

Flight Tracker Consortium Meeting



December 2, 2020

What Makes Careers Advance?
Turning Flight Tracker into Research

Scott J. Pearson

Meeting Agenda



Consortium Year-End Update

What's New & What's Next?

Turning Flight Tracker into Research

Office Hours with ~~Rebecca~~ and Scott

Consortium by the Numbers



- We've been meeting for **12 months** now.
- Grown in size of community and number of scholars tracked.
- Stats report **10** institutions collecting data.
(Please make sure your REDCap box can talk to our REDCap box!)
- **Four** more are at various stages of getting organized.
- **Three** more groups are investigating Flight Tracker.
- **4,499** scholars currently tracked.
- Consortium meeting invites out for next 6 months – please forward.

Thank you for your interest and contribution. Keep in touch!



Denver

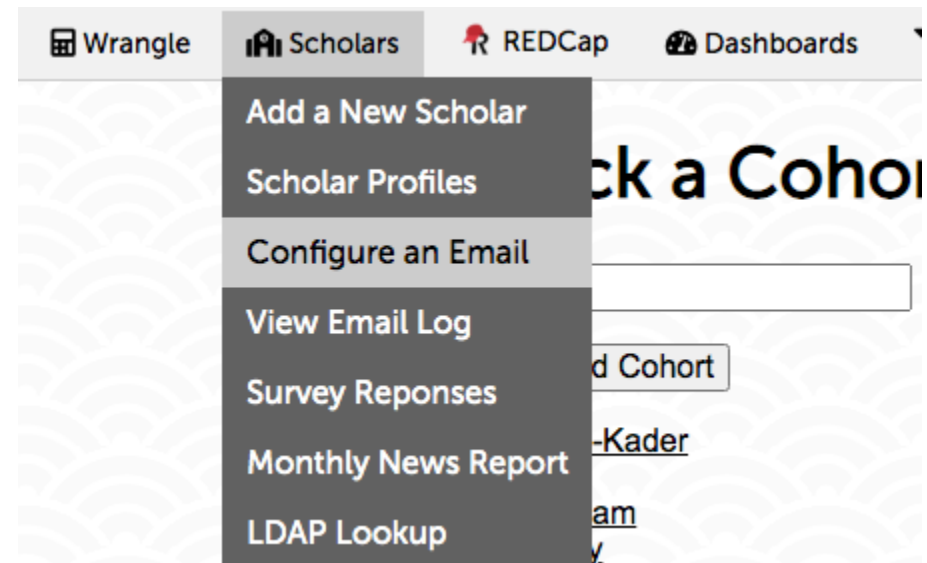


What's New & What's Next?



What's New?

- Email Management system enabled – easy to send out surveys

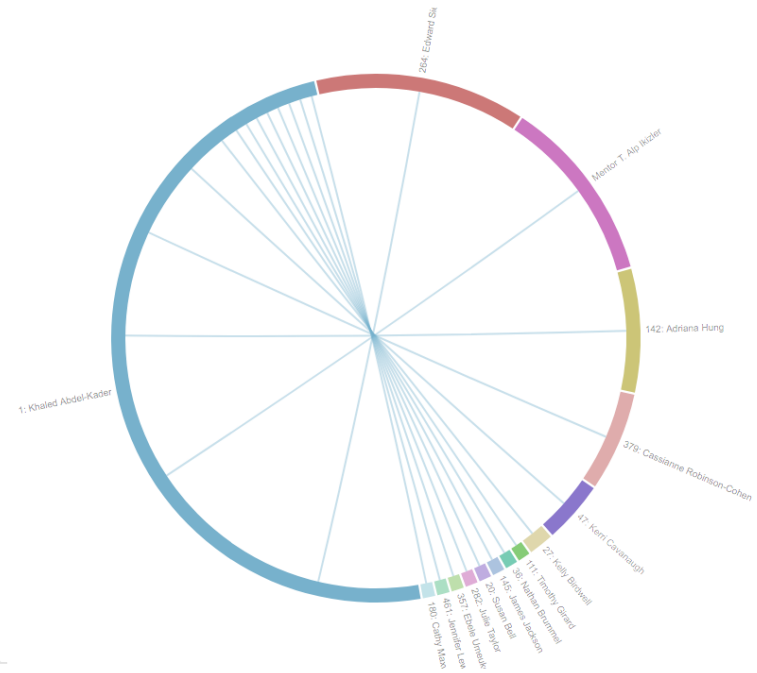


What's New & What's Next?



