 Avenue Flats CAT study data entry Overview | TREE Dist... XC Cabin Creek (xcca... Commons Status Que...

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My Projects
Project Home
Project Setup
Project status: **Development**

Data Collection [Edit instruments](#)

Scheduling
- Generate schedules for the calendar using your defined events

Data Collection Instruments:
Demographics Form1

Applications

- Calendar
- Data Export Tool
- Data Import Tool
- Data Comparison Tool
- Logging
- File Repository
- User Rights
- Graphical Data View & Stats
- Report Builder
- ITHS REDCap List

Help & Information

- Help & FAQ
- Video Tutorials
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Demo Project

[Project Home](#) [Project Setup](#) [Other Functionality](#) [Project Revision History](#)

Project status: Development Completed steps **0** of **6**

In progress

Modify project settings or make customizations

You have created your project and are ready to begin building on it. If you would like to modify the general project settings that you set when creating the project or if you wish to make some customizations to the project (e.g. enable auto-numbering for new records), use the buttons below.

[I'm done!](#) Go to [Modify project settings](#) or [Make customizations](#)

In progress

Design your data collection instruments

Add or edit fields on your data collection instruments. This may be done by either using the Online Designer (online method) or by uploading a Data Dictionary (offline method), in which you may use either method or both. Quick links: [Download PDF of all data collection instruments](#) OR [Download the current Data Dictionary](#)

[I'm done!](#) Go to [Online Designer](#) or [Upload Data Dictionary](#)

Have you checked the [Check For Identifiers](#) page to ensure all identifier fields have been tagged?

Not started

Define your events and designate instruments for them

Create events for re-using data collection instruments and/or set up scheduling.

Go to [Define My Events](#) or [Designate Instruments for My Events](#)

[I'm done!](#)

Optional

Set up project bookmarks (optional)

You may create custom bookmarks to webpages that exist inside or outside of REDCap. These bookmarks will be seen as links on the left-hand project menu and can be accessed at any time by users who are given privileges to do so. Every project bookmark has custom settings that allow one to control its appearance and behavior.

[I'm done!](#) Go to [Add or edit bookmarks](#)

Optional

User Rights and Permissions

You may grant other users access to this project or edit the user privileges of current users on this project by navigating to the User Rights page. Additionally, if you wish to limit user access to certain records/responses for this project, you may want to use Data Access Groups, in which only users within a given Data Access Group can access records created by users within that group.

[I'm done!](#) Go to [User Rights](#) or [Data Access Groups](#)

x Find: [Next](#) [Previous](#) [Highlight all](#) Match case

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My Projects
[Project Home](#)
[Project Setup](#)

Project status: **Development**

Data Collection [Edit instruments](#)

Scheduling
 - Generate schedules for the calendar using your defined events

Data Collection Instruments:
[Demographics Form 1](#)

Applications

- [Calendar](#)
- [Data Export Tool](#)
- [Data Import Tool](#)
- [Data Comparison Tool](#)
- [Logging](#)
- [File Repository](#)
- [User Rights](#)
- [Graphical Data View & Stats](#)
- [Report Builder](#)
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Demo Project

[VIDEO: How to use this page \(4 min\)](#)

[Project Setup](#)
[Define My Events](#)
[Designate Instruments for My Events](#)

This application allows you to define 'events' for your project that allow for the **utilization of data collection forms multiple times for any given project record** (often used when collecting longitudinal data), as well as for **generating new schedules** to display on the [Calendar](#). An 'event' may be a temporal event in the course of your project, such as a participant visit or a task to be performed. After events have been defined, you may use them and their Days Offset value to generate schedules. For data collection purposes, you will additionally need to designate the data collection instruments that you wish to utilize for any or all events, thus allowing you to use a form for multiple events for the same project record. You may **group your events into 'arms'**, in which you may have one or more arms/groups for your project. Each arm can have as many events as you wish. You may use the table below to create new events and/or arms, or modify existing ones. (One arm and one event will be initially defined as the default for all projects.)

STEP #1:

To add new events below, provide an **Event Name** and the **Days Offset** for that event, and then click the **Add new event** button. If your events are temporal (e.g. visits, tasks), you may use the Days Offset to provide a timeframe of all your events relative to the time of the first event defined. If you will be using the [Scheduling module](#), the Days Offset will be used to generate a schedule based on a start date that you provide, and then that new schedule will be added to the Calendar. The Offset Range may be used to help you stay within a range of days, if needed, when scheduling is being done by changing it to a value other than 0. If your events are not temporal but are ordered, you may still use the Days Offset simply as a means of ordering your events.

STEP #2:

If you will be performing formal data collection in this project, then once you have defined your events on this page, you may navigate to the [Designate Instruments for My Events](#) page, where you may select which data collection instruments that you wish to utilize for each event you defined.

NOTE: To get you started, we have already added one event for you below. You may edit this event and also add as many events as you need.

Arm 1 [Add New Arm](#)

Arm name: **Arm 1** [Rename Arm 1](#)

	Event #	Days Offset	Offset Range Min / Max	Event Name	Unique event name (auto-generated)
<input type="button" value="Save"/>	1	0	-0 +0	Enrollment	
<input type="button" value="Add new event"/>	<input type="text"/>	<input type="text"/> Days Convert from other units	-0 +0	<input type="text"/>	

Descriptive name for this event



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My Projects
[Project Home](#)
[Project Setup](#)
 Project status: **Development**

Data Collection [Edit Instruments](#)

Scheduling
 - Generate schedules for the calendar using your defined events

Data Entry

Applications

- [Calendar](#)
- [Data Export Tool](#)
- [Data Import Tool](#)
- [Data Comparison Tool](#)
- [Logging](#)
- [File Repository](#)
- [User Rights](#)
- [Graphical Data View & Stats](#)
- [Report Builder](#)
- [ITHS REDCap List](#)

Help & Information

- [Help & FAQ](#)
- [Video Tutorials](#)
- [Suggest a New Feature](#)

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Demo Project

[VIDEO: How to use this page \(4 min\)](#)

- [Project Setup](#)
- [Define My Events](#)
- [Designate Instruments for My Events](#)**


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STEP #2:
 If you will be performing formal data collection in this project, then once you have defined your events on this page, you may navigate to the [Designate Instruments for My Events](#) page, where you may select which data collection instruments that you wish to utilize for each event you defined.

[Add New Arm](#) [Rename Arm 1](#)

	Event #	Days Offset	Offset Range Min / Max	Event Name	Unique event name (auto-generated)
	1	0	-0/+0	Enrollment	enrollment_arm_1
	2	90	-0/+0	Visit 1	visit_1_arm_1
<input type="button" value="Add new event"/>	<input type="text"/>	Days	<input type="text" value="-0"/> <input type="text" value="+0"/>	<input type="text"/>	
		Convert from other units		Descriptive name for this event	




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[My Projects](#)
[Project Home](#)
[Project Setup](#)
 Project status: **Development**

Data Collection [Edit Instruments](#)
[Scheduling](#)
- Generate schedules for the calendar using your defined events
[Data Entry](#)

Applications
[Calendar](#)
[Data Export Tool](#)
[Data Import Tool](#)
[Data Comparison Tool](#)
[Logging](#)
[File Repository](#)
[User Rights](#)
[Graphical Data View & Stats](#)
[Report Builder](#)
[ITHS REDCap List](#)

Help & Information
[Help & FAQ](#)
[Video Tutorials](#)
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Demo Project

[VIDEO: How to use this page \(2 min\)](#)

◀ Project Setup
⌚ Define My Events
📄 Designate Instruments for My Events

Since you have defined multiple events on the [Define My Events](#) page, you may now select which data collection instruments that you wish to utilize for each event by using the table below. This allows you to enter data on any data collection form multiple times for any given project record. Any and all data collection instruments can thus be used for any event defined.

Click the *Begin Editing* button to change the relationships below by designating which forms you wish to utilize for which events. When you are finished making changes, click the *Save* button to finalize your changes.

Begin Editing Save

Data Collection Instrument	Events	
	Enrollment (1)	Visit 1 (2)
Demographics	<input type="checkbox"/>	<input type="checkbox"/>
Form1	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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My Projects
 Project Home
 Project Setup
 Project status: **Development**

Data Collection [Edit Instruments](#)

Scheduling
 - Generate schedules for the calendar using your defined events

Data Entry

Applications

- Calendar
- Data Export Tool
- Data Import Tool
- Data Comparison Tool
- Logging
- File Repository
- User Rights
- Graphical Data View & Stats
- Report Builder
- ITHS REDCap List

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

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Demo Project

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[Project Setup](#)
[Define My Events](#)
[Designate Instruments for My Events](#)

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Click the *Begin Editing* button to change the relationships below by designating which forms you wish to utilize for which events. When you are finished making changes, click the *Save* button to finalize your changes.

