

Designing an Interface for Data Driven Detroit's Toolbox

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The image shows a white laptop open, displaying a website titled "Toolbox" from "Data Driven Detroit". The website has a dark header with the organization's name and a navigation menu. Below the header is a large, colorful graphic of a circular structure with various patterns and text overlays. The main content area is titled "Resource Categories" and lists several categories with corresponding icons: All Categories, Kids & Education, Housing & Neighborhood, Business & Workforce, Demographic, and Health & Environment. Below this is a section titled "Resources" featuring a card for "Resident Workers Blocks 2014" with a thumbnail image of a person working, a "Read More" button, and some descriptive text. To the right of the laptop, there is a white rectangular box containing the "DATA DRIVEN DETROIT" logo (a blue bar chart icon next to the text "DATA DRIVEN DETROIT") and the "UMSI" logo (a yellow "M" icon next to the text "UMSI"). A small "X" symbol is positioned between the two logos.

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Executive Summary

Data Driven Detroit (D3) aims to assist Detroit community members in making informed data-based decisions by providing resources, such as datasets and analytical tools for the Detroit Area. To drive adoption and implementation of these resources in decision making for Detroit, D3 needs these open data resources to be both accessible and understandable.

Our project is to evaluate their current interfaces to create a new design and construct UX design suggestions that restructure D3's Toolbox. The redesign must focus on usability, accessibility, and scalability, so that even as the page and the site grows, the Toolbox remains user-friendly for a wide variety of Detroit community members.

D3's Websites

While D3's current website is the only publicly accessible site, we had the opportunity to research and evaluate both this current site as well as a prototype site that D3 had been developing in preparation for the launch of a new website.

Portfolio

Tools

- MorningSide Pilot Project (LocalData) 2015
- Open Data Portal 2015
- Student Dispersion Tool 2014
- Motor City Mapping 2014

Projects

- LISC Building Sustainable Communities 2016
- The D3 Internship Program 2015
- Detroit By The Numbers 2015
- Motor City Mapping 2015

Maps & Infographics

- Osborn Community Assets 2016
- Osborn DFC 50-year Land Use 2016
- MorningSide Map 2015
- Density of Employed Detroit, Hamtramck, and Highland Park Residents, 2011

Data Sets

- Third Grade ELA & Math Scores by Census Tract 2017
- Developments With Housing Subsidies 2017
- Good Building Permits by Block 2017
- Greater Detroit Foreign Trade Zone Sites 2016

Presentations & Reports

Blog Posts

D3's Current Site

DATA DRIVEN DETROIT

About ▾ Data ▾ Blog AskD3 ▾

USE DATA

TOOLBOX

Interactive tools to find data, maps, and other visualizations. If you need something you aren't seeing, please reach out through AskD3 and we can send it to you!

Kids & Education

Housing & Neighborhoods

Business & Workforce

Networks & Directories

Demographics & More

Kids & Education

D3's Prototype Site

Research

Target Users Groups

Along with our research, we consulted with D3 to identify the target market and user base of D3's website and toolbox. Initial discussions pointed toward designing the site to work for everyone, but further thinking narrowed the primary target market down to three user groups:

Urban Planners

Does D3's site present their resources in a manner that an urban planner can quickly and easily understand an urban area based on D3's listed resources and the tools that use this open, accessible data?

Individuals with data experience

Does D3's site present their resources in an understandable, yet informative and technical manner so that users with experience working with data would want to use the site?

Individuals interested in community information but with little/no data experience

Is the design of D3's site approachable and intuitive so that users with little or no experience working with data can understand the resources that D3 offers and why they are useful?

Heuristic Analysis

We conducted a heuristic analysis of three available D3 sites: the current site, the prototype site, and a D3 affiliated, Open Data Portal, where users can search through datasets and tools. We conducted these heuristic analysis in order to obtain a baseline understanding of the main functionality, pain points, and usability issues of each site.

Competitive Analysis

Based on the pain points and insights we gathered from our heuristic analysis, we began researching direct and indirect competitors of D3, looking primarily at site navigation and structural organization of assets.

Usability Tests

Recruitment

We mostly recruited users who were in the Ann Arbor area, primarily students and faculty at the University of Michigan. We categorized these users by our three user groups, whether they were experienced with data, inexperienced with data, or an urban planner

With these three user groups defined, we ran five user tests on D3's current site as well as D3's prototype in order to identify pain points with each site and gain a better understanding of how each user group approached each site and interacts with the information and functionality provided.

