

Flight Tracker Consortium Meeting

March 5, 2025



www.edgeforscholars.org

X @EdgeForScholars

https://redcap.link/flight_tracker

Meeting Agenda



Current Version:
v6.20.0

What's New?

A Letter to Request a My Bibliography API
IES Website Changes

Deep Dive: Collaborations on Publications

What's Next?

The “Leaky Pipeline”
Updates to Find a Collaborator
Flight Tracker Educational Videos



What's New?

Request: My Bibliography API



- Scholars regularly vet/wrangle their own publications for the NIH's My Bibliography tool
- **Corey Snelson at the University of Washington** asked if there was a way for Flight Tracker to tap into that info
- The way that's done is via an “API” so that computers can talk together; the NIH would have to build one

A screenshot of the PubMed.gov website. The search bar at the top contains the text "trevor r smith". Below the search bar, there are buttons for "Save", "Email", and "Send to". To the right, it says "Sorted by: Best match" and "Display options". On the left, there are filters for "MY NCBI FILTERS" and a "RESULTS BY YEAR" chart showing publication counts from 2004 to 2020. On the right, a "Clipboard" section is displayed, showing a list of 22 results. The first result is checked and has a dropdown menu with options: "Clipboard", "Orad", "Collections", "Citation manager", "Cite", and "Share". The "My Bibliography" option is highlighted with a red oval. The second result is also checked and has a similar dropdown menu. The results list includes titles like "Oral nutritional supplements in a randomised trial are more effective than dietary advice for improving quality of life in malnourished care home residents." and "Cost-effectiveness of oral nutritional supplements in older malnourished care home residents." The names of the authors are listed as Elia M. Parsons, E.L. Cawood, A.L. Smith, T.R. Stratton, and R.J.

Request: My Bibliography API



- Goal: Co-sign group letter to increase chances of acceptance
- Letter & co-signing: <https://redcap.vumc.org/surveys/?s=FRN39DWCJ7F88KFA>
- We'll send this link out via email after NIH-related dramas cool
- We'll wait until the budget turmoil subsides to send to NLM
- **What could get more PIs and admins to sign it?**



Education Grants (IES)



- The Institute of Education Services is the data wing of the Department of Education
- Their website provides information about educational grants
- They do not have an API whereby Flight Tracker can talk to it. Therefore, our code just strips the data straight from the web.
- They suddenly **changed their website** a few weeks ago. This broke Flight Tracker's ability to get educational grants.

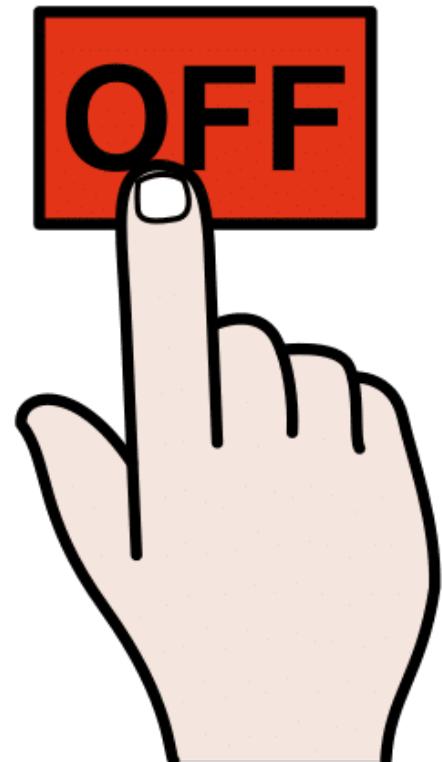


Education Grants (IES)



- You might receive errors in emails about this.
- In **v6.20.0**, we turned **off** pulling data from IES.
- Similarly, we'll wait to write a new script until the federal situation resolves & calms.
- Fortunately, most of our scholars do not receive grants from the Department of Education.

- **Note:** This change does NOT affect ERIC, the Department of Education's PubMed equivalent, which does have an API.





