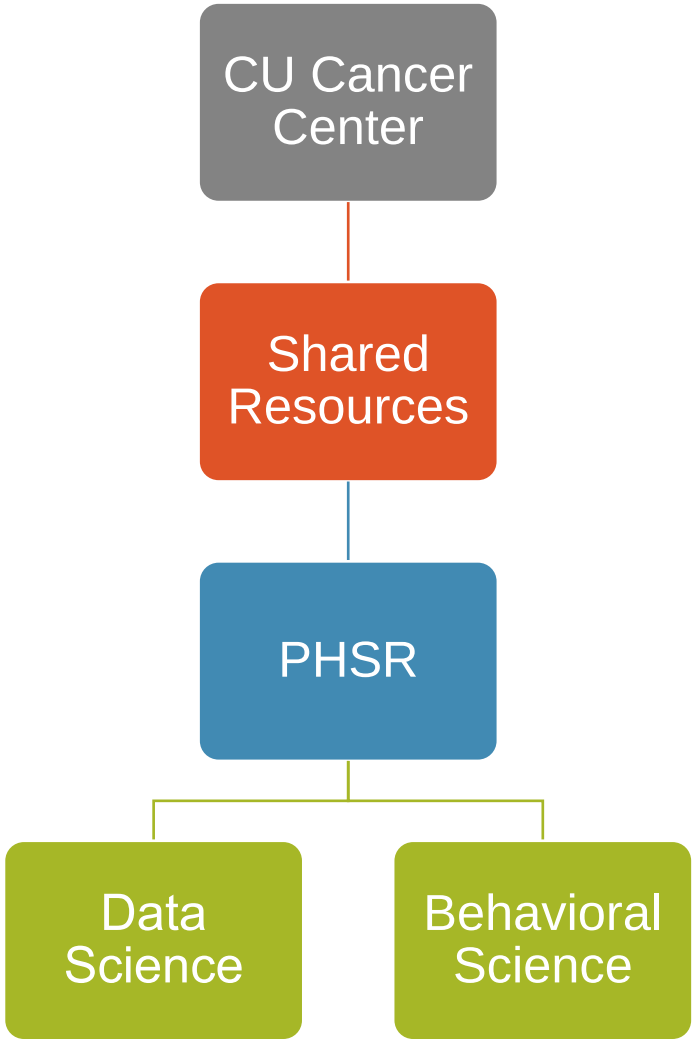
University of Colorado **Anschutz Medical Campus**

REDCap: From Programming to Publication

PHSR Behavioral Science Seminar
November 2024

Overview

- (Re)Introduction to PHSR
- REDCap Basics
- Example projects using REDCap
- Active REDCap Projects
- Questions



Population Health Shared Resource

Population Data Science Team:

Uses large population-based datasets to conduct cancer health services research and policy impact analyses.

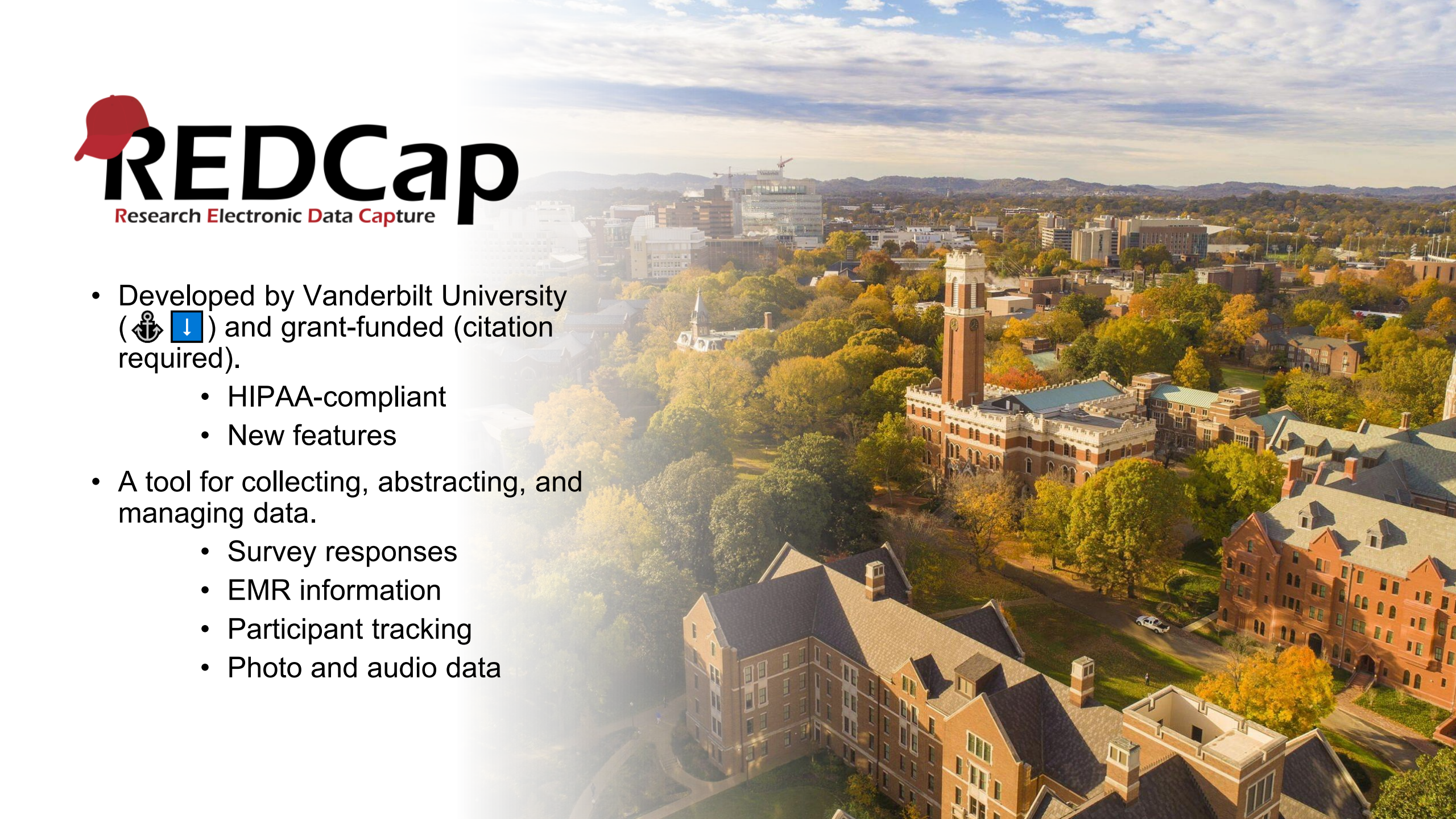
Behavioral Science Team:

Uses patient and community-focused methods to conduct research related to delivery of healthcare, behavioral interventions, and patient-reported outcomes.

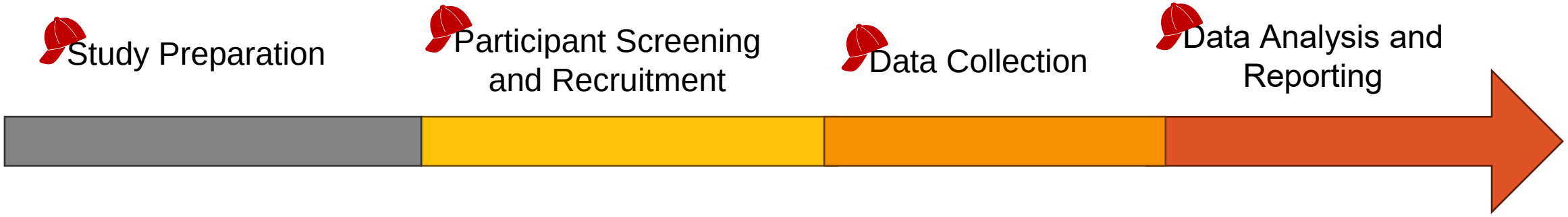
REDCap

Research Electronic Data Capture

- Developed by Vanderbilt University (⚓ ↓) and grant-funded (citation required).
    - HIPAA-compliant
    - New features
- A tool for collecting, abstracting, and managing data.
    - Survey responses
    - EMR information
    - Participant tracking
    - Photo and audio data



