

COMPARATIVE ANALYSIS OF CHATGPT AND RE3DATA.ORG FOR FINDING DATA REPOSITORIES IN SOCIAL SCIENCE

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Abstract. Artificial intelligence (AI) is increasingly important in scholarly communication. Despite concerns about academic integrity compliance, AI tools offer potential benefits for researchers navigating the complex landscape of research data repositories. This study explores whether Chat Generative Pre-training Transformer (ChatGPT) can effectively identify and recommend quantitative and qualitative datasets in social sciences. We compare how ChatGPT (version 3.5) identifies data repositories versus the specialized Re3Data.org registry.

The results revealed that ChatGPT can respond with relevant repository recommendations that complement rather than duplicate those found through Re3Data.org, providing researchers with a broader range of options. Standard searches using Re3Data.org offered more structured results with disciplinary categorization, while ChatGPT provided repositories with richer contextual information about their contents.

In specialized searches for datasets on generative AI in academic contexts, ChatGPT demonstrated the ability to identify specific datasets across multiple repositories with detailed metadata. However, when asked about broader empirical trends, such as the proportion of quantitative versus qualitative research, ChatGPT could only provide generalized responses without precise statistics, highlighting its limitations in accessing current empirical data.

The conclusion reached is that while ChatGPT cannot yet generate repository data of suitable quality for advanced-level analyses in all contexts, it is a valuable complementary tool to traditional repository registries. As AI tools continue to develop, educators and scholars must shift their focus from negative expectations to the practical benefits these tools can provide in research data discovery.

Keywords: ChatGPT, Re3Data.org, data repositories, social science, AI.

1. INTRODUCTION

Research data has emerged as a cornerstone of innovation and discovery in the modern scientific landscape. Raw data, properly stored and shared, enables verification of results, facilitates new analyses, and drives collaborative progress across disciplines. Data repositories — specialized platforms designed for preserving, organizing, and disseminating research data — have become essential infrastructure for the scientific community (Corti et al., 2020, p. 1).

Well-managed research data repositories benefit researchers, institutions, and society. They ensure long-term data preservation, protecting valuable information from being lost when projects conclude, or researchers move institutions. They provide standardized metadata and documentation, making data more discover-

able and reusable by others. Perhaps most importantly, they democratize access to scientific information, allowing researchers worldwide to build upon existing findings regardless of institutional resources (Assante et al., 2016, p.1–2).

The shift toward open data practices has accelerated scientific advancement in remarkable ways. Studies consistently show that papers with publicly available data receive more citations and have a more significant impact (Piwowar, et al., 2007, p. 3). Cross-disciplinary collaboration flourishes when specialists from different fields can access and analyze the same datasets through different methodological lenses. Furthermore, data repositories help combat the “replication crisis” by allowing independent verification of published findings, strengthening scientific rigor and public trust in research.

Funding agencies and publishers increasingly recognize these benefits, implementing policies that require researchers to deposit their data in appropriate repositories. This cultural shift toward data sharing represents a fundamental transformation in how we conceptualize scientific output — acknowledging that datasets themselves are valuable scholarly contributions worthy of recognition alongside traditional publications (Corti et al., 2020, p.p. 275–283).

HOW TO FIND DATA REPOSITORIES

Finding the proper data repository for research needs requires a strategic approach. General-purpose repositories like Zenodo, Figshare, and Dryad provide excellent starting points for researchers across disciplines, offering robust infrastructure for diverse data types with minimal barriers to entry. These platforms typically assign Digital Object Identifiers (DOIs) to datasets, ensuring they remain permanently citable and discoverable.

Discipline-specific repositories often provide tailored features and community standards for more specialized research. Resources like re3data.org (Registry of Research Data Repositories) catalog thousands of repositories across scientific domains, allowing researchers to filter by subject area, data type, and access conditions. Institutional repositories managed by university libraries also offer valuable options, particularly for researchers looking to comply with local data management policies (Corti et al., 2020, p.p. 278–281).

When evaluating potential repositories, consider factors beyond mere storage capacity. Look for platforms that support appropriate metadata standards for specific fields, offer version control, provide usage statistics, and ensure long-term preservation commitments (Kindling & Strecker, 2022). The repository's certification status (such as CoreTrustSeal certification) can indicate adherence to best practices in data stewardship.

Journal requirements should also factor into researchers' decision-making process. Many publications now recommend or require deposition in specific repositories as part of their

submission guidelines. Consulting these requirements early in the research process can save considerable time later. Additionally, database literature searches through platforms like PubMed, Web of Science, or Google Dataset Search can reveal which repositories are commonly used in some research areas.