Deep Dive

Collaborations on Publications

Collaborations



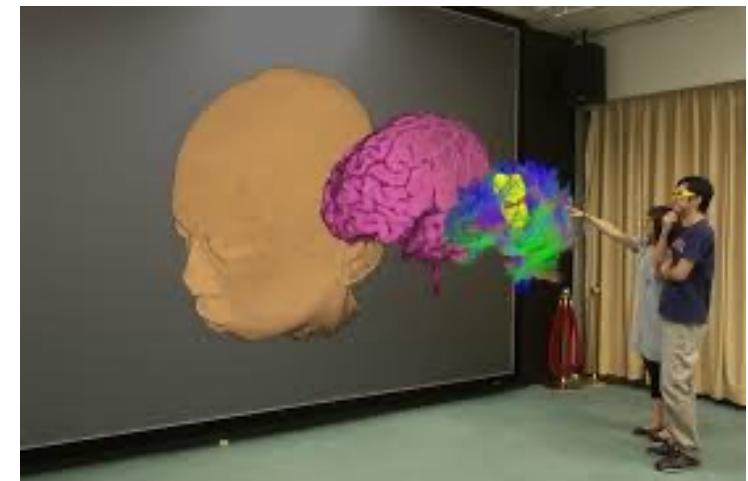
- Why publications and not grants?
 - More publications exist
 - More data available on them – PubMed
 - Affects even the newest of scholars
- The computer:
 - Makes fun scientific visualizations possible
 - Makes simplifying complex data helpful & necessary
 - Has coding libraries to enable custom, interactive graphs
- Administrators are always interested in profiling their group



Outline



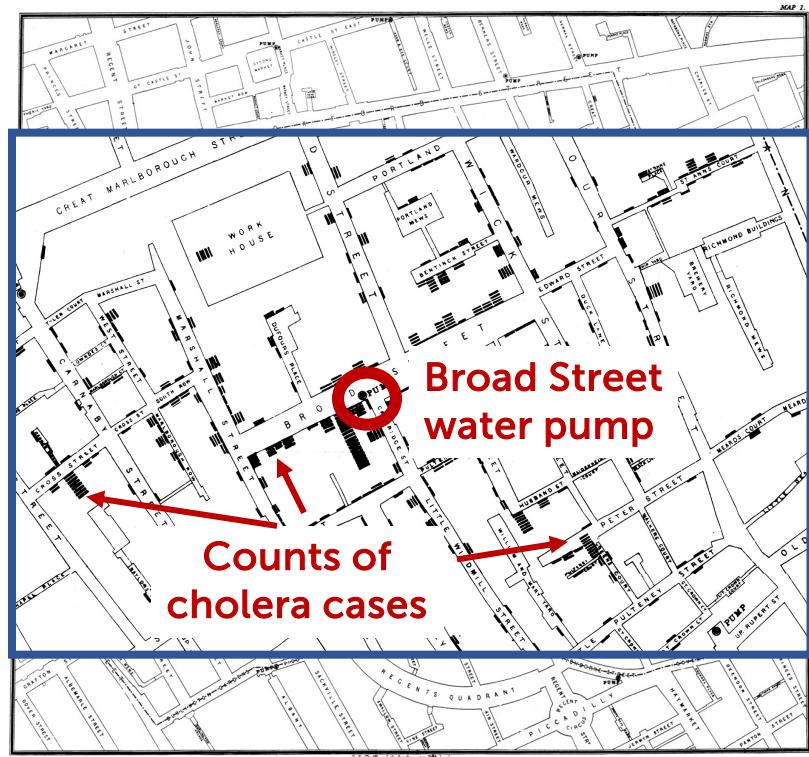
- An overview of scientific visualizations
- Flight Tracker:
 - Social network of collaborations
 - Multi-site consortia
 - International collaborations
- Imagining new visualizations:
 - Available data
 - Enabling technologies
 - Open questions – what would help practical problems?



