# Flight Tracker Consortium Meeting

December 2, 2020

What Makes Careers Advance?
Turning Flight Tracker into Research

Scott J. Pearson

# Meeting Agenda

FLIGHT TRACKER for scholars

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!


University at Buffalo
The State University of New York


Penn
University of Pennsylvania


UAB


FLIGHT
TRACKER
for scholars


MUSC
Medical University
of South Carolina


Denver


KU
SCHOOL OF
MEDICINE
The University of Kansas


SCIENTIA · PRO · BONO · HUMANI · GENERIS
The
Rockefeller
University
1901


WASHINGTON UNIVERSITY IN ST. LOUIS
1853


University of
CINCINNATI

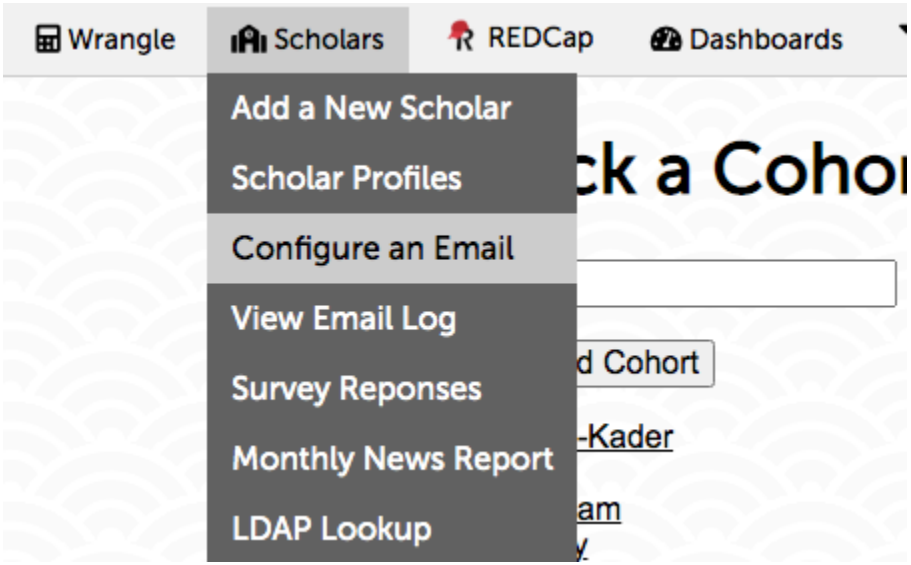

UNIVERSITY OF SOUTHERN CALIFORNIA
1880

# What's New & What's Next?

FLIGHT TRACKER for scholars

## What's New?

- Email Management system enabled – easy to send out surveys

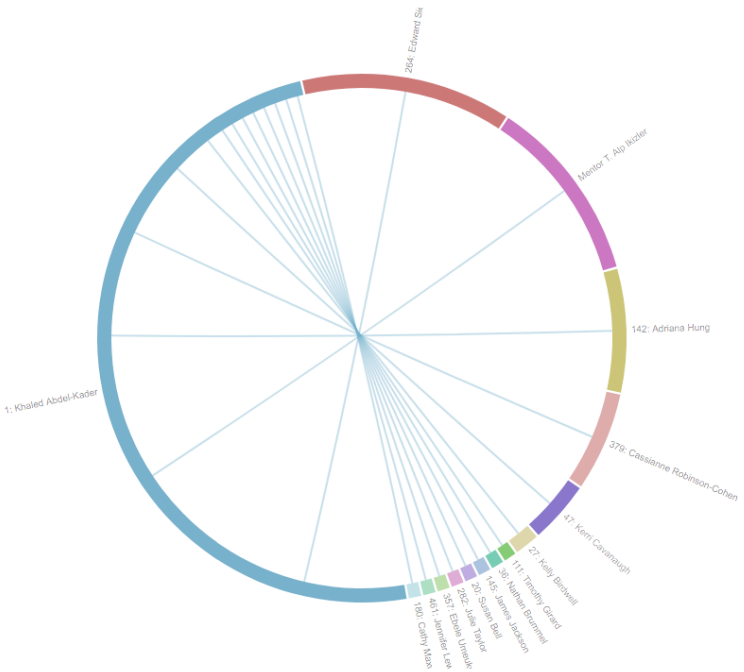


# What's New & What's Next?

FLIGHT TRACKER for scholars

## What's New?

- Individual co-authorship social network graph in Scholar Profile

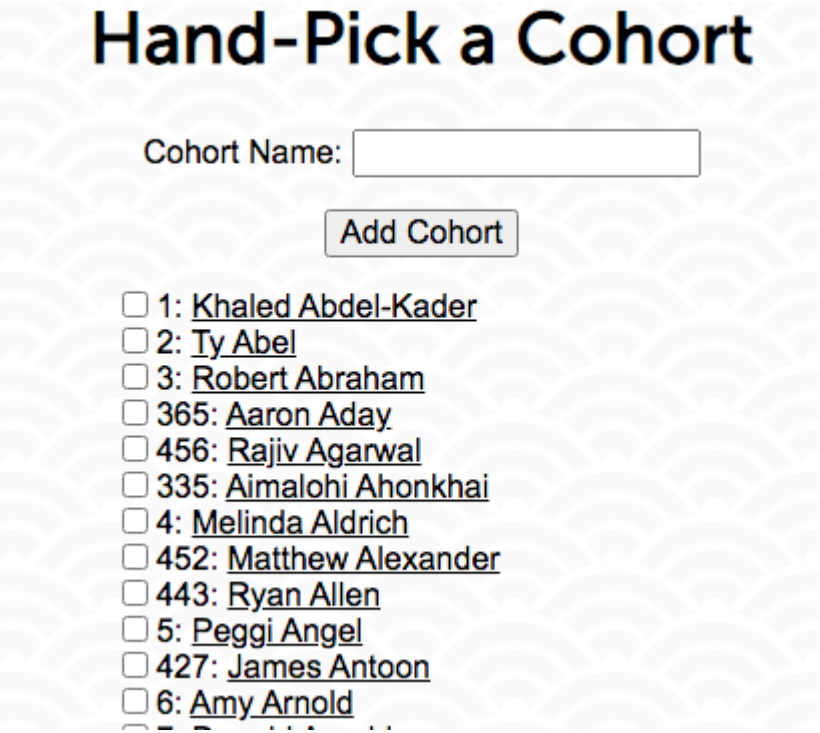


# What's New & What's Next?

FLIGHT TRACKER for scholars

## What's New?

- Hand-pick a cohort



# What's New & What's Next?

FLIGHT TRACKER for scholars

## 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?**

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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