What's New?

- Individual co-authorship social network graph in Scholar Profile



What's New & What's Next?



What's New?

- Hand-pick a cohort

Hand-Pick a Cohort

Cohort Name:

Add Cohort

- 1: Khaled Abdel-Kader
- 2: Ty Abel
- 3: Robert Abraham
- 365: Aaron Aday
- 456: Rajiv Agarwal
- 335: Aimalohi Ahonkhai
- 4: Melinda Aldrich
- 452: Matthew Alexander
- 443: Ryan Allen
- 5: Peggi Angel
- 427: James Antoon
- 6: Amy Arnold

What's New & What's Next?



What's Next?

- Publications Wrangler upgrade & tune-up
- Finishing polish on NIH Tables and xTRACT integration
- More T-space (pre-doc) customizations
- Copy of Initial Survey → Manual initial import form

Central Problem



What Makes Careers Advance?
Turning Flight Tracker into Research

**So what works and what doesn't work
in academic career development?**

Central Problem



What Makes Careers Advance?
Turning Flight Tracker into Research

**So what works and what doesn't work
in academic career development?**

Scientific Career Development

Current American Practice



- Research literature exists in niche areas
- Translational Science and CTSA program seek to hone good practices
- Structure of NIH (and other) grant funding
- Well-funded, but lacks return-on-investment (ROI) analysis
- **Field is important (funding, power, influence) but poorly understood**
- Much of the difficulty is due to lack of good, publicly available data



Different Goals of Programs



Each group's goals are unique:

- Pre-doc vs. post-doc
- Large research center vs. smaller program
- Training programs vs. faculty management
- Individual career trajectories
 - Academe vs. industry
 - Research focus vs. non-research focus
- Reporting vs. research vs. pure tracking
- Long-term tracking vs. short-term tracking



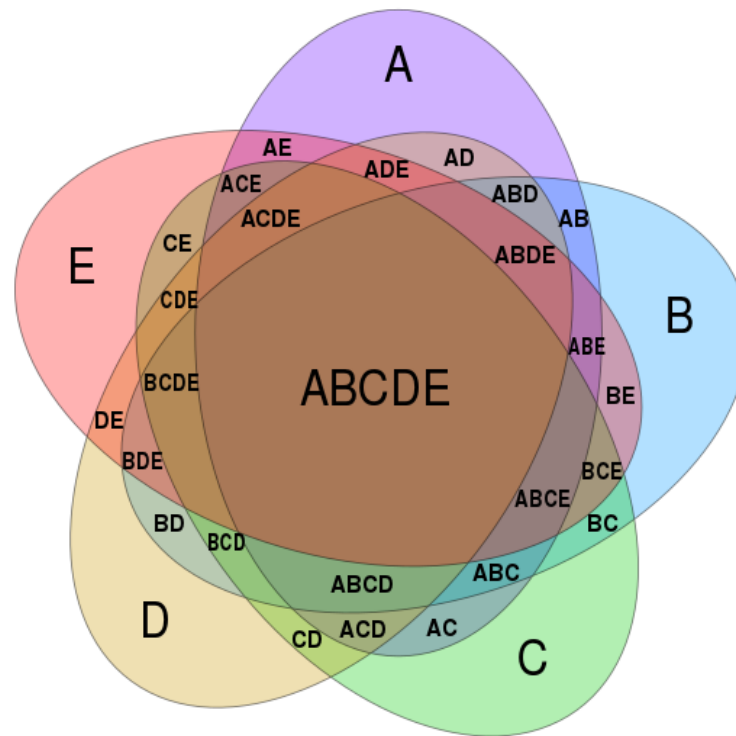
Similarities



- Outcomes
 - Publications
 - High impact (bibliometrics)
 - High number (total, first author, last author)
 - Relationship to grants (needs exploration)
 - Co-authorship
 - Grants – training → individual → project(s) [→ training grant admin]
- Special sub-groups (e.g., under-represented minorities, those with disability)
- Resources to assist – evaluate outcomes
- Diversity of demographics