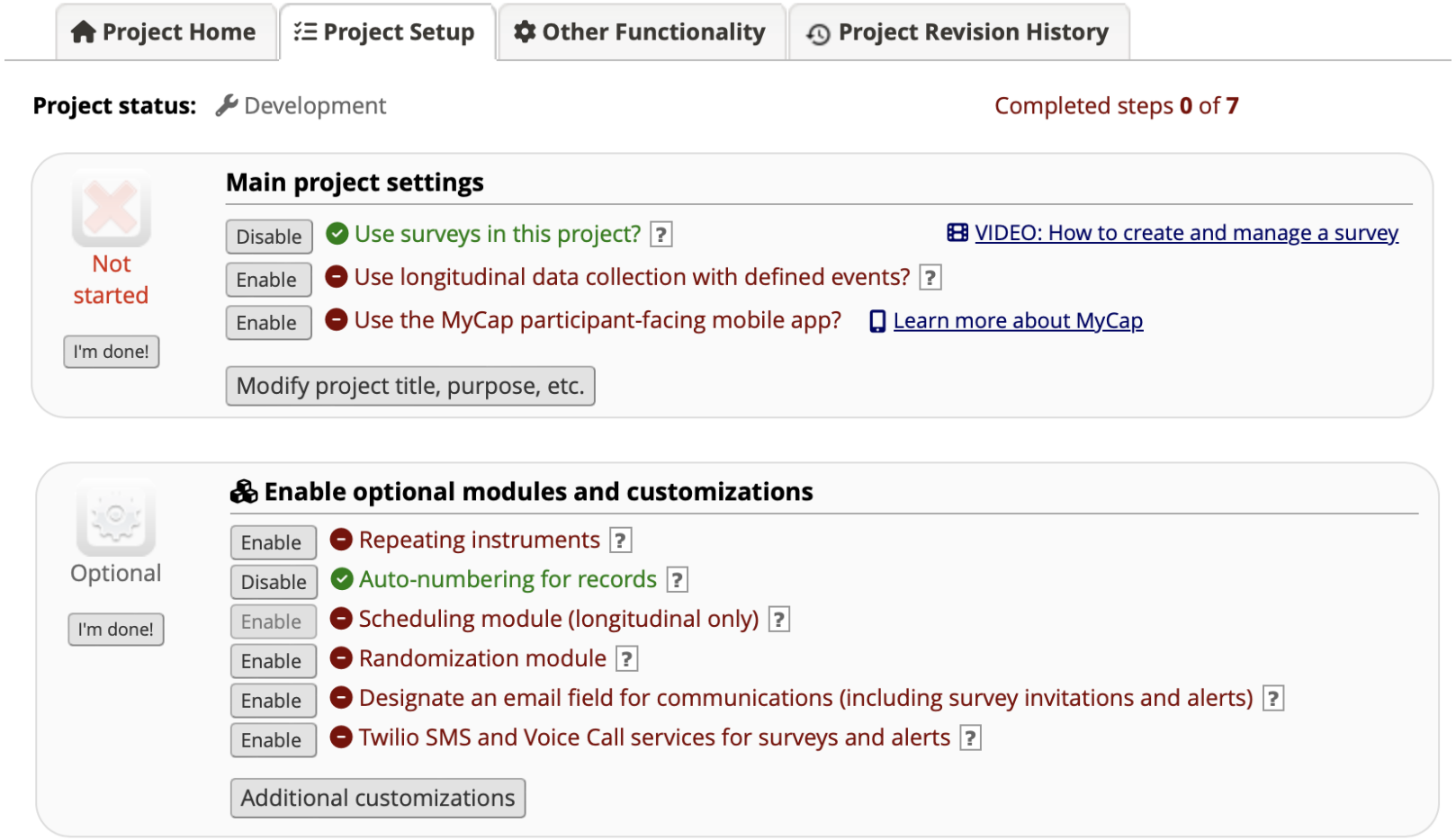
Project Timeline



REDCap Basics

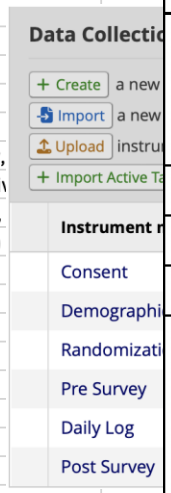
REDCap Vocab

- Project
- Project Set-up



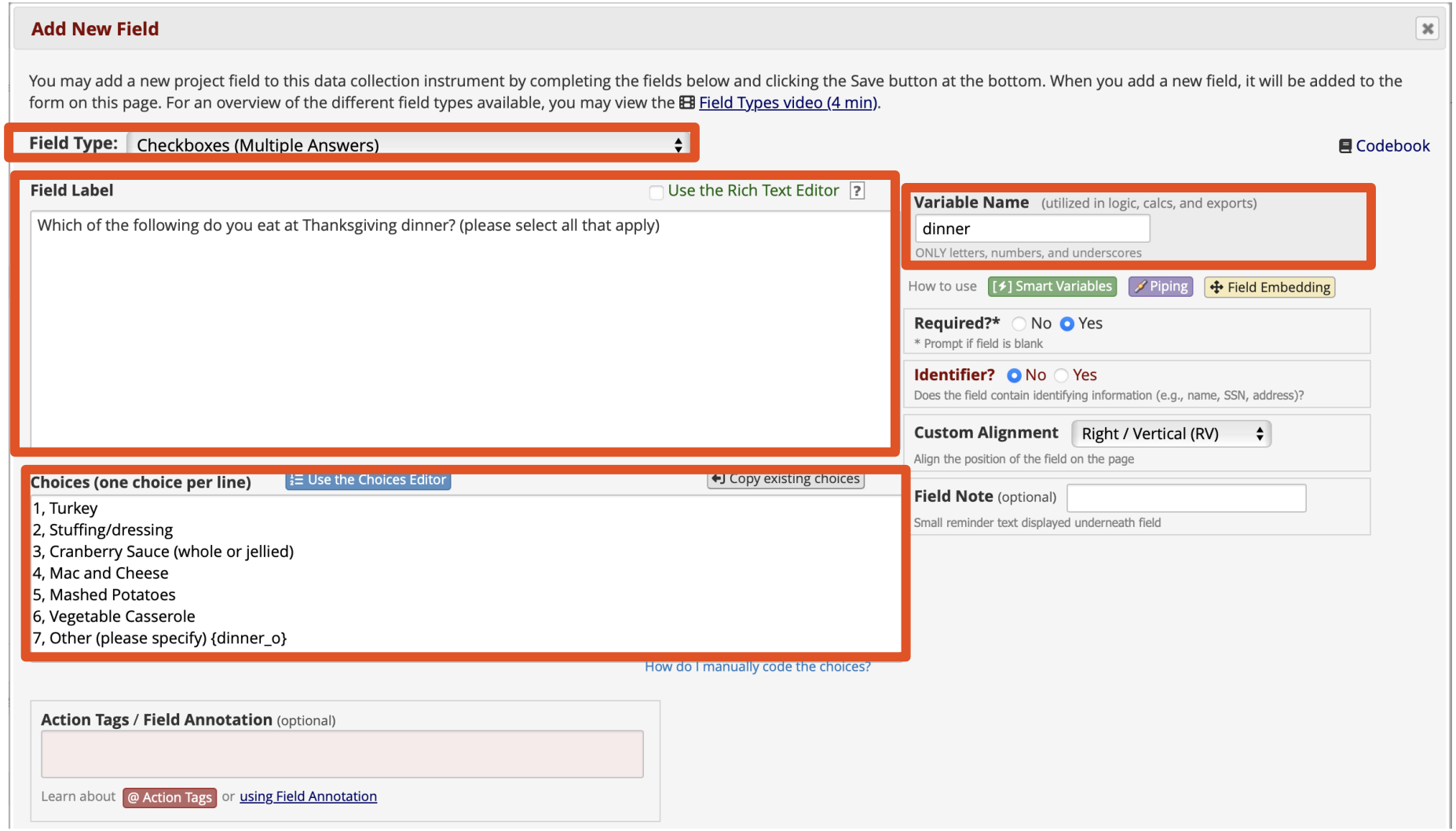
Designer

	A	B	C	D	E	F	G	H	I	J
1	Variable / Fie	Form Name	Section Heac	Field Type	Field Label	Choices, Cal	Field Note	Text Validatic	Text Validatic	Text Va
2	record_id	demographics		text	Record ID					
3	consent	demographics		yesno	consent					
4	mrn	demographics		text	MRN					
5	email	demographics		text	Email			email		
6	date	demographics		text	Today's date			date_dmy		
7	gender	demographics		radio	Gender	Man, Man | Woman, Woman | Non-Binary,				
8	race	demographics		radio	Race	LA10608-0, American Indian or Alaska Nativ				
9	source	demographics		dropdown	Source	1, Flyer | 4, Social Media | 2, Clinician | 3,				
10	randomizatic	randomization		radio	Arm	1, Intervention (Arm 1) | 0, Control (Arm 2)				
11	test	pre_survey		notes	Test					
12	log_date	daily_log		text	Today's date			date_mdy		
13	daily_log	daily_log		notes	Daily log					
14	uuid	daily_log		text	UUID					
15	startdate	daily_log		text	Start Date					
16	enddate	daily_log		text	End Date					
17	scheduledat	daily_log		text	Schedule Date					
18	status	daily_log		dropdown	Status	0, Deleted | 1, Completed | 2, Incomplete				
19	supplementa	daily_log		notes	Supplemental Data (JSON)					
20	serializedres	daily_log		file	Serialized Result					
21	end_date	post_survey		notes	Date					
22	test_post	post_survey		radio	test post	1, a | 2, b | 3, c | 4, d				
23										