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- 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

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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

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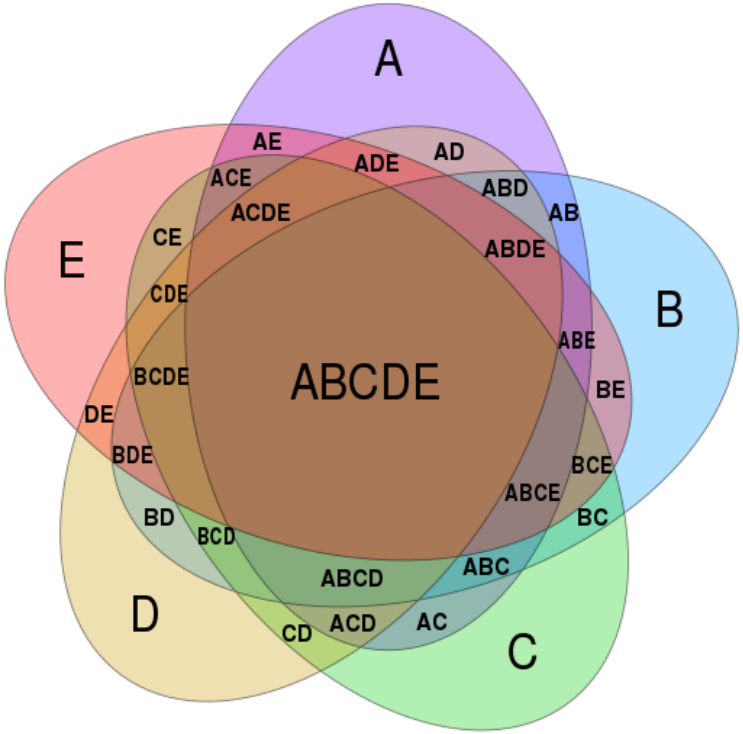

# Data Collection Strategies

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

FLIGHT TRACKER for scholars

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

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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


**P**opulation
**I**ntervention(s)
**C**ontrol/Comparison
**O**utcome(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

FLIGHT TRACKER for scholars

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.

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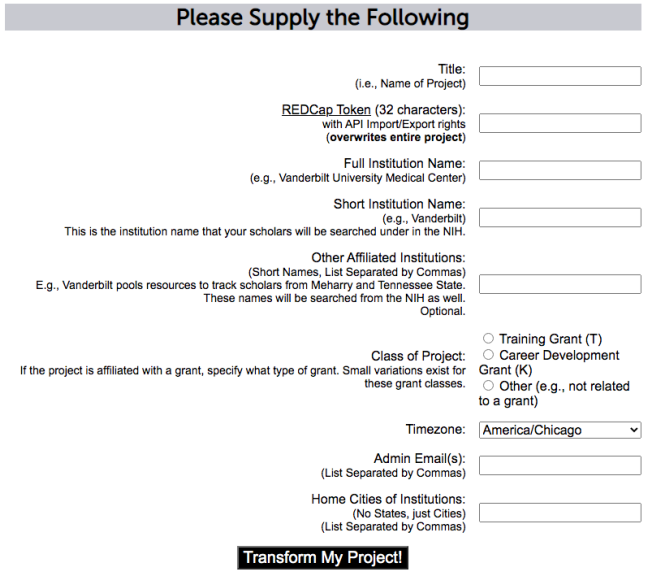


**Please Supply the Following**

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:
If the project is affiliated with a grant, specify what type of grant. Small variations exist for these grant classes.
- Training Grant (T)
- Career Development Grant (K)
- Other (e.g., not related to a grant)

Timezone: America/Chicago

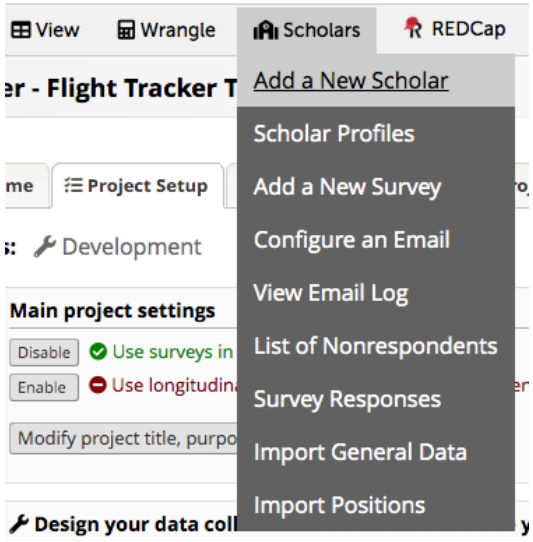
Admin Email(s):
(List Separated by Commas)