History of Scientific Visualizations



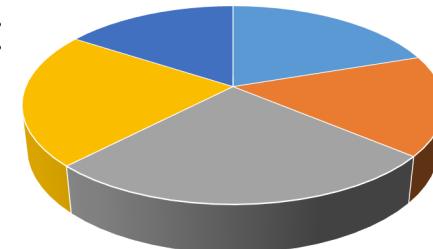
- Helpful to organize wide-ranging data instead of tables
- Early: Galileo & Isaac Newton
- John Snow, cholera & epidemiology in 1854
- Required manual artistry
- Published in scientific journals
- Hand-drawn infographics in newspapers
- Required time, skill & printability



Modern Scientific Visualizations



- The growth of personal computers:
 - Microsoft Excel & PowerPoint
 - Advanced tools for coders
 - Internet graphics & journals
- **Edward Tufte**, *The Visual Display of Quantitative Information*, 1983, 2001
 - Political scientist; father of modern visualizations
 - Organized concepts of information design
 - Five seminal books with historical examples
 - Oh, and he hates PowerPoint!



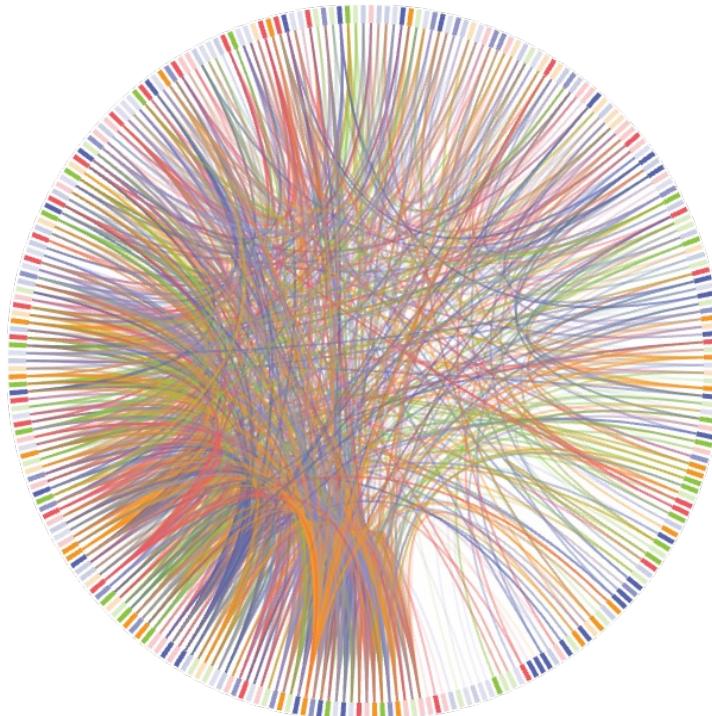
Flight Tracker on Collaborations



- Graphics
 - Social network of collaborations
 - Multi-site consortia
 - International collaborations
- Data
 - PubMed: Co-author names, institutional affiliations, MeSH terms, associated grants
 - NIH's iCite: Papers citing this paper, clinical papers citing this paper, papers this paper cites



Social Network of Collaborations



Relies upon co-authorship information

- Nodes on the outside are scholars
- Every time they co-author a paper together, a line between them is drawn
- The “hairball graph” – busy lines mean a lot of collaboration

Social Network of Collaborations



- **Only includes the co-authors in your project/cohorts.**
- “Collaboration” = a pair of co-authors on one paper
- “Average Collaborations with a Collaborator” = average number of co-authors x papers

Total Number of Papers	1,477
Total Number of Citations by Papers	57,715
Total Collaborations	7,359
Number of Scholars with Collaborations	n = 270
Average Number of Collaborators with at least one Collaboration	7.0
Mean of Collaborations	$\mu = 27.2$
Average Collaborations with a Collaborator	3.8
Median of Collaborations	11
Mode of Collaborations	2, 5, 7
Standard Deviation	$\sigma = 44.7$
Maximum Collaborations	Leading 3 Entries 392 (Wesley H Self) 319 (Jonathan D Casey) 295 (Timothy J Hohman)
Maximum Number of Collaborators	Leading 3 Entries 34 (Jonathan D Mosley) 31 (Douglas B Johnson) 28 (Wesley H Self)

