SI 487 UX CAPSTONE 2020

Final Report

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TEAM

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CLIENT

Inter-university Consortium for Political and Social Research

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Introduction

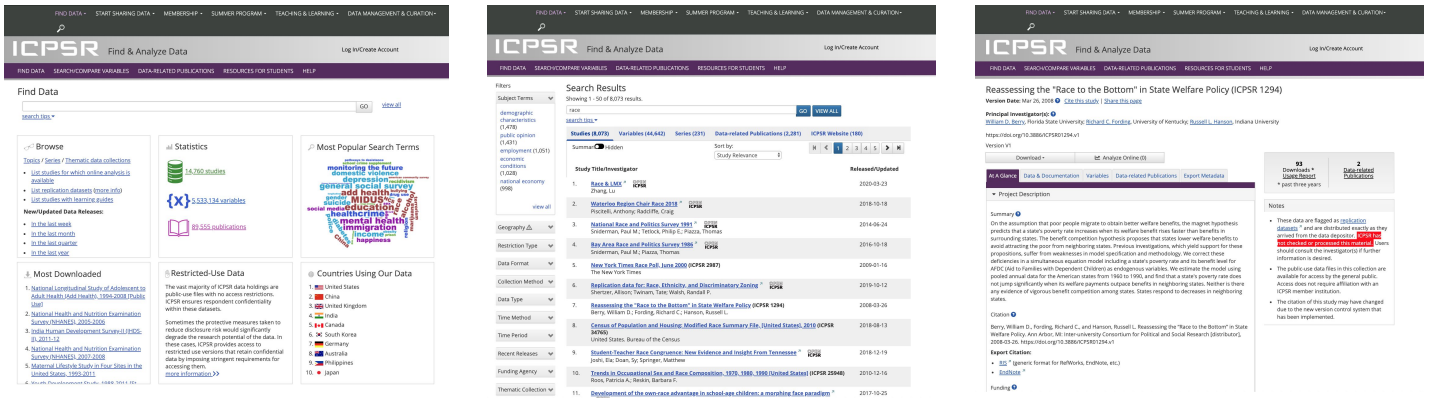
About Us

We are a team of four undergraduate students at the University of Michigan School of Information, with User Experience (UX) Design as our concentration. For our capstone project, we are tasked with working on a UX-related project with a real-world client, acting as design consultants utilizing the various skills in design and research that we have picked up throughout our time at UMSI.

Project Brief

The Inter-University Consortium for Political and Social Research (ICPSR) is a global leader in advancing and expanding social and behavioral research. It is an international consortium consisting of more than 750 academic institutions and research organizations. ICPSR holds a data archive of more than 250,000 files of research in social and behavioral sciences.

Our project is to help ICPSR re-envision dataset search to meet user's needs (particularly the ability to browse through data without a specific research goal). We focused on accessibility and usability, so that the information provided is consistently easy to find for new and existing users. ICPSR's website offers an abundant amount of information, so our team focused on improving the usability of the search interface. We narrowed down re-envisioning to the **Find Data page**, **Search Results page**, and the **Dataset page**.



Existing ICPSR search interface - pictured above from left to right, Find Data, Search Results, Dataset Page. The user starts the search on the find data page and can browse through datasets from the search results.

Research

Competitive Analysis

We identified several direct and indirect competitors to ICPSR. The main focus in conducting the competitive analysis was to see how the competitors created a user-friendly interface for their uses, specifically features that improved the usability of their search interface.

For the direct competitors, a table is shown below with the metrics we used for comparison.

	Ease of use	Synonym identification	Breadcrumb trails	Information in search page	Citation creation	Filter options
gesis Leibniz-Institut für Sozialwissenschaften	Easy, but not all pages translate well to English	No	Yes	Top 10 results, 1-2 sentences	Yes, multiple formats	Easy
ELSEVIER	Hard to use, information locked behind paywall	No, will return similarly spelled words	No	Top 20 results, 1-2 sentences	No	Difficult
Google Scholar	Easy to use, familiarity from Google interface	No, but gives "related search" option	No	Top 10 results, 1-2 sentences	Yes, multiple formats	Medium
HARVARD Dataverse	Relatively simple, but information can be dense	No	Minimal	Top 10 results, 1-2 sentences	Yes, however no way to select format	Easy

Online Survey

We conducted an online survey to examine what users wanted from a dataset search platform. The survey link was posted on ICPSR's twitter to reach the social and political researchers. The results allowed us to conclude that 56% of users browse through ICPSR with both a specific research goal in mind and without one. The remaining 44% solely use ICPSR when they have a specific goal set. 67% of the users claim they consult a third party for help in locating data on ICPSR. This suggested that there is room for improvement to make ICPSR more intuitive for non-experts.

We also asked for opportunities for improvement and what users would want to see from a data search platform like ICPSR. The most desired functionality was comprehensive filtering options, with 44% of respondents rating the importance of this feature as a 10 from a 1-10 point scale (with 10 being the highest possible value, indicating great importance). Some other desired features were synonym detection and automatic citation generation. To view the survey results, please refer to this link.

Card Sorting

We conducted a closed card sorting experiment on five potential users. These were not users that have ever used the ICPSR website, so we wanted to understand if a non-user would organize the website the way it is structured. After conducting the exercises, it was clear that there was a need to reorganize the existing interface.

The users expressed how they were confused at some of the terms that were presented on the website and did not see where they fit in the closed headings. There was consistency between the testing results from different users.

There were six headings that the cards could be placed into: Filters, Types of Results, Project Description, Scope of Project, Methodology, and Version. There were 18 cards that by all the users tested had ⅗ majority that they would be placed in the same category. There were 10 cards that resulted in ⅖ of the same category and 2 that showed no pattern. The users expressed their confusion with some of the terms. For example, one card read "Collection Method" and another "Method of Data Collection". This is where there shows to be inconsistency throughout the website and how our recommendations could make a huge difference for the user needs.