[Begin Editing](#) [Save](#)

Data Collection Instrument	Events	
	Enrollment (1)	Visit 1 (2)
Demographics	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Form1	<input type="checkbox"/>	<input checked="" type="checkbox"/>



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 Log out

My Projects
 Project Home
 Project Setup
 Project status: **Development**

Data Collection [Edit instruments](#)

Scheduling
 - Generate schedules for the calendar using your defined events

Data Entry

Applications

- Calendar
- Data Export Tool
- Data Import Tool
- Data Comparison Tool
- Logging
- File Repository
- User Rights
- Graphical Data View & Stats
- Report Builder
- ITHS REDCap List

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

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[VIDEO: How to use this page \(2 min\)](#)


[Project Setup](#)
[Define My Events](#)
[Designate Instruments for My Events](#)

Since you have defined multiple events on the [Define My Events](#) page, you may now select which data collection instruments that you wish to utilize for each event by using the table below. This allows you to enter data on any data collection form multiple times for any given project record. Any and all data collection instruments can thus be used for any event defined.

Click the **Begin Editing** button to change the relationships below by designating which forms you wish to utilize for which events. When you are finished making changes, click the **Save** button to finalize your changes.

[Begin Editing](#) [Save](#)

Data Collection Instrument	Events	
	Enrollment (1)	Visit 1 (2)
Demographics	✓	
Form1		✓



Logged in as **brguth@washington.edu**
Log out

My Projects
Project Home
Project Setup
Project status: **Development**

Data Collection [Edit instruments](#)

Scheduling
- Generate schedules for the calendar using your defined events

Data Entry

Applications

- Calendar
- Data Export Tool
- Data Import Tool
- Data Comparison Tool
- Logging
- File Repository
- User Rights
- Graphical Data View & Stats
- Report Builder
- ITHS REDCap List

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

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Demo Project

- [Project Home](#)
- [Project Setup](#)
- [Other Functionality](#)
- [Project Revision History](#)


Project status:  Development Completed steps **0** of **6**

 **Modify project settings or make customizations**

In progress

You have created your project and are ready to begin building on it. If you would like to modify the general project settings that you set when creating the project or if you wish to make some customizations to the project (e.g. enable auto-numbering for new records), use the buttons below.

[I'm done!](#) Go to [Modify project settings](#) or [Make customizations](#)


 **Design your data collection instruments**

In progress

Add or edit fields on your data collection instruments. This may be done by either using the Online Designer (online method) or by uploading a Data Dictionary (offline method), in which you may use either method or both. Quick links: [Download PDF of all data collection instruments](#) or [Download the current Data Dictionary](#)

[I'm done!](#) Go to [Online Designer](#) or [Upload Data Dictionary](#)


Have you checked the [Check For Identifiers](#) page to ensure all identifier fields have been tagged?

 **Define your events and designate instruments for them**

In progress

Create events for re-using data collection instruments and/or set up scheduling.


[I'm done!](#) Go to [Define My Events](#) or [Designate Instruments for My Events](#)

 **Set up project bookmarks (optional)**

Optional

You may create custom bookmarks to webpages that exist inside or outside of REDCap. These bookmarks will be seen as links on the left-hand project menu and can be accessed at any time by users who are given privileges to do so. Every project bookmark has custom settings that allow one to control its appearance and behavior.


[I'm done!](#) Go to [Add or edit bookmarks](#)

 **User Rights and Permissions**

Optional

You may grant other users access to this project or edit the user privileges of current users on this project by navigating to the User Rights page. Additionally, if you wish to limit user access to certain records/responses for this project, you may want to use Data Access Groups, in which only users within a given Data Access Group can access records created by users within that group.

[I'm done!](#) Go to [User Rights](#) or [Data Access Groups](#)

 **Move your project to production status**

DemoProject_DataDictionary_2012-09-11.csv - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Clipboard Font Alignment Number Styles Cells Editing

Calibri 11 A A Wrap Text General

Conditional Formatting Format as Table Cell Styles Insert Delete Format

AutoSum Fill Clear Sort & Filter Find & Select

A7 fx address

	A	B	C	D	E	F	G	H
1	Variable / Field Name	Form Name	Section Header	Field Type	Field Label	Choices, Calculations, OR Slider Labels	Field Note	Text Validation Type OR Show Slider Num
2	study_id	demographics		text	Study ID			
3	first_name	demographics	Demographics Information	text	First Name			
4	last_name	demographics		text	Last Name			
5	dob	demographics		text	Date of Birth			date_ymd
6	sex	demographics		dropdown	Gender	0, Female 1, Male		
7	address	demographics		notes	Street, City, State, ZIP			
8	phone_number	demographics		text	Phone number			phone
9	ptid	form1		text	Participant ID			integer
10								
11								

Ready DemoProject_DataDictionary_2012 100%

File Edit View History Bookmarks Tools Help

Demo Project | REDCap

https://redcap.iths.org/redcap_v6.16.5/DataEntry/grid.php?pid

PubMed UW Libraries Proxy B... 15 Google Calendar University of Washing... HSE Shuttle Tracker

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My Projects
Project Home
Project Setup

Project status: **Development**

Data Collection

[Edit Instruments](#)

Scheduling
- Generate schedules for the calendar using your defined events

Record Status Dashboard
- View data collection status of all records

Add / Edit Records
- Create new records or edit/view existing ones

Applications

- Calendar
- Data Exports, Reports, and Stats
- Data Import Tool
- Data Comparison Tool
- Logging
- Field Comment Log
- File Repository
- User Rights and DAGs
- API and API Playground
- ITHS REDCap User Mailing List
- Free REDCap Classes
- ITHS REDCap (User) FAQ

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

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Add / Edit Records

You may view an existing record/response by selecting it from the drop-down lists below. To create a new record/response, type a new value in the text box below and hit Tab or Enter. To quickly find a record without using the drop-downs, the text box will auto-populate with existing record names as you begin to type in it, allowing you to select it.

Total records: 2

Choose an existing Study ID

Enter a new or existing Study ID

Data Search

Choose a field to search (excludes multiple choice fields)

Search query

Begin typing to search the project data, then click an item in the list to navigate to that record.

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 Log out

My Projects
 Project Home
 Project Setup

Project status: **Development**

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Data Collection [Edit Instruments](#)

Scheduling
 - Generate schedules for the calendar using your defined events

Record Status Dashboard
 - View data collection status of all records

Add / Edit Records
 - Create new records or edit/view existing ones

Study ID 1711000112
[Select other record](#)

Demo Project

Record Home Page

The grid below displays the form-by-form progress of data entered for the currently selected record. You may click on the colored status icons to access that form/event. If you wish, you may modify the events below by navigating to the [Define My Events](#) page.

Legend for status icons:

- Incomplete
- Incomplete (no data saved)
- Unverified
- Complete

[Choose action for record](#)

Study ID 1711000112

Data Collection Instrument	Enrollment	Visit 1
Demographics		
Delete all data on event:		

Applications

- Calendar
- Data Exports, Reports, and Stats
- Data Import Tool
- Data Comparison Tool
- Logging
- Field Comment Log
- File Repository
- User Rights and DAGs
- API and API Playground
- External Modules
- ITHS REDCap User Mailing List
- Free REDCap Classes
- ITHS REDCap (User) FAQ
- ITHS REDCap Tip of the Month

External Modules

- Tableau Connector Instructions

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

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- Project Home
- Project Setup

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Data Collection [Edit instruments](#)

Scheduling
- Generate schedules for the calendar using your defined events

Data Entry

Study ID **1711000112**

Event: **Enrollment**

Data Collection Instruments:

Demographics

Applications

- Calendar
- Data Export Tool
- Data Import Tool
- Data Comparison Tool
- Logging
- File Repository
- User Rights
- Graphical Data View & Stats
- Report Builder
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Demographics

[Modify this instrument](#)

[Download PDF of](#) - select PDF download option -

Adding new Study ID **1711000112**

Event Name: **Enrollment**

Study ID 1711000112

Demographics Information

First Name

Last Name

Date of Birth Y-M-D

Gender

Street, City, State, ZIP

Expand

Phone number

Form Status

Complete? Incomplete

Save Record

Save and Continue

-- Cancel --



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- My Projects
- Project Home
- Project Setup

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Data Collection [Edit instruments](#)

Scheduling
- Generate schedules for the calendar using your defined events

Data Entry

Study ID **1711000112**

Event: **Enrollment**

Data Collection Instruments:

Demographics

Applications

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- Help & FAQ
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Demographics

[Modify this instrument](#)

[Download PDF of](#) - select PDF download option -

Adding new Study ID **1711000112**

Event Name: **Enrollment**

Study ID 1711000112

Demographics Information

First Name

Last Name

Date of Birth Today Y-M-D

Gender

Street, City, State, ZIP

Street, City, State, ZIP

Phone number

Form Status

Complete?