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



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FLIGHT TRACKER for scholars

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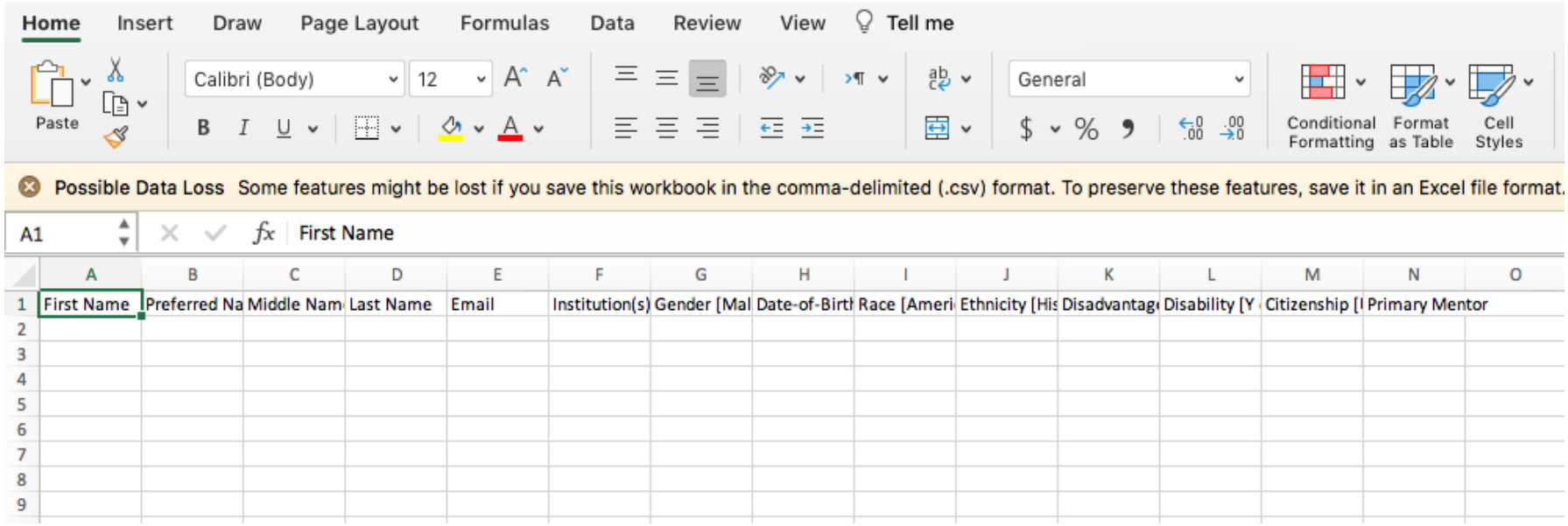
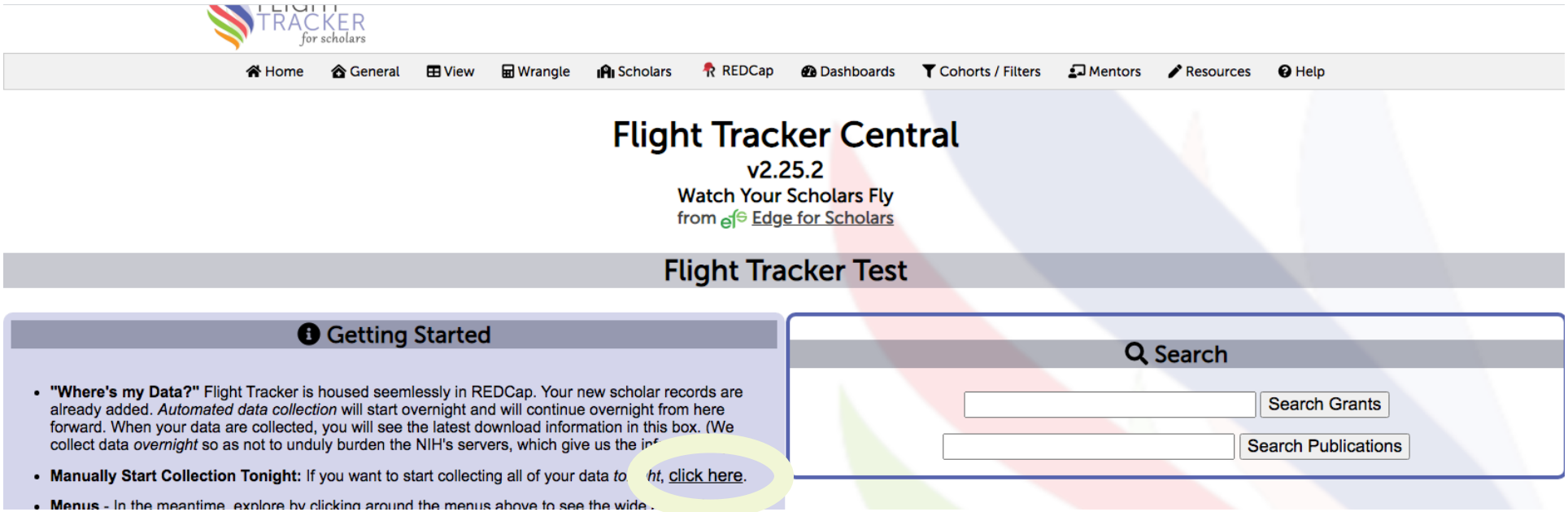