One user test was performed by a professional Urban Planner and faculty member of the Taubman College of Architecture and Urban Planning at the University of Michigan.

Two user tests were performed by University of Michigan students that have at least a year of experience working with data and analytics.

Two user tests were performed by University of Michigan students that possessed no prior experience working with data or analytics.

Personas

From our identified user groups and our research findings, we developed three personas that guided our design decisions as we moved forward.



Kathryn Douglas

32

Urban Planner
Detroit, Michigan

Needs data to back up large projects and bold decisions all within very short deadlines.



Rachel Ari

21

Student at University of Michigan
Ann Arbor, Michigan

Interested in gaining an understanding of data analysis and how it can help make informed



Tom Wilson

42

Data Analyst at General Motors
Detroit, Michigan

Personally interested in the city of Detroit. Contributes to community-centered projects outside of work.

Key Findings from Research

Poor Information Architecture and Categorization

Many of the resources available are not categorized based on content, therefore resulting in a large unstructured list of assets. This resulted in users having to sift through many resources before finding the one that they wanted. Better categorizing resources based on users' mental models would allow users to more quickly find these desired resources.

Unseen Search and Filtering

The search and filtering mechanisms were not obvious to the user. They did not see that they can filter for a particular resource, which meant that they spent a lot of time scanning the list instead of narrowing down the search results. Making it easier to filter and find resources could greatly improve the user experience.

Ambiguous Labeling

Some of the labels that D3 uses in the navigation bar and for project names contain data jargon. This can confuse users who are inexperienced and therefore hinder them from finding the resources that they might be interested in.

Required and excessive hovering to see necessary information

When conducting user testing we found that users had difficulty finding resources and understanding them on the first version of D3's prototype. The user had to hover over each resource to see the description. This increased the amount of time it took for users to scan the page. As a result, on our prototype we wanted to restructure the resources and make important information and details apparent to the user.

Design Requirements

Must Have

Better communicate what data is and why it is helpful in decision making

Key finding: Ambiguous labeling

Users with little data experience were overwhelmed and didn't understand how to engage with data in order to aid their decisions.

Better communicate what D3 is and how it is useful

Key finding: Unclear mission and role

Users didn't understand D3's role and how the resources could be particularly meaningful for them.

Restructure listing of tools to be comprehensive and scalable

Key finding: Poor information architecture and categorization

Users took an unnecessarily long time searching through the portfolio and tool pages to find specific resources.

Organize the site so important resources are salient for the user

Key finding: Unseen Search and Filtering

Some users failed to notice key features on the site that would have greatly aided the completion of their task. For example, users

Should Have

Remove data jargon to make the site understandable

Key finding: Ambiguous Labeling

Users had difficulty clearly understanding what they were doing

Nice to Have

Nice to Have:

Improve the visual design of the site

Users would benefit from a visually engaging and attractive website

Design

Overview

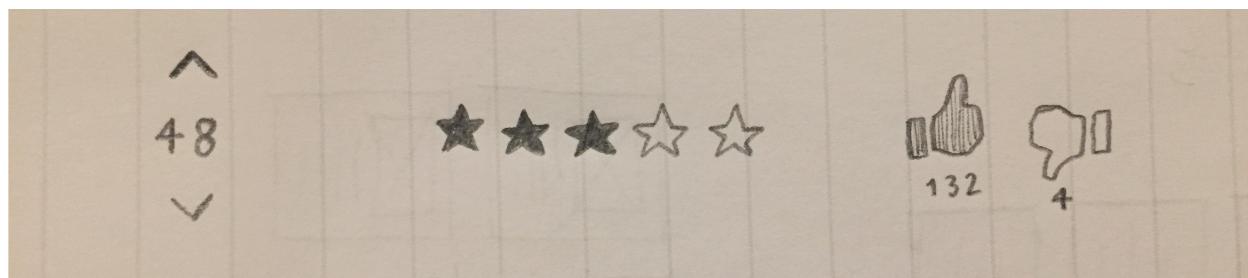
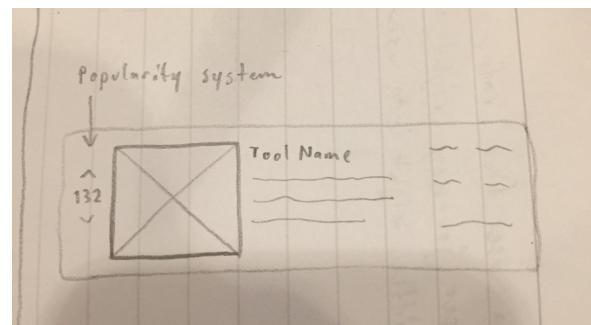
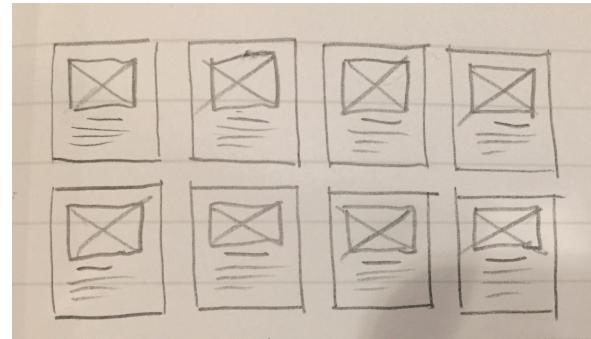
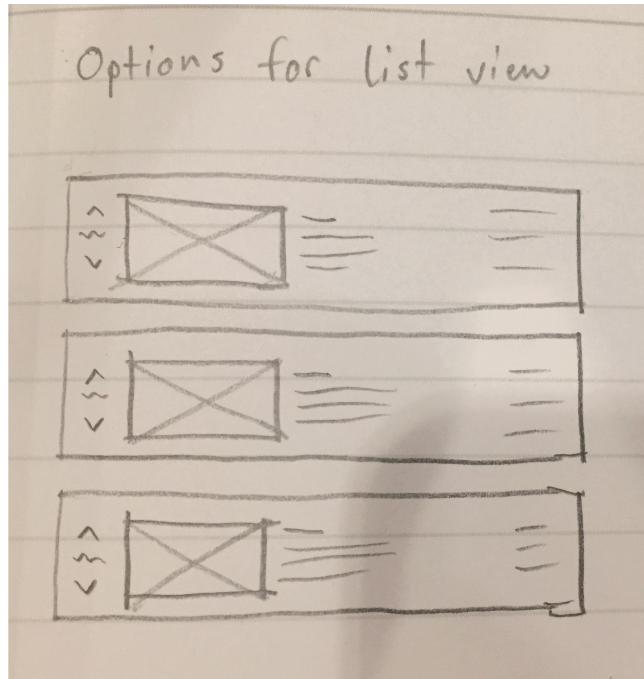
Our design process for D3's website was focused primarily on the personas and design requirements that were identified in the research phase. These requirements were therefore referred to often as we progressed through the design iterations.

Brainstorming



Sketching

Initial sketches laid out preliminary ideas for listing resources and displaying popularity for resources.



Initial Feedback

The two designs for the display of resources did not have to be mutually exclusive

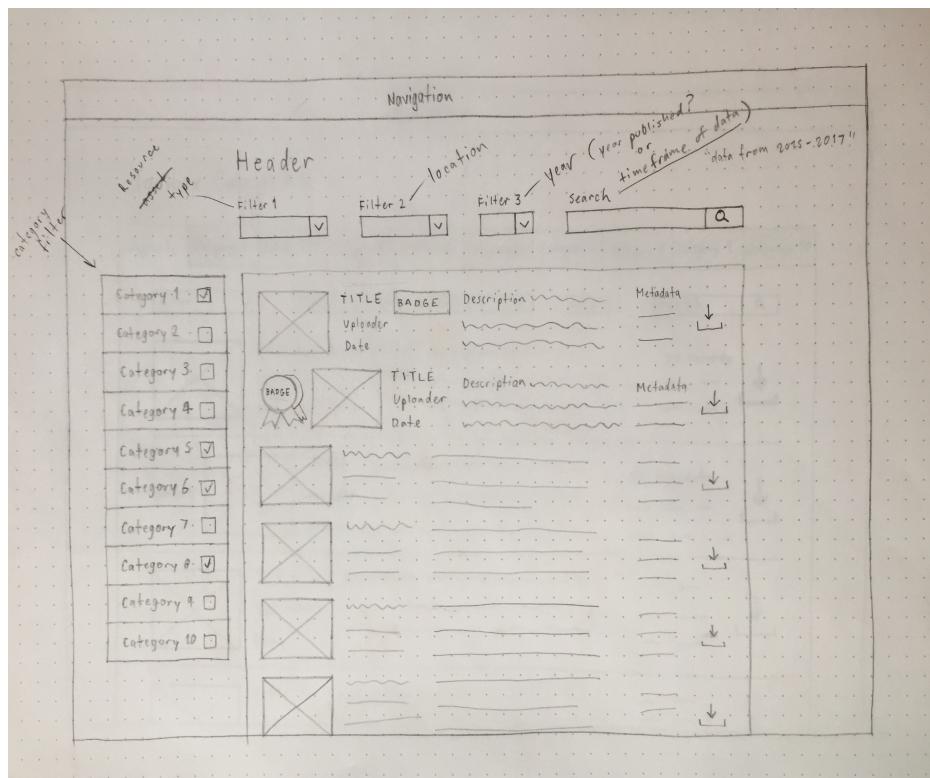
Perhaps use the first design to show categories, then resources within those categories using the vertical listing.