Situation



Data Collection Strategies

1. Big group, many sub-groups

- Limited by overall size
- Much slicing/dicing

2. Small, contained group

- Limited by ability to see complex relationships
- Efficient for reporting and bragging

→ Current Flight Tracker groups go this far



Data Collection Strategies



1. Big group, many sub-groups

- Limited by overall size
- Much slicing/dicing; **can divide into small groups and/or research groups**

2. Small, contained group

- Limited by ability to see complex relationships
- Efficient for reporting and bragging

3. Research spin off

- Track only participants and divide into treatment/control groups
- Designed for quick data uptake (< 1 week)
- Limited by time to input data (manual input and/or surveys)
- Heavy analysis



Research Scopes



Flight Tracker's goal: Make **data collection** simpler.

Can also provide **tools** to begin **analysis**.

Asking good questions is left up to the researcher.

Identify PICO



Population
Intervention(s)
Control/Comparison
Outcome(s)



Flight Tracker group = population + control

[Adapted from field of evidence-based medicine.]



PICO Example

- Population – Vanderbilt trainees in the MSCI program
- Intervention(s) – Used a resource
- Control/Comparison – Those in the MSCI program who did not use the resource
- Outcome(s) – number of publications, type of first job placement, conversion to K-class grant and to R-class grant

Flight Tracker group = All those in MSCI program

[Adapted from field of evidence-based medicine.]

Steps to Set Up a Research Study



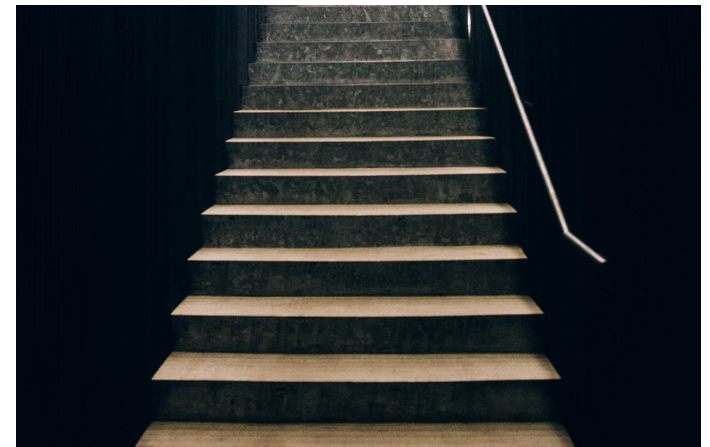
1. Get Flight Tracker administrator to create new REDCap project with the Flight Tracker External Module enabled.
2. Set up Flight Tracker through REDCap project
3. Fill in CSV spreadsheet for all study participants (same spreadsheet as Add New Scholars); upload to Flight Tracker
 - Names essential; demographics optional
4. Automatically collect data (can expedite)
 - Weekly: Everything but bibliometrics;
bibliometrics on 18th



Steps to Set Up a Research Study



5. If needed, get demographics by survey, CSV, or manual input in REDCap
 - Data import options
 - Email management tool
6. Input resource use rosters
7. Start inspecting the results
 - Results update over time
 - Analyze: Resource ROI, K→R conversion rates, cohorts, dashboards, etc.



Steps to Set Up a Research Study



1. Get Flight Tracker administrator to create new REDCap project with the Flight Tracker External Module enabled.
2. Set up Flight Tracker through REDCap project

Please Supply the Following

Title:
(i.e., Name of Project)

REDCap Token (32 characters):
with API Import/Export rights
(overwrites entire project)

Full Institution Name:
(e.g., Vanderbilt University Medical Center)

Short Institution Name:
(e.g., Vanderbilt)
This is the institution name that your scholars will be searched under in the NIH.

Other Affiliated Institutions:
(Short Names, List Separated by Commas)
E.g., Vanderbilt pools resources to track scholars from Meharry and Tennessee State.
These names will be searched from the NIH as well.
Optional.

Class of Project: Training Grant (T)
 Career Development Grant (K)
 Other (e.g., not related to a grant)

If the project is affiliated with a grant, specify what type of grant. Small variations exist for these grant classes.