Networking with colleagues and attending data management workshops can provide insider knowledge about repository functionality, user experience, and community adoption. Remember that the ideal repository preserves research data and maximizes its visibility and reuse potential within the research community.

CAN AI HELP FIND AND MANAGE RESEARCH DATA REPOSITORIES?

Generative artificial intelligence, such as ChatGPT, can now be employed with associated risks and benefits to address these challenges. AI tools can significantly streamline identifying appropriate data repositories by rapidly analyzing research requirements and matching them with suitable platforms. These tools can process vast amounts of information about repository features, disciplinary standards, and data management best practices, providing researchers with tailored recommendations in seconds rather than hours of manual research.

AI assistants excel at parsing complex repository documentation and translating technical requirements into accessible language. They can help researchers understand metadata standards, file format requirements, and submission protocols specific to different repositories. This guidance can be particularly valuable for early-career researchers or those entering new research domains, flattening the learning curve associated with data management practices.

However, implementing AI in research data management comes with important considerations. AI recommendations are only as good as the data they are trained on, which may not always reflect the most current repository landscape or discipline-specific nuances. There is also a risk of over-reliance on automated systems without developing fundamental data literacy skills. Researchers should view AI tools as

supplements to, rather than replacements for, scholarly judgment and domain expertise.

The ethical dimensions of AI use in research contexts also warrant attention. Questions about data privacy, algorithmic bias, and the appropriate attribution of AI contributions remain actively debated in the scientific community. Best practice suggests using AI as a starting point for repository identification, followed by critical evaluation and consultation with human experts such as research data librarians or experienced colleagues.

Despite these challenges, the potential for AI to democratize access to sophisticated data management practices is substantial. As these tools continue to evolve, they may help bridge the gap between data management best practices and real-world implementation, particularly for researchers working in resource-limited settings or outside traditional research institutions.

ChatGPT is a modern-day artificial intelligence tool that has gained huge popularity in the academic and educational environment. It was

developed by OpenAI as a tool that performs its activity communication in the form of dialog (Introducing ChatGPT, 2022). That means any user can ask ChatGPT (inquire), and Chat conversationally responds as if the user addressed a person, for example, reference department staff in the library.

Re3Data.org is a global registry of data repositories funded by the German Research Foundation (DFG) (About | re3data.org, 2023). The search in this registry is performed by subject, country, or data type. The user selects the necessary category and widens it to the subcategory most relevant to the information needed.

PRACTICE IN FINDING REPOSITORIES IN SOCIAL SCIENCE

First, let us start by asking a question about ChatGPT. The following command was given to ChatGPT: "Hi, please, find data repositories for social science".

The result is in figure 1:

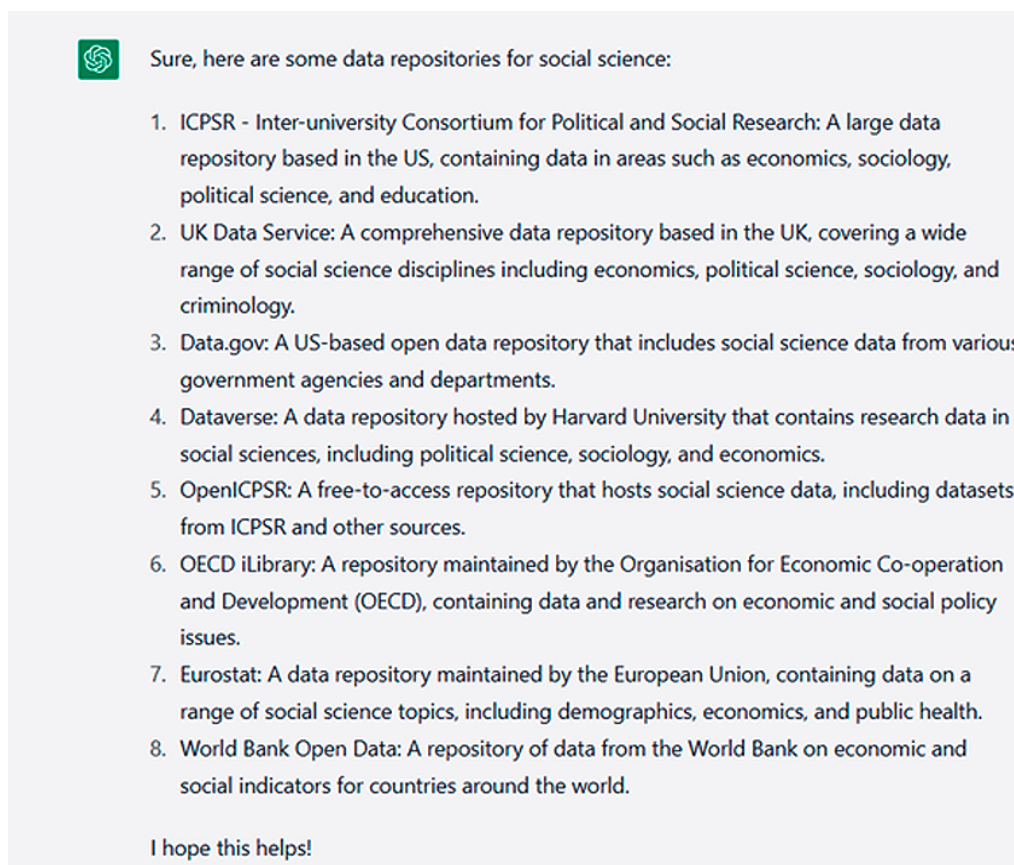


Fig. 1. Screenshot of ChatGPT's answer to the task of finding data repositories in social science

Thus, as we can see, ChatGPT selected the following repositories: ICPSR – Inter-university Consortium for Political and Social Research (ICPSR, 2023) which is enriched by 780 + member institutions and contains 18,369 studies, comprising 6,156,373 variables, 106,943 publications; UK Data Service (UK Data Service, 2023) funded by UK Research and Innovation (UKRI), through Economic and Social Research Council with contributions from partners containing over 5,000 datasets (LibGuides: Statistics and datasets: UK data service, 2023); Data.gov (Data.gov Home – Data.gov, 2023) which provides access to datasets published by agencies across the Federal Government and has 248,505 datasets available; Dataverse: A data repository hosted by Harvard University that contains research data in social sciences, including political science, sociology, and economics, open to all researchers from any discipline, even outside of the Harvard community (Harvard Dataverse, 2023). The collection dedicated to social sciences contains 58,836 sets of data; OpenICPSR, which is a set of repositories united by the topics connected to social studies, contains 6,904 results: of public use 6,808 and restricted use 96 (OpenICPSR: Share your behavioral health and social science research data, 2023); OECD iLibrary containing by March 2023 Content items (March 2023): 17,585 ebook titles, 97,850 chapters, 299,200 tables and graphs, 172 podcasts, 2,600 articles, 6,390 multilingual summaries, 8,350 working papers, and policy responses, 7 billion data points across 44 databases (About OECD iLibrary, 2023); Eurostat, as the statistical office of the European Union, is a data repository where there is logical structural organization of the categories and subcategories of data sets (Eurostat, 2023). World Bank Open Data is maintained by the World Bank Group and contains 20,000 indicators from more than 200 countries and economies, with 6,433 datasets available (World Bank, 2023). These repositories contain materials in disciplines related to social science, such as social science itself, statistics, economic studies, politics, public health, and education.

The next step in our comparative analysis is to search for similar repositories in the Re3Data

registry. To find thematic repositories, one can go to <https://www.re3data.org/> and select the option “browse by subject,” as shown in Figure 2. When various topics are of interest, we might select the topic “Social and Behavioural Sciences” or proceed with further specifications and select one from the following categories with their subcategories: education sciences, psychology, social sciences, political science, economics, and jurisprudence.

For example, we would like to see the list of Social Sciences and select this option. The registry shows the following results: Repositorio Universidad Autónoma de Bucaramanga, located in Colombia and contains data sets in humanities and social sciences along with medicine (Repositorio Universidad Autónoma de Bucaramanga | re3data.org, 2023); Social Scientific Research Documentation Centre Repository located in Hungary and containing data sets in social sciences along with medicine and life sciences (Social Scientific Research Documentation Centre Repository | re3data.org, 2023); Grouplens Datasets located in the US and containing materials not only in social science but also in computer science and engineering (Grouplens Datasets | re3data.org, 2023). The result shown by Re3Data contains fewer repositories that we cannot define as social science only but as multidisciplinary.

The search results do not overlap, and we can observe different names of repositories suggested by ChatGPT and Re3Data, which is useful for researchers looking for more possibilities in depositing their own data sets or looking for existing data for their research. However, we must admit that repositories from ChatGPT results can also be regarded as cross-disciplinary as they contain content from the sphere of medicine, namely COVID-19.

