Data Accessibility Update

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Lab Meeting 20240129

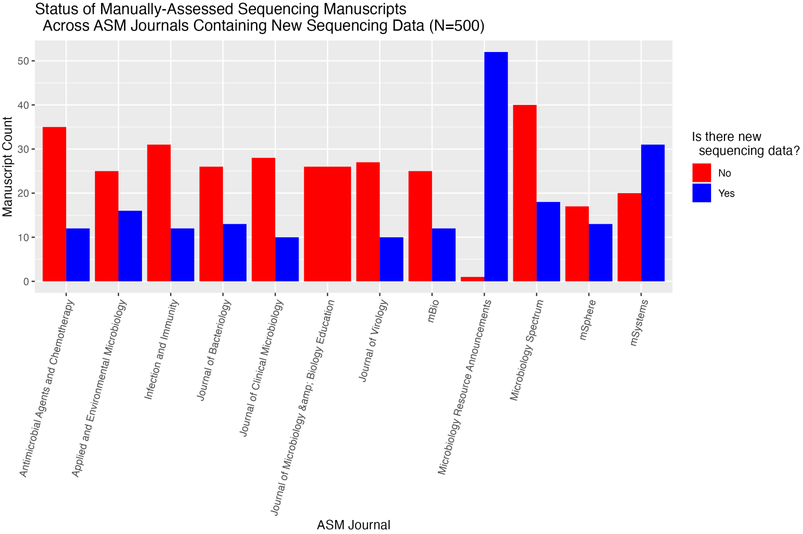
Project Goals

- General- Report statistics on the number of citations per paper as a function of data availability from the 12 ASM journals to answer question “Does making publication data available increase citation index of publications?”
- Proposal - Quantify the benefits of adhering to data accessibility policies for sequencing data at microbiology journals

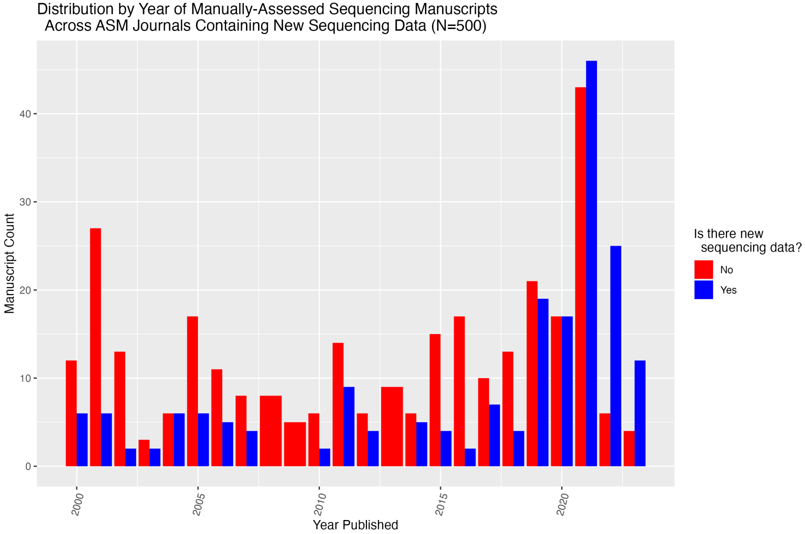
Completed Tasks

- Create “groundtruth.csv” file of N=446 papers with complete metadata from 12 ASM journals
  - Manually assessed each paper to determine if it was a “New Sequencing Paper” or not, and if “Data Available.”
- Creation of summary figures for the groundtruth dataset on its composition
  - Separation of papers by journal and by year based on data availability (N=181 with data available)
- API Key obtained for Clarivate Web of Science-starter API
  - Clarivate alternatives investigated:
    - CrossRef doesn’t appear to return citation metric information
    - Scopus API from Elsevier should get citation metrics, has institutional API key available