Timezone:

Admin Email(s):
(List Separated by Commas)

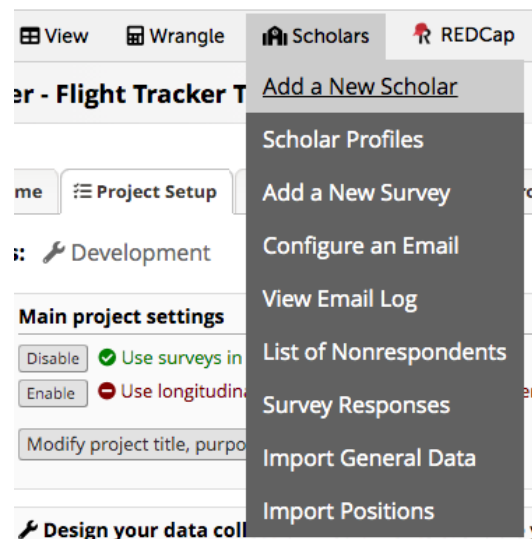
Home Cities of Institutions:
(No States, just Cities)
(List Separated by Commas)

Transform My Project!

Steps to Set Up a Research Study



3. Fill in CSV spreadsheet for all study participants (same spreadsheet as Add New Scholars); upload to Flight Tracker
 - Names essential; demographics optional



Steps to Set Up a Research Study



3. Fill in CSV spreadsheet for all study participants (same spreadsheet as Add New Scholars); upload to Flight Tracker
 - Names essential; demographics optional

A screenshot of the Microsoft Excel interface. The ribbon at the top shows the 'Home' tab with various formatting options. Below the ribbon, a yellow warning bar reads: "Possible Data Loss Some features might be lost if you save this workbook in the comma-delimited (.csv) format. To preserve these features, save it in an Excel file format." The spreadsheet grid below has columns labeled A through O and rows 1 through 9. Row 1 contains the following headers: "First Name", "Preferred Na", "Middle Nam", "Last Name", "Email", "Institution(s)", "Gender [Mal", "Date-of-Birth", "Race [Ameri", "Ethnicity [His", "Disadvantag", "Disability [Y", "Citizenship [I", and "Primary Mentor". The cell A1 is currently selected and contains the text "First Name".

Steps to Set Up a Research Study



4. Automatically collect data (can expedite)


- Weekly: Everything but bibliometrics; bibliometrics on 18th



Home General View Wrangle Scholars REDCap Dashboards Cohorts / Filters Mentors Resources Help

Flight Tracker Central

v2.25.2

Watch Your Scholars Fly
from  Edge for Scholars

Flight Tracker Test

Getting Started

- **"Where's my Data?"** Flight Tracker is housed seamlessly in REDCap. Your new scholar records are already added. *Automated data collection* will start overnight and will continue overnight from here forward. When your data are collected, you will see the latest download information in this box. (We collect data *overnight* so as not to unduly burden the NIH's servers, which give us the info.)
- **Manually Start Collection Tonight:** If you want to start collecting all of your data tonight, [click here](#).
- **Menus** - In the meantime, explore by clicking around the menus above to see the wide...