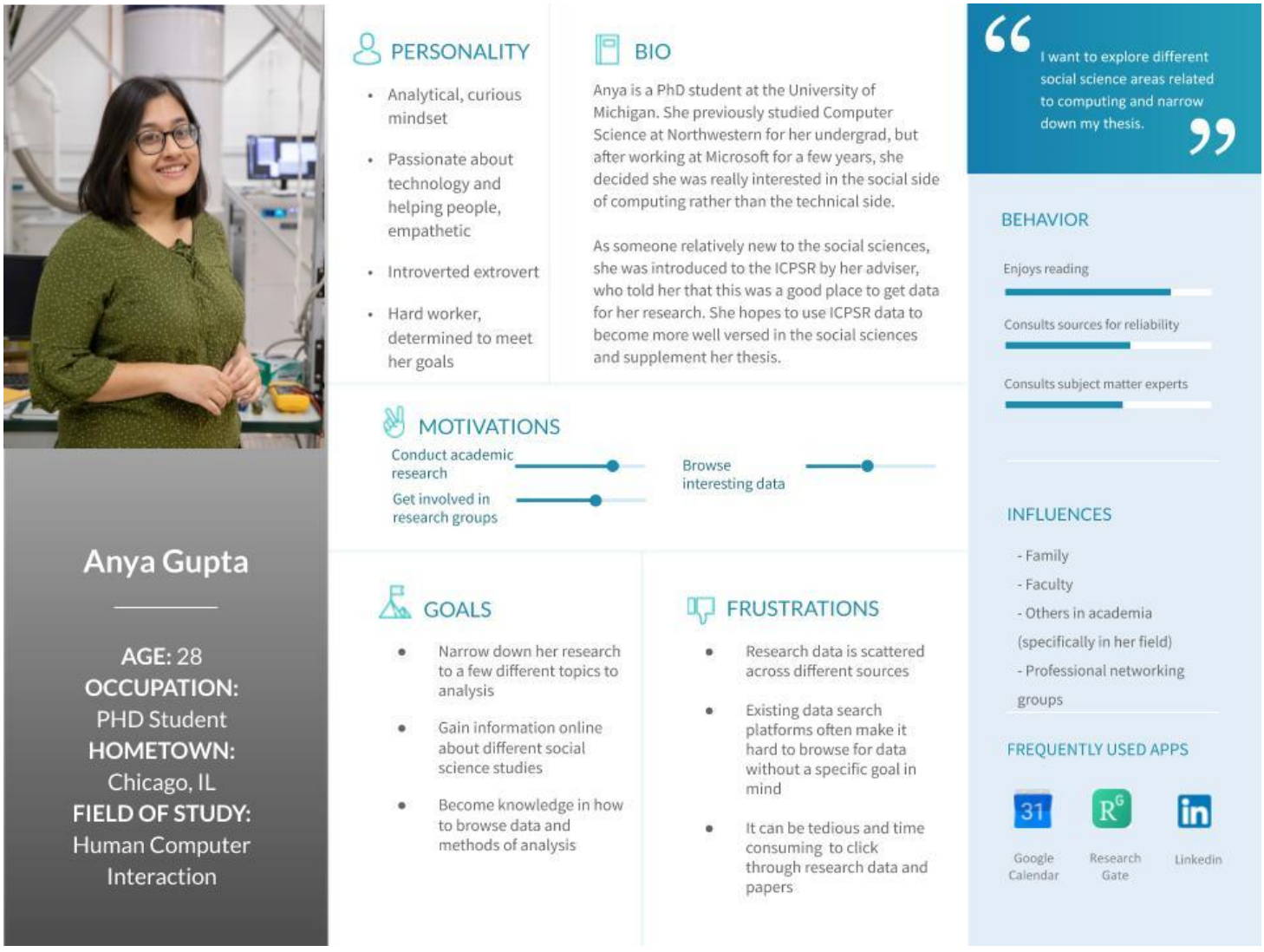
User Interviews

We conducted four in depth user interviews on existing ICPSR users in order to gain insight on their experience using ICPSR and what could be done to improve their experience. Based on the results of these user interviews, we created an affinity map to find common threads and opinions across the user interviews.

A link to this affinity map is available here for reference online if you would like to view some common opinions or experiences brought up during these user interviews.

User Personas

Based on the results of our user research and testing (alongside prior conversations with our contact Libby Hemphill), we synthesized the following two user personas to use as a guideline when creating our designs.



Our first persona, "Anya", created for our primary user group of a researcher in academia.

Thomas Lee

AGE: 19
OCCUPATION: College Freshman
HOMETOWN: Los Angeles, CA
FIELD OF STUDY: Psychology

PERSONALITY

- Likes to travel
- Ambitious
- Enjoys socializing and listening to music

BIO

Thomas is a freshman at the University of Michigan in the college of the Literature, Science and Arts. He wants to major in Psychology and so he is taking many courses relevant to the field.

One of his courses requires him to analyze a psychology study dataset, but it has to be a peer-reviewed study within the last 3 years. His instructor won't allow him to use the Google search engine or Google Scholar as a source, so he has been looking at several data aggregator sites like ICPSR to find data.

MOTIVATIONS

- Get a good grade
- Potentially get involved in a research lab
- Complete work efficiently so he can do other things

GOALS

- Find a dataset that fits the criteria of his report and involves a topic he is interested in.
- Find a website that matches Google's accessibility and search function.
- Learn the functions of aggregator websites

FRUSTRATIONS

- Doesn't know where to find information about student orgs.
- Tried using Maize Pages to find student orgs of interest, but was overwhelmed by the amount of information.
- Needs to figure out how to organize her schedule, assignments, meetings, etc.

> "I want a convenient and easy to use website that lets me finish my report quickly."

BEHAVIOR

- Uses laptop frequently
- Gets distracted easily
- Appreciates aesthetics

INFLUENCES

- Friends/classmates
- Family
- Internet forums

FREQUENTLY USED APPS

Snapchat, Google Calendar, Instagram

Our first persona, "Thomas", created for our secondary user group of an undergraduate student working on research.

Though this was not our primary user group, we ended up with a significant amount of data from this user group due to our proximity with this user group as undergraduate students ourselves.

Key Findings

Using our research, we synthesized the following key findings on the existing ICPSR search interface to use as guidelines when creating a redesign for the ICPSR search interface.

1. Lack of Styling and Information Structure

Since the Find Data, Search Results, and Dataset pages predominantly consist of black and blue text with a white background, nothing captures the user's attention as important. As a result, users spend a considerable amount of time trying to find what they are looking for when they should have been able to scan headers quickly to get the gist of each page. Utilizing colors or icons to draw attention to certain elements of a page, or prioritizing important information at the top would help decrease the browsing time.

2. Synonym Identification For Ambiguous Terms Is Desirable

Users often have a hard time searching for specific datasets using terms whose definitions vary depending on context. For example, if someone searches the term "race", they could be referring to a political election, a person's ethnicity, or a marathon. Having a way to specify what definition a person is referring to when using broad terms would be extremely beneficial in finding the right datasets.

3. Easily Missed Search Result Features

Users could not always locate all the options they had when narrowing down the search results page, frequently missing the summary toggle and "Sort By" dropdown menu. These features are inconspicuously located inside the search results infobox without any contrast to distinguish them from the rest of the text located nearby. Putting these options where they stand out on their own, such as near the search bar, or highlighting their importance with a different text color or style would improve the user experience.

4. Accessibility Features For New Users Are Desirable

From our initial survey, we discovered that many users consult help from a third party source, such as a librarian, when searching for datasets on ICPSR. This suggests that there is room for improving the experience of first-time users, as many survey respondents agreed that there is an initial learning curve when using ICPSR. As a result, we included a list of help links when redesigning the "find data" page.

Design Process

Overview

Throughout our design process, we focused primarily on the requirements that are identified below (with a prioritization based on how feasible the requirement was to fulfill and how often the need for such a feature came up during user research). We worked to restructure the Find Data page, Search Results page, and the Dataset page.

UX Requirements

MUST HAVE

Term Ambiguity Feature

A researcher wants to be able to specify what a search term means when it has multiple definitions (i.e. searching for “race”, do they want a political race or ethnicity?)