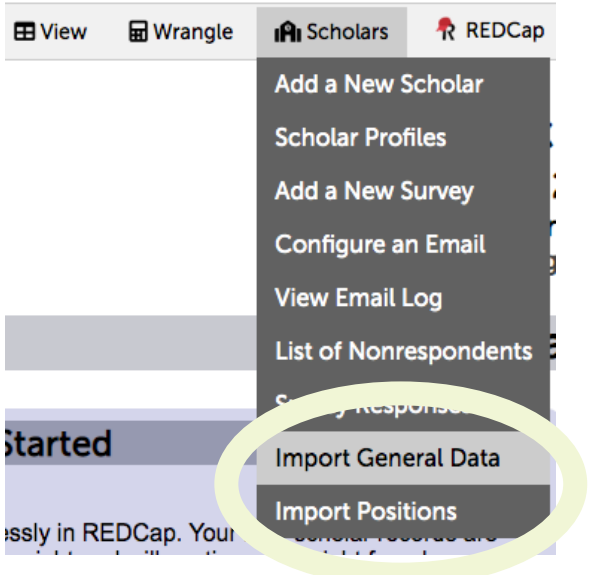
# Steps to Set Up a Research Study

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

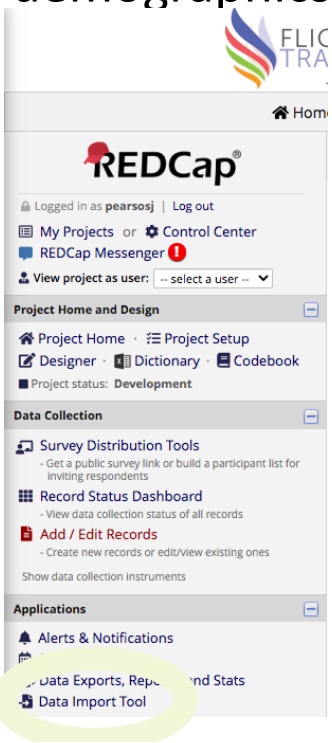



***Using Flight Tracker imports***

- 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

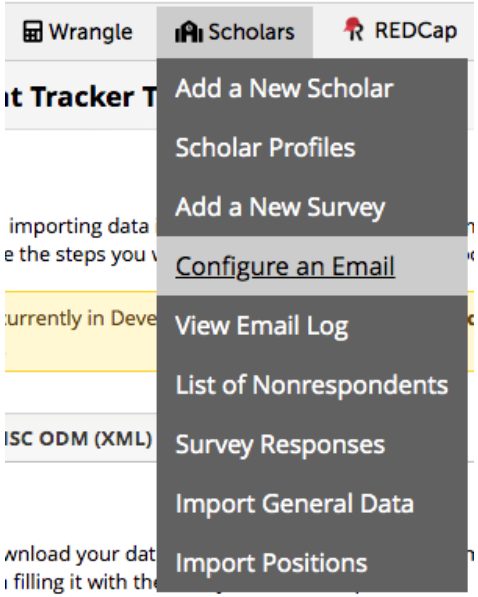



***Using REDCap's Data Import Tool***

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

# Steps to Set Up a Research Study

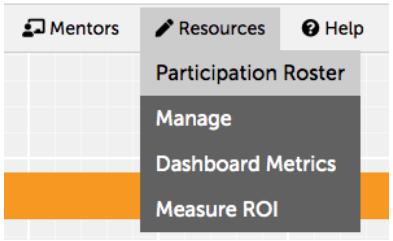
5. If needed, get demographics by survey, CSV, or manual input in REDCap
   - Email management tool