	#	Variable / Field Name	Field Label *Field Note*	Field Attributes (Field Type, Validation, Choices, Calculations, etc.)
Instrument: **Demographics** (demographics) Enabled as survey				
	1	record_id	Record ID	text
	2	consent	consent	yesno 1 Yes 0 No
	3	mrn	MRN	text
	4	email	Email	text (email)
	5	date	Today's date	text (date_dmy), Identifier
	6	gender	Gender	radio Man: Man Woman: Woman Non-Binary: Non-Binary Transgender: Transgender 1: None of these describe me. I would like to consider

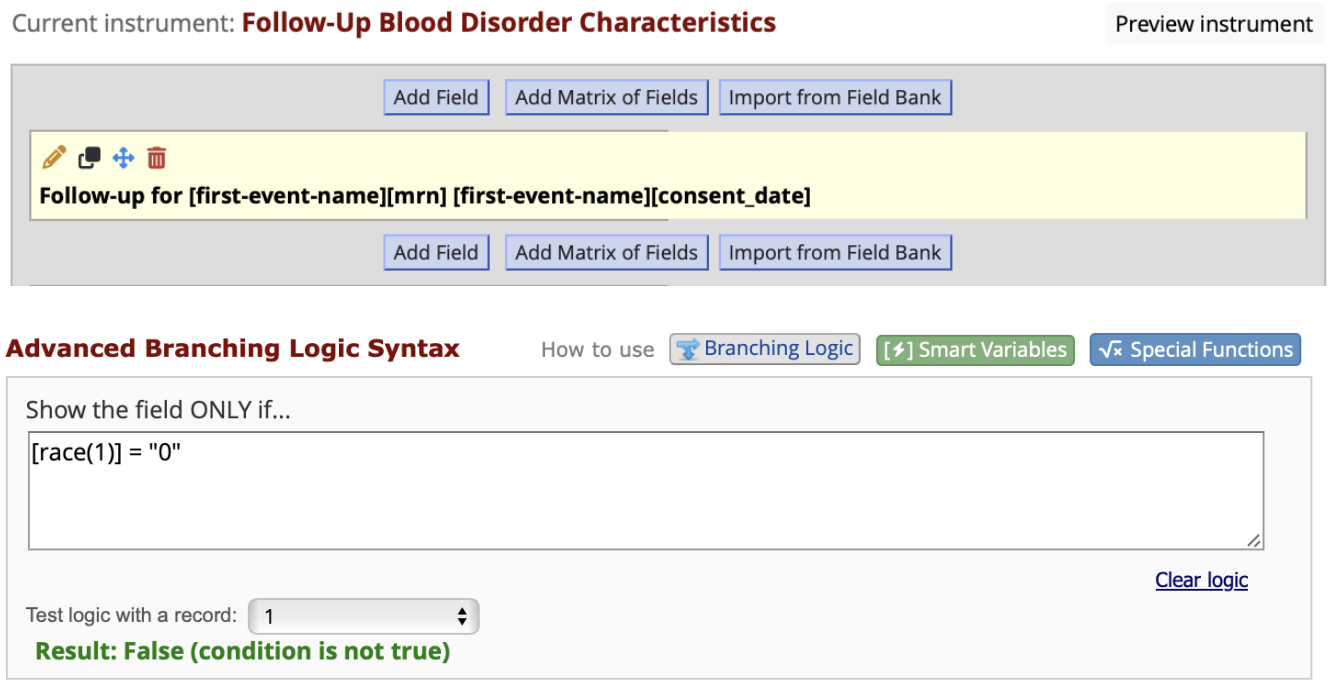
Field Programming



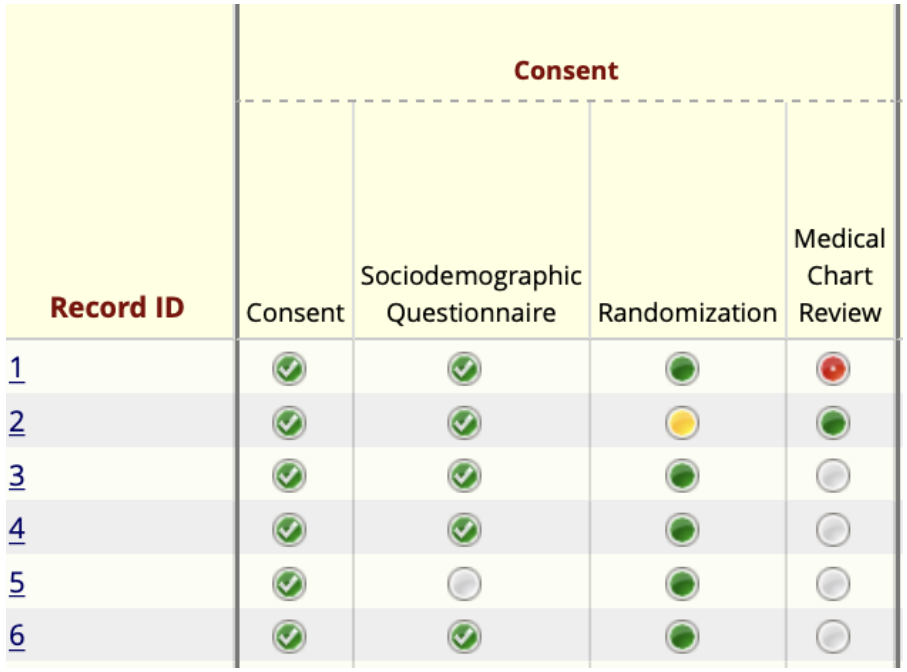
REDCap Vocab

- Events (longitudinal)
- Piping
- Logic
  - Branching
  - Smart Variable
  - Special Function

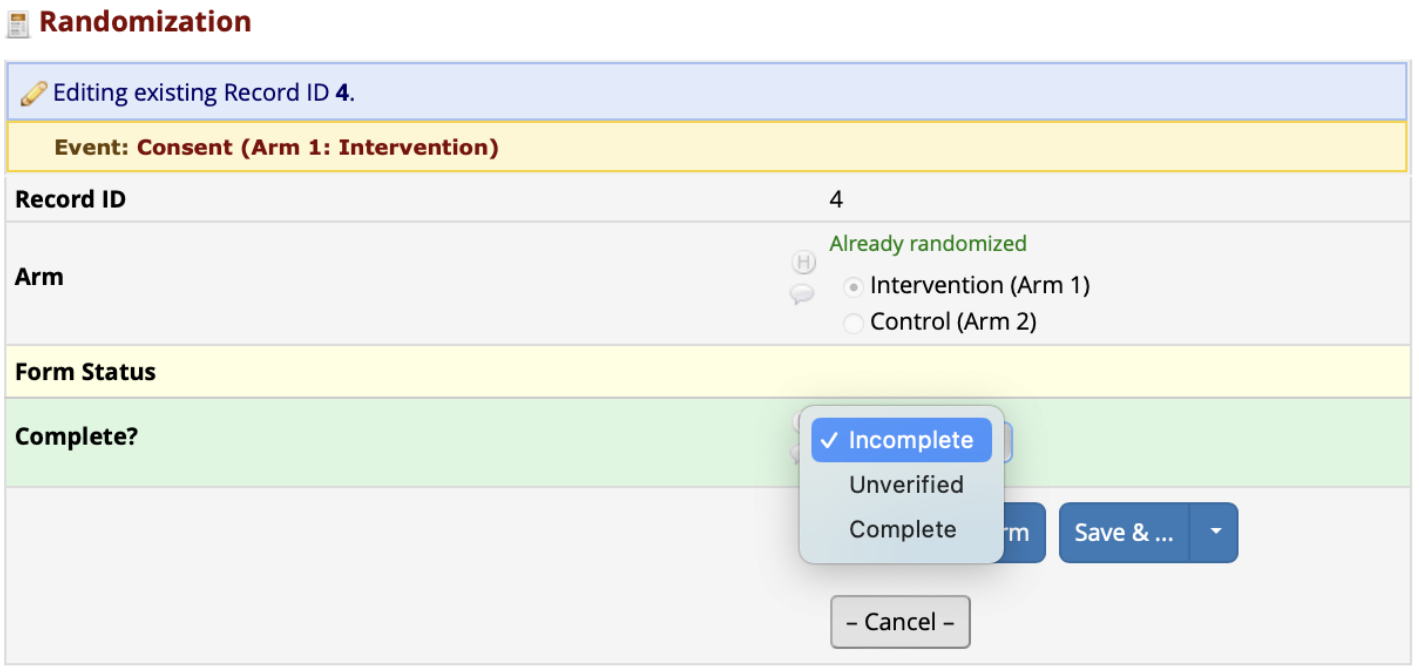
Data Collection Instrument	Consent (1)	Pre (2)	Post (3)
Consent (survey)	⬇		
Demographics (survey)	✓		
Randomization	✓		
Pre Survey (survey)		✓	
Daily Log (survey)		✓	
Post Survey (survey)			✓