Save Record

Save and Continue

-- Cancel --

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Project Home
Project Setup
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Data Collection [Edit Instruments](#)

Scheduling
- Generate schedules for the calendar using your defined events

Record Status Dashboard
- View data collection status of all records

Add / Edit Records
- Create new records or edit/view existing ones

Study ID 1711000218 [Select other record](#)

Event: **Enrollment**
Data Collection Instruments:
Demographics

Applications

- Calendar
- Data Exports, Reports, and Stats
- Data Import Tool
- Data Comparison Tool
- Logging
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- ITHS REDCap Classes
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Help & Information

- Help & FAQ
- Video Tutorials
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Demo Project

[VIDEO: Basic data entry](#)

Actions: [Modify instrument](#) [Download PDF of instrument\(s\)](#)

Demographics

Adding new Study ID **1711000218**

Event Name: **Enrollment**

Study ID: 1711000218

Demographics Information

First Name:

Last Name:

Date of Birth: Y-M-D

Gender:

Street, City, State, ZIP: Expand

Phone number:

How many times have you been pregnant?
* must provide value

Form Status

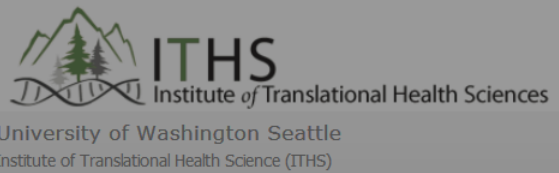
Complete?

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My Projects
Project Home
Project Setup
Project status: **Development**

Data Collection [Edit Instruments](#)
Scheduling
Record Status Dashboard
Add / Edit Records
Study ID 1711000218 [Select other record](#)
Event: **Enrollment**
Data Collection Instruments
Demographics

Applications
Calendar
Data Exports, Reports, and Stats
Data Import Tool
Data Comparison Tool
Logging
Field Comment Log
File Repository
User Rights and DAGs
ITHS REDCap User Mailing List
Supplemental Documentation
ITHS REDCap Classes
User Management FAQ

Help & Information
Help & FAQ
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Demo Project

Actions: [Modify instrument](#) [Download PDF of instrument\(s\)](#) [VIDEO: Basic data entry](#)

Demographics

[Editing existing Study ID 1711000218](#)

Event Name: **Enrollment**

Study ID: 1711000218

Demographics Information

NOTE: Some fields are required!

Your data was successfully saved, but you did not provide a value for some fields that require a value. Please enter a value for the fields on this page that are listed below.

Provide a value for...

- How many times have you been pregnant?

Okay Ignore and leave record

Street, City, State, ZIP

Phone number

How many times have you been pregnant?
* must provide value

Form Status

Complete?

Save Record
Save and Continue

-- Cancel --

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 Project Home
 Project Setup

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Data Collection [Edit Instruments](#)

Scheduling
 - Generate schedules for the calendar using your defined events

Record Status Dashboard
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Study ID **1711000112**
[Select other record](#)

Demo Project

Record Home Page

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Legend for status icons:

- Incomplete
- Incomplete (no data saved)
- Unverified
- Complete

Choose action for record

Study ID 1711000112 successfully edited

Study ID 1711000112

Data Collection Instrument	Enrollment	Visit 1
Demographics	●	
Delete all data on event:	✖	

Applications

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My Projects
Project Home
Project Setup
Project status: **Development**

Data Collection [Edit instruments](#)

Scheduling
- Generate schedules for the calendar using your defined events

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Demo Project

[Project Home](#) [Project Setup](#) [Other Functionality](#) [Project Revision History](#)

Project status: **Development** Completed steps **0** of **8**

Main project settings

Not started

Use longitudinal data collection with repeating forms? [?](#)

Use surveys in this project? [?](#) [VIDEO: How to create and manage a survey](#)

Design your data collection instruments

Add or edit fields on your data collection instruments. This may be done by either using the Online Designer (online method) or by uploading a Data Dictionary (offline method), in which you may use either method or both. Quick links: [Download PDF of all data collection instruments](#) OR [Download the current Data Dictionary](#)

Go to or

You may also browse for pre-built data collection instruments in the [REDCap Shared Library](#)

Have you checked the [Check For Identifiers](#) page to ensure all identifier fields have been tagged?

Define your events and designate instruments for them

Create events for re-using data collection instruments and/or set up scheduling.

Go to or

Enable optional modules and customizations

Auto-numbering for records? [?](#)

Scheduling module (longitudinal only)? [?](#)

Randomization module? [?](#)

Designate an email field to use for invitations to survey participants? [?](#)

Twilio SMS and Voice Call services for surveys? [?](#)


Find in page Highlight All Match Case

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My Projects

Project Home

Project Setup

Project status: **Development**

Data Collection [Edit Instruments](#)

Scheduling
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- Help & FAQ
- Video Tutorials
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Data Exports, Reports, and Stats

[VIDEO: How to use Data Exports, Reports, and Stats](#)

[+ Create New Report](#)
[My Reports & Exports](#)
[PDF & Other Export Options](#)

This module allows you to easily view reports of your data, inspect plots and descriptive statistics of your data, as well as export your data to Micro Excel, SAS, Stata, R, or SPSS for analysis (if you have such privileges). If you wish to export your *entire* data set or view it as a report, then Report A is the best and quickest way. However, if you want to view or export data from only specific instruments (or events) on the fly, then Report B is the choice. You may also create your own custom reports below (if you have such privileges) in which you can filter the report to specific fields, record events using a vast array of filtering tools to make sure you get the exact data you want. Once you have created a report, you may view it as a well export it out of REDCap in a specified format (Excel, SAS, Stata, SPSS, R), or view the plots and descriptive statistics for that report.

My Reports & Exports

	Report name	View/Export Options	Management Options
A	All data (all records and fields)	View Report Export Data Stats & Charts	
B	Selected instruments and/or events (all records)	Make custom selections	

[+ Create New Report](#)

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
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Project Home
Project Setup
Project status

Exporting "All data (all records and fields)"

Select your export settings, which includes the export format (Excel/CSV, SAS, SPSS, R, Stata) and whether or not to perform de-identification on the data set.

Choose export format

-  **CSV / Microsoft Excel (raw data)**
-  **CSV / Microsoft Excel (labels)**
-  **SPSS Statistical Software**
-  **SAS Statistical Software**
-  **R Statistical Software**
-  **Stata Statistical Software**

De-identification options (optional)

The options below allow you to limit the amount of sensitive information that you are exporting out of the project. Check all that apply.

Known Identifiers:

- Remove all tagged Identifier fields (tagged in Data Dictionary)
- Hash the Record ID field (converts record name to an unrecognizable value)

Free-form text:

- Remove unvalidated Text fields (i.e. Text fields other than dates, numbers, etc.)
- Remove Notes/Essay box fields

Date and datetime fields:

- Remove all date and datetime fields
- OR—
- Shift all dates by value between 0 and 364 days (shifted amount determined by algorithm for each record) [What is date shifting?](#)

[Deselect all options](#)

Export Data **Cancel**

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DemoProject_DATA_2012-09-11_1318.csv - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Clipboard Font Alignment Number Styles Cells Editing

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	study_id	redcap_event_name	first_name	last_name	dob	sex	address	phone_number	demographics_complete	ptid	form1_complete		
2	1711000112	Enrollment	John	Smith	9/11/2012	1	1234 1st Ave. Seattle, WA, 98103	(206) 222-2222		1		0	
3													
4													
5													
6													
7													
8													
9													
10													
11													

DemoProject_DATA_2012-09-11_131

Ready 100%

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My Projects
Project Home
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Select your export settings, which includes the export format (Excel/CSV, SAS, SPSS, R, Stata) and whether or not to perform de-identification on the data set.

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- Remove all date and datetime fields
- OR—
- Shift all dates by value between 0 and 364 days (shifted amount determined by algorithm for each record) [What is date shifting?](#)

[Deselect all options](#)

Export Data **Cancel**

If you are experiencing problems, please contact your [REDCap administrator](#).