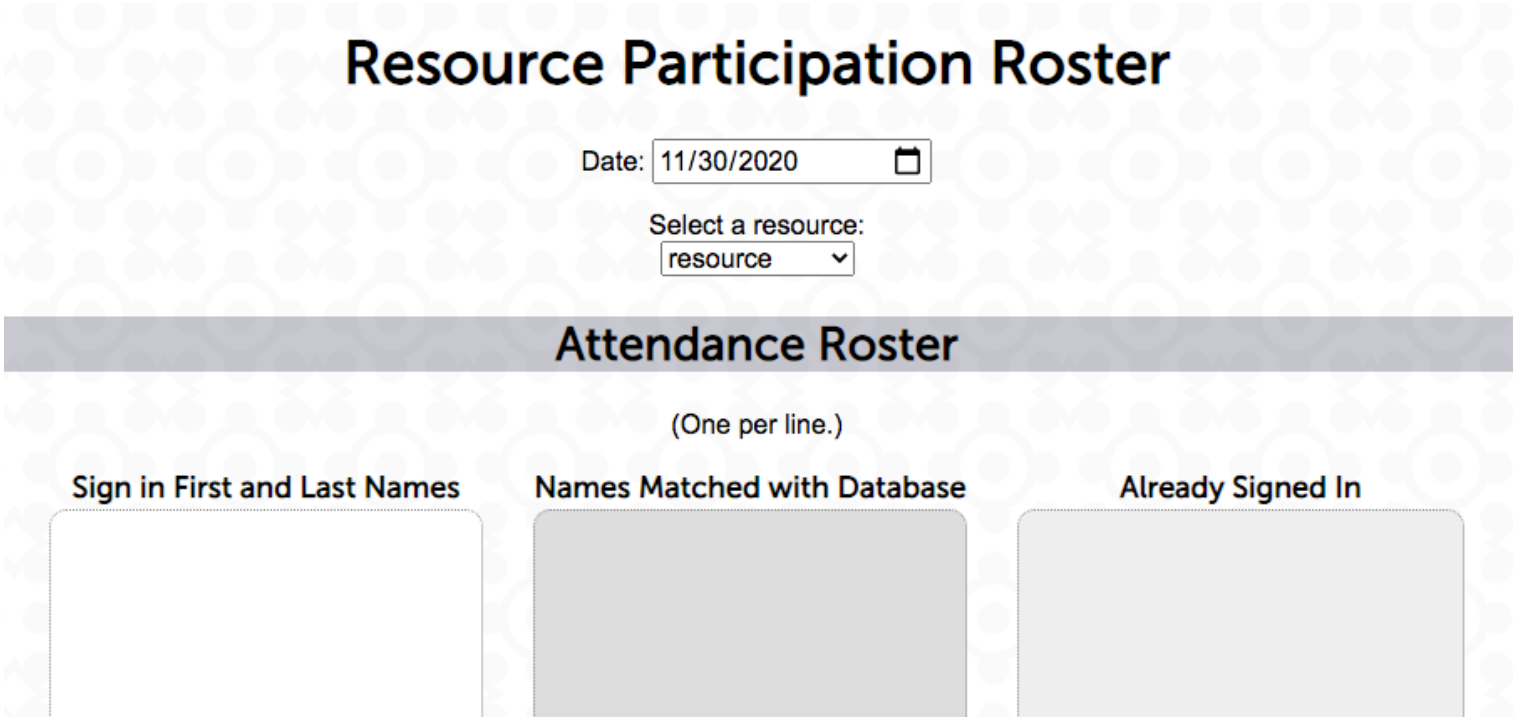



New in November as of 2.25.0

# Steps to Set Up a Research Study

6. Input resource use rosters



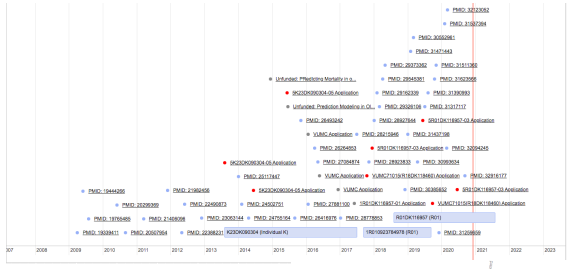



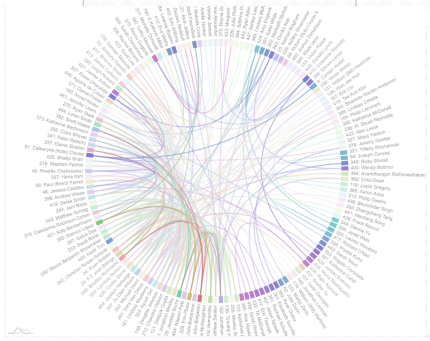
# Steps to Set Up a Research Study

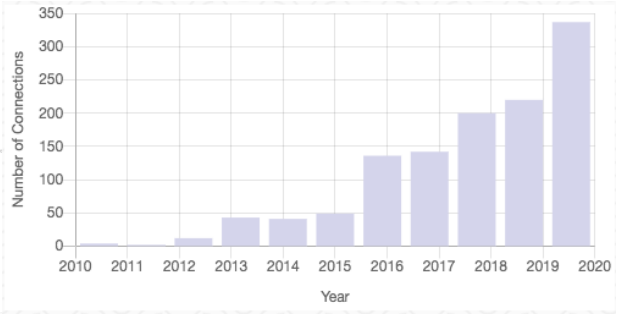
FLIGHT TRACKER for scholars

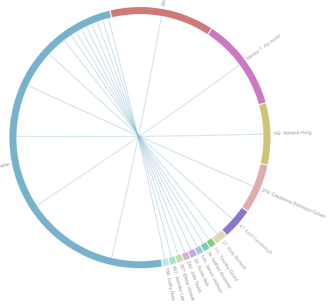
7. Start inspecting the results
   - Results update over time
   - Analyze: Resource ROI, K→R conversion rates, cohorts, dashboards, etc.

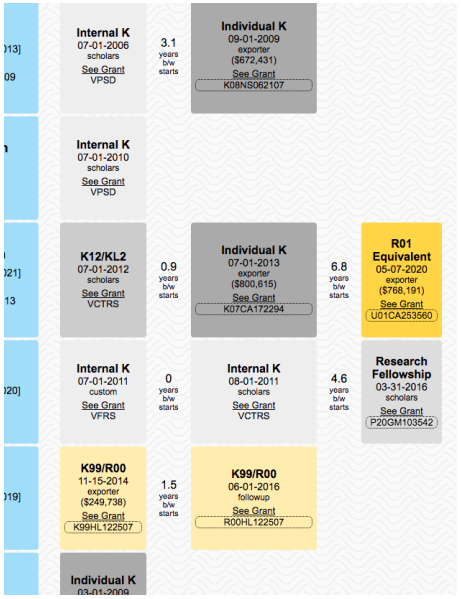
| Result | Did Not Use Resource | Used Resource |
|---|---|---|
| **Effect of Grant Pacing on Conversion Ratio** | | |
| Mean (μ) for Conversion Ratio | μ = 41.9% | μ = 56.3% |
| Cases (n) for Conversion Ratio | n = 174 | n = 103 |
| Number Successful | 73 | 58 |
| Number Not Successful | 174 | 103 |
| 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 | μ = 5.1 | μ = 4.6 |
| Cases (n) for Years to Convert | n = 71 | n = 57 |
| Standard Deviation (σ) for Years to Convert | σ = 2.5 | σ = 2.3 |
| Probability (p) of $H_0$ | p = 0.247<br>t = 1.164<br>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) | |