Social Network of Collaborations



- Mean = traditional average
- Median = middle value
 - If mean is much higher than median, then a set of high performers are skewing it
- Mode = most common value
- Standard Deviation = a statistical term

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Social Network of Collaborations



- “Maximum Collaborations” = those with the most co-authors x papers
- “Maximum Number of Collaborators” = those with the most co-authors in the network
- Both these values are great to identify individual awards for your top collaborators!

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Multi-Site Collaborative Groups

- Multi-Site Collaborations page

Multi-Site Collaborations

[Make a Cohort to View a Sub-Group](#)

Cohort:

More concise institution names will receive more matches.

List of Institutions or Fragments of Institution Names (one per line):

Vanderbilt
Medical University of South Carolina
Southern California
Kansas University Medical Center
University of Chicago
Yale
Harvard
University of Kentucky

Start Date (on-or-after 2014):

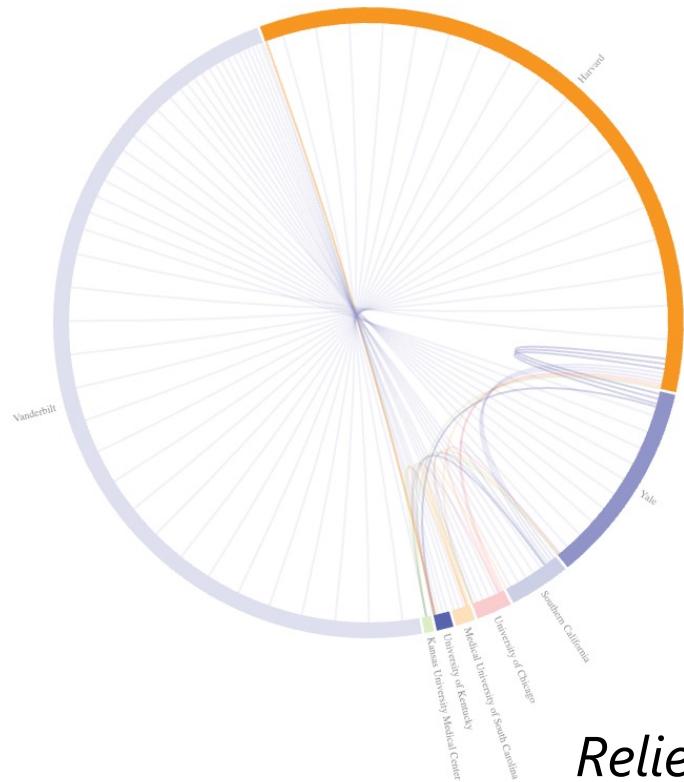
End Date:

PubMed publications only (no ERIC)



- Enter institutional names
- Will scan PubMed affiliations for these terms
- PubMed only has data for this feature after 2014

Multi-Site Consortia



- Nodes on the outside are the institutions you entered
- The size of the node reflects the number of collaborations
- Whenever the institutions co-author a paper together among your scholars, a line is drawn between them
 - If there are too many lines, they are divided into groups of ten.

Relies on co-authors' institutional affiliations

International Collaborations



- Multi-Site Collaborations page

International Collaborations

Note that institutions that need to be cleaned will be marked with a **. Other institutions may also need to be cleaned due to limitations in the PubMed data quality and storage capabilities.

[Make a Cohort to View a Sub-Group](#)
Cohort:

One Institution per Row on CSV? (Unchecked means combining all institutions for a publication on one row.)