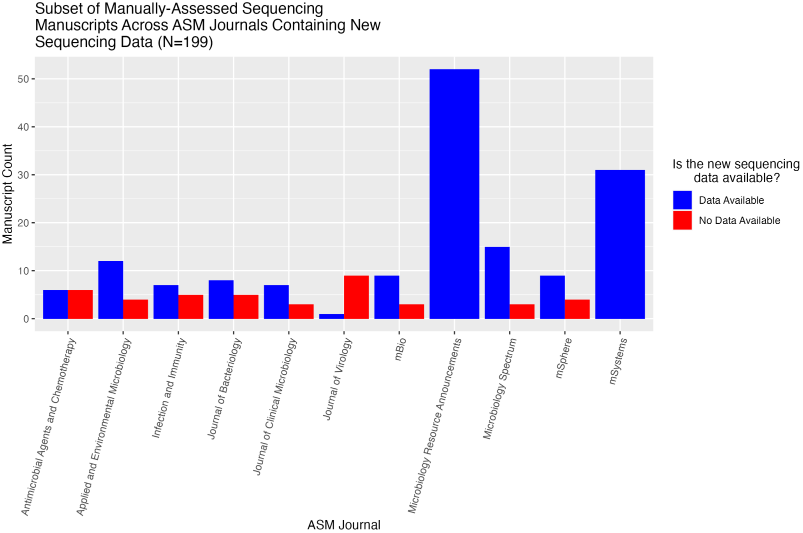
Which journals contain papers with new sequencing data?



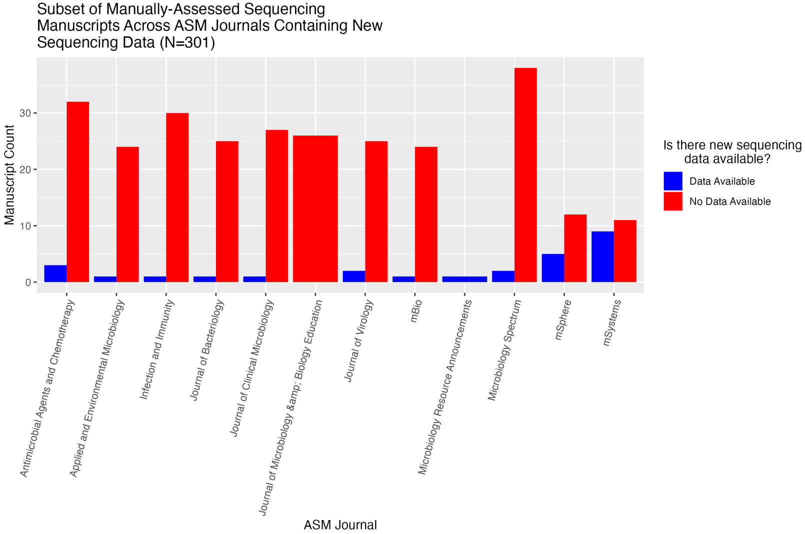
Distribution of papers with new sequencing data by year



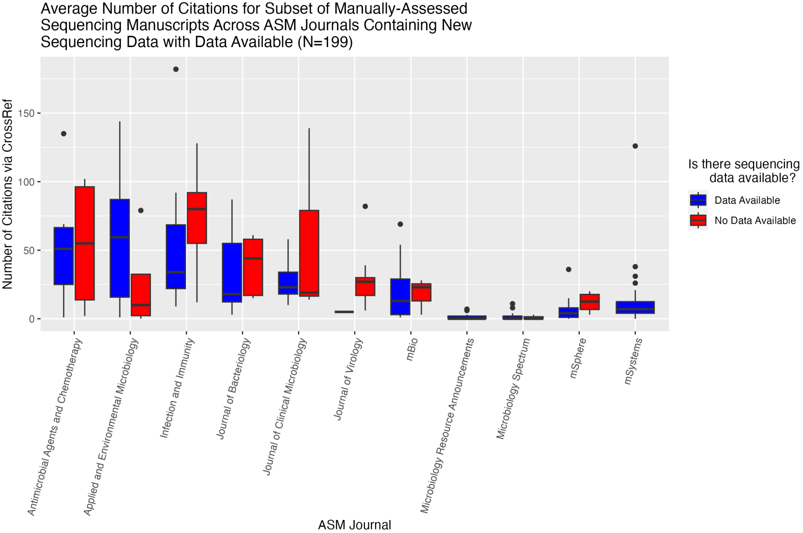
Of papers with new sequencing data, how many contain publicly available data?



