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Things to know when working with reddit data

Show & Tell – Social Media-Daten in der Forschungspraxis II

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Thank you to Ashley Amaya et al., authors of the article „New Data Sources in Social Science Research: Things to Know Before Working With Reddit Data” on which I base part of my talk

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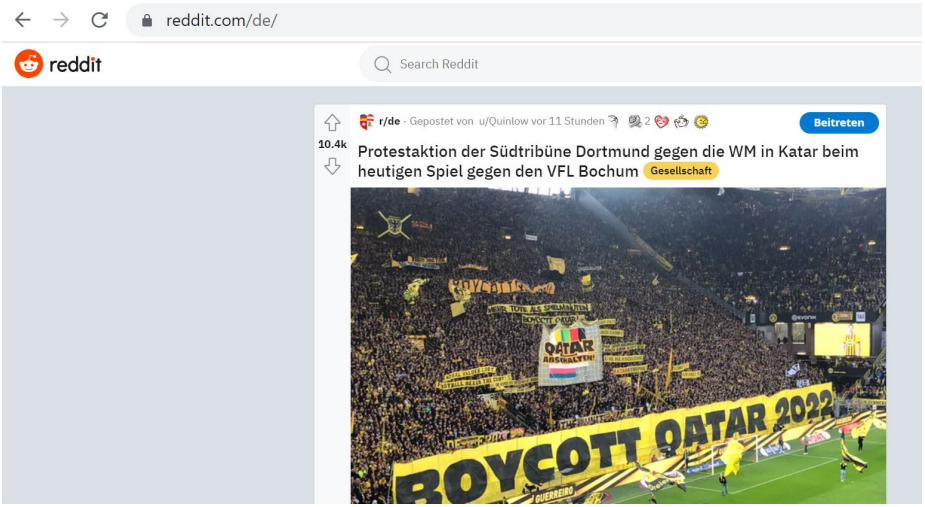
1. Reddit overview

Reddit as platform

- Popular social media site
  - Worldwide Nr. 20
  - Germany Nr. 37
  - US Nr. 9 (all numbers from 2021)
- Self-proclaimed “front page of the Internet”
- Founded in 2005



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reddit | r/dataisbeautiful | Search Reddit | Registrieren | Anmelden

DataIsBeautiful

Beitreten

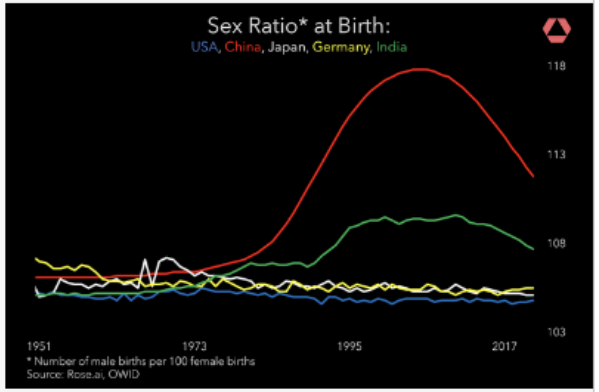
r/dataisbeautiful

Beiträge | Posting Rules | Top OC of the Week

Heiß | Neu | Top | Heute

Gepostet von u/rosetechnology OC: 22 vor 21 Stunden

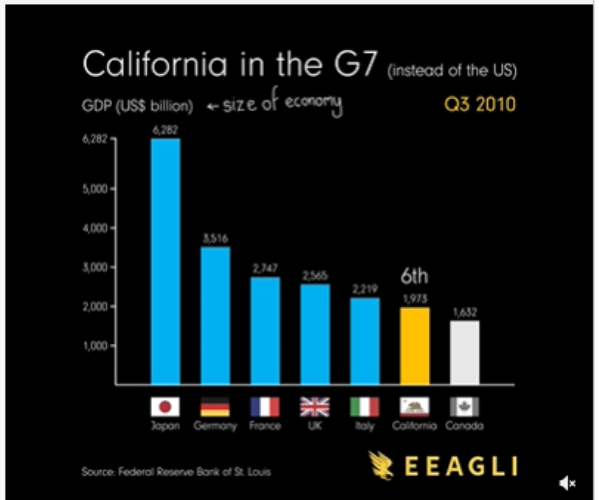
14.3k OC **Sex Ratio at Birth: USA, China, Japan, Germany, & India [OC]**