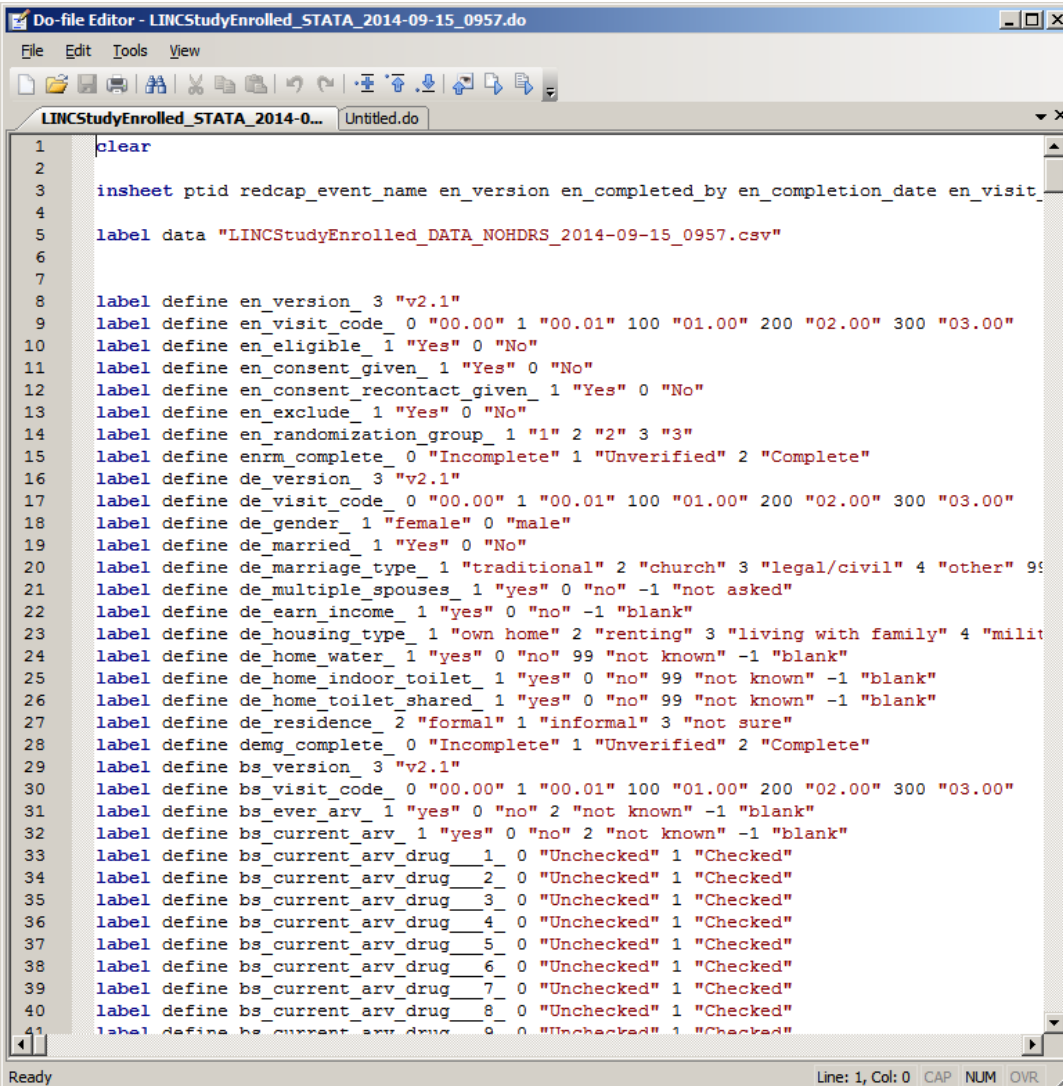
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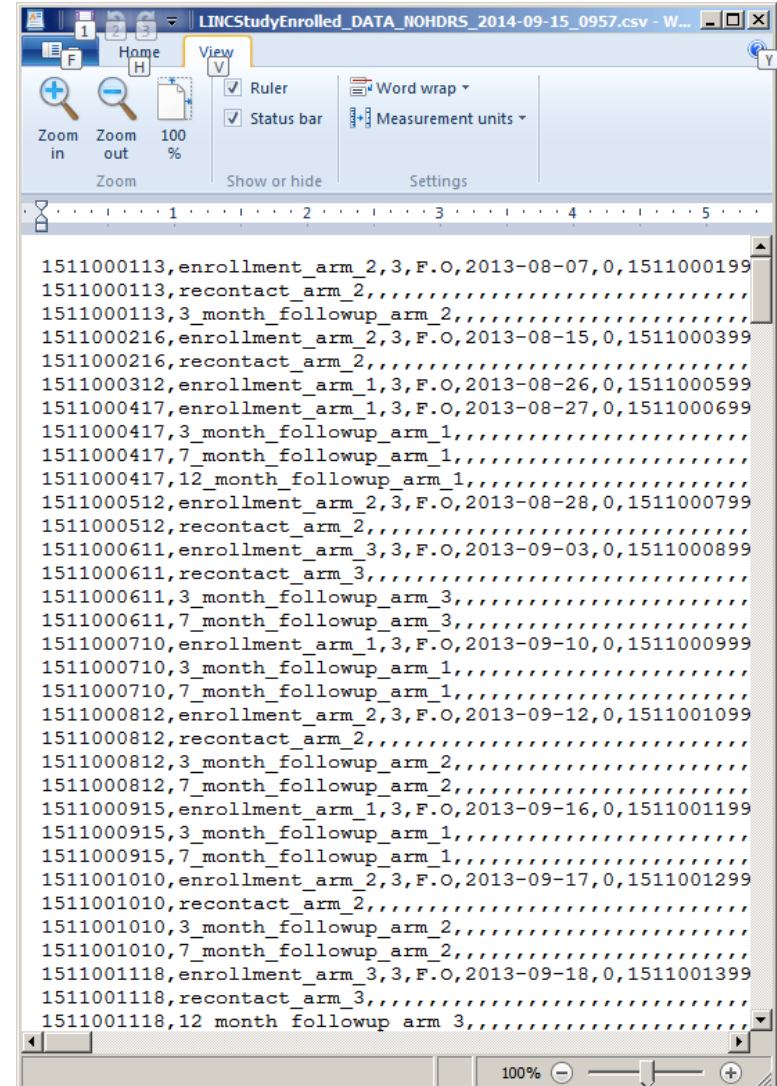
Find in page Highlight All Match Case