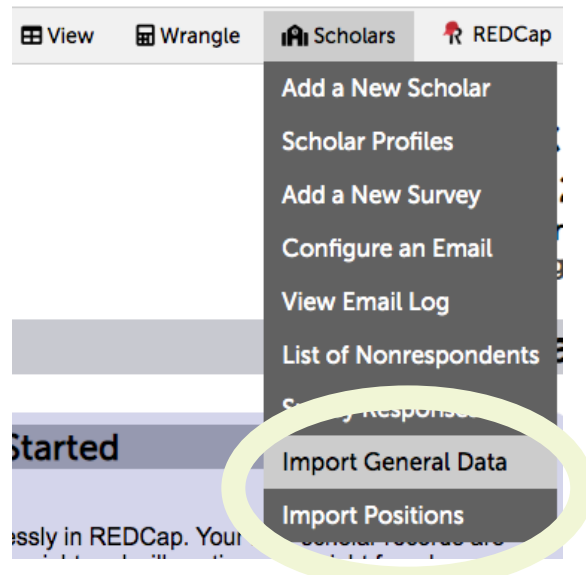
Search

<input type="text"/>	Search Grants
<input type="text"/>	Search Publications

Steps to Set Up a Research Study



5. If needed, get demographics by survey, CSV, or manual input in REDCap
 - Data import options



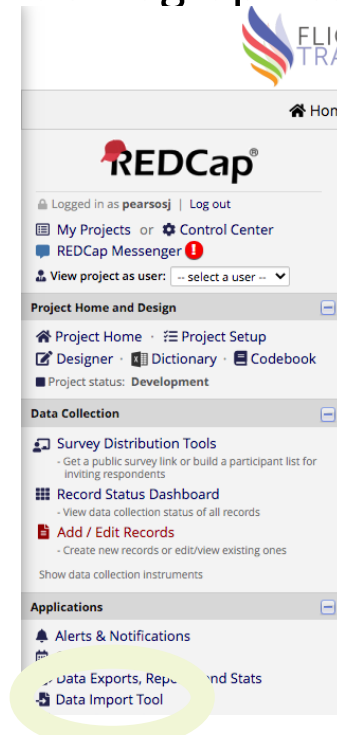
Using Flight Tracker imports

- Follow instructions to import data from a CSV (in Excel)
- It will match by your scholar's name

Steps to Set Up a Research Study



5. If needed, get demographics by survey, CSV, or manual input in REDCap
- Data import options



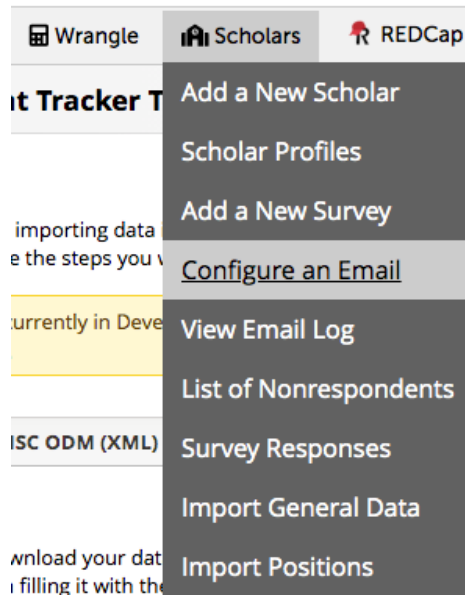
Using REDCap's Data Import Tool

- Must supply the REDCap record id.
- Follow instructions to structure CSV spreadsheet according to REDCap format.

Steps to Set Up a Research Study



- 5. If needed, get demographics by survey, CSV, or manual input in REDCap
 - Email management tool



New in November as of 2.25.0

Steps to Set Up a Research Study



6. Input resource use rosters

Mentors Resources Help

Participation Roster

Manage

Dashboard Metrics

Measure ROI

Resource Participation Roster

Date:

Select a resource:

Attendance Roster

(One per line.)