Re3Data has a logical structure consisting of topics and subtopics, and when we search for social science data repositories, we may specify the specific area of social science. The logical structure may be depicted as a tree, as in Figure 3. From the logical tree, it is obvious that searching Re3Data is performed better when we specify what area of social science we would like

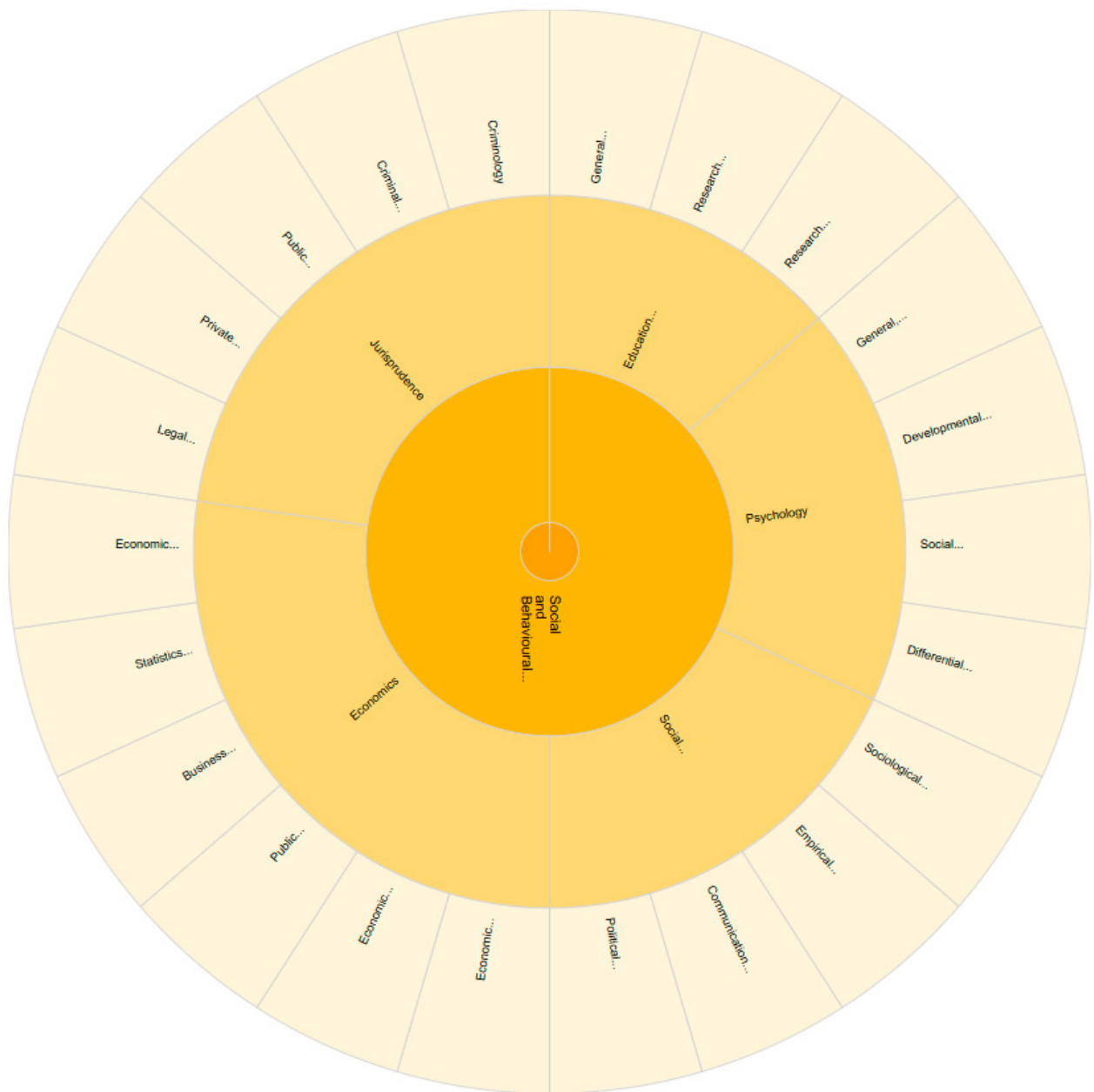


Fig. 2. Browsing by subject option while finding social science repositories on Re3Data

to research. For example, if we need materials in economics or pedagogy, we must use corresponding thematic repositories, thus specifying our search by filtering these particular disciplines.