Stata .do file

Data file



```
1 clear
2
3 insheet ptid redcap_event_name en_version en_completed_by en_completion_date en_visit
4
5 label data "LINCStudyEnrolled_DATA_NOHDRS_2014-09-15_0957.csv"
6
7
8 label define en_version_3 "v2.1"
9 label define en_visit_code_0 "00.00" 1 "00.01" 100 "01.00" 200 "02.00" 300 "03.00"
10 label define en_eligible_1 "Yes" 0 "No"
11 label define en_consent_given_1 "Yes" 0 "No"
12 label define en_consent_recontact_given_1 "Yes" 0 "No"
13 label define en_exclude_1 "Yes" 0 "No"
14 label define en_randomization_group_1 "1" 2 "2" 3 "3"
15 label define enr_complete_0 "Incomplete" 1 "Unverified" 2 "Complete"
16 label define de_version_3 "v2.1"
17 label define de_visit_code_0 "00.00" 1 "00.01" 100 "01.00" 200 "02.00" 300 "03.00"
18 label define de_gender_1 "female" 0 "male"
19 label define de_married_1 "Yes" 0 "No"
20 label define de_marriage_type_1 "traditional" 2 "church" 3 "legal/civil" 4 "other" 95
21 label define de_multiple_spouses_1 "yes" 0 "no" -1 "not asked"
22 label define de_earn_income_1 "yes" 0 "no" -1 "blank"
23 label define de_housing_type_1 "own home" 2 "renting" 3 "living with family" 4 "milit
24 label define de_home_water_1 "yes" 0 "no" 99 "not known" -1 "blank"
25 label define de_home_indoor_toilet_1 "yes" 0 "no" 99 "not known" -1 "blank"
26 label define de_home_toilet_shared_1 "yes" 0 "no" 99 "not known" -1 "blank"
27 label define de_residence_2 "formal" 1 "informal" 3 "not sure"
28 label define demg_complete_0 "Incomplete" 1 "Unverified" 2 "Complete"
29 label define bs_version_3 "v2.1"
30 label define bs_visit_code_0 "00.00" 1 "00.01" 100 "01.00" 200 "02.00" 300 "03.00"
31 label define bs_ever_arv_1 "yes" 0 "no" 2 "not known" -1 "blank"
32 label define bs_current_arv_1 "yes" 0 "no" 2 "not known" -1 "blank"
33 label define bs_current_arv_drug_1_0 "Unchecked" 1 "Checked"
34 label define bs_current_arv_drug_2_0 "Unchecked" 1 "Checked"
35 label define bs_current_arv_drug_3_0 "Unchecked" 1 "Checked"
36 label define bs_current_arv_drug_4_0 "Unchecked" 1 "Checked"
37 label define bs_current_arv_drug_5_0 "Unchecked" 1 "Checked"
38 label define bs_current_arv_drug_6_0 "Unchecked" 1 "Checked"
39 label define bs_current_arv_drug_7_0 "Unchecked" 1 "Checked"
40 label define bs_current_arv_drug_8_0 "Unchecked" 1 "Checked"
41 label define bs_current_arv_drug_9_0 "Unchecked" 1 "Checked"
```



```
1511000113,enrollment_arm_2,3,F.O,2013-08-07,0,1511000199
1511000113,recontact_arm_2,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511000113,3_month_followup_arm_2,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511000216,enrollment_arm_2,3,F.O,2013-08-15,0,1511000399
1511000216,recontact_arm_2,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511000312,enrollment_arm_1,3,F.O,2013-08-26,0,1511000599
1511000417,enrollment_arm_1,3,F.O,2013-08-27,0,1511000699
1511000417,3_month_followup_arm_1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511000417,7_month_followup_arm_1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511000417,12_month_followup_arm_1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511000512,enrollment_arm_2,3,F.O,2013-08-28,0,1511000799
1511000512,recontact_arm_2,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
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1511000611,recontact_arm_3,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511000611,3_month_followup_arm_3,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511000611,7_month_followup_arm_3,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511000710,enrollment_arm_1,3,F.O,2013-09-10,0,1511000999
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1511000812,recontact_arm_2,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511000812,3_month_followup_arm_2,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511000812,7_month_followup_arm_2,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511000915,enrollment_arm_1,3,F.O,2013-09-16,0,1511001199
1511000915,3_month_followup_arm_1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511000915,7_month_followup_arm_1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511001010,enrollment_arm_2,3,F.O,2013-09-17,0,1511001299
1511001010,recontact_arm_2,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511001010,3_month_followup_arm_2,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511001010,7_month_followup_arm_2,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511001118,enrollment_arm_3,3,F.O,2013-09-18,0,1511001399
1511001118,recontact_arm_3,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1511001118,12 month followup arm 3,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
```







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- [Training Resources](#)
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- [Send-It](#)

[Site Help](#)

REDCap Training Resources







Just Getting Started?

In you are new to REDCap, this first set of videos below can help you get started to learn the basics of REDCap and provide a general overview for some of REDCap's preliminary concepts and features.

Title	Description	Watch Video
REDCap Overview	This video provides an overview of basic functions and features within a REDCap project. It will serve as a starting point for learning about the basic concepts of REDCap, what REDCap projects are, how to create them, and how to use them.	 78 minutes
Building Your Data Collection Forms	The Online Designer Use this online method for making modifications to project fields and data collection instruments very easily using only your web browser. Changes can be made quickly and viewed immediately as you build your data collection forms in real time.	 5 minutes
	The Data Dictionary Use this offline method, called the 'Data Dictionary', which is a specifically formatted Microsoft Excel file within which you may construct your project fields and afterward upload the file into REDCap to commit the changes to your project. If you wish to view an example of how your Data Dictionary may be formatted, you may download the Data Dictionary demonstration file .	 14 minutes
The Scheduling Module	If you elect to utilize the Scheduling module in your REDCap project, you may then generate schedules based upon pre-defined events/time-points, after which the scheduled events get added to your project calendar. Scheduling may be done in conjunction with proper data collection, or scheduling may be performed on its own.	 6 minutes

Types of REDCap Projects

There are several flavors of REDCap projects to choose from as you begin thinking about building your own project. Each type of project has its advantages and disadvantages, and may fit the specific needs better of one type of project over another. Please review the different types below, and you may even view a live example of each project type in action or view a short video about it.

Project Type	Description	View Example	Watch Video
Traditional Project (classic model with data entry forms)	The traditional project is typically used for the primary purpose of simple data collection and data export. Multiple data collection instruments are often defined. While this model is not specifically aimed for capturing data in a longitudinal fashion, it can sometimes be utilized this way (with some limitations).		 5 minutes
Single Survey Project	A single survey project is a REDCap project with only one data collection instrument, which will be utilized as a survey where data will be entered by survey respondents.		 24 minutes
Longitudinal Project	A project with the Longitudinal module enabled allows one to utilize data collection instruments multiple times for any given project record/patient so that the same data may be captured over and over		

REDCap - Mozilla Firefox

File Edit View History Bookmarks Tools Help

REDCap

https://redcap.iths.org/redcap/index.php?action=help

UW Libraries Proxy B... 94.9 KUOW: Seattle's... PubMed Home #6 Avenue Flats CAT study data entry Overview | TREE Dist... XC Cabin Creek (xcca... Commons Status Que...

brguth@washington.edu | My Profile | Log out

REDCap™

Home My Projects Request New Project Training Resources **Help & FAQ** Send-It

Site Help

REDCap FAQs

- General
- Project Setup / Design
- Online Designer / Data Dictionary
 - Calculated Fields
 - Branching Logic
- Data Entry
- Survey
- Applications
- Shared Library
- Post Production Changes
- Data Quality Module

General

Q: How much experience with programming, networking and/or database construction is required to use REDCap?

No programming, networking or database experience is needed to use REDCap. Simple design interfaces within REDCap handle all of these details automatically.

Q: Can I still maintain a paper trail for my study, even if I use REDCap?

All surveys and forms can be downloaded as a universal PDF file to be printed and filed.

Q: How can I view my data?

You can use the **Report Builder** tool to view your data. The Report Builder tool serves as the search engine of a REDCap database. The Report Builder queries the database in real time and displays the resulting data in table format. Variables are listed in columns and individual records are displayed in rows.

To create a report simply assign a name and choose the variables that you want to report on. You can set limiters for the variables you select. Note that when you save the report you are saving the combination of variables that you queried. The actual data is not affected.

Q: Can I access REDCap on Android devices, e.g. HTC phones, Galaxy tab etc.?

REDCap can be used on mobile devices in a limited way. It displays a special format for data entry forms when these are accessed on mobile devices. You can select a project, select a form and do data entry or review data that was previously entered. To see what it looks like on a smart phone add "Mobile" after the version number in the URL as follows (substituting your redcap URL and version number): https://your.redcap.url/redcap_v4.2.2/Mobile.

Q: Why can't I pinch in/pinch out when I view REDCap on an iphone?

On iphone and ipad pinch/zoom works correctly on regular REDCap pages. There are two modes where pinch/zoom does not work. These are the survey page on the iphone or the mobile REDCap view. However the Desktop Site view of REDCap pages should render normally and allow zoom.

Project Setup / Design

Q: What types of projects can I create?

Starting with v4.0, you can create surveys, database projects (data entry forms) and single survey + data entry forms projects, in which new records can be initiated with a survey response and additional data can be added to the response on follow-up data entry forms.

Data entry

- Develop a protocol and follow it
- Storage of files
 - secure, organized, accessible to those who need access
- Quality control
 - reviewed by person filling out form
 - reviewed by second person in clinic
 - reviewed by data entry personnel before entry
- Forms should be corrected only by the person who completed the form, or a designated person
 - do not erase original entry; clearly record the correction and initial/date the entry

Data entry

- Movement of files
 - files should only be moved by designated personnel in a structured manner.
 - Movement of files should be logged (sending and receiving)
- Data entry should occur in a timely manner to avoid backlogs
- Duplicate entry is preferred
 - duplicate entry of a subset to validate data entry and identify problems
 - duplicate entry of every form can ensure accuracy, but can be time consuming

Barcodes



What is a barcode?

What can you do with a barcode?