1.3k Kommentare | Teilen | Speichern

Gepostet von u/jcceagle OC: 97 vor 20 Stunden

6.3k OC **[OC] The GDP of California in the G7 instead of the United States**



Über diese Community

DataIsBeautiful is for visualizations that effectively convey information. Aesthetics are an important part of information visualization, but pretty pictures are not the sole aim of this subreddit.

Erstellt am 14. Feb. 2012

18.8m Mitglieder | 7.4k Online

Nach Flair filtern

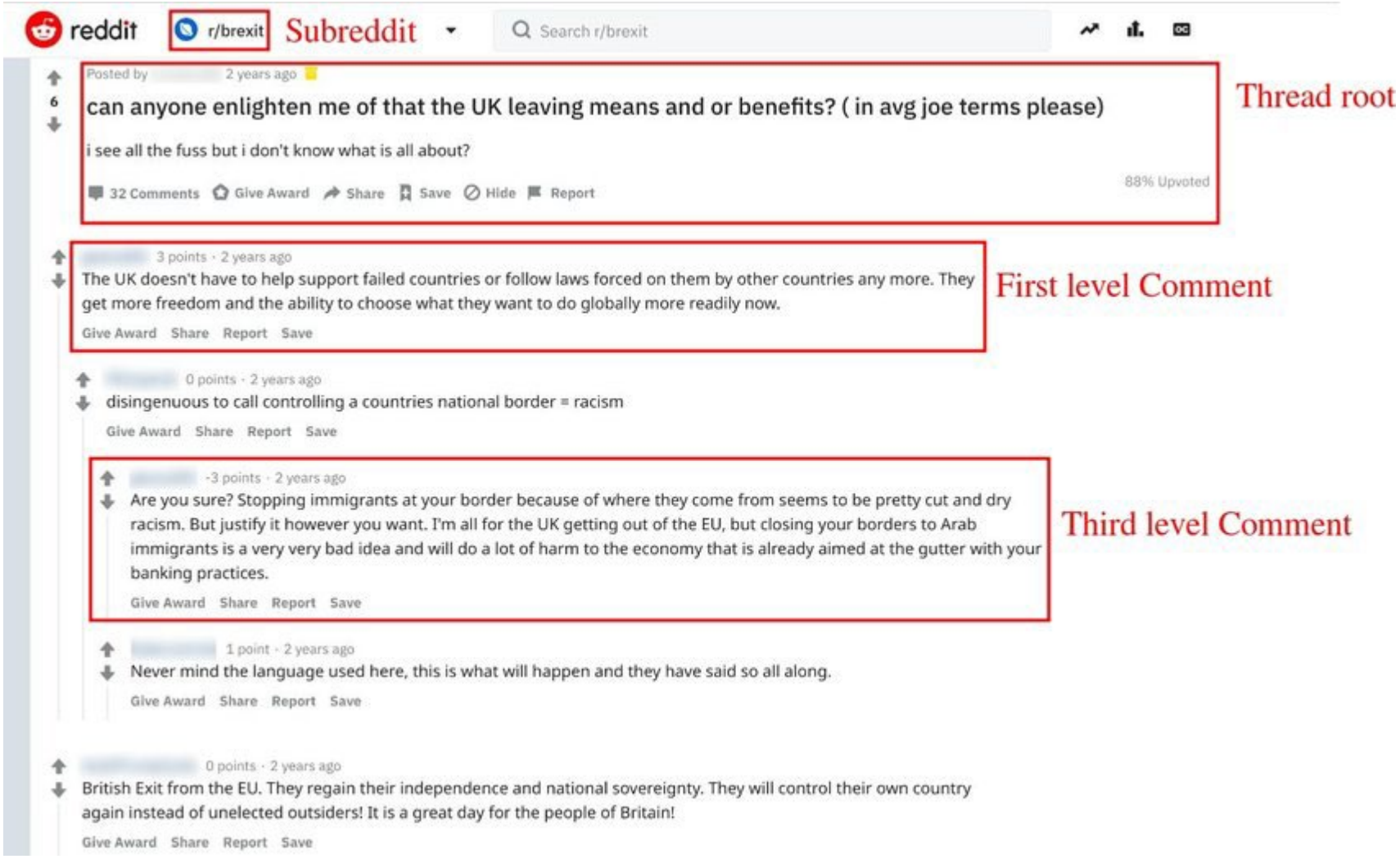
Discussion | OC

r/dataisbeautiful Regeln

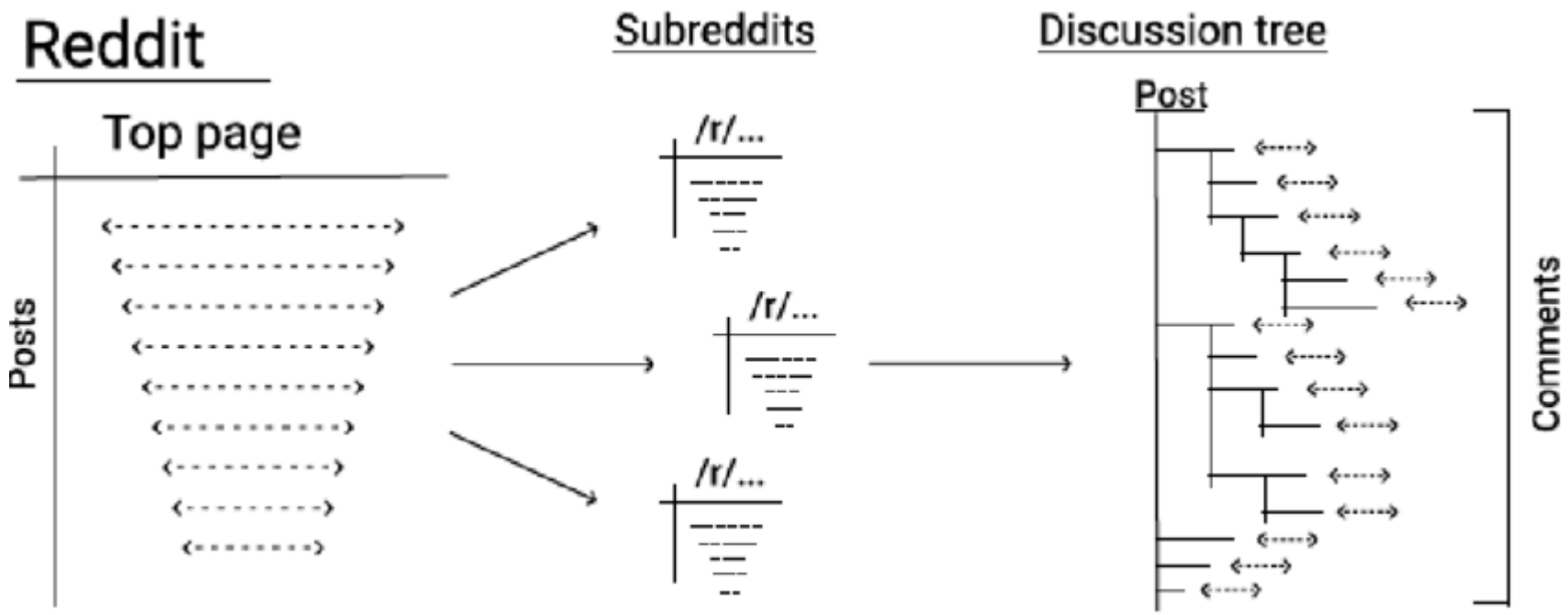
1. A post must be (or contain) a qualifying data visualization.
2. Directly link to the original source article of the visualization.
3. [OC] posts must state the data source(s) and tool(s) used.
4. DO NOT claim "[OC]" for visualizations that are not yours.
5. All diagrams must have at least one computer generated element.
6. No reposts of popular posts within 1 month.
7. Post titles must describe the data plainly without using sensationalized headlines.
8. Posts involving U.S. politics are allowed only on Thursday (ET)
9. Posts regarding Personal Data are permissible only on Mondays (ET).
10. Hate Speech or Dogwhistling
11. Comment is unconstructive
12. This is plagiarism. I'll explain in modmail.