Home Coordinates for Global Arcs on Graph (optional; leave blank to turn off):
Latitude (negative for south):
Longitude (negative for west):

Show Numbers on Each Country

Start Date (on-or-after 2014): End Date:
PubMed publications only (no ERIC)

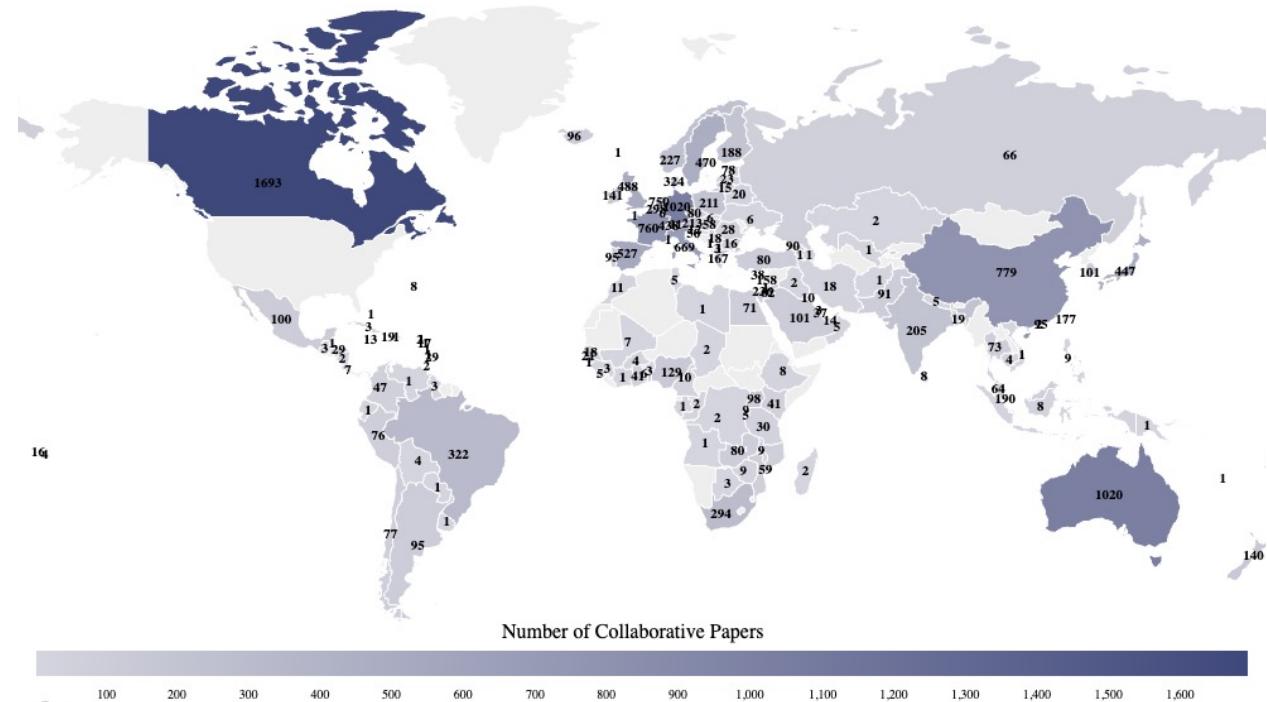
- You can draw an arc from your institution to each country if you provide the GPS coordinates
- You can export your data to a CSV
- PubMed has data only after 2014