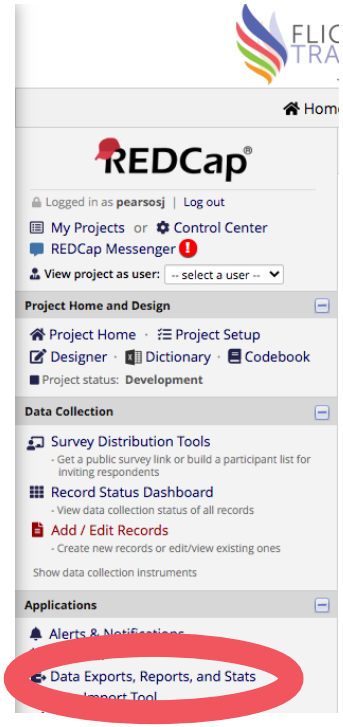






# Using REDCap Data Exports



# Using REDCap Data Exports

FLIGHT TRACKER for scholars

| | | | | | |
|---|---|---|---|---|---|
| 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 | | | | | |

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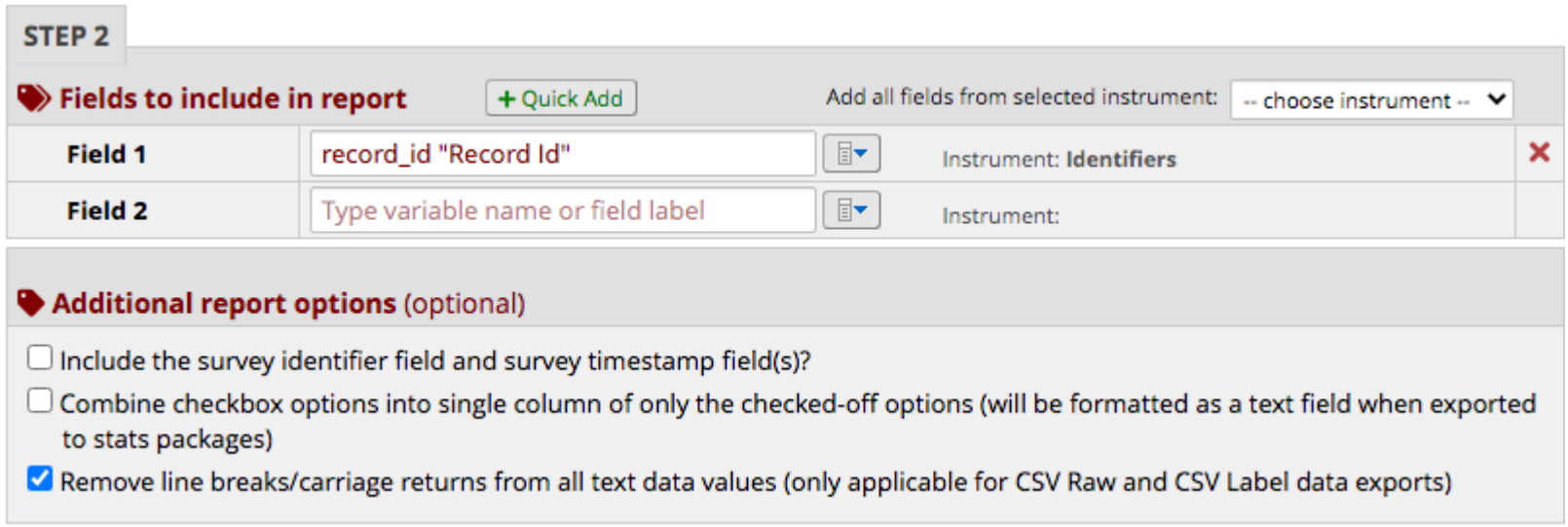
FLIGHT TRACKER for scholars



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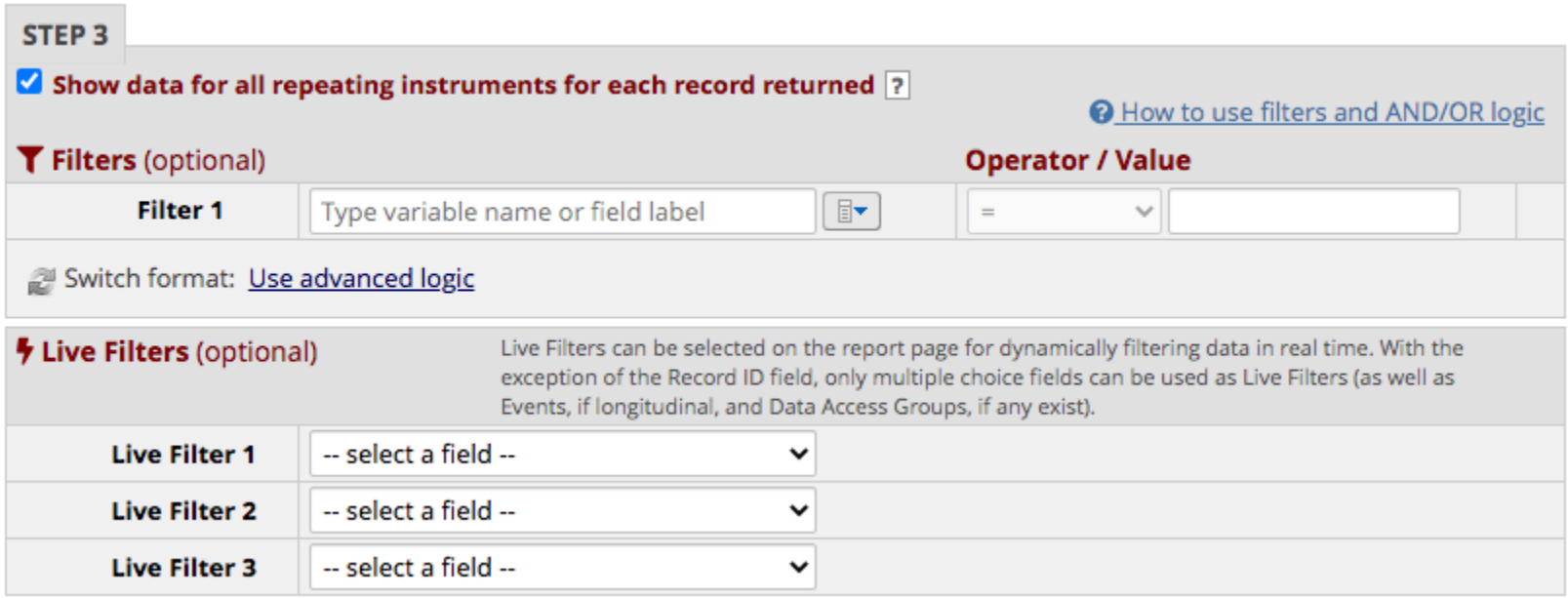