Pre-defined Citations

A researcher wants to be able to get a citation in any of the common citation methods

Browsing Widget or Page

A research wants to search for datasets that are popular this month or that they might be interested in, but doesn’t know what to search for. It should be easier to find interesting datasets without a specific research goal in mind

SHOULD HAVE

Search Results Preview

A researcher wants a brief description of the article / data set before clicking on the search result (existing toggle not very visible)

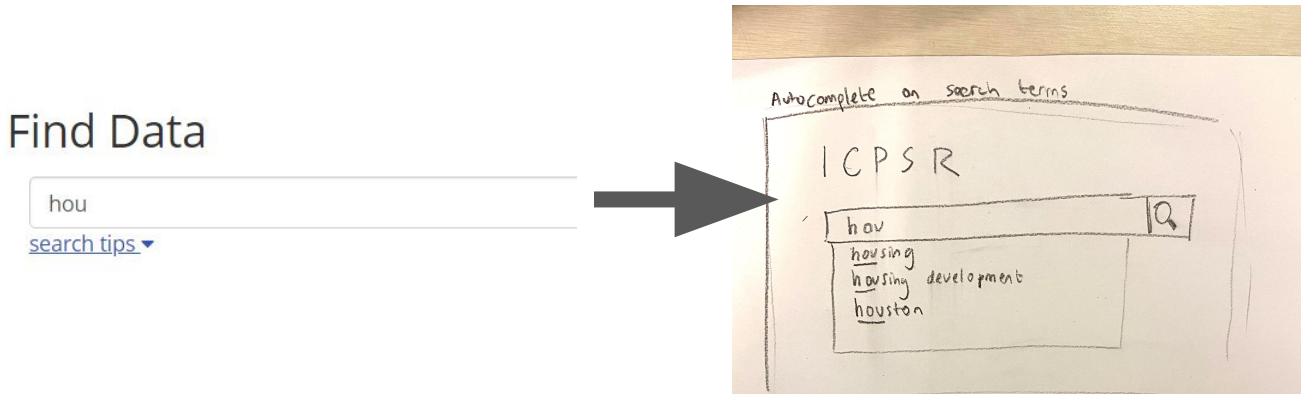
NICE TO HAVE

Dataset View

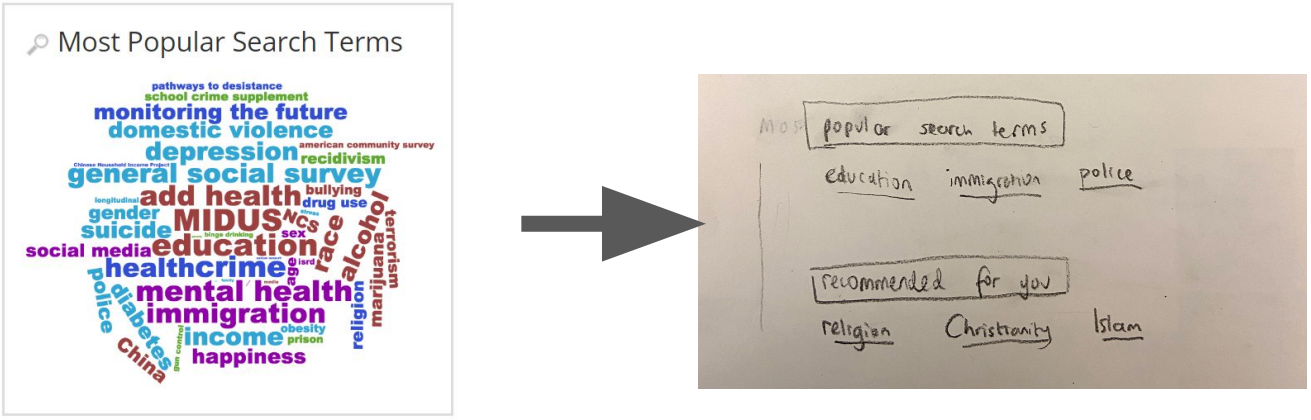
A researcher wants to be able to find anything about the dataset in as little click as possible once they’ve searched for something

Initial Sketches

Some examples of initial sketches of how to improve the existing search interface are shown below.



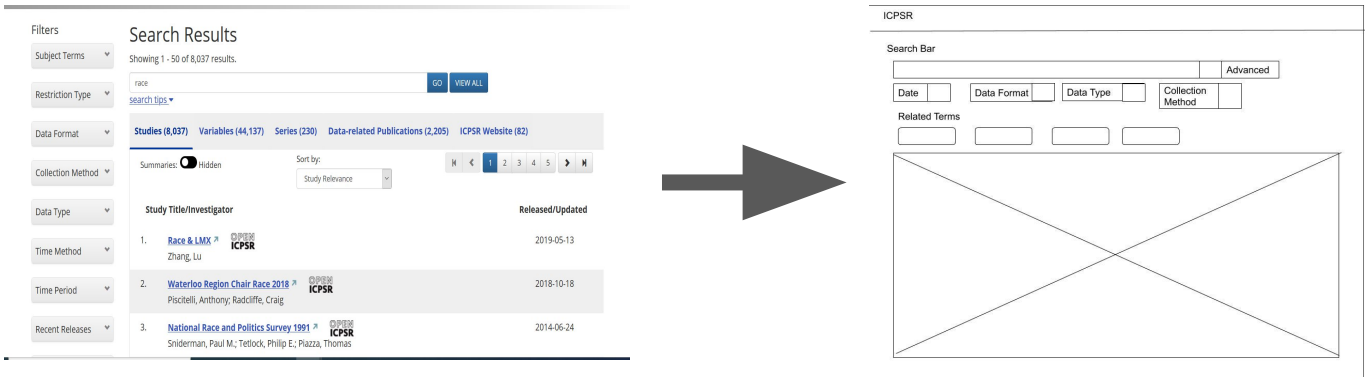
Picture above: adding autocomplete function to search box



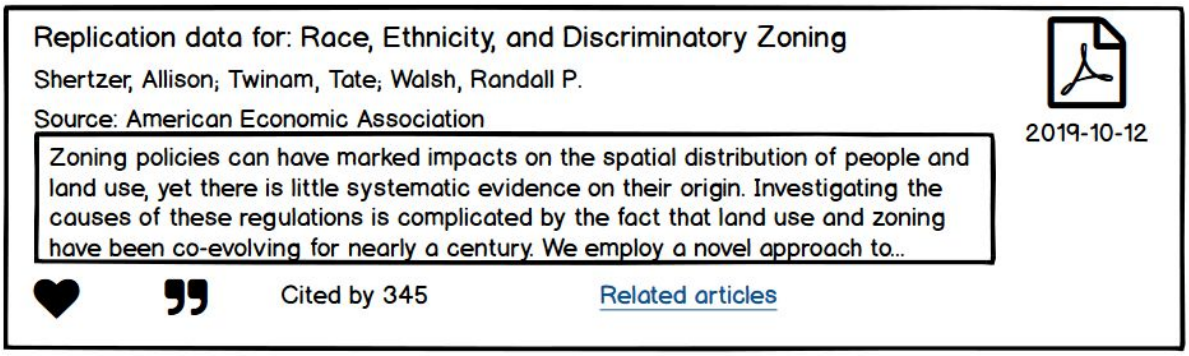
Picture above: making it easier to browse for data without a specific purpose in mind

Wireframing

We used software to create some low fidelity wireframes for how we wanted certain elements to look. Some examples are shown as follows:

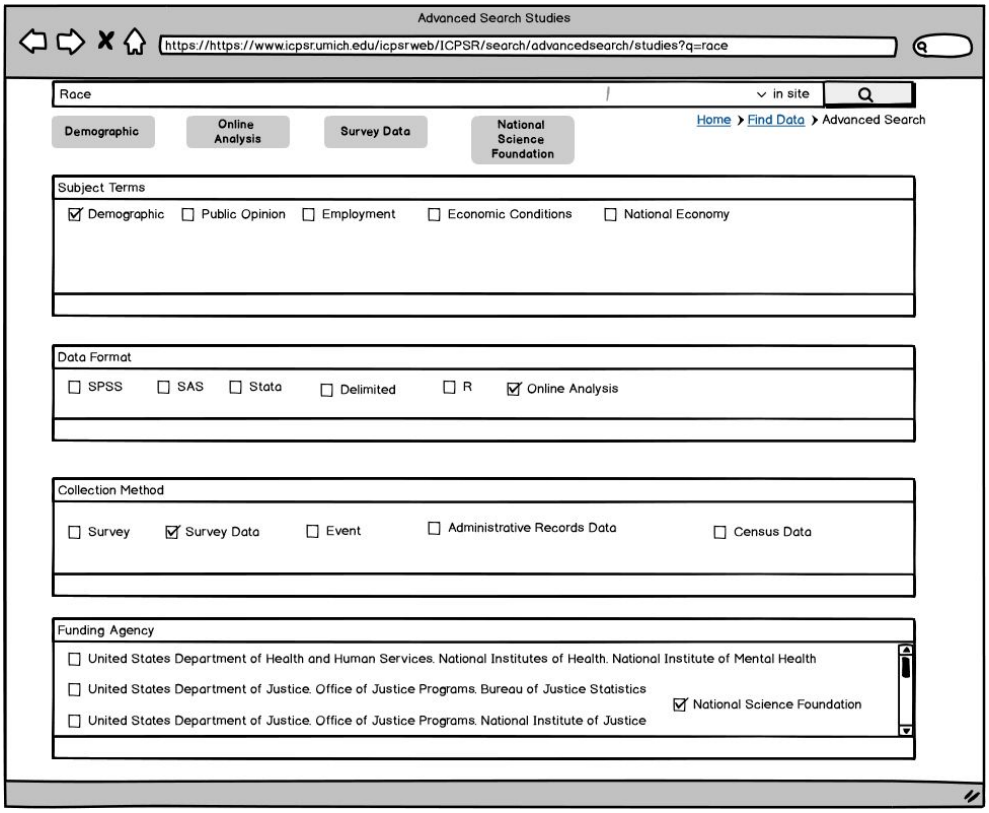


Picture above: possible layout for Search Results page

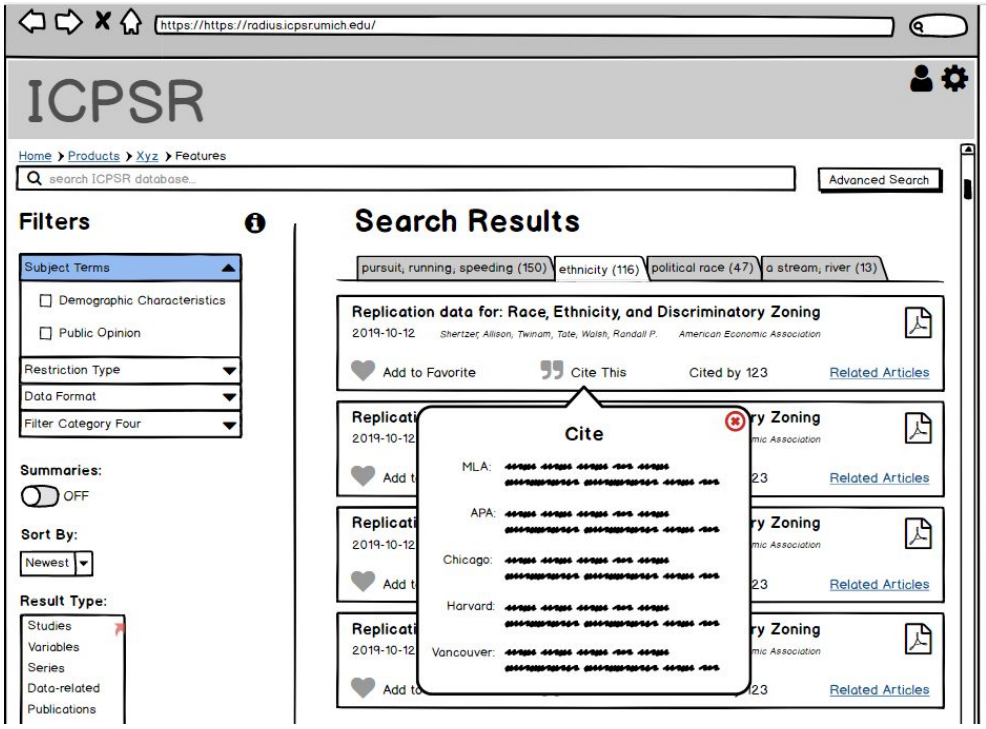


Picture above: redesigned search results list object with summary and citations more easily accessible