Barcodes



=

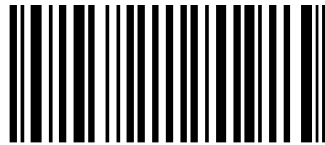


Barcodes

Symbology

Content: **1411000117**

Code 128



PDF 417



QR Code

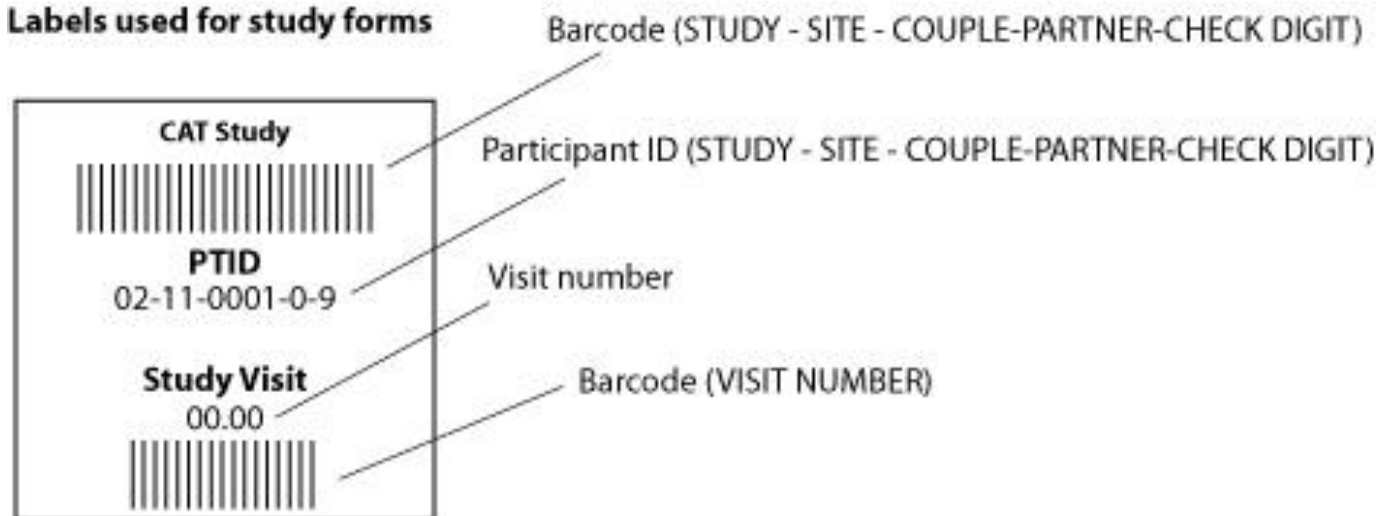


Data Matrix 2D



Barcodes and Labels

Labels used for study forms



Example specimen barcode:

02-11 - 9999 - 1 - 3 - 00.00 - 0101

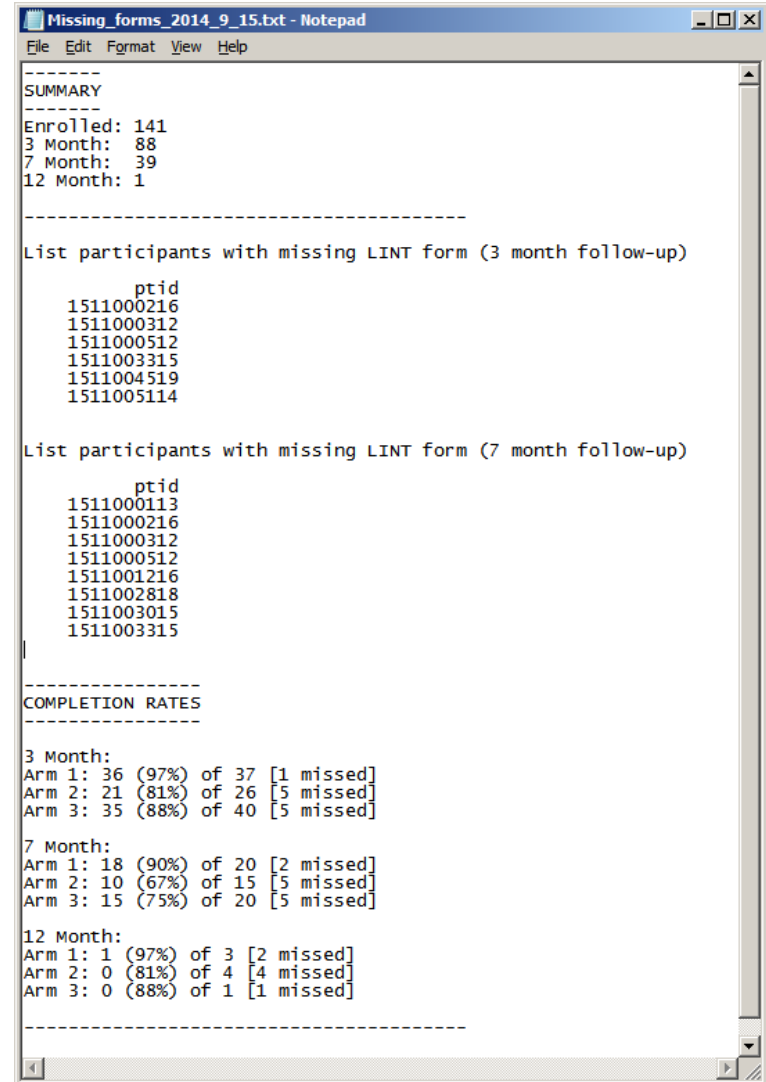
└───┘	-	└───┘	-	└─┘	-	└─┘	-	└───┘	-	└───┘
study and site number		couple number		participant indicator		check digit		visit number		specimen type code

Barcodes

- Speed up data entry
- Reduce transcription errors
- Improve storage of specimens

Monitor Progress

- Monitor study progress in real-time
 - Missing forms / visits
 - Identify data entry errors
 - Identify enrollment issues
- Automate as much as possible
- Disseminate to relevant personnel



```
Missing_forms_2014_9_15.txt - Notepad
File Edit Format View Help
-----
SUMMARY
Enrolled: 141
3 Month: 88
7 Month: 39
12 Month: 1
-----
List participants with missing LINT form (3 month follow-up)

      ptid
1511000216
1511000312
1511000512
1511003315
1511004519
1511005114

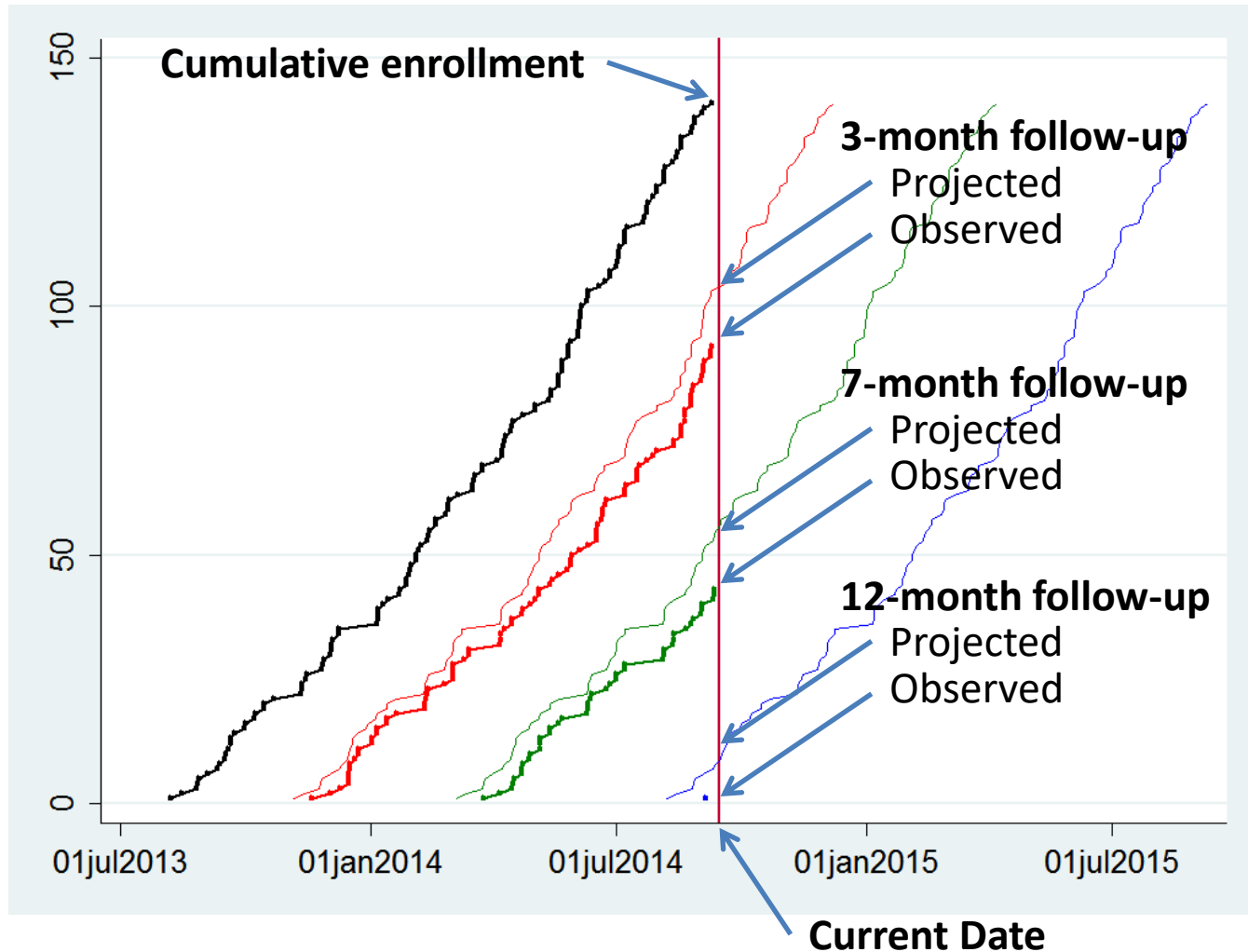
List participants with missing LINT form (7 month follow-up)

      ptid
1511000113
1511000216
1511000312
1511000512
1511001216
1511002818
1511003015
1511003315
|
-----
COMPLETION RATES
-----
3 Month:
Arm 1: 36 (97%) of 37 [1 missed]
Arm 2: 21 (81%) of 26 [5 missed]
Arm 3: 35 (88%) of 40 [5 missed]

7 Month:
Arm 1: 18 (90%) of 20 [2 missed]
Arm 2: 10 (67%) of 15 [5 missed]
Arm 3: 15 (75%) of 20 [5 missed]

12 Month:
Arm 1: 1 (97%) of 3 [2 missed]
Arm 2: 0 (81%) of 4 [4 missed]
Arm 3: 0 (88%) of 1 [1 missed]
-----
```