However, the Re3Data search result may show cross-disciplinary repositories, but the probability of finding the repository needed for our discipline is high when ChatGPT also gives quite specific repositories that are cross-disciplinary but contain mainly materials from the area of our interest.

COMPARATIVE ANALYSIS OF REPOSITORY SEARCH CAPABILITIES AND CHATGPT

Analysis Methodology. To deepen our research, we conducted a detailed analysis of search capabilities in one of the major social science data repositories (ICPSR) across the key parameter: data type (quantitative vs qualitative research). Similar queries were posed to ChatGPT to compare results and evaluate the effectiveness of its recommendations.

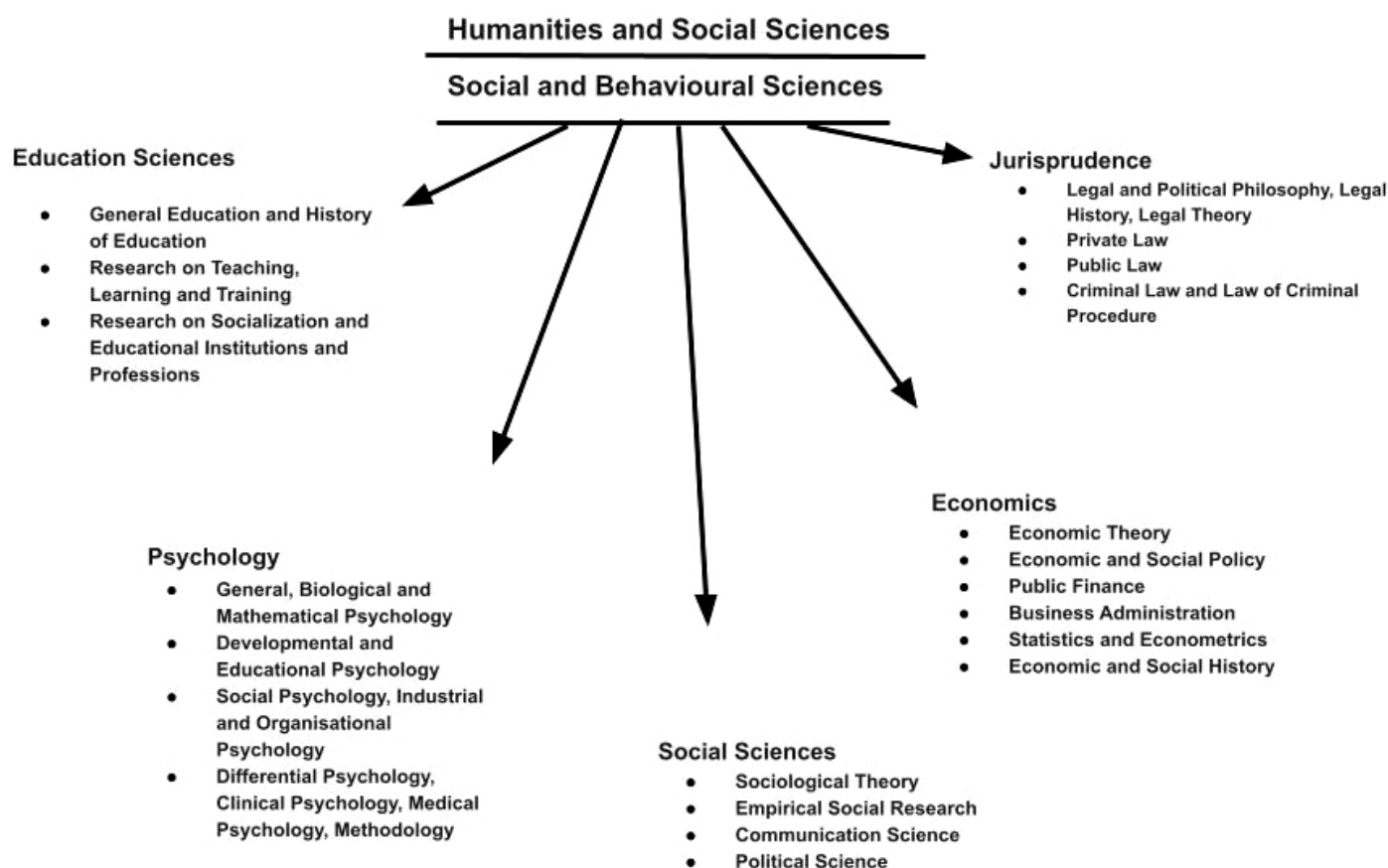


Fig. 3. Logical tree of social science data repositories by subject at re3data

Results of ICPSR Search by Data Types

When searching ICPSR by data type using the term “Generative AI for academics,” 672 quantitative and 5 qualitative datasets were found. This indicates a significant predominance of quantitative research in the ICPSR repository, reflecting the general trend in AI-related research toward quantitative methodologies. The disparity between quantitative and qualitative approaches suggests that researchers primarily focus on statistical modeling, performance metrics, and computational experiments when studying generative AI applications in academic contexts.