Reddit basics

- Registered users can submit content
  - Content includes links, text posts, images, videos, GIFs
  - Upvoting and downvoting possible, influences position on pages
- Content is divided into boards/subpages called subreddits or communities
  - Example: r/dataisbeautiful or r/dataisugly
- Reddit administrators and subreddit-specific members moderate the subreddits



https://www.researchgate.net/publication/348757045_Linking_User_Opinion_Dynamics_and_Online_Discussions



https://sciendo.com/article/10.2478/subbs-2020-0005

Reddit as a data source for research

- Amount/Size: Due to its popularity, there is A LOT of data available
- Availability: Most subreddits (exact statistics are unavailable) are public
  - Public subreddits can be viewed by all
  - Posts may be commented and voted on by all registered users (free and anonymous)
  - The data may be downloaded for free by any registered user
- Identification of rare subpopulations: 130,000 active subreddits
  - Researchers of rare populations can identify and study eligible participants

reddit r/Frankenkultur

r/Frankenkultur Search Reddit

FRANKEN

Frankenkultur

Beitreten

r/Frankenkultur

Beitrag erstellen

Heiß Neu Top ...

VON MODS ANGEHEFTET

3

Gepostet von u/NicolaiWM Franke vor 2 Jahren

r/Frankenkultur Lounge

LIVE jetzt beitreten

0 Nachrichten Auszeichnen Teilen Speichern ...

5

Gepostet von u/NicolaiWM Franke vor 8 Monaten

Bamberger Bierkeller-Empfehlungen? Dorschd

Über diese Community

Ein Subreddit für alle, die Franken lieben & im schönen Frankenland leben. Hier könnt ihr euch über Kultur, schöne Orte, gutes Essen und sonstige Interessen und Neuigkeiten in Franken austauschen! Teilt gerne eure Tipps.

Erstellt am 15. Dez. 2020

227	4	Oberste 50%
Mitglieder	Online	Sortiert nach Größe

Beitrag erstellen

Content created on Reddit in 2021

Posts
429,952,687

Comments
2,717,216,237

PMs
713,505,544

Chats
1,912,574,822

Total
5,773,249,290

Examples for data analyses with Reddit data

- Gender roles (Ammari, Schoenebeck, & Romero, 2018)
  - Variation across parenting subreddits (mommit and daddit). Similarities in topics across the boards, such as sleep training, as well as differences, such as fathers talking about custody cases and Halloween
- News consumption (Wasike, 2011)
  - Human interest frame was the most common generic frame followed by technology. Science and technology was the most common issue-specific frame.
- Sexual identity (En, En, & Griffiths, 2013)
  - Evaluate through subreddit self-descriptions which aspects of identity are seen – and thereby made – to be markers of personal and collective sexual identities
- Mental health (Choudhury & De, 2014)
  - Self-disclosure in mental illness communities and characterization of mental health social support

Examples

- Right-wing accounts (Gaudette et al., 2021)
  - Group building dynamics in subreddits through calls for violence against minorities and political opponents of right-wingers
- Corona-pandemic and news consumption (Chipidza et al., 2022)
  - News sources in liberal and conservative subreddits

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2. A closer look from the social science perspective