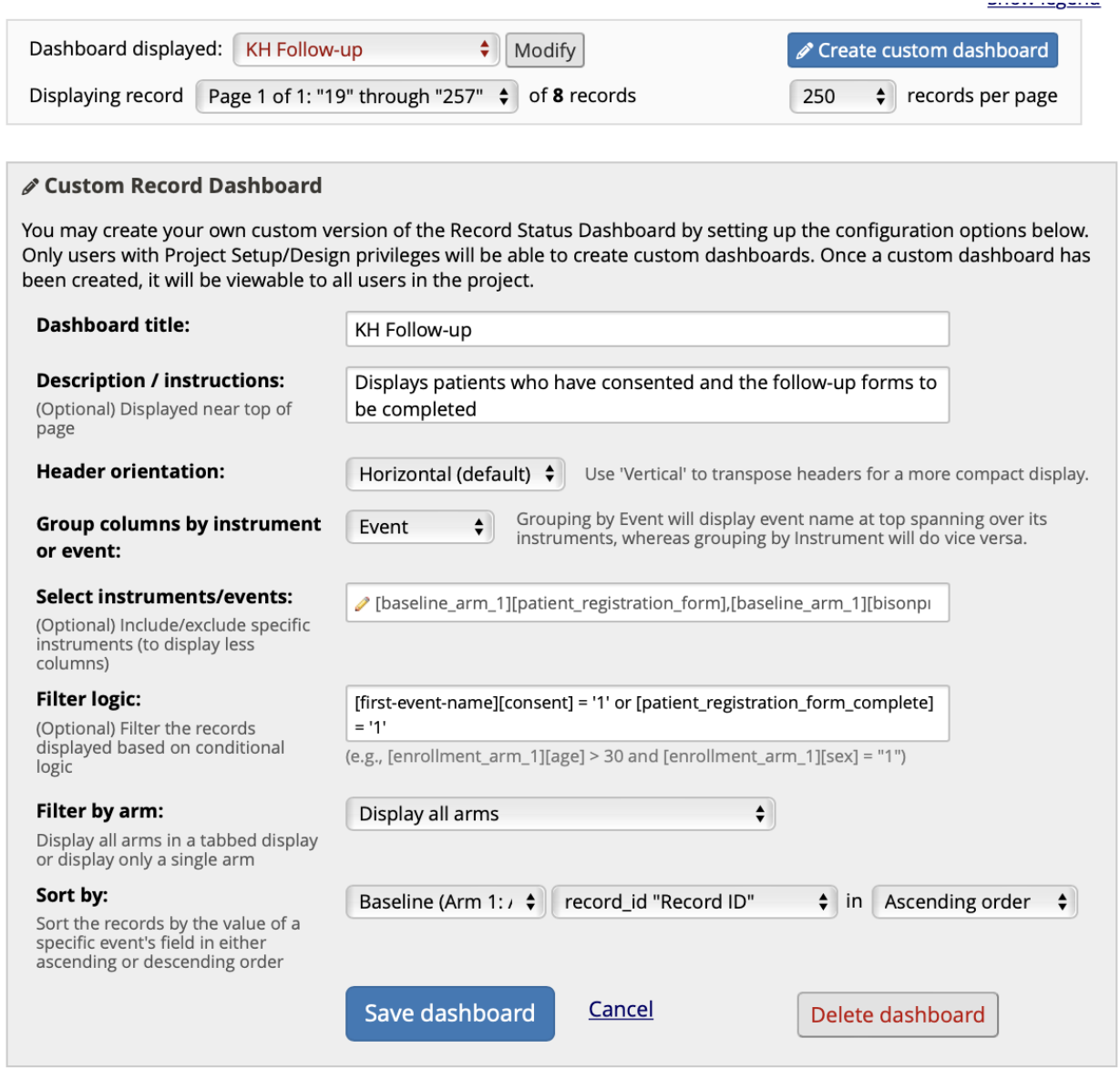
Record Status Dashboard



Record ID	Consent			
	Consent	Sociodemographic Questionnaire	Randomization	Medical Chart Review
1	✓	✓	●	●
2	✓	✓	●	●
3	✓	✓	●	○
4	✓	✓	●	○
5	✓	○	●	○
6	✓	✓	●	○



Custom Record Dashboard



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Example Project #1

Research Team wants to interview and collect data using the FACT instruments at ***three time points*** *from* ***men over 65 with prostate cancer who opted not to pursue treatment at time of diagnosis and live with a pet****.*

How can REDCap help?

- Track progress and record data from EMR screening
- Collect longitudinal data for each participant linked to a single record ID
- Store interview audio files and transcripts