Distribution of papers WITHOUT new sequencing data

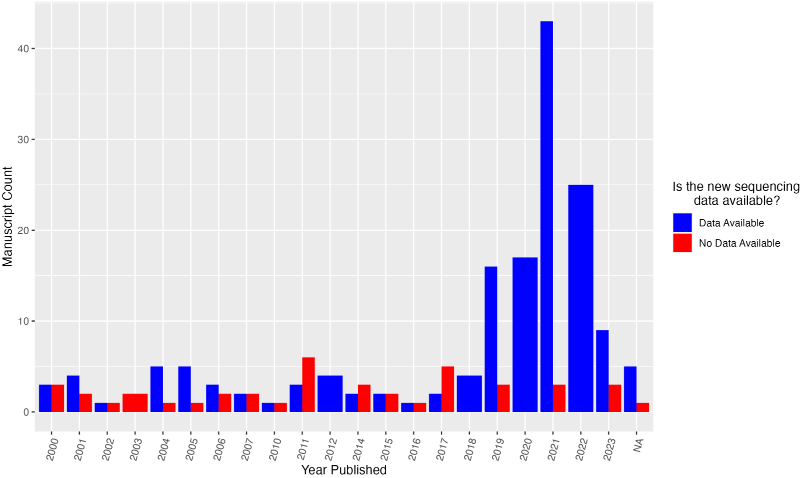


Do papers with sequencing data available have more citations?

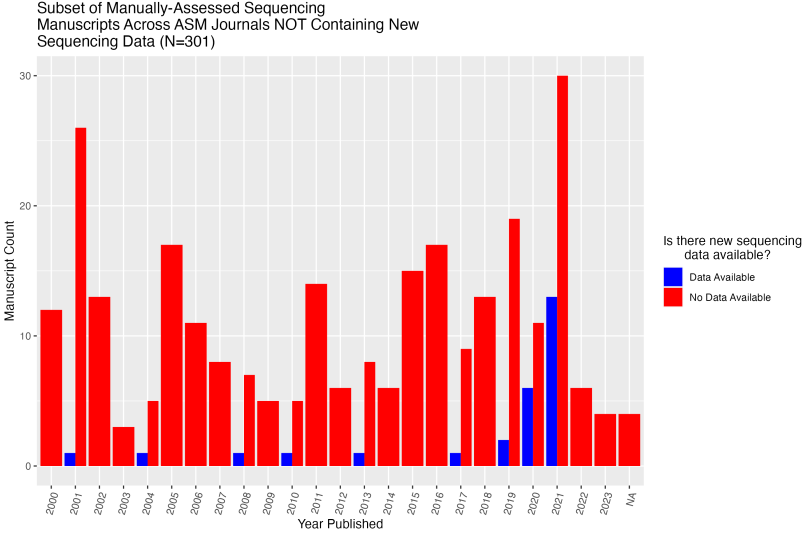


Does the number of sequencing papers with data available change based on date published?

Subset of Manually-Assessed Sequencing
Manuscripts Across ASM Journals Containing New
Sequencing Data (N=199)