2.1 The reddit population

Reddit population

- Reddit is anonymous + anyone can view most subreddits
- Posting, voting, or commenting on Reddit requires registration
- **Demographics of the 330 million active users are unknown**
    - Users are more likely to be male and younger
    - Pew:
        - 6% of all U.S. adults used Reddit
        - Men twice as likely as women to use
    - Reddit:
        - 79% of worldwide users are 18– 34 years of age

Reddit population

- First half of 2022, the **United States** accounted for 47.13 percent of traffic
- The **United Kingdom** was ranked second, accounting for 7.48 percent of web visits to the social media platform
- **Canada, Australia and Germany** are the next biggest countries

Reddit may be an appropriate source of data if a researcher is attempting to target a *rare population* but less ideal for *general population research*.

The definition of Redditors (e.g., Reddit posters, viewers/consumers, commenters) influences your findings

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2.2 Getting reddit data

Getting reddit data

- Two ways to access Reddit content
  - Via the Reddit API
    - PRAW for python
    - RedditExtractoR for R
  - Pushshift.io (maintained by redditor Jason Baumgartner, Stuck_In_The_Matrix)
    - Download via http://files.pushshift.io/reddit/
    - PSAW for python
    - pushshiftR for R

Getting reddit data via the Reddit API (python)

- API rules: https://github.com/reddit-archive/reddit/wiki/API#rules
- Any registered user may use the Reddit API, but they must fill out a special request and be authenticated. (This will take less than an hour.)
- The guide of the PRAW (Python Reddit API Wrapper) package provides documentation to start the process in Python
- Allows data collection from subreddits, threads, users
- Depending on the search being conducted and unit of analysis, there are limits to the number of units the system will return

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Submission

class `praw.models.Submission`*(reddit: praw.Reddit, id: Optional[str] = None, url: Optional[str] = None, _data: Optional[Dict[str, Any]] = None)*

A class for submissions to Reddit.

Typical Attributes

Note

This table describes attributes that typically belong to objects of this class. PRAW dynamically provides the attributes that Reddit returns via the API. Since those attributes are subject to change on Reddit's end, PRAW makes no effort to document any new/removed/changed attributes, other than to instruct you on how to discover what is available. As a result, this table of attributes may not be complete. See Determine Available Attributes of an Object for detailed information.

If you would like to add an attribute to this table, feel free to open a pull request.

Attribute	Description
`author`	Provides an instance of `Redditor`.
`clicked`	Whether or not the submission has been clicked by the client.
`comments`	Provides an instance of `CommentForest`.
`created_utc`	Time the submission was created, represented in Unix Time.
`distinguished`	Whether or not the submission is distinguished.
`edited`	Whether or not the submission has been edited.

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`clicked`	Whether or not the submission has been clicked by the client.
`comments`	Provides an instance of `CommentForest`.
`created_utc`	Time the submission was created, represented in Unix Time.
`distinguished`	Whether or not the submission is distinguished.
`edited`	Whether or not the submission has been edited.
`id`	ID of the submission.
`is_original_content`	Whether or not the submission has been set as original content.
`is_self`	Whether or not the submission is a selfpost (text-only).
`link_flair_template_id`	The link flair's ID.
`link_flair_text`	The link flair's text content, or `None` if not flaired.
`locked`	Whether or not the submission has been locked.
`name`	Fullname of the submission.
`num_comments`	The number of comments on the submission.
`over_18`	Whether or not the submission has been marked as NSFW.
`permalink`	A permalink for the submission.
`poll_data`	A `PollData` object representing the data of this submission, if it is a poll submission.
`saved`	Whether or not the submission is saved.
`score`	The number of upvotes for the submission.
`selftext`	The submissions' selftext - an empty string if a link post.
`spoiler`	Whether or not the submission has been marked as a spoiler.