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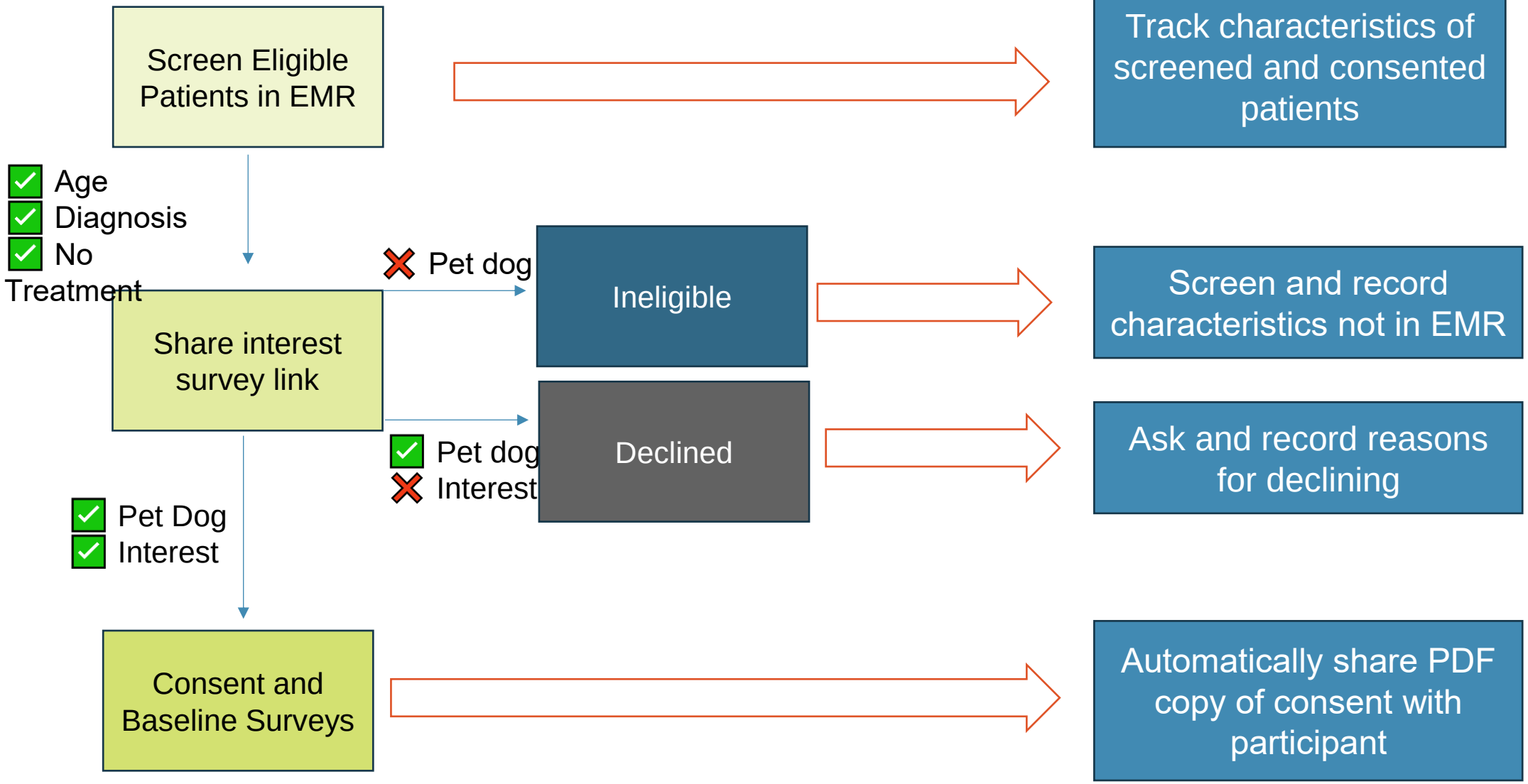
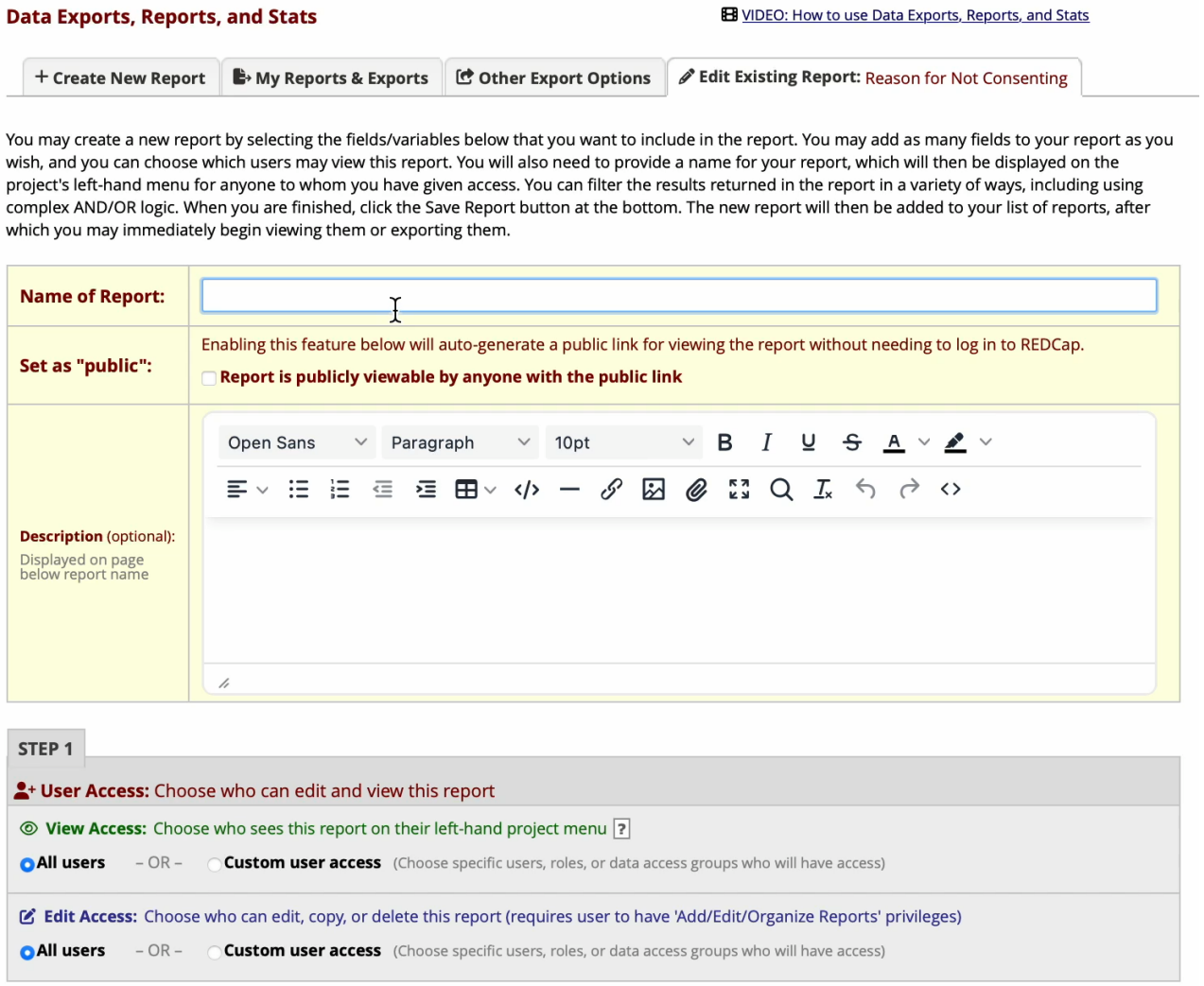
Accrual Flowchart



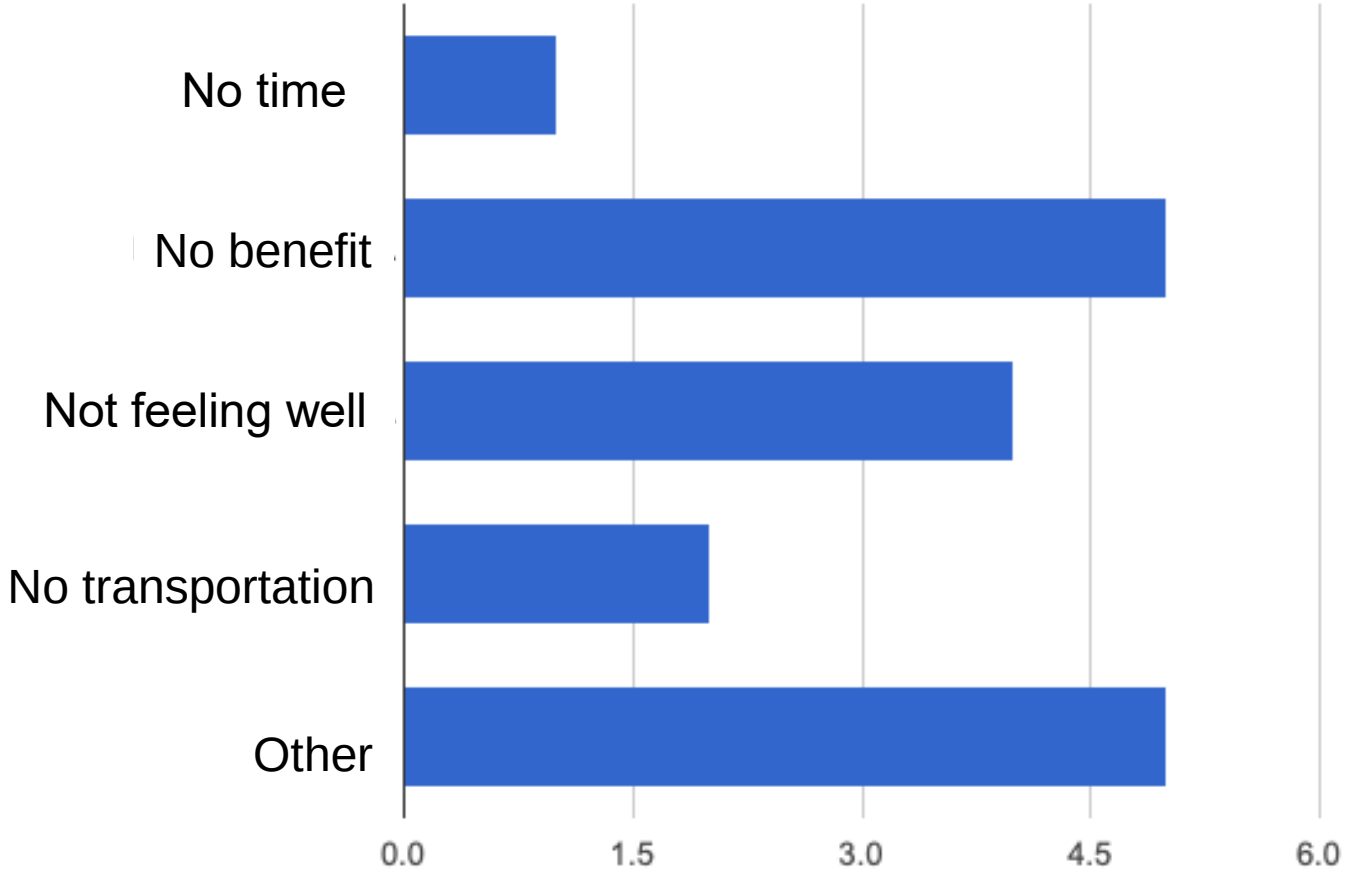
REDCap Benefits

- Track characteristics of screened and consented patients
- Screen and record characteristics not in EMR
- Ask and record reasons for declining
- Automatically share PDF copy of consent with participant

Reports


Data Exports, Reports, and Stats
VIDEO: How to use Data Exports, Reports, and Stats
+ Create New Report
My Reports & Exports
Other Export Options
Edit Existing Report: Reason for Not Consenting
You may create a new report by selecting the fields/variables below that you want to include in the report. You may add as many fields to your report as you wish, and you can choose which users may view this report. You will also need to provide a name for your report, which will then be displayed on the project's left-hand menu for anyone to whom you have given access. You can filter the results returned in the report in a variety of ways, including using complex AND/OR logic. When you are finished, click the Save Report button at the bottom. The new report will then be added to your list of reports, after which you may immediately begin viewing them or exporting them.
Name of Report:
Set as "public":
Enabling this feature below will auto-generate a public link for viewing the report without needing to log in to REDCap.
Report is publicly viewable by anyone with the public link
Description (optional):
Displayed on page below report name
Open Sans
Paragraph
10pt
STEP 1
User Access: Choose who can edit and view this report
View Access: Choose who sees this report on their left-hand project menu
All users – OR – Custom user access (Choose specific users, roles, or data access groups who will have access)
Edit Access: Choose who can edit, copy, or delete this report (requires user to have 'Add/Edit/Organize Reports' privileges)
All users – OR – Custom user access (Choose specific users, roles, or data access groups who will have access)

Reports


No time
No benefit
Not feeling well
No transportation
Other
0.0
1.5
3.0
4.5
6.0

Example Project #2

*Research team is conducting a **large survey project** in which they intend to use **purposive sampling and community partnerships** in order to collect data regarding cancer risk factors and health behaviors*

How can REDCap help?