International Collaborations



Without arcs

Darker blue /
purple = more
collaborations



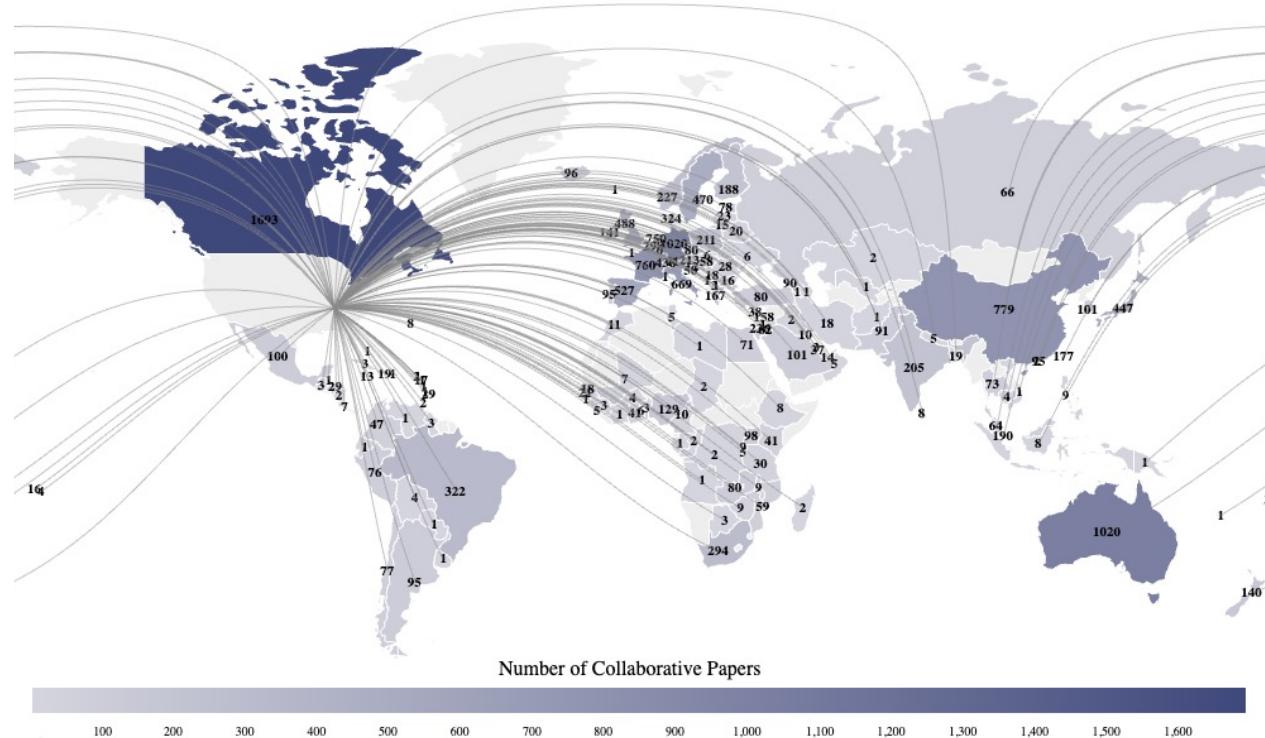
Relies upon countries in institutional affiliations