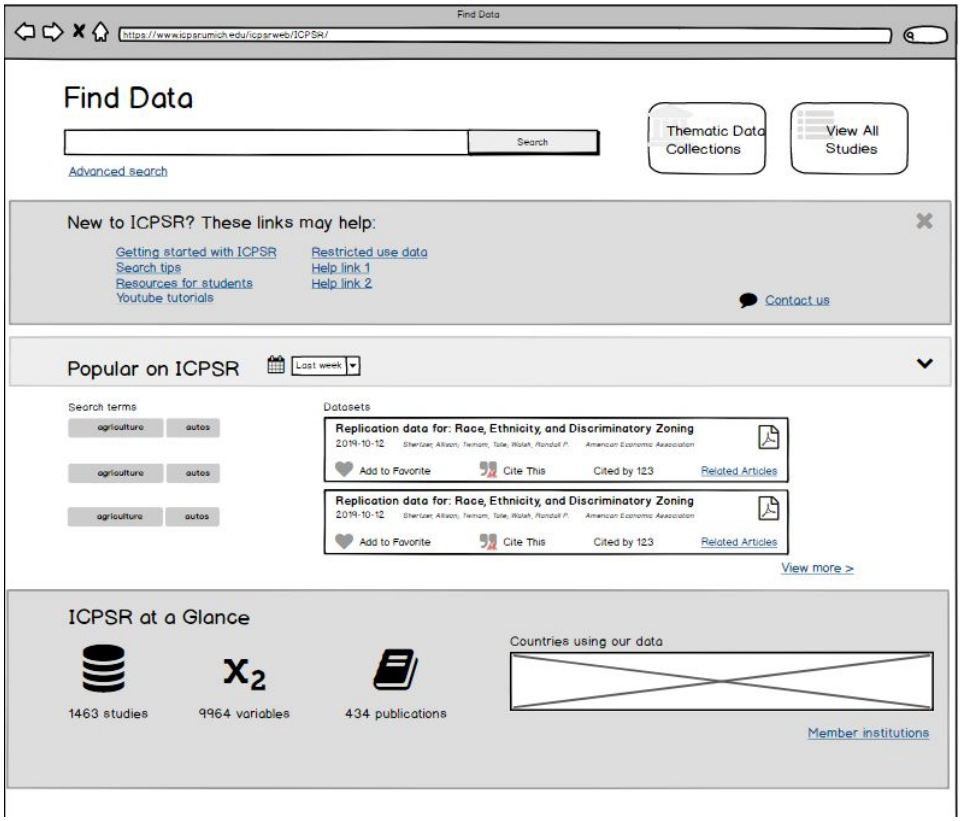
Advanced filter method design



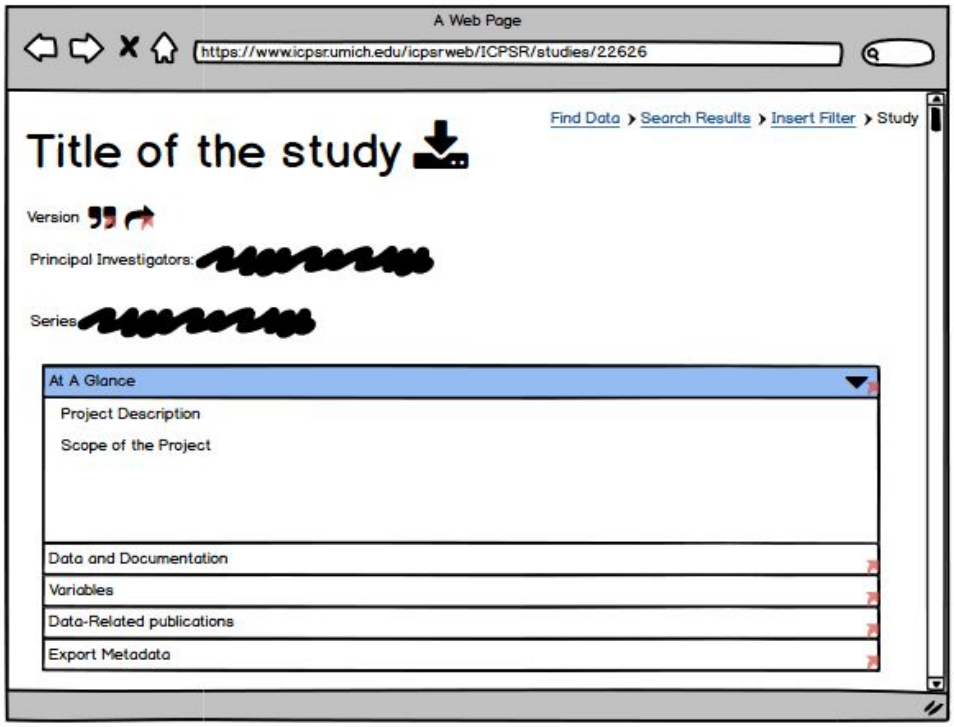
***Search results page** with filter method*



Find Data page
with improved recommendations for browsing through data



Dataset page
consolidating information into single page



Initial Feedback

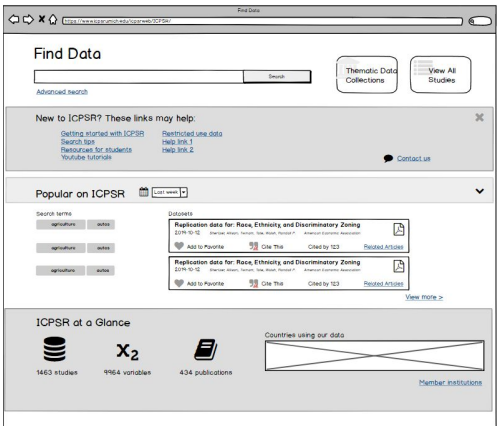
Overview

Before polishing our designs look more visually appealing and bringing it to a high fidelity prototype, we determined it was important to conduct some research first to see what areas for improvement our designs could have. Through user testing and gathering opinions from others involved in our class (UX instructors and students), we gathered feedback for each page which we will show here.

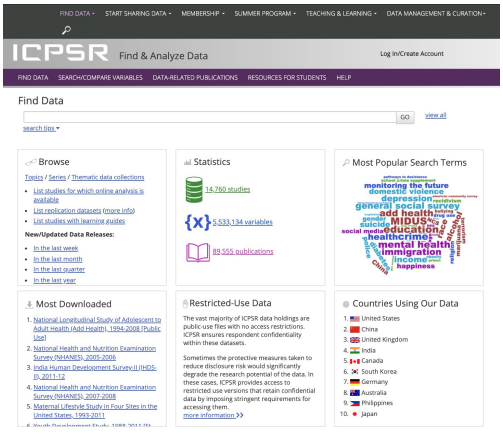
Feedback for Find Data Page

The Find Data page is the first place a person goes to begin their research process. This is where the user can find information about ICPSR, help documentation and where to begin their search, with suggested studies and the popular search terms.

All of the users understood this page's purpose throughout the testing and gave suggestions that made it better. The first necessary change was the help documentation. The help documentation was located in the middle of the page as a pop-out feature that users could minimize. When the users were tasked with "find the help documentation" their immediate reactions were to look on the bottom of the page and then the top. It took them on the third try to find it in the middle. This is because help is normally found at the bottom or top of a webpage. It is never the main focus of the page and it was taking away from the main purpose of this page. We were able to implement this change and now it will be more intuitive to the user. The users appreciated the "Recommend for You" section and expressed that it was a great feature to add that is not currently on the ICPSR website.



Our low fidelity version



Original (for reference)

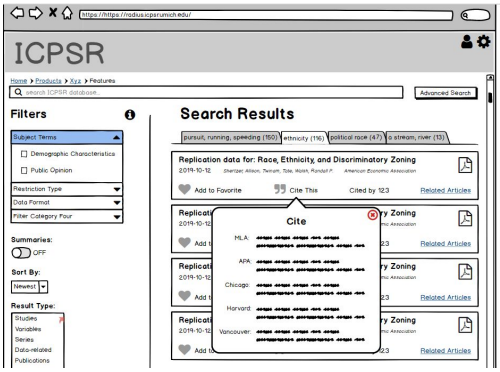
Feedback for Search Results Page:

After conducting testing, three major changes needed to be implemented into the wireframes. These changes address consistent problems across all of the tests.

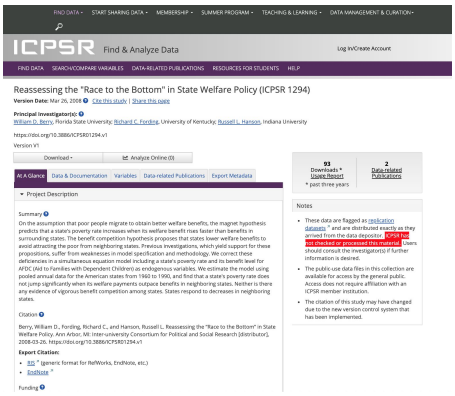
The first change that was implemented was moving the "Sort By" for the results next to the search bar. When given the task to sort the results by the most recent studies, all users immediately went to the center of the bag above the results. This is often where this sort of feature lies on many websites, so the users were used to finding that feature in that convenient location. Before, the feature was present on the left. It took the users a long time to find the feature and they were confused by the location.