Getting reddit data via Reddit API

- Overview over options in R from APIs for Social Scientists (Bauer et al)
- https://bookdown.org/paul/apis_for_social_scientists/reddit-api.html

- Simple API calls via subreddit webadresses *without authentication*
  - https://www.reddit.com/r/cats/*.json*
  - Possibe to extracts threads, upvotes and so on

- RedditExtractoR: Reddit Data Extraction Toolkit
  - Limited functionalities

find_subreddits . . . . . .
find_thread_urls . . . . . .
get_thread_content . . . .
get_user_content . . . . .

Getting reddit data via pushshift download

- Contains all Reddit content
  - Data sets are stored as large compressed json files organized by month and by type of content (e.g., post or comment)
  - Data is copied into Pushshift at the time it is posted to reddit
- The data set structure and its contents changes over time as changes were implemented in Reddit
- Contains variables and content that may have since been removed or changed (not available on Reddit API)
- Current scores not available via pushshift

Getting reddit data via pushshift download

Directory Contents

Please consider making a donation (https://pushshift.io/donations) if you download a lot of data. This helps offset the costs of my time collecting data and providing bandwidth to make these files available to the public. Thank you!

If you have any questions about the data formats of the files or any other questions, please feel free to contact me at jason@pushshift.io.

Filename	Type	Size (bytes)	Date Modified
69M_reddit_accounts.csv.gz	69M_REDDIT_ACCOUNTS.CSV.GZ File	1,051,903,601	Sep 8 2021 6:10 AM
RA_2018-09.gz	RA_2018-09.GZ File	1,104,136,829	Sep 8 2021 6:11 AM
RA_2020-06-28.ndjson.zst	RA_2020-06-28.NDJSON.ZST File	1,933,724,618	Sep 8 2021 6:12 AM
RS_2019-09-01.gz	RS_2019-09-01.GZ File	256,537,945	Sep 8 2021 6:12 AM
authors	<Directory>	<Directory>	Jun 23 2022 2:09 AM
authors.dat.zst	AUTHORS.DAT.ZST File	1,444,191,053	Sep 8 2021 6:14 AM
comments	<Directory>	<Directory>	Oct 11 2022 11:47 AM
daily	<Directory>	<Directory>	Sep 8 2021 5:54 AM
joel_data.ndjson.zst	JOEL_DATA.NDJSON.ZST File	105,415,750	Oct 19 2021 11:30 AM

Getting reddit data via pushshift API

- Pushshift also offer an API and there are API wrappers for R and python
  - Python package psaw
    - https://psaw.readthedocs.io/en
  - R Package pushshiftR
    - https://github.com/nathancunn/pushshiftR
  - The Python package offers more options and is better documented.

Comparison of pushshift and Reddit API

Amaya et al. 2019

Table 2. Differences Between Two Reddit Data Sources.

Downloadable Data Set (from http://files.pushshift.io/reddit/)	Reddit API
• Contains all Reddit content, making it larger than one may want or be able to process	• Caps ability to pull data to 60 items per minute. An item would be a single post or a comment along with the metadata associated with that submission
• Maybe some missingness (due to download error), but the rate of missing data has declined over time	• More variables at more levels of analysis (e.g., thread, user, subreddit) are available through the API than the downloadable data set
• The data set structure and its contents changes over time as changes were implemented in Reddit	• Will be more consistent if downloaded all at once
• Contains variables and content that may have since been removed or changed (not available on Reddit API)	• Depending on the search being conducted and unit of analysis, there are limits to the number of units (i.e., data rows) the system will return (either 100, 1,000, or unlimited)

Note. API = Application Programming Interface.

Combination of pushshift and Reddit API

- Search for content through Pushshift, save IDs of the content
- Forward IDs to the Reddit API
- Get updated (meta-) data through the Reddit API

Summary

- Reddit is large and will likely have sufficient data for several types of research objectives and questions.
- The sociodemographic characteristics of redditors are not comparable to the general population but insights into rare subpopulations might be possible.
- Pushshift and the Reddit API have different advantages and disadvantages for collecting Reddit data, but can also be combined.

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Thank you for your attention!

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