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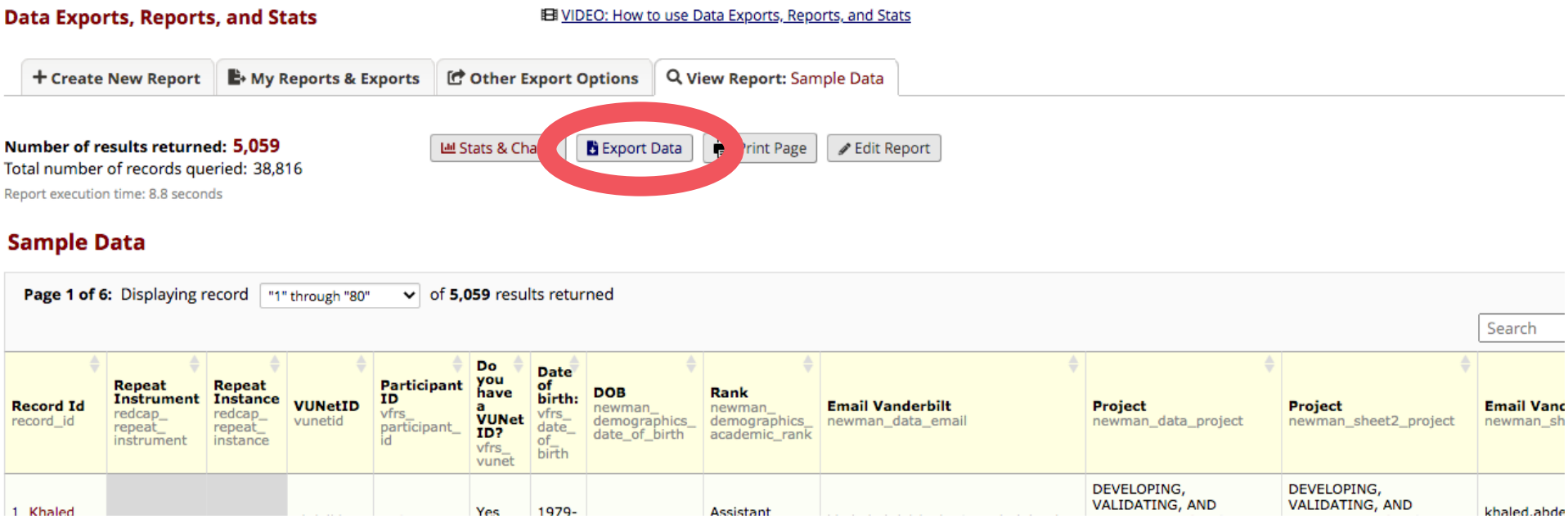
FLIGHT TRACKER for scholars