Sign in First and Last Names

Names Matched with Database

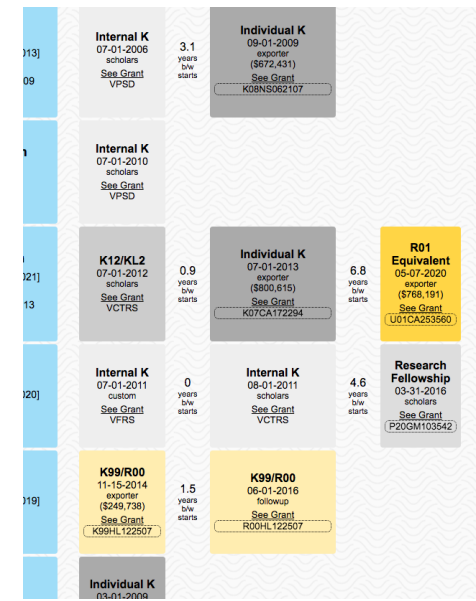
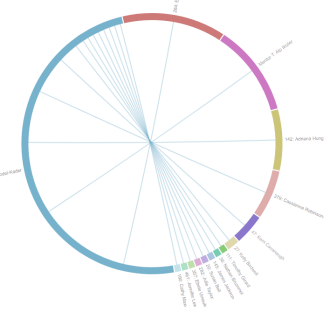
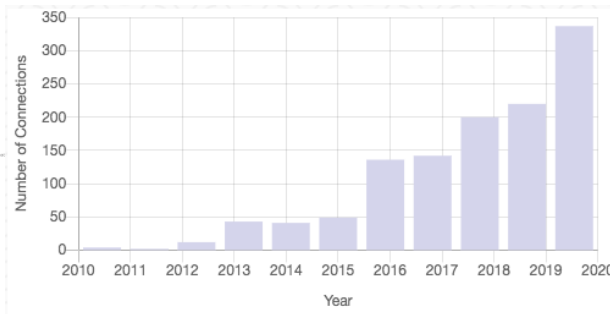
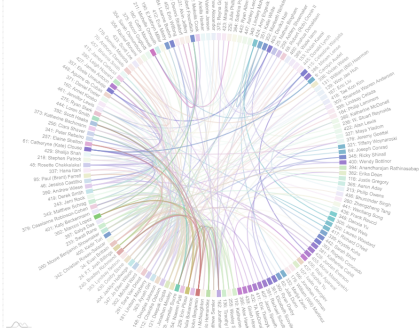
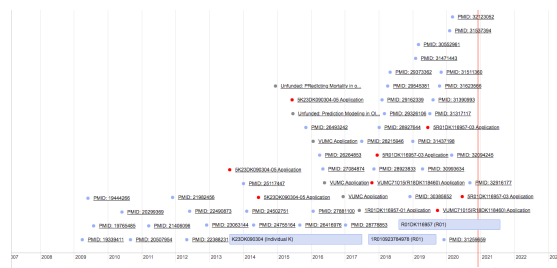
Already Signed In

Steps to Set Up a Research Study

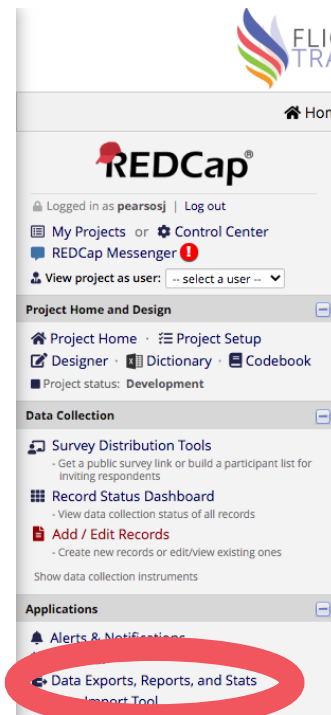
7. Start inspecting the results

- Results update over time
- Analyze: Resource ROI, K→R conversion rates, cohorts, dashboards, etc.

Result	Did Not Use Resource	Used Resource
Effect of Grant Pacing on Conversion Ratio		
Mean (μ) for Conversion Ratio	$\mu = 41.9\%$	$\mu = 56.3\%$
Cases (n) for Conversion Ratio	n = 174	n = 103
Number Successful	73	58
Number Not Successful	174	103
Odds Ratio		OR = 1.34
Interpretation	Those using the resource are 1.34 times more likely to have a good outcome.	
Effect of Grant Pacing on Years to Convert		
Mean (μ) for Years to Convert	$\mu = 5.1$	$\mu = 4.6$
Cases (n) for Years to Convert	n = 71	n = 57
Standard Deviation (σ) for Years to Convert	$\sigma = 2.5$	$\sigma = 2.3$
Probability (p) of H_0		p = 0.247 t = 1.164 df = 126
95% Confidence Interval (CI)		CI = (4.00, 5.24)
Interpretation	There is not a statistically significant difference in outcomes between those who used the resource and those who did not. Perhaps having a larger sample-size (n) - i.e., more power - would provide more insight. (p > 0.05)	