Results of Chat GPT Search by Data Type

To find research datasets related to generative AI in academic contexts using ChatGPT, it is recommended to use a clear, specific prompt like this:

“I am looking for research datasets about generative AI applications in academic settings. Please provide a comprehensive list of reposi-

tories or databases where I can find qualitative and quantitative datasets related to:

1. Use of large language models like GPT in education and research
2. Academic impact of generative AI tools
3. Quantitative and qualitative studies on how researchers and students use AI
4. Datasets specifically focused on ChatGPT or similar models in higher education

For each suggested repository, please note if they contain primarily quantitative or qualitative data, and include any information about dataset size, recency, and accessibility.”

This prompt:

- Clearly defines the topic area (generative AI in academic contexts)
- Specifies subtopics to help narrow the search
- Requests information about data types (quantitative vs. qualitative)
- Asks for metadata about the datasets (size, recency, accessibility)

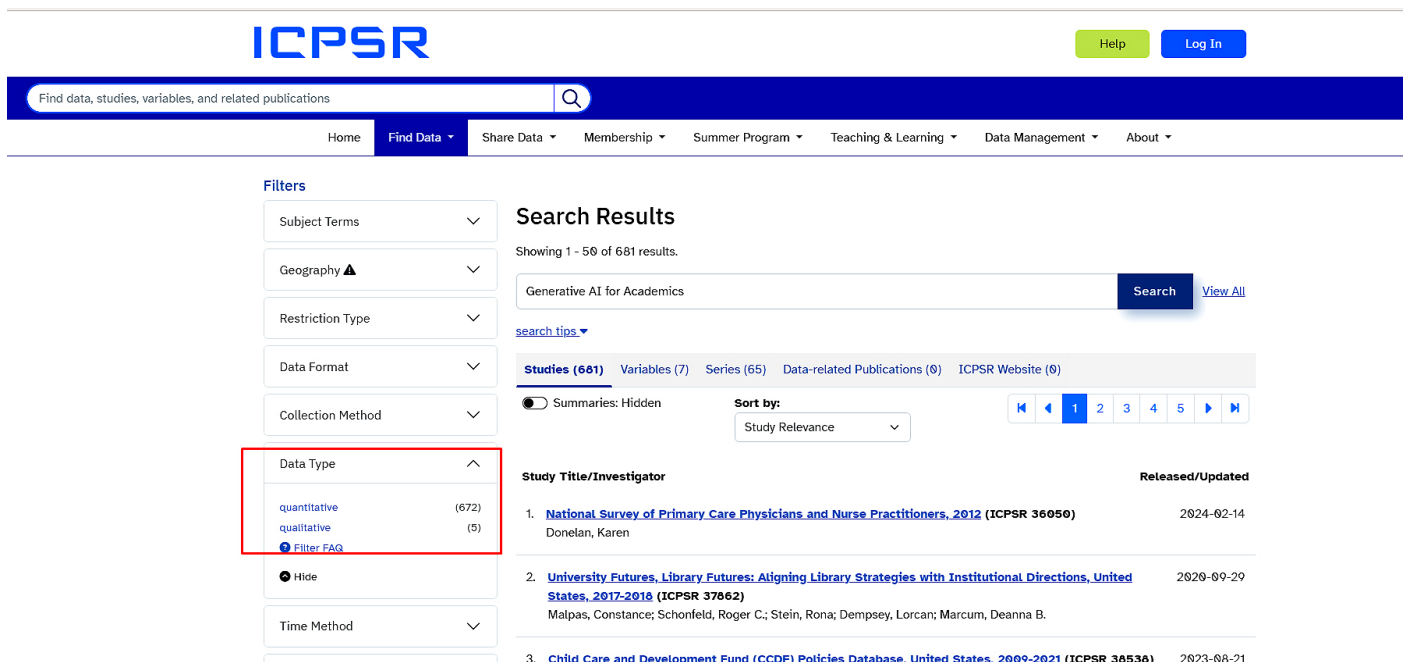


Fig. 4. Results of ICPSR Search by Data Types

- Is specific enough to get relevant results but broad enough to capture various relevant repositories.