The next major change was the summaries function. Currently, the users have the option to turn on and off a feature that provides them with a short abstract of the study. This is a feature that was present on the left sidebar with the filters, but it was made clear that the users would not always want all of the studies to be present. It would clutter the page. Instead, the users would prefer a pop-out function over the study results. When the users scroll over the summary logo, they are provided with a summary. Now the users can learn more about a study if they choose and only one study at a time.

Lastly, it was suggested that instead of the "Add to Favorites" feature, we would allow the users to save a study in a specific location. This will allow the users to organize their research. If a researcher is studying more than one topic at a time, they can save the studies in different folders, so they will not get disorganized and confused with their work.



Our initial low fidelity version

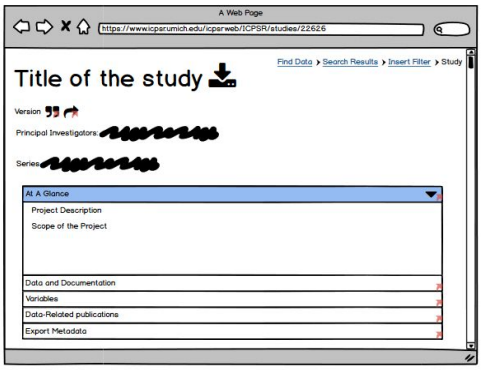


Original (for reference)

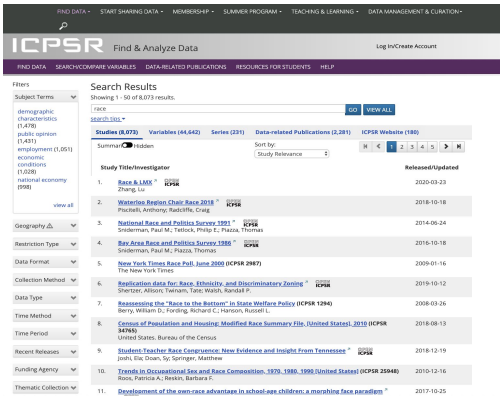
Feedback for Dataset Page:

When the users were tasked with the actions on the dataset page, they were generally able to complete them with no major criticisms, except the actions that were just related to logos. One of the first actions with logos was to copy the MLA citation. All three users were puzzled when completing this task because they were unfamiliar with the citation logo. When they had to share the study to Facebook there was hesitation with the logos. We have decided to adapt to this confusion and add text to support the logos. This will help the users complete these tasks faster and better understand the scope of the page.

Something that we were concerned about was design consistency of this page with other pages that we had designed, and the feedback that we got agreed with this. For our final design we decided to try and find ways to add visual consistency between this page and our other two pages.



Our initial low fidelity version

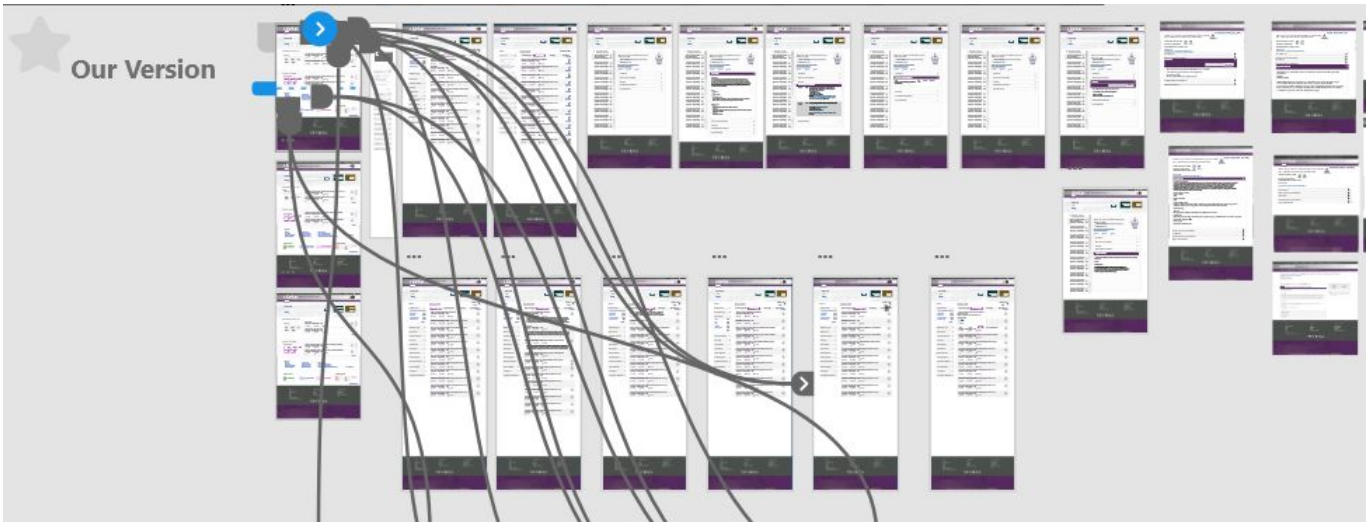


Original (for reference)

Final Designs

Overview

After we received feedback on our low fidelity wireframes, we used Adobe XD to create a high fidelity interactive prototype of our pages.



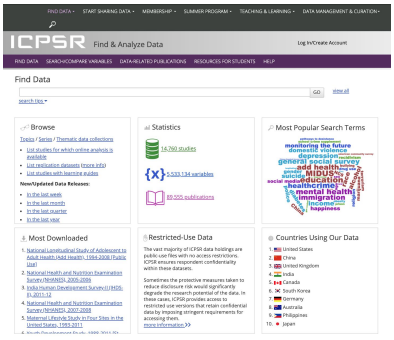
Our Adobe XD work environment

To view our interactive prototype on Adobe XD, click here to view online and click here to download a local file.

For detailed page specifications explaining the features of each page and the interactions, click here.

Find Data page

Emphasis here was adding browsing capabilities and recommendation widgets so that people could browse through data without a specific research goal in mind.