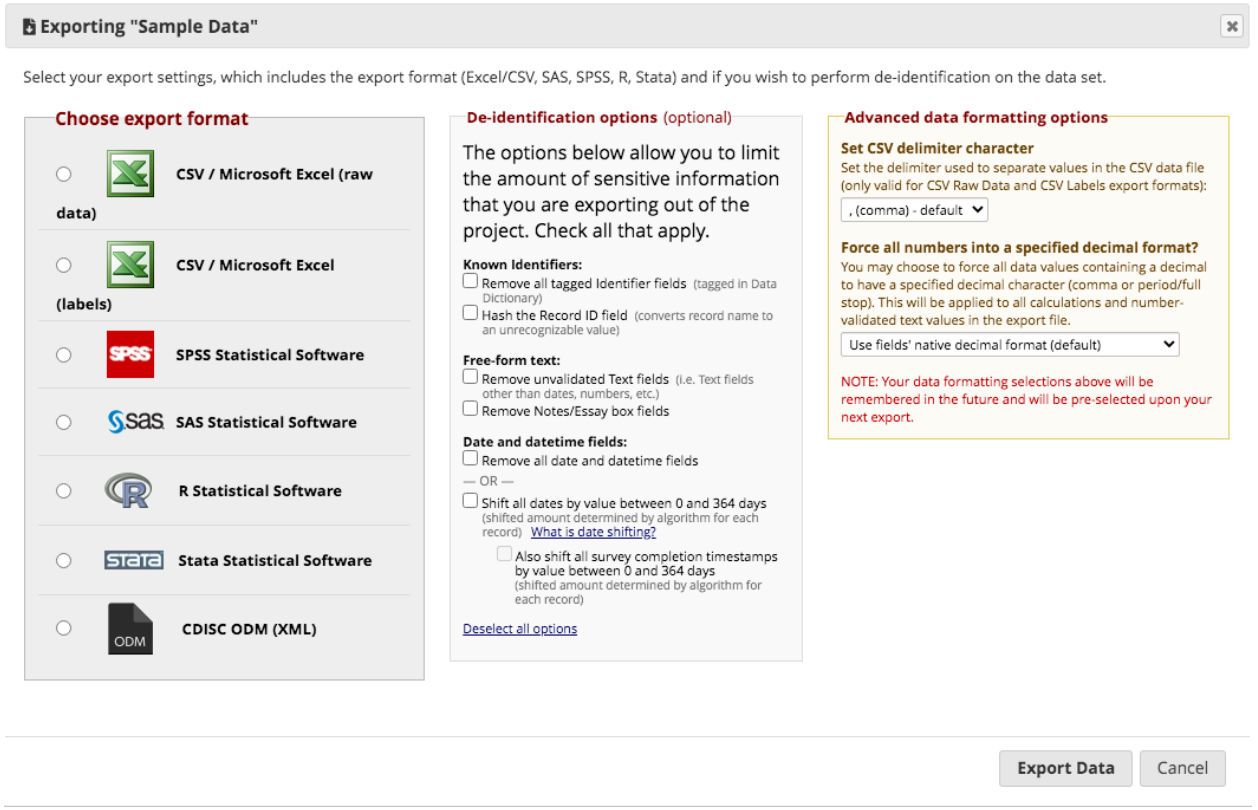


# Using REDCap Data Exports

FLIGHT TRACKER for scholars

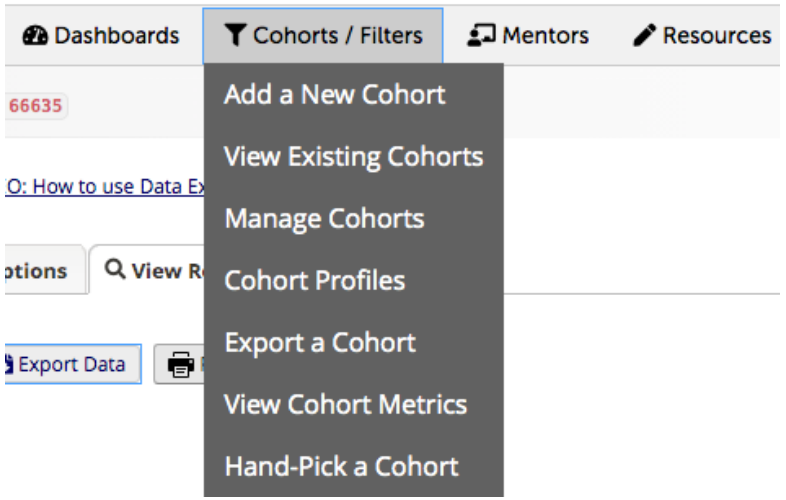
Export to MS Excel

Export dataset to computational statistics packages for further analysis



# 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

FLIGHT TRACKER for scholars

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

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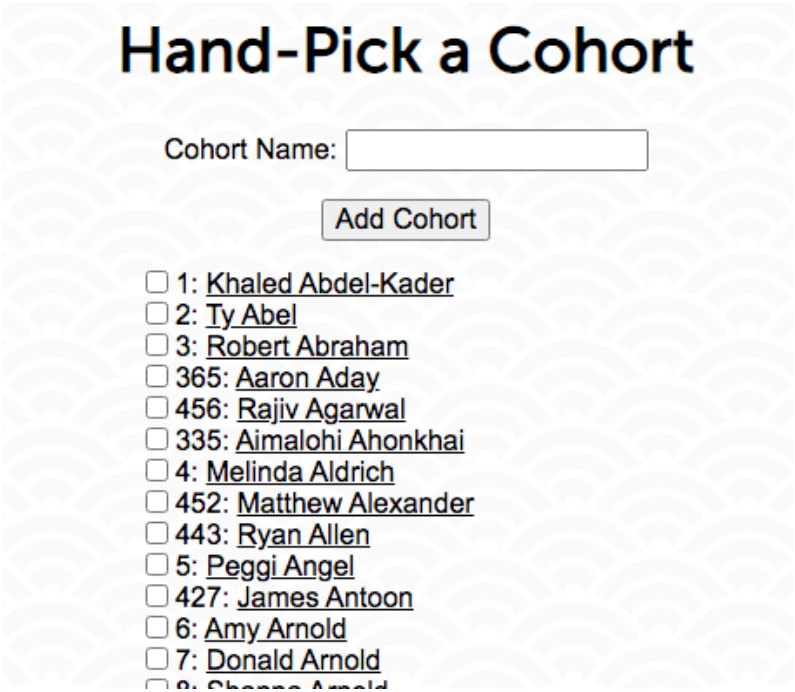
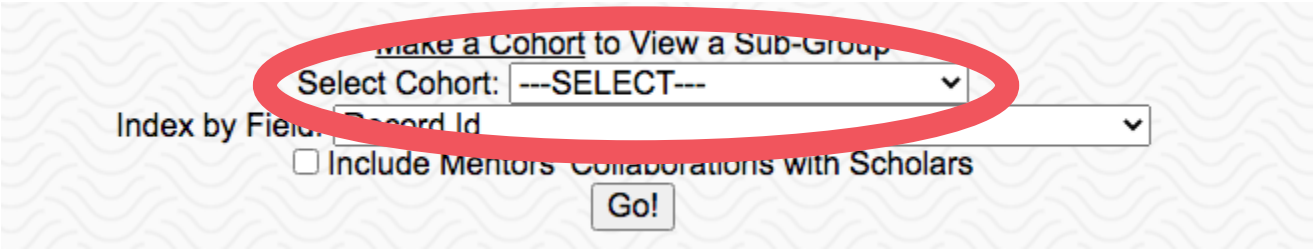


# Steps to Analyze Sub-Group

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



# Long-Term Aim: Pooling Data

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- 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

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