International Collaborations



With arcs

Darker blue /
purple = more
collaborations



Relies upon countries in institutional affiliations

Available Data

new

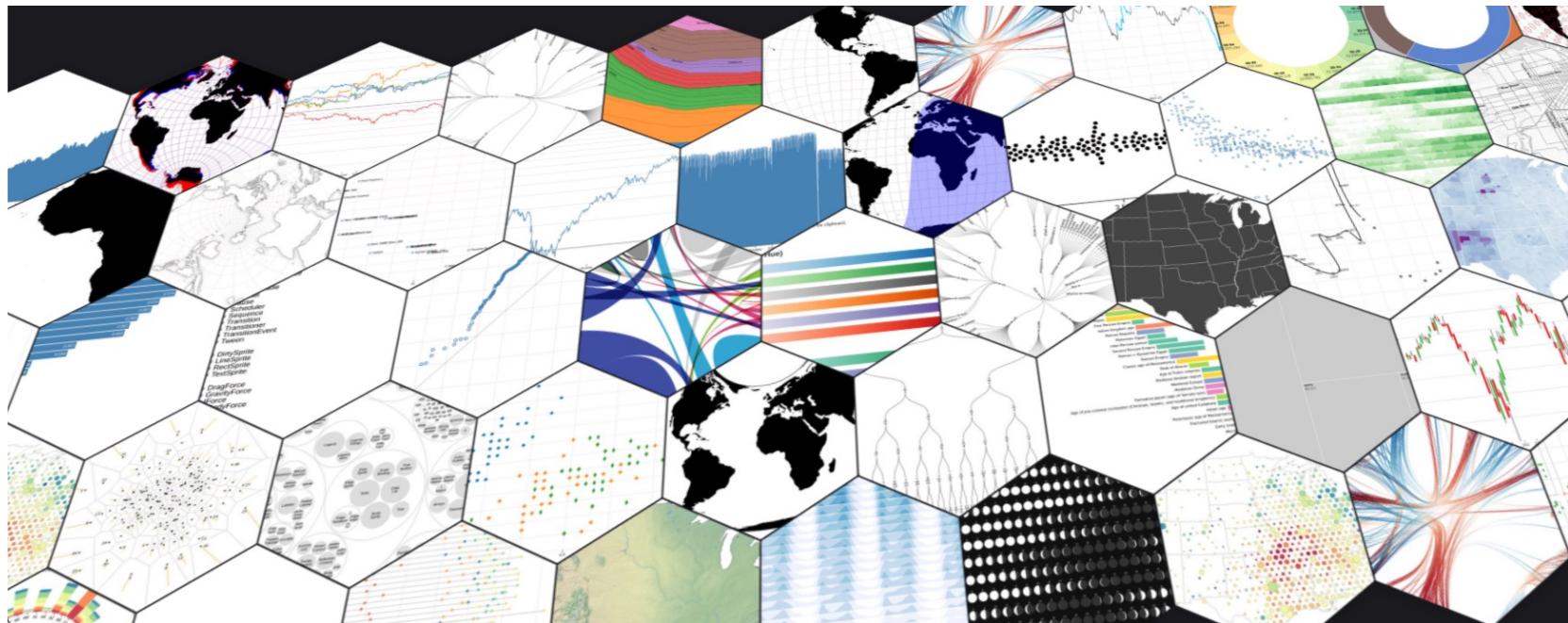
- PubMed:
 - Co-authors
 - Institutional affiliations, usually with countries
 - MeSH terms for scientific fields
 - Associated grants
 - Free-text keywords
- NIH's iCite [as of **v6.20.0**]:
 - Papers citing this paper
 - Clinical papers citing this paper
 - Papers this paper cites