- Sharable public link with passcode
- Dashboard to track real-time accrual by variables of interest

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Project Dashboards

Dashboard title: Consented Participants

User access: Choose who sees this dashboard on their left-hand project menu
(Note: Users with Setup/Design privileges can still access all dashboards via the Project Dashboards page.)
All users – OR – **Custom user access** (Choose specific users, roles, or data access groups who will have access)

Set as "public": Enabling this feature below will auto-generate a public link for viewing the dashboard without needing to log in to REDCap.
Dashboard is publicly viewable by anyone with the public link
Public link: https://redcap.ucdenver.edu/surveys/?__dashboard=RYX4JR... Create custom link

Dashboard content:
Add any static or dynamic text to be displayed, including Smart Functions, Smart Tables, and Smart Charts.

Dashboard help:
Use the Wizard

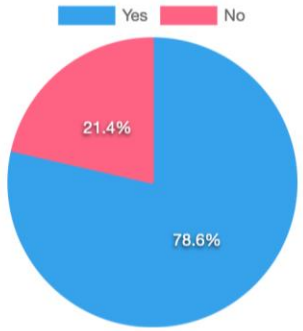
Open Sans | Heading 2 | 24pt

Consented
[pie-chart:consent:consent_arm_1]

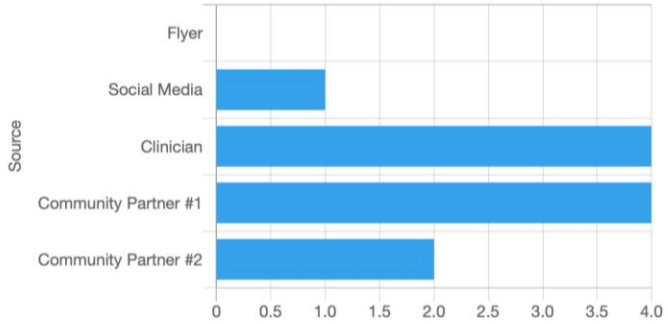
Consented by Source
[bar-chart:source:consent_arm_1]

Consented by Gender
[bar-chart:gender:consent_arm_1]

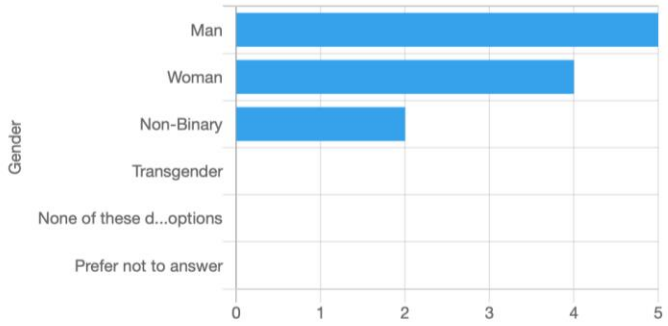
Consented



Consented by Source



Consented by Gender



Real Dashboard Programming

	Consented	Invited
Total	[aggregate-count:consent]	[aggregate-unique:participant_id:baseline_arm_1,baseline_screening_arm_2,week_prior_arm_2,baseline_arm_3]
Arm 1	[aggregate-count:consent:baseline_arm_1]	[aggregate-unique:participant_id:baseline_arm_1]
Arm 2	[aggregate-count:consent:baseline_screening_arm_2,week_prior_arm_2]	[aggregate-unique:participant_id:baseline_screening_arm_2,week_prior_arm_2]
Arm 3	[aggregate-count:consent:baseline_arm_3]	[aggregate-unique:participant_id:baseline_arm_3]

Example Project #3

Clinical research team wants ***to collect well-being data*** *as* ***part of a new exercise and counseling program*** *for people at high-risk for cancer. A clinician on the team would like to be* ***alerted if anyone scores low on the scales so that help can be provided****.*

How can REDCap help?

- Library of validated tools for measuring well-being, some are auto-scoring
- Participant list with contact preference and links that can also be shared in the EMR messaging system
- Automatic alerts if a participant meets certain criteria

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Participant Lists

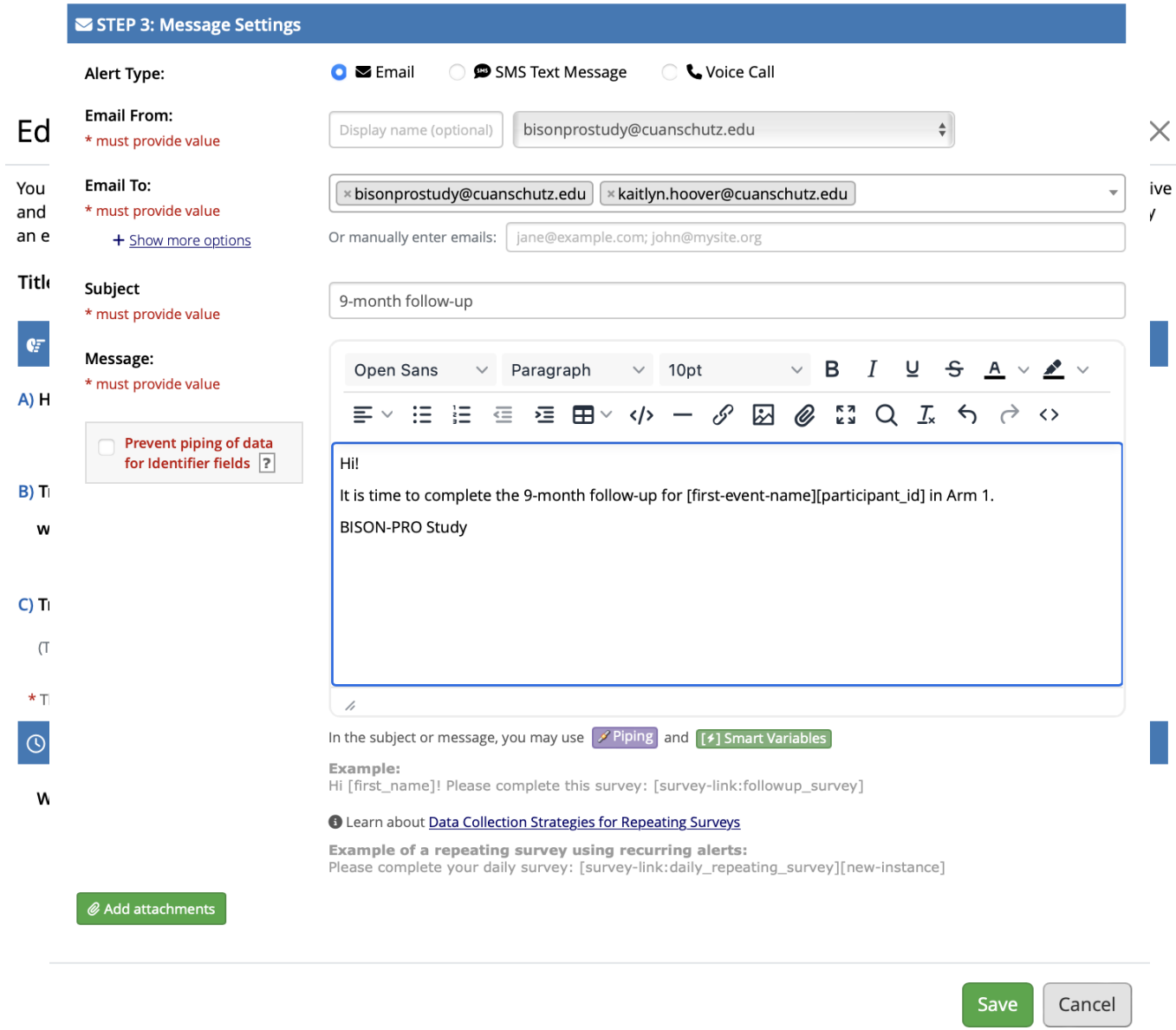
Participant List belonging to **[Initial survey] "Consent Form" - Consent**