Results from ChatGPT

In response to our specific query about generative AI datasets in academic contexts, ChatGPT provided a detailed and particular list of six datasets:

1. Higher Education Students' Early Perceptions of ChatGPT: Global Dataset

- Description: Survey responses from 23,218 students across 109 countries
- Data Type: Primarily quantitative with some qualitative insights
- Size: 23,218 responses
- Recency: Data collected in early 2024
- Source: data.mendeley.com

2. Chatbots' Impact on University Learning

- Description: Evaluation of educational chatbots in mathematics education
- Data Type: Quantitative
- Recency: Published approximately 10 months ago
- Source: Kaggle

3. AGGA: A Dataset of Academic Guidelines for Generative AI and Large Language Models

- Description: 80 academic guidelines from universities on generative AI use
- Data Type: Qualitative
- Size: 188,674 words across 80 documents
- Recency: Published 2 months ago
- Source: arXiv

4. The StudyChat Dataset: Student Dialogues With ChatGPT in an Artificial Intelligence Course

- Description: Student interactions with a ChatGPT-powered tutoring chatbot
- Data Type: Qualitative dialogues with quantitative annotations
- Size: 1,197 conversations
- Recency: Published "last week"
- Source: arXiv

5. ChEDDAR: Student-ChatGPT Dialogue in EFL Writing Education

- Description: Dialogues between students and ChatGPT during EFL writing courses
- Data Type: Qualitative dialogues with quantitative satisfaction ratings
- Size: Data from 212 students over a semester
- Recency: Published 1.5 years ago
- Source: arXiv

6. ChatGPT in Education: A Discourse Analysis of Worries and Concerns on Social Media

- **Description:** Twitter data reflecting concerns about ChatGPT in education
- **Data Type:** Qualitative social media posts
- **Recency:** Published 1.5 years ago
- **Source:** socialmediaarchive.org

This specialized search experiment revealed several important insights about ChatGPT's capabilities that were not apparent in our initial general search:

1. **Specificity of Results:** When given a precisely formulated query about a specialized topic, ChatGPT provided highly relevant and specific dataset recommendations rather than just general repository suggestions.
2. **Metadata Richness:** ChatGPT provided detailed metadata about each dataset, including size, recency, data types, and accessibility — information that would typically require navigating to individual repositories and datasets to obtain.
3. **Cross-Repository Knowledge:** Rather than limiting results to a single repository, ChatGPT

aggregated dataset recommendations from multiple sources (arXiv, Kaggle, Mendeley Data, socialmediaarchive.org).

4. **Temporal Awareness:** The model included recently published datasets (as recent as “last week” and “2 months ago”), demonstrating some awareness of relatively current research materials. However, the exact accuracy of these temporal claims would require verification.
5. **Balance of Data Types:** Unlike the ICPSR search, which revealed a strong quantitative bias, ChatGPT's recommendations included a more balanced mix of quantitative, qualitative, and mixed-methods datasets.

Limitations and Considerations

Despite these strengths, several limitations were observed:

1. **Verification Challenges:** Without direct hyperlinks or DOIs, verifying the existence and accessibility of these specific datasets requires additional effort.

ChatGPT ▾

I'm looking for research datasets about generative AI applications in academic settings. Please provide a comprehensive list of repositories or databases where I can find qualitative and quantitative datasets related to:

1. Use of large language models like GPT in education and research
2. Academic impact of generative AI tools
3. Quantitative and qualitative studies on how researchers and students use AI
4. Datasets specifically focused on ChatGPT or similar models in higher education

For each suggested repository, please note if they contain primarily quantitative or qualitative data, and include any information about dataset size, recency, and accessibility."

Exploring datasets on the application of generative AI, particularly large language models like GPT, in academic settings is crucial for understanding their impact on education and research. Below is a curated list of repositories and databases offering qualitative and quantitative datasets relevant to your specified areas of interest:

1. **Higher Education Students' Early Perceptions of ChatGPT: Global Dataset**
 - **Description:** This dataset encompasses responses from 23,218 students across 109 countries, capturing their initial perceptions of ChatGPT in educational contexts. [data.mendeley.com](#) +2
 - **Data Type:** Primarily quantitative, with some qualitative insights from open-ended responses.
 - **Size:** 23,218 responses. [pmc.ncbi.nlm.nih.gov](#) +2
 - **Recency:** Data collected in early 2024.
 - **Accessibility:** Publicly available for download.
 - **Source:** [DATA.MENDELEY.COM](#)

Fig. 5. Results of ChatGPT Search by Data Types

2. **Potential Hallucinations:** Some precise metadata (such as exact word counts and precise recency claims) may be prone to AI hallucination and require independent verification.
3. **Limited Scope:** The results appear comprehensive but may represent only a fraction of available datasets.