Using REDCap Data Exports



Using REDCap Data Exports



142	First Three Awards	View Report	Export Data	Stats & Charts	Edit	Copy	Delete	229377
143	Vanderbilt.edu emails	View Report	Export Data	Stats & Charts	Edit	Copy	Delete	231686
144	Summary Roles	View Report	Export Data	Stats & Charts	Edit	Copy	Delete	232114
145	Responses after 10/2020	View Report	Export Data	Stats & Charts	Edit	Copy	Delete	232845
146	X Shu publications	View Report	Export Data	Stats & Charts	Edit	Copy	Delete	232994
147	Citation year and month	View Report	Export Data	Stats & Charts	Edit	Copy	Delete	233138
148	Disadvantaged	View Report	Export Data	Stats & Charts	Edit	Copy	Delete	233335
149	Effort	View Report	Export Data	Stats & Charts	Edit	Copy	Delete	233339
150	Effort	View Report	Export Data	Stats & Charts	Edit	Copy	Delete	233340
151	VUNets	View Report	Export Data	Stats & Charts	Edit	Copy	Delete	234294
152	Survey Completes	View Report	Export Data	Stats & Charts	Edit	Copy	Delete	234665
		+ Create New Report						

Using REDCap Data Exports



STEP 2

Fields to include in report + Quick Add Add all fields from selected instrument: -- choose instrument -- ▼

Field 1	<input type="text" value="record_id 'Record Id'"/>	▼	Instrument: Identifiers	✕
Field 2	<input type="text" value="Type variable name or field label"/>	▼	Instrument:	

Additional report options (optional)

- Include the survey identifier field and survey timestamp field(s)?
- Combine checkbox options into single column of only the checked-off options (will be formatted as a text field when exported to stats packages)
- Remove line breaks/carriage returns from all text data values (only applicable for CSV Raw and CSV Label data exports)

Using REDCap Data Exports



STEP 3

Show data for all repeating instruments for each record returned ?

[? How to use filters and AND/OR logic](#)

Filters (optional)

Operator / Value

Filter 1	<input type="text" value="Type variable name or field label"/>	<input type="button" value="v"/>	<input "="" type="text" value="="/>	<input type="text" value=""/>
-----------------	--	----------------------------------	-------------------------------------	-------------------------------

Switch format: [Use advanced logic](#)

Live Filters (optional)

Live Filters can be selected on the report page for dynamically filtering data in real time. With the exception of the Record ID field, only multiple choice fields can be used as Live Filters (as well as Events, if longitudinal, and Data Access Groups, if any exist).

Live Filter 1	<input type="text" value="-- select a field --"/>	<input type="button" value="v"/>
Live Filter 2	<input type="text" value="-- select a field --"/>	<input type="button" value="v"/>
Live Filter 3	<input type="text" value="-- select a field --"/>	<input type="button" value="v"/>

Using REDCap Data Exports



Data Exports, Reports, and Stats

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

[+ Create New Report](#) [My Reports & Exports](#) [Other Export Options](#) [View Report: Sample Data](#)

Number of results returned: **5,059**
Total number of records queried: 38,816
Report execution time: 8.8 seconds

[Stats & Charts](#) [Export Data](#) [Print Page](#) [Edit Report](#)

Sample Data

Page 1 of 6: Displaying record "1" through "80" of 5,059 results returned

Search

Record Id record_id	Repeat Instrument redcap_repeat_instrument	Repeat Instance redcap_repeat_instance	VUNetID vunetid	Participant ID vfrs_participant_id	Do you have a VUNet ID? vfrs_vunet	Date of birth: vfrs_date_of_birth	DOB newman_demographics_date_of_birth	Rank newman_demographics_academic_rank	Email Vanderbilt newman_data_email	Project newman_data_project	Project newman_sheet2_project	Email Vanc newman_sh
1 Khaled					Yes	1979-		Assistant		DEVELOPING, VALIDATING, AND	DEVELOPING, VALIDATING, AND	khaled.abde

Using REDCap Data Exports










Export to MS Excel

Export dataset to computational statistics packages for further analysis

Exporting "Sample Data"

Select your export settings, which includes the export format (Excel/CSV, SAS, SPSS, R, Stata) and if you wish 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**
-  **CDISC ODM (XML)**

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?](#)
 - Also shift all survey completion timestamps by value between 0 and 364 days (shifted amount determined by algorithm for each record)

[Deselect all options](#)

Advanced data formatting options

Set CSV delimiter character
Set the delimiter used to separate values in the CSV data file (only valid for CSV Raw Data and CSV Labels export formats):

Force all numbers into a specified decimal format?
You may choose to force all data values containing a decimal to have a specified decimal character (comma or period/full stop). This will be applied to all calculations and number-validated text values in the export file.