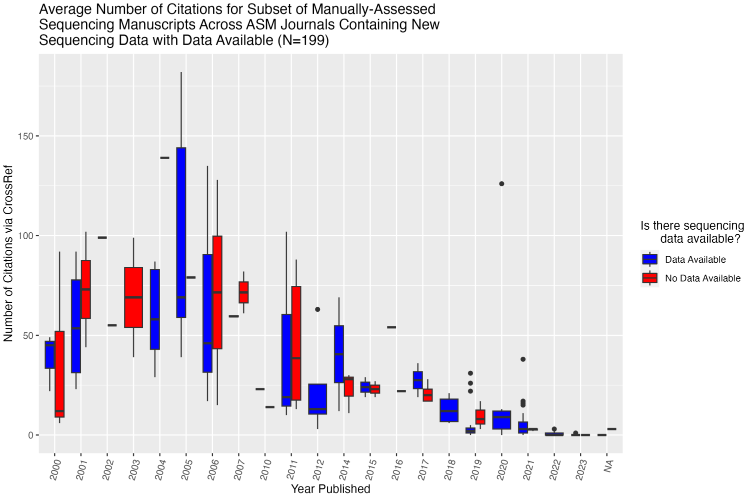


Distribution of nonsequencing papers by date published

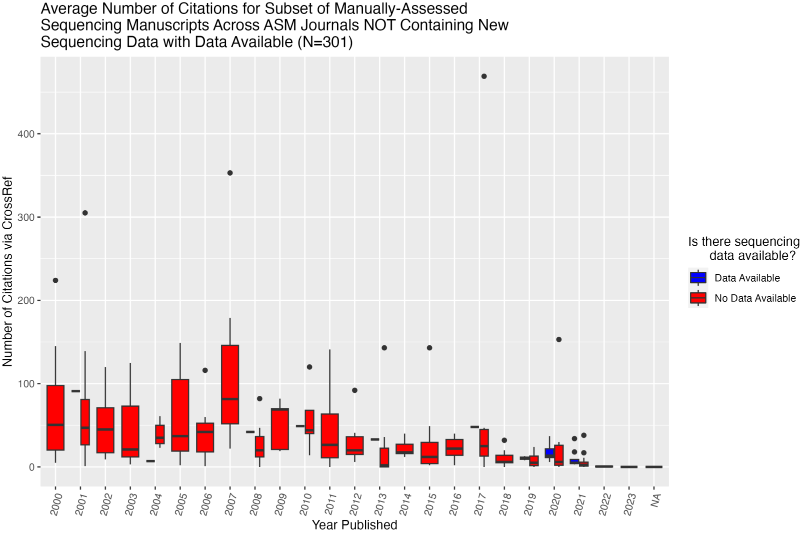


Do new sequencing papers with sequencing data available have more citations based on year published?

- Do we need more papers for the training set based on the composition of the current training set?



Do nonsequencing papers have more citations based on year published?



Webscraping Status

- Test script works to eliminate table and figure captions using rvest and XML2! (Thanks Greg!)
- Some remaining issues for web scraping:
  - Headings still in scrape (h2 and h3)
    - Hyphen removal using [:punct:] smashes some words together
    - Some special characters still appear

Next Steps - Tidy Text

- Tackle converting example scraped text into tidy text format (one token/line)
  - readLines() %>% unnest_tokens()
  - allows for greater use of tidytext package, helps compute metrics and work with text
- Anti join with stop words df to remove common words
  - could also remove words < 3 letters/characters (AC did, would probably get rid of special characters)
  - can also make custom df of stop words to remove
- Does word frequency matter for each paper or just collectively for each larger grouping (ie contains new data or has data available)
  - if word frequency doesn't matter for each paper, we can remove duplicate words and make dfs smaller

Next Steps - Storage and GL

- Storage of tidy text data frames for each paper, dependent somewhat on size
- Purrring for scraping and cleaning of all paper texts from the groundtruth dataset
  - GL scripting and polite package
  - ensure correct conda env is active
  - polite must be installed in R, not able to install using conda env

Notes from Meeting (1/3)

- Allison: When does ASM want data published? Is that consistent among journals?
    - Pat: no, not really consistent, we're trusting that if authors say that their data is on the SRA, it's actually there at that accession
    - authors in corporate settings often get away with "data available on request" which means data is really NOT available
    - might need to tighten up operational definition of data availability
        - data available on request is NOT available request, need to check AC/JVC coding of data to see if we coded incorrectly/kept track of this
        - variation may be driven by journal editors/reviewers
- Allison: do i have data on journal and year at once?
    - time since published and journal could be covariates
    - some journals have different goals (ie to be open access vs highly cited)
    - not all journals have been around the same length of time either

Notes from Meeting (2/3)

- does the training set need more papers?
  - why does it go back to the year 2000?
  - goal: need a training set to get a model to code for 20,000+ papers
    - want a representative training set of the actual data
    - does that focus on the last 5 years?
    - do we get equal papers for the last 20 years?
    - equal numbers by journal?
  - currently, roll with what we have for a training set with the addition to get back to 500 papers
    - pick papers randomly as best you can for underrepresented years and journals
    - look at AC 1300 papers set? does it have metadata already?
    - if we train the model on the training set and it's garbage, we can go back and work from there and start over or grab a ton more papers

Notes from Meeting (3/3)

- make pat figure of not new sequencing papers distribution (bar, boxplot)
- special character removal?
  - non-regex StringR cheatsheets (see back) to help you match character expressions
- can revisit link rot question if you want to poke your eyes out
  - will still need to get all of the paper text (with HTML tags tbh)
  - look for external links
    - this could actually help check for accession numbers that are live/viable