Enabling Technologies

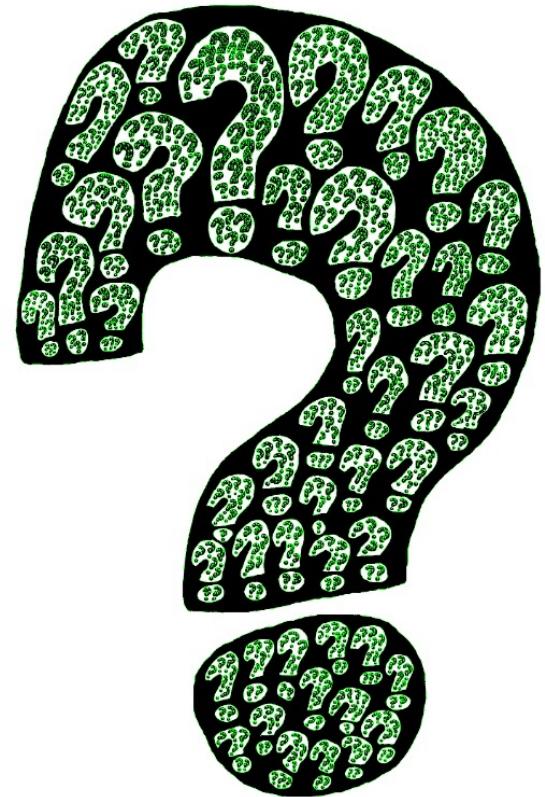


 d3js.org: Each hexagon is a project with its own code template

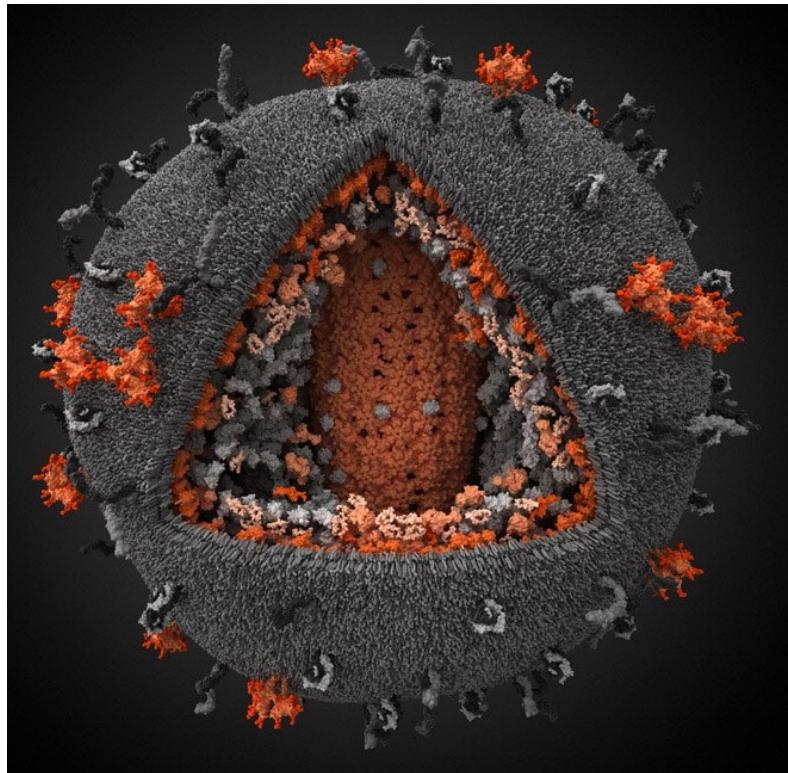


Open Questions

- I admit I'm weak here. I learn everything about developing research careers from listening to you and people like you.
- This is also where team science comes in. Today's most interesting problems are solved by teams. This is no exception.
- What questions – which probably are complicated – can be addressed by scientific visualizations? **What can you imagine you'd want to know & communicate about your group's scientific collaborations? Especially, what shows their impact?**



Recap



- Scientific visualizations
- Social network of collaborations
- Multi-site consortia
- International collaborations
- Imagining new visualizations:
 - PubMed data
 - Enabling technologies
 - Open questions



What's Next?

The “Leaky Pipeline”



- Much literature tells of a “leaky pipeline” among academic researchers in non-majority gender, racial & other groups
 - Many people in these groups are coming in, but not many are represented in top roles later in their career
- How can Flight Tracker help diagnose & suggest remedies?
- Question: **Does your institution have surveys about why people leave?**
 - What motivates job departures?
 - What drives institutional successes / failures?



Find a Collaborator



- Earlier in 2024, the Scholar Portal added a way to search all Flight Trackers for a certain publication topic [MeSH term]
- We've been using it to focus emails for career opportunities, like a research grant for "Health Services Research"
 - Avoiding excess email noise
- We love the targeting; we want to improve it:
 - Make a more advanced interface
 - Make a table of outputs
 - Add it to the admin side of Flight Tracker, too
- **Andrew is starting to work through our list of improvements**



Educational Videos



- Asynchronous, online videos to replace “Newbie” call
- Coming in late spring/early summer
- We’re using an on-campus studio to film short videos to be shared on our website
- **We’re starting to produce transcripts, which will be shared, to use on the videos**



Support Resources



Forum: Flight Tracker Community

Free accounts available

Monthly Troubleshooting Call

3rd Wednesday, March 19, at 1pm CT

Monthly “Newbie” Call

March 17, noon CT

Monthly Getting Started Workshop

March 20, 11am CT

Type your email in the chat for more info



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