Monitor Progress



Data Storage: Back-up

- Have a plan
- Make a schedule
- Test back-ups
- Store off-site
- Use multiple types of media
- “Outsource” your back-ups

Data cleaning

- Garbage in = garbage out
 - the quality of your data depends on thorough data cleaning
- Develop a plan
- Don't fall behind
- Main categories
 - missing data
 - impossible values
 - inconsistencies
 - transcription errors

Data cleaning

- Changes should NOT be made to the raw data set
- All changes should be documented
- Using “code” is preferred

SQL:

```
UPDATE followup_medical_history_indices SET malaria =  
    'no' WHERE person_ptid = '0211004818' AND visit_code  
    = '0701';
```

Stata:

```
replace cd4_count = 437 if ptid == 211014613
```

Documentation

- Study protocols
- Data dictionaries
- Changes to questionnaires and data collection instruments
- Systematic problems identified during the study
- Changes to the database structure
- Data cleaning

You probably **won't remember what you did...
so **WRITE IT DOWN!****

Documentation: data code books

Form	Number	Question	Variable	Variable Type	Coding
SDEM	1	When were you born (if available)?	dob	DATE	
SDEM	1	OR what is your age?	age	SMALLINT	
SDEM	2	What is your gender?	gender	TINYTEXT	0 = MALE 1 = FEMALE 2 = Not listed
SDEM	3	Are you married?	married	TINYTEXT	0 = NO 1 = YES
SDEM	3a	Please specify the type of marriage	marriage_type	TINYTEXT	1 = TRADITIONAL 2 = CHURCH 3 = LEGAL 4 = OTHER
SDEM	3a	specify "other" marriage type	marriage_type_other	TINYTEXT	free entry
SDEM	3b	Do you have more than one wife/husband?	multiple_spouses	TINYTEXT	0 = NO 1 = YES
SDEM	4	How many times have you been pregnant?	pregn_number	TINYINT UNSIGNED	
SDEM	5	How many live births have you had?	live_birth_number	TINYINT UNSIGNED	
SDEM	6	How many still births have you had (child born lifeless)?	still_birth_number	TINYINT UNSIGNED	
SDEM	7	How many living children do you have?	children_living	TINYINT UNSIGNED	
SDEM	8	What is your ethnic group or tribe?	ethnic	TINYTEXT	free entry
SDEM	9	How many years of school did you complete?	school_years	TINYINT UNSIGNED	
SDEM	10	Do you own your own home?	own_home	ENUM	0 = NO 1 = YES
SDEM	10	What is your monthly rent?	rent	DECIMAL(8,2) UNSIGNED	
SDEM	11	Do you earn an income?	earn_income	TINYTEXT	0 = NO 1 = YES
SDEM	11a	What is your own monthly income in Kenyan shillings?	income_shill	DECIMAL(8,2) UNSIGNED	
SDEM	12	Does the participant live in a formal or an informal settlement?	residence	TINYTEXT	1 = INFORMAL 2 = FORMAL 3 = NOT SURE
SDEM	13a	Are you and your study partner married?	married_to_partner	TINYTEXT	0 = NO 1 = YES
SDEM	13b	Do you and your study partner live together?	live_with_partner	TINYTEXT NULL	0 = NO 1 = YES
SDEM	13b1	How long have you been living together? (years)	live_with_partner_years	SMALLINT UNSIGNED	
SDEM	13b1	How long have you been living together? (months)	live_with_partner_months	SMALLINT UNSIGNED	
SDEM	13c	How many living children do you have with the study partner?	children_with_partner	TINYINT UNSIGNED	

Documentation: data revisions

	A	B	C	D	E	F	G	H	I	J
1	Date requested	Requestor	PTID	Visit	Form	Change needed	Variable name	Date corrected	Corrected by	Comments
9	21-Oct-09	Anne/Rob	0211-0131-03	???	???	Issue came up during our conversation on how to fix the switched couples: this man is circumcised but the CRF says he is not circumcised.	NO CHANGE MADE	22-Oct-09	BLG	male_circumcised already set to
10	13-Oct-09	Priscilla	0211-0301-0-4	S400	Visit	This visit is not yet due was erroneously created ,kindly destroy the record .	record deleted	22-Oct-09	BLG	
11	15-Oct-09	Priscilla	0211-0340-1-1	Visit 2	IFPE	Confirm that the form was created.	NO CHANGE MADE	22-Oct-09	BLG	Form was entered on 15 Oct 200
12	15-Oct-09	Priscilla	0211-0083-0-5	Visit 0701	visit	Change the completion date to 30th September 2009	completion_date	22-Oct-09	BLG	
13	16-Oct-09	Priscilla	0211-0344-1-2	Visit 0100	visit	Change the completion date to 16th July 2009	completion_date	22-Oct-09	BLG	
14	16-Oct-09	Priscilla	0211-0344-1-2	Visit 0100/0	IFSX, IFPE, FSHM	The information in the CRFs appearing as Visit 0100 is actually for visit 0200 and vice versa				
15	16-Oct-09	Priscilla	0211-0126-0-8	Visit 0700	visit	Change the completion date to 8th October 2009	NO CHANGE MADE	22-Oct-09	BLG	completion_date already set to
16	16-Oct-09	Priscilla	0211-0126-0-8	Visit 0800	visit	This visit is not yet due was erroneously created ,kindly destroy the record .	record deleted	22-Oct-09	BLG	
17	16-Oct-09	Priscilla	0211-0261-1-9	Visit 0300	visit	Change the completion date to 25th June 2009	completion_date	22-Oct-09	BLG	
18	16-Oct-09	Priscilla	0211-0233-1-0	Visit 0300	visit	Change the completion date to 6th April 2009	NO CHANGE MADE	22-Oct-09	BLG	completion_date already set to
19	16-Oct-09	Priscilla	0211-0160-0-8	Visit 0600	visit	Change the completion date to 1st September 2009	completion_date	22-Oct-09	BLG	
20	16-Oct-09	Priscilla	0211-0015-0-4	Visit 0701	visit	Change the completion date to 19th August 2009	completion_date	22-Oct-09	BLG	
21	16-Oct-09	Priscilla	0211-0388-1-2	Visit 0100	visit	Change the completion date to 10th September 2009	completion_date	22-Oct-09	BLG	
22	16-Oct-09	Priscilla	0211-0326-0-8	Visit 0200	visit	Change the completion date to 22nd September 2009	completion_date	22-Oct-09	BLG	PTID should be 0211-0326-0-0
23	16-Oct-09	Priscilla	425	Visit 0000	visit	Change the completion date to 10th August 2009	NO CHANGE MADE	22-Oct-09	BLG	completion_date already set to
24	16-Oct-09	Priscilla	0211-0014-1-3	Visit 0701	visit	Change the completion date to 24th August 2009	completion_date	22-Oct-09	BLG	
25	16-Oct-09	Priscilla	0211-0399-1-0	Visit 0000	visit	Change the completion date to 30 June 2009	completion_date	22-Oct-09	BLG	
26	16-Oct-09	Priscilla	0211-0048-1-8	Visit 0701	IFMH-1	Q4-6 should be 'NO'	malaria malaria_diagnosed malaria_treated	26-Oct-09	BLG	only malaria, malaria_diagnose and malaria_treated changed
27	16-Oct-09	Priscilla	0211-0048-1-8	Visit 0701	IFMH	Q15 should be 'NO'	seprtrin seprtrin_start	26-Oct-09	BLG	
28	15-Oct-09	Priscilla	0211-0249-1-3	Visit 0400	IFPE	Confirm that the form was created.	NO CHANGE MADE	26-Oct-09	BLG	Form was entered on 10 Sept 200
29	16-Oct-09	Priscilla	0211-0325-1-0	Visit 0200	IFPE	Q15 should be 'YES'	NO CHANGE MADE	26-Oct-09	BLG	pap_collected already set to 'yes
30	16-Oct-09	Priscilla	0211-0018-1-5	Visit 0800	IFPE	Q15 should be 'YES'	pap_collected	26-Oct-09	BLG	
31	16-Oct-09	Priscilla	0211-0104-0-2	Visit 0600	PFPE	Q13-15 should be 'NOT EXAMINED'				PLEASE CONFIRM PTID AND FORM TO CHANGE. THE PTID GIVEN IS FOR A PARTNER, BUT THE FORM TO CHANGE IS FOR INDEX PARTICIPANTS.
32	16-Oct-09	Priscilla	0211-0394-0-4	Visit 0100	PFPE	Q13-14 should be 'NO' and Q15 Should be 'YES'				PLEASE CONFIRM PTID AND FORM TO CHANGE. THE PTID GIVEN IS FOR A PARTNER, BUT THE FORM TO CHANGE IS FOR INDEX PARTICIPANTS.
33	16-Oct-09	Priscilla	0211-1057-99	visit 9900	SCRN	Change referring VCT to BARAKA				