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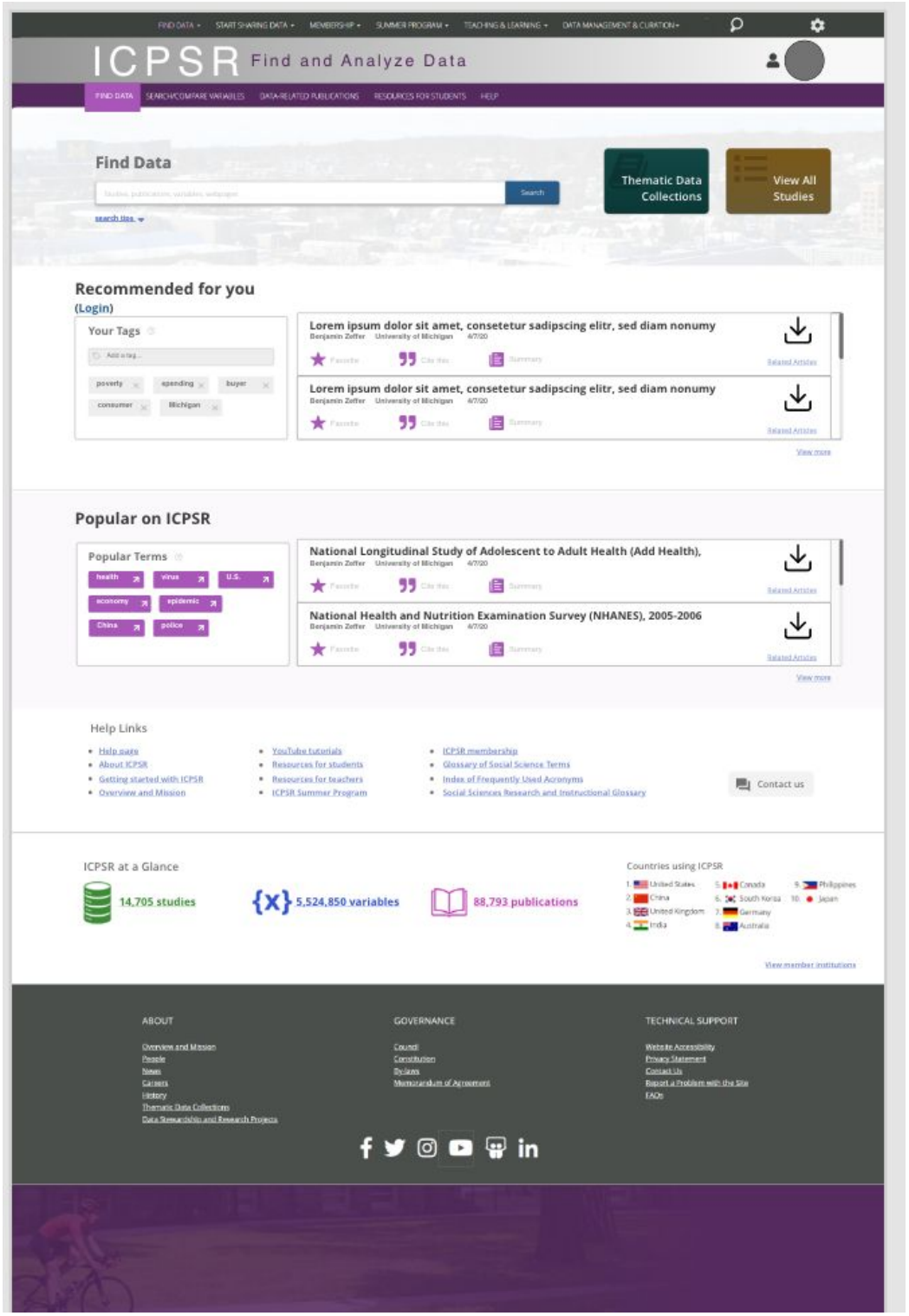
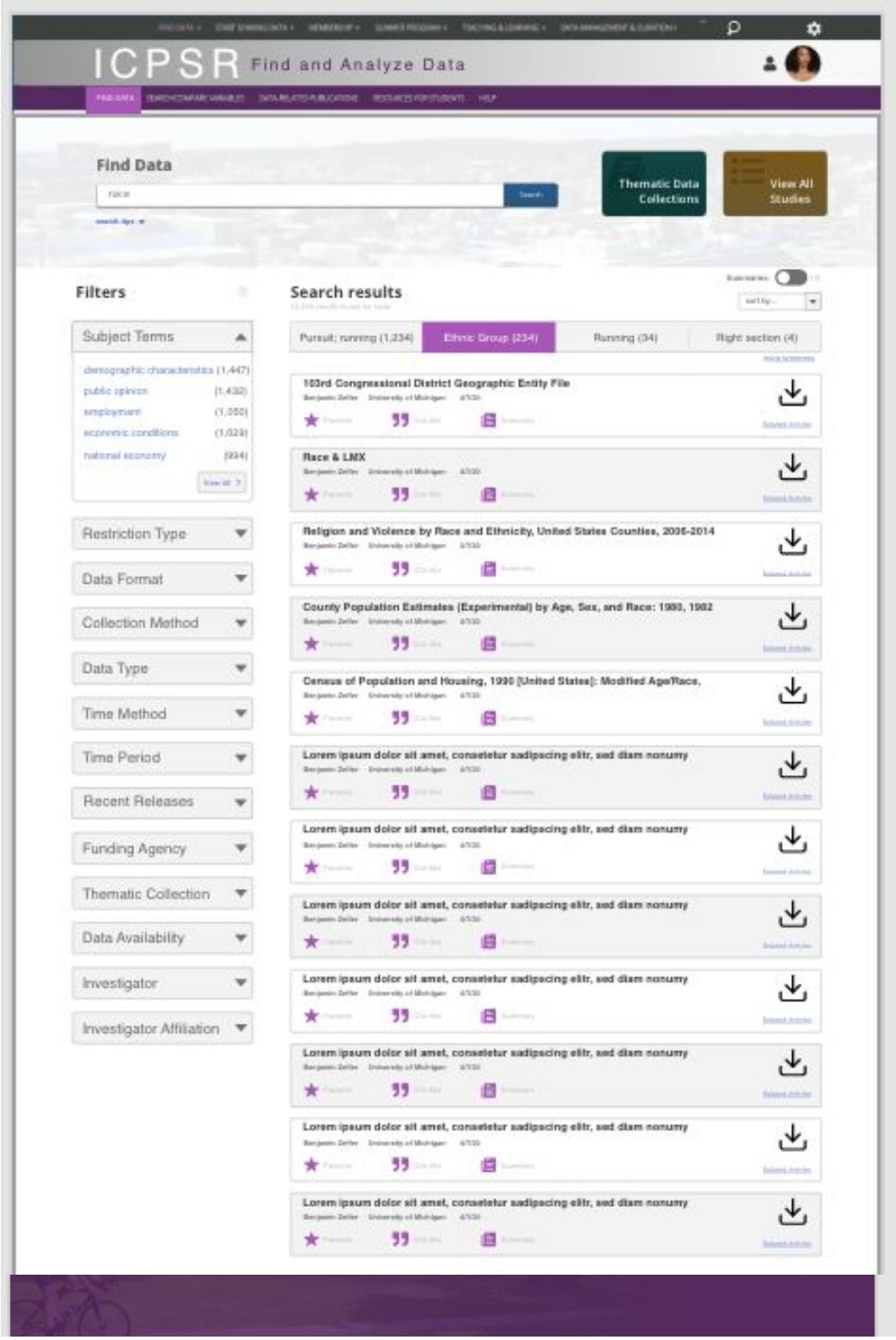
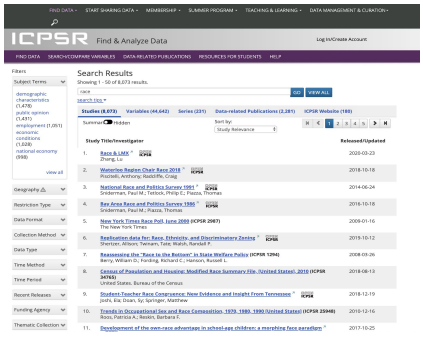


Search results page

We added a tab system to address term ambiguity (one of our Key Findings), inspired by the UI of an online thesaurus. Easier citation methods and access to summaries was added in our version.