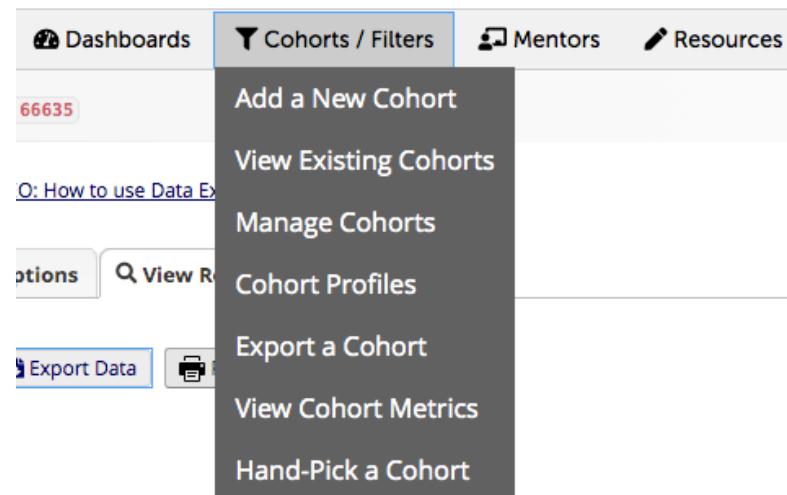
NOTE: Your data formatting selections above will be remembered in the future and will be pre-selected upon your next export.

Export Data **Cancel**

Steps to Analyze Sub-Group



- What if you have a big project and just want to analyze a sub-group of your data?
- Flight Tracker calls that a **cohort**.



Steps to Analyze Sub-Group



1. Form a new cohort -or- hand-pick a cohort.

Add a Cohort

This page is complex. [Click here to show help.](#)

Title:

Precedence Rules: XOR > AND > OR

	Filter Type	Variable		Value	
Filter 1	<input type="text" value="Demographic"/>	<input type="text" value="Gender"/>	<input type="text" value="Has"/>	<input type="text" value="Female"/>	<input type="button" value="Add Row"/>
			<input type="text" value="AND"/>		
Filter 2	<input type="text" value="Grant"/>	<input type="text" value="First Award Type"/>	<input type="text" value="Has"/>	<input type="text" value="K12/KL2"/>	<input type="button" value="Add Row"/>
					<input type="button" value="Commit Filter"/>

Steps to Analyze Sub-Group



1. Form a new cohort -or- hand-pick a cohort.

Hand-Pick a Cohort

Cohort Name:

- 1: [Khaled Abdel-Kader](#)
- 2: [Ty Abel](#)
- 3: [Robert Abraham](#)
- 365: [Aaron Aday](#)
- 456: [Rajiv Agarwal](#)
- 335: [Aimalohi Ahonkhai](#)
- 4: [Melinda Aldrich](#)
- 452: [Matthew Alexander](#)
- 443: [Ryan Allen](#)
- 5: [Peggi Angel](#)
- 427: [James Antoon](#)
- 6: [Amy Arnold](#)
- 7: [Donald Arnold](#)
- 8: [Shanna Arnold](#)

Steps to Analyze Sub-Group



2. Use a Cohort on an analytical tool to focus your data pool.

A screenshot of a web form titled "Make a Cohort to View a Sub-Group". The form includes a dropdown menu for "Select Cohort:" with the text "--SELECT--" and a downward arrow. Below this is another dropdown menu for "Index by Field:" with the text "Record Id" and a downward arrow. There is also a checkbox labeled "Include Mentors Collaborations with Scholars" which is currently unchecked. A "Go!" button is located at the bottom of the form. A red oval highlights the "Select Cohort:" dropdown menu.

Long-Term Aim: Pooling Data



- Aggregate data across multiple sites (opt-in, de-identified)
 - E.g., several MSCI-type programs nationally, CTSA-related K12s or TL1s
- Correlate resources into generic types
- Figure out what's effective and what's not for career development
- Suggest best practices based on data
- Share results with translational community



Office Hours with Scott