Documentation: data revisions

The screenshot shows the REDCap Logging interface. The left sidebar contains a navigation menu with the 'Logging' option circled in red. The main content area displays the 'Logging' module with a description and a table of data changes.

REDCap™
Logged in as **brguth@washington.edu**
Log out
My Projects
Project Home
Project Setup
Project status: **Development**

Data Collection [Edit instruments](#)

- Record Status Dashboard**
- View data collection status of all records
- Add / Edit Records**
- Create new records or edit/view existing ones

Applications

- Calendar
- Data Exports, Reports, and Stats
- Data Import Tool
- Data Comparison Tool
- Logging**
- Field Comment Log
- File Repository
- User Rights and DAGs
- E-signature and Locking Mgmt
- Data Quality
- ITHS REDCap User Mailing List
- Free REDCap Classes
- ITHS REDCap (User) FAQ

Help & Information

- Help & FAQ

ITHS | Institute of Translational Health Sciences
Accelerating Research. Improving Health.

University of Washington Seattle
Institute of Translational Health Science (ITHS)

REDCap Excercise

Logging [Download entire logging record to Microsoft Excel \(CSV\)](#)

This module lists all changes made to this project, including data exports, data changes, and the creation or deletion of users.

Filter by event: All event types (excluding page views)
Filter by user name: All users
Filter by record: All records
Displaying events (by most recent): 1 - 31
Filter by time range from [] to []

Time / Date	Username	Action	List of Data Changes OR Fields Exported
09/15/2014 2:48pm	brguth@washington.edu	Updated Record 2 (Baseline)	cd_cd4_spec_collect_date = '2014-09-15', cd_cd4_assay_date = '2014-09-15', cd_cd4_count = '12', cd_cd4_pct = '12', cd4r_complete = '2'
09/15/2014 2:47pm	brguth@washington.edu	Updated Record 2 (Baseline)	at_ccc_likely = '33', at_art_benefit(1) = checked, at_art_benefit(6) = checked, attd_complete = '0'

Tips and Tricks

- Prepare for some detective work

ptid	visit_date	visit_code	time_stamp	
02-11-0003-1-7	05-01-2012	0	05-05-2012-10:13:17	
02-11-0003-1-7	08-05-2012	1	08-07-2012-09:05:19	96
02-11-0003-1-7	11-02-2011	2	11-04-2012-14:21:41	-277 ←
02-11-0003-1-7	05-01-2013	3	05-07-2013-12:02:22	546 ←
02-11-0003-1-7	02-03-2013	4	02-06-2013-15:33:58	-87
02-11-0030-1-5	10-03-2012	0	10-06-2013-14:14:42	
02-11-0030-1-5	01-04-2013	1	01-05-2012-13:21:18	93
02-11-0030-1-5	04-02-2013	2	04-05-2013-16:22:38	88
02-11-0030-1-5	07-01-2013	3	07-03-2013-10:15:47	90
02-11-0030-1-7	08-02-2013	5	08-04-2013-11:04:31	32 ←

Tips and Tricks

- Prepare for some detective work
- Incorporate redundancy
- Anticipate reports
- Expect the unexpected

Other Forms of Data Entry

- Electronic data capture
- Mapping

Electronic Data Capture



Handheld computers
Tablets
Smart Phones



Audio Computer Assisted Self-Interview (ACASI)

REDCap, Open Data Kit, etc.



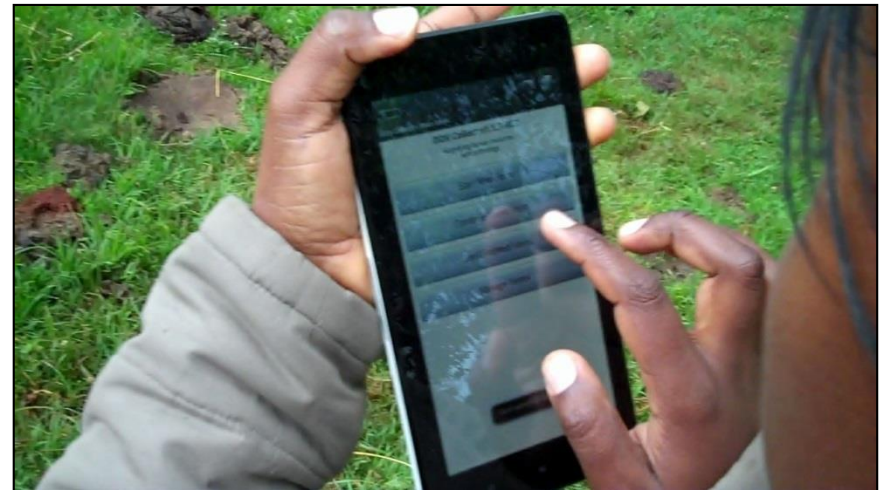
Desktop and mobile versions



Open source (free) platform for electronic data capture

<http://opendatakit.org/>

OPEN DATA KIT



Source: www.kiva.org/updates/fellows/2012/09/12/technology-in-the-field-the-future-of-microfinance

REDcap versus ODK

REDcap Mobile App

Pros

- Designed for epi study designs
- Strong project management
- Easy setup
- Integrates with standard entry
- HIPPA compliant

Cons

- Designed for epi study designs
- Limited error checking logic
- Poor user interface
- Limited control of user rights
- Some data synchronization problems

ODK

Pros

- High degree of flexibility
- Flexible error checking logic
- Excellent user interface
- Accommodates broad range of data types

Cons

- High degree of flexibility
- HIPPA compliance not guaranteed
- Setup/administration more complicated
- More challenging data management
- Longitudinal records not possible

Capturing Geographic Data

Map Satellite Hybrid

Participant ID

Visit Number

Participant Residence: Please click on the map where the participant lived at study enrollment or followup to set Lon/Lat

Longitude

Latitude

Map data ©2011 Google, Tracks4Africa - Terms of Use

Summary

- Plan your data management system ahead of time
- Tailor data management to the study
- Data entry should be timely, efficient, and accurate
- Data cleaning is critical
- Think carefully about how data will be distributed