Remove all participants

Displaying 1 - 18 of 18 | Add participants | Compose Survey Invitations | Export list

Email	Phone	Record	Participant Identifier (optio Disable	Invitation preferenc	Responded?	Invitation Scheduled?	Invitation Sent?	Link	Survey Access Code and QR Code
1) kaithoov@gmail.com	770-238-7144					-		-	-
2) kaithoov@gmail.com	770-238-7144					-		-	-
3) kaithoov@gmail.com	770-238-7144					-			
4) kaithoov@gmail.com	770-238-7144					-			
1) kaitlyn.hoover@cuanschutz.edu						-		-	-
2) kaitlyn.hoover@cuanschutz.edu						-		-	-
3) kaitlyn.hoover@cuanschutz.edu	770-238-7144					-		-	-

Alerts


STEP 3: Message Settings
Alert Type:
Email
SMS Text Message
Voice Call
Email From:
* must provide value
Display name (optional)
bisonprostudy@cuanschutz.edu
Email To:
* must provide value
bisonprostudy@cuanschutz.edu
kaitlyn.hoover@cuanschutz.edu
+ Show more options
Or manually enter emails:
jane@example.com; john@mysite.org
Subject
* must provide value
9-month follow-up
Message:
* must provide value
Open Sans
Paragraph
10pt
Hi!
It is time to complete the 9-month follow-up for [first-event-name][participant_id] in Arm 1.
BISON-PRO Study
Prevent piping of data for Identifier fields
In the subject or message, you may use Piping and [ ] Smart Variables
Example:
Hi [first_name]! Please complete this survey: [survey-link:followup_survey]
Learn about Data Collection Strategies for Repeating Surveys
Example of a repeating survey using recurring alerts:
Please complete your daily survey: [survey-link:daily_repeating_survey][new-instance]
Add attachments
Save
Cancel

ACTIVE PROJECTS

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BRIDGE Study

PIs: Dr. Randy Miles, MD and Dr. Jamie Studts, PhD

Surveys and interview with women who receive mammography and may be eligible for lung cancer screening, meaning they:

- **Are between the ages of 50 and 80**
- **Have a 20 pack-year or more smoking history**
- **Currently smoke or have quit within the past 15 years**

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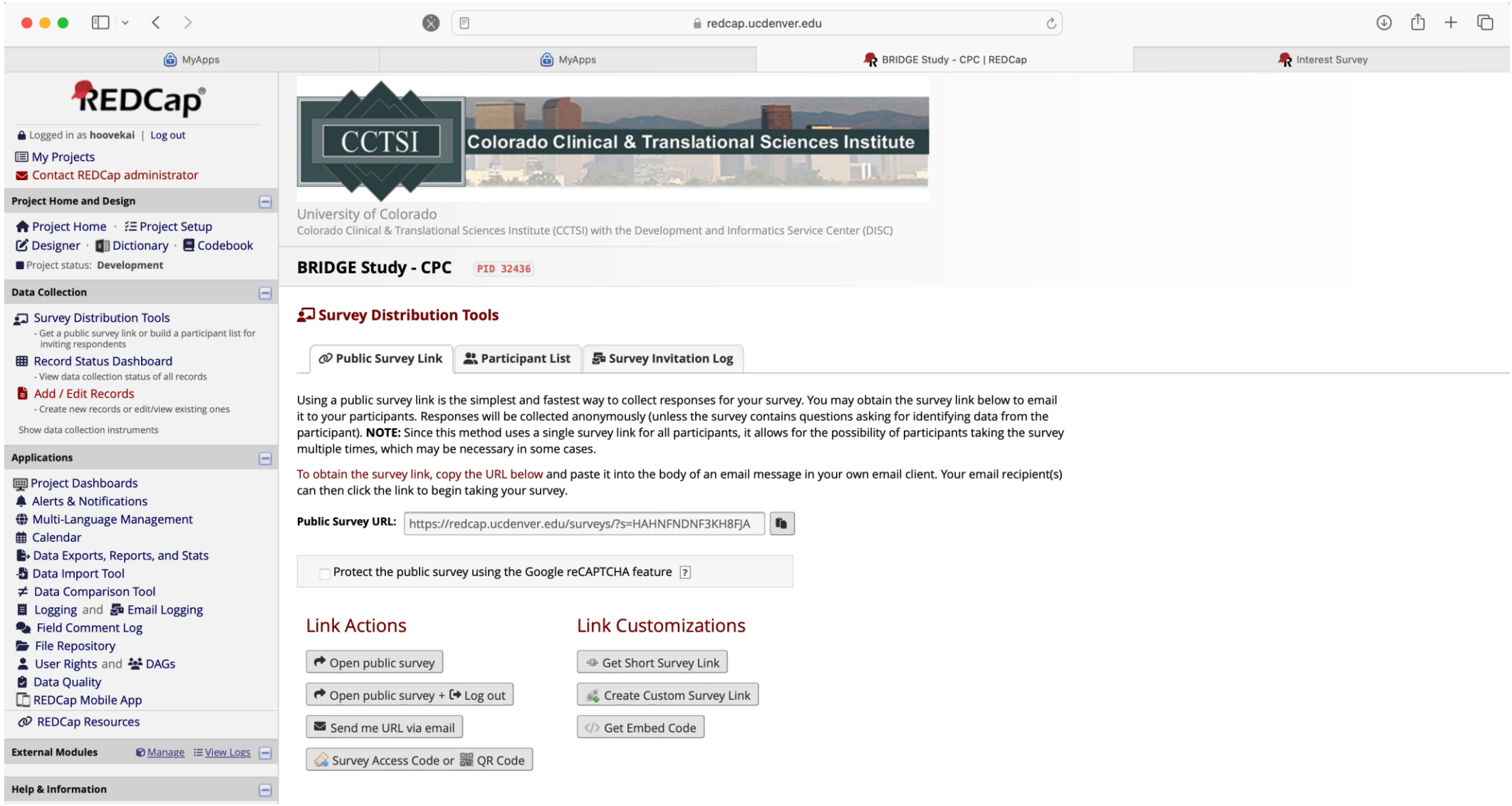
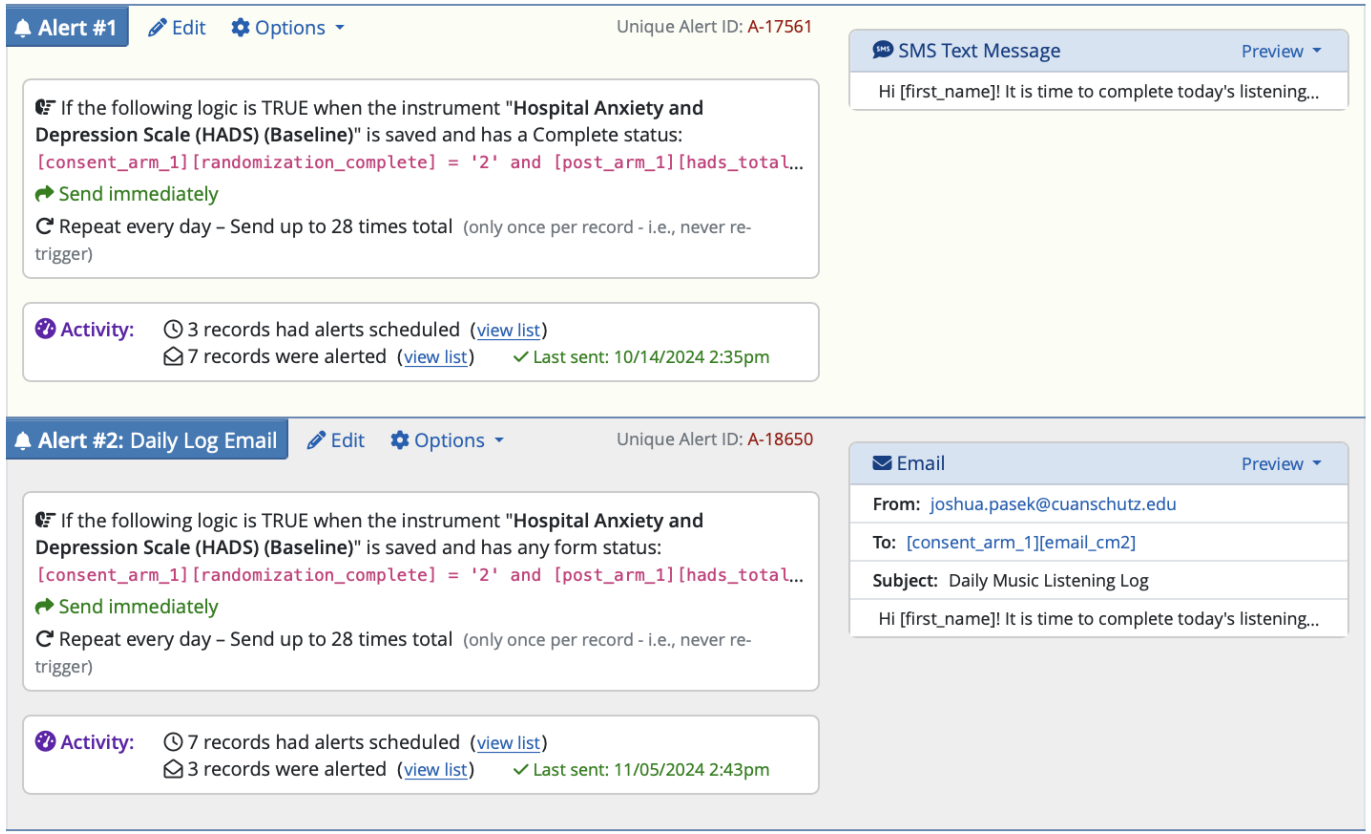