This specialized search experiment demonstrates that AI assistants can provide more valuable and detailed information when queries are precisely formulated for specific research needs. Rather than merely identifying general repositories, well-crafted prompts can help locate specific, relevant datasets. However, when asked about the proportion of quantitative versus qualitative research in social sciences, the AI could only provide generalized responses without precise figures or current statistics. This confirms the inherent limitations of AI systems in accessing and analyzing the most recent empirical data distributions within repositories, highlighting the importance of supplementing AI assistance with traditional research methods for comprehensive, up-to-date information.

At the same time the repository ICPSR enhances search precision through an extensive filtering system that includes subject terms, geography (beta), restriction type, data format, collection method, data type, time method, time period, recent releases, funding agency, thematic collection, data availability, classifications (beta), investigator, mode of data collection (beta), object type (beta), archive (beta), investigator affiliation, and series (beta), allowing researchers to narrow results according to particular parameters.

SUMMARY

In conclusion, it is necessary to mention that both methods, asking ChatGPT and searching Re3Data, might be effective as the results (in the example of social science) do not overlap. The practice has shown that both tools provided relevant lists of repositories related to social science, and this search result widens the possibility of a social science researcher finding appropriate data repositories for their studies. Although ChatGPT is a developing tool, it showed good results along with the well-established registry Re3Data, an advantage to a researcher in finding the required data sets.

Our specialized search experiment further demonstrated that when given precisely formulated queries, ChatGPT can go beyond simply identifying repositories to locating specific datasets with detailed metadata. This capability provides significant value for researchers with clearly defined data needs. However, ChatGPT showed limitations in providing current statistical information about broader empirical trends in research methodologies, highlighting the continued importance of traditional research tools. Such practice can be recreated during training and classes in research data management for Ph.D. students, researchers, and professors. The exercise can be adapted according to the discipline representatives in the group, and it is worth mentioning that when there is a mixed group of participants, such practice would be more informative because at least one representative of each discipline in the group will announce the results received after searching in the Re3Data and asking ChatGPT, which allows comparing the effectiveness and efficiency of such practice in different areas of studies.

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ПОРІВНЯЛЬНИЙ АНАЛІЗ CHAT GPT ТА RE3DATA.ORG ДЛЯ ПОШУКУ РЕПОЗИТАРІЇВ ДЛЯ ДАНИХ У СОЦІАЛЬНИХ НАУКАХ

Анотація. Штучний інтелект (ШІ) відіграє дедалі помітнішу роль у науковій комунікації. Незважаючи на занепокоєння щодо дотримання норм академічної доброчесності, інструменти ШІ пропонують потенційні переваги для дослідників, зокрема в роботі з дослідницькими даними. Ця стаття вивчає, чи може Chat Generative Pre-training Transformer (ChatGPT) ефективно ідентифікувати та рекомендувати кількісні та якісні набори даних у соціальних науках. Ми порівнюємо, як ChatGPT (версія 3.5) ідентифікує репозитарії для даних у порівнянні зі спеціалізованим реєстром Re3Data.org.

Результати показали, що ChatGPT може надавати відповідні рекомендації щодо репозитаріїв, які доповнюють, а не дублюють ті, що знайдені через Re3Data.org, надаючи дослідникам ширший спектр варіантів. Стандартні пошуки з використанням Re3Data.org пропонували більш структуровані результати з дисциплінарною категоризацією, тоді як ChatGPT надавав переліки репозитаріїв із багатшою контекстною інформацією про їх вміст.

Здійснюючи пошуки наборів даних ChatGPT продемонстрував здатність ідентифікувати конкретні набори даних у кількох репозитаріях з детальними метаданими. Однак, коли запитували про ширші емпіричні тенденції, такі як співвідношення кількісних та якісних досліджень, ChatGPT міг надати лише узагальнені відповіді без

точних статистичних даних, що підкреслює його обмеження в доступі до поточних емпіричних даних.

Ключові слова: ChatGPT, Re3Data.org, сховища даних, соціальні науки, ШІ.

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