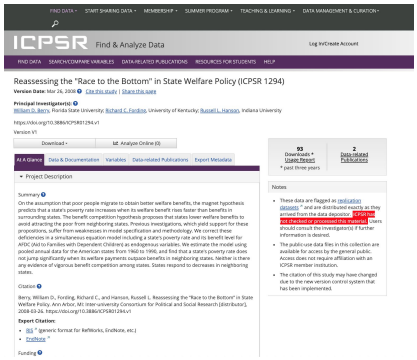




Original (for reference)

Dataset page

We consolidated information onto a single page for users to more conveniently get information without feeling disjointed. We added a bar for search results at the side for more easy navigation and to add more visual consistency between this page and the search results page.



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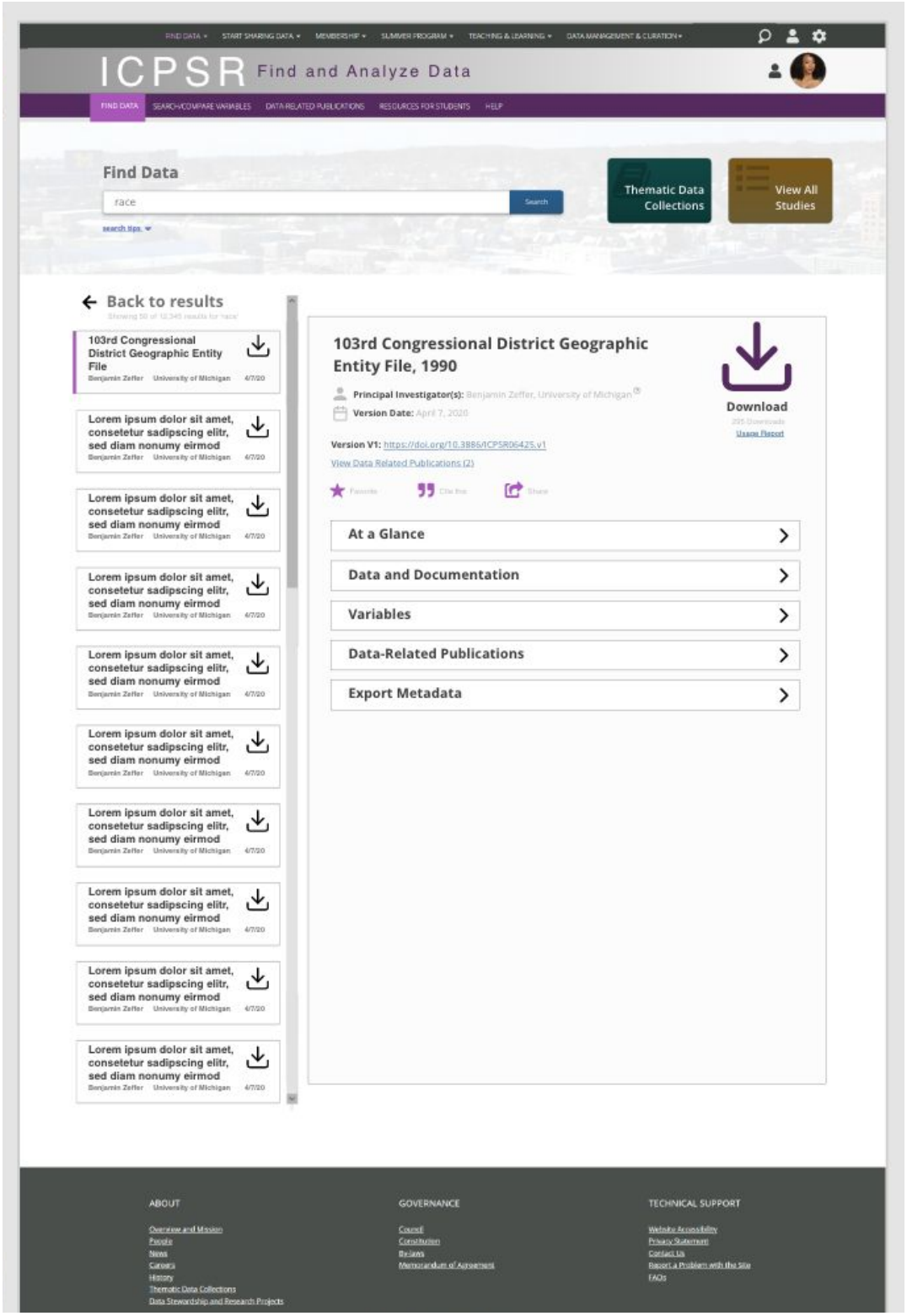

Final Recommendations

Overall recommendations

1. **Present information horizontally to promote a natural reading of the content.**
   A lot of the content on pages is stacked vertically, disrupting users' proclivity to read from left to right. Distributing the content to be read chronologically in a horizontal form may help users process information faster.

2. **Use color to highlight important information on a page.**
   The original design features a lot of black text and blue hyperlinks, which makes it hard to distinguish resources at a glance. We utilized more purple in our redesign to match the current color scheme and draw users' attention to important aspects of each page.

Recommendations for Find Data page

1. **Incentivize users to log in with a personalized dashboard.**
   This could include a recommendation feature that suggests datasets to users based on their past downloads or a "Save for Later" function where users can quickly access their favorites and create folders for certain research topics.

2. **Redistribute information so that important resources are at the top.**
   We shuffled the information on the "find data" page so links that take users to specific datasets are featured more prominently than statistics about the site as a whole.

3. **Provide Help Links on how to search for data on ICPSR**
   The current Help page lists information about data access, analytical tools, the download process, and some of the technical jargon used on ICPSR, but there isn't a clear tutorial for first-time users navigating the site. We added a list of help links at the bottom of the "find data" for users who don't know where to start.

Recommendations for Search Results page

1. **Provide quick access tools for each search result**
   We designed options such as an “add to favorites” tool, a quick citation generator, and a summary pop-up that allows users to quickly skim through search results without having to look at each individual dataset page.

2. **Create a synonym identification method so users can clarify their intent.**
   We felt that having a method for users to further specify what they mean without having to modify their original search query would greatly aid in reducing the amount of time spent looking for the right data.

Recommendations for Dataset page

1. **Provide quick access tools for each search result**
   Condense dataset options into one dropdown menu to reduce page reload time.

2. **Create a browsing widget for faster navigation between datasets.**
   We created a sidebar that displays some of the datasets listed on the previous search results page to eliminate the amount of backtracking.

Next Steps

Further Validation

Due to COVID-19 and the University of Michigan's transition to online learning, we were unable to conduct user testing for our final prototype with primary stakeholders. Before implementing any design changes we have suggested, consider further usability testing with ICPSR users who actively engage with the website, as we conducted most of our tests on family members and friends who were in isolation with us during the quarantine.

Design and Functionality

When creating our high-fidelity prototype, we adopted the current ICPSR website layout into our designs to allow for easy assimilation. Our project does not require building any additional pages on the ICPSR website, as we have been working on the "find data" page, the search results page, and the individual study page that users see when they click on a result, all of which already exist.

Implementation

Due to the complexity of some features on our redesigned interface, it is highly probable that ICPSR cannot apply every suggestion we have made to the original design. Therefore, we have provided a list of recommendations to serve as a guide for what features ICPSR should focus on to optimize the user experience of the website.