redcap.ucdenver.edu
MyApps
MyApps
BRIDGE Study - CPC | REDCap
Interest Survey
REDCap
Logged in as hoovekai | Log out
My Projects
Contact REDCap administrator
Project Home and Design
Project Home · Project Setup
Designer · Dictionary · Codebook
Project status: Development
Data Collection
Survey Distribution Tools
- Get a public survey link or build a participant list for inviting respondents
Record Status Dashboard
- View data collection status of all records
Add / Edit Records
- Create new records or edit/view existing ones
Show data collection instruments
Applications
Project Dashboards
Alerts & Notifications
Multi-Language Management
Calendar
Data Exports, Reports, and Stats
Data Import Tool
Data Comparison Tool
Logging and Email Logging
Field Comment Log
File Repository
User Rights and DAGs
Data Quality
REDCap Mobile App
REDCap Resources
External Modules Manage View Logs
Help & Information
CCTSI
Colorado Clinical & Translational Sciences Institute
University of Colorado
Colorado Clinical & Translational Sciences Institute (CCTSI) with the Development and Informatics Service Center (DISC)
BRIDGE Study - CPC
PID 32436
Survey Distribution Tools
Public Survey Link
Participant List
Survey Invitation Log
Using a public survey link is the simplest and fastest way to collect responses for your survey. You may obtain the survey link below to email it to your participants. Responses will be collected anonymously (unless the survey contains questions asking for identifying data from the participant). NOTE: Since this method uses a single survey link for all participants, it allows for the possibility of participants taking the survey multiple times, which may be necessary in some cases.
To obtain the survey link, copy the URL below and paste it into the body of an email message in your own email client. Your email recipient(s) can then click the link to begin taking your survey.
Public Survey URL: https://redcap.ucdenver.edu/surveys/?s=HAHNFNDNF3KH8FJA
Protect the public survey using the Google reCAPTCHA feature
Link Actions
Open public survey
Open public survey + Log out
Send me URL via email
Survey Access Code or QR Code
Link Customizations
Get Short Survey Link
Create Custom Survey Link
Get Embed Code

Allo-BMT Music Listening Study

PIs: Maria Olex, PsyD and Lauren Zimmaro, PhD

Inpatient transplant recipients complete pre- and post- battery of surveys as well as daily logs regarding music listening if intervention group

- COMIRB approved
- Participants are consented then randomized to control or intervention within REDCap
- Depending on group, REDCap sends daily links to participants to complete the daily log
- Upon completion of post surveys at discharge, daily log invitation automatically stops being sent



Example Record

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.

Choose action for record

Legend for status icons:

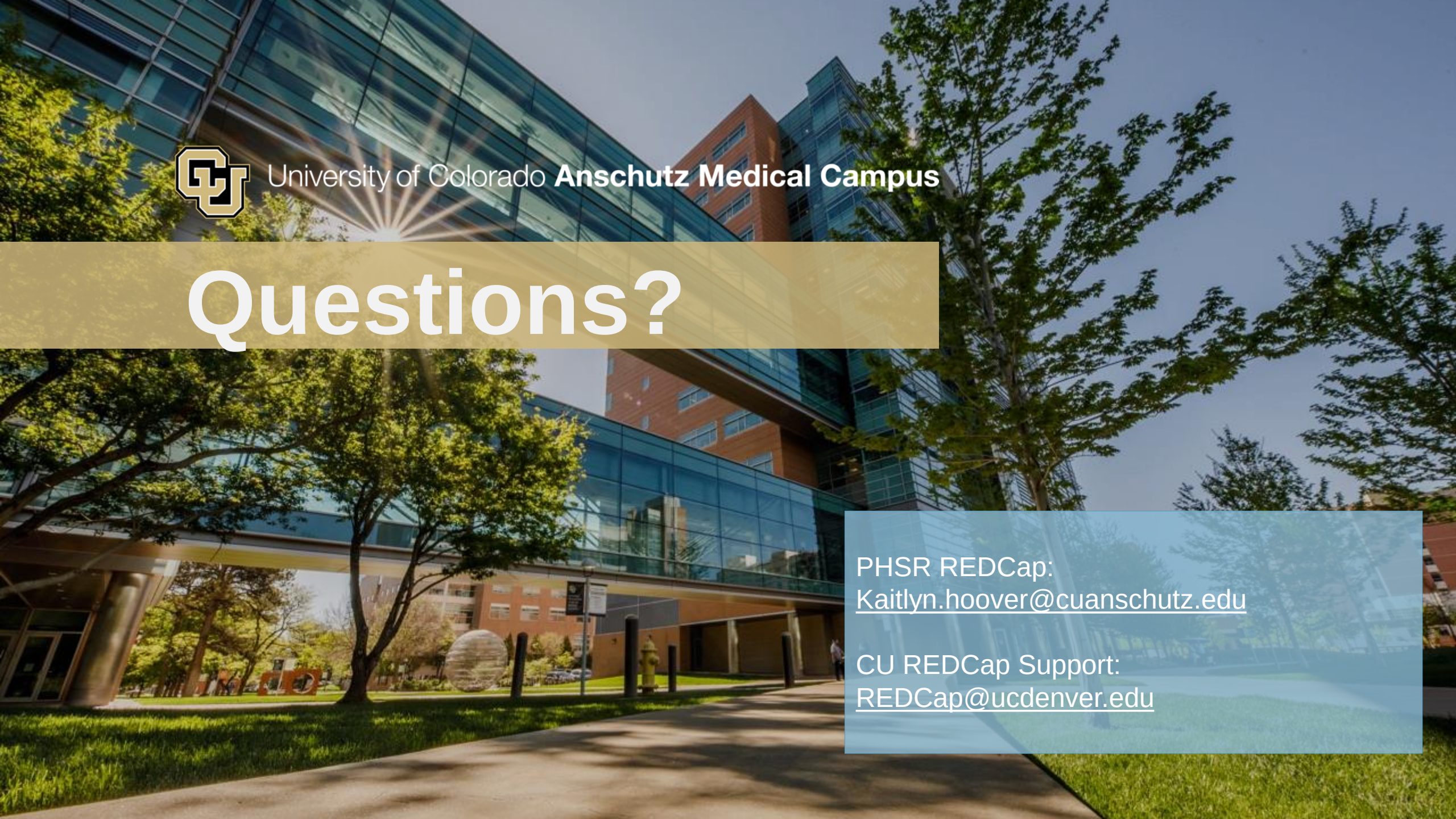
- Incomplete
- Incomplete (no data saved)
- Unverified
- Partial Survey Response
- Complete
- Completed Survey Response
- Many statuses (mixed)
- Many statuses (all same)

Record ID **9** 555555

Data Collection Instrument	Consent	Baseline	Post	Listening Log (#1)	(#2)	(#3)	+ Add new (#4)
Consent (survey)	✓						
Sociodemographic Questionnaire (survey)	✓						
Randomization	●						
Medical Chart Review	●						
Hospital Anxiety and Depression Scale (HADS) (survey)		✓	○				
FACT-BMT (Version 4) - Scored (survey)		✓	○				
Body Compassion Scale (survey)		✓	○				
Brief MAIA-2 (survey)		✓	○				
FFMQ-15: 15-item Five-Facet Mindfulness Questionnaire (survey)		✓	○				
UCLA Loneliness Scale (survey)		✓	○				
Self-Compassion Scale Short Form (SCS-SF) (survey)		✓	○				
Daily Repeating Log (survey)				●	●	●	●

Conclusions

- Optimal use of REDCap is a collaborative effort that should be considered early in study planning.
- REDCap is always expanding its capabilities, so submit ideas for new features.
- REDCap not having a specific one-click feature does not mean it cannot do something at all. We can trick it!
- CU REDCap support is very responsive and knowledgeable!



Questions?

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Kaitlyn.hoover@cuanschutz.edu

CU REDCap Support:
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