Giving users the capability to downvote resources may make the resources unappealing.

Consider using a badge system instead to simply highlight exceptional resources.

Wireframing

More detailed paper and digital wireframes allow for more detailed views of design components in the context of the full webpage. Using these wireframes, informal user testing allowed to make further design decisions to proceed with making a digital prototype.



A digital wireframe of a data search interface. The top navigation bar includes 'Choose Resource', 'Choose Location', 'Choose Year', and a search bar. A 'Toolbox' sidebar lists categories: Amenities, Business & Workforce, Civic Engagement, Demographic, Education, Environment, Health, Property & Land Use, Public Safety, and Transportation. The main content area displays a list of data resources:

- Resident Workers Blocks 2014** (Data Set): Timeline 2014, 1000 Locations, 9 Attributes, Raw Data Available. Includes a download button.
- Detroit Census Blocks, 2010** (Dataset): Timeline 2010, Filesize: 50 MB, FileType: CSV. Includes a download button.
- Graduation Rates by Zip** (Dataset): Timeline 2010-2017, Filesize: 30 MB, FileType: CSV. Includes a download button.
- Healthy Detroit** (Project): Timeline 2010-2015, Partners: Detroit Department of Health and Wellness, Detroit Planning Department, Woodward Planning Commission. Includes a download button.
- Population Over 18 by Highest Level of Educational Attainment, 2013** (Maps & Infographics): Timeline 2013, Filesize: 10 MB, FileType: PDF. Includes a download button.
- DDOT Bus Stops 2017** (Dataset): Timeline 2017, Filesize: 200 KB, FileType: TXT. Includes a download button.
- The Police Data Initiative in Detroit** (Presentation & Report): Timeline 2007-2016, Filesize: 10 MB, FileType: PDF. Includes a download button.
- Urban Innovation Exchange** (Project): Timeline 2010-2015, Partners: Detroit Department of Health and Wellness, Detroit Planning Department, Woodward Planning Commission. Includes a download button.
- Parks Watch Handout / WDET** (Presentation & Report): Timeline 2013, Filesize: 10 MB, FileType: PDF. Includes a download button.

High-Fidelity Mockup

Frequent feedback sessions played a major role by fostering creative solutions and driving our design iterations. With this digital prototype, we were able to run formal user testing that led us into our validation phase, where we tested our site against D3's sites.


About
Toolbox
Blog
Ask D3

[Use Data](#)

Toolbox

Interactive tools to find data, maps, and other visualizations. Use these resources to make informed decisions.

Categories

- All Categories
- Kids & Education
- Housing & Neighborhood
- Business & Workforce
- Demographic
- Health & Environment

Filters

Resource Type

- Data Tool
- Dataset
- Reports & Presentations
- Maps & Infographics
- Project

Location

- Albion
- Allegan County
- Ann Arbor
- Battle Creek

[See all](#)

Timeframe

- 2007 +
- 2008 +
- 2009 +
- 2010 +

[See all](#)

Resident Workers Blocks 2014

Timeframe: 2014
1096 Locations
9 Attributes
Raw Data Available

Detroit Census Blocks, 2010

Timeframe: 2010
Filesize: 30 MB
Filetype: CSV
[Download](#)

Graduation Rates by Zip

Timeframe: 2015-2017
Filesize: 3 MB
Filetype: CSV
[Download](#)

Healthy Detroit

Timeframe: 2013-2015
Partners:
Detroit Downtown Partnership
Detroit Planning Department
Woodward Planning Commission

Population Over 18 by Highest Level of Educational Attainment, 2013

Timeframe: 2013
Filesize: 67 MB
Filetype: PDF
[Download](#)

DDOT Bus Stops 2017

Timeframe: 2017
Filesize: 200 KB
Filetype: TXT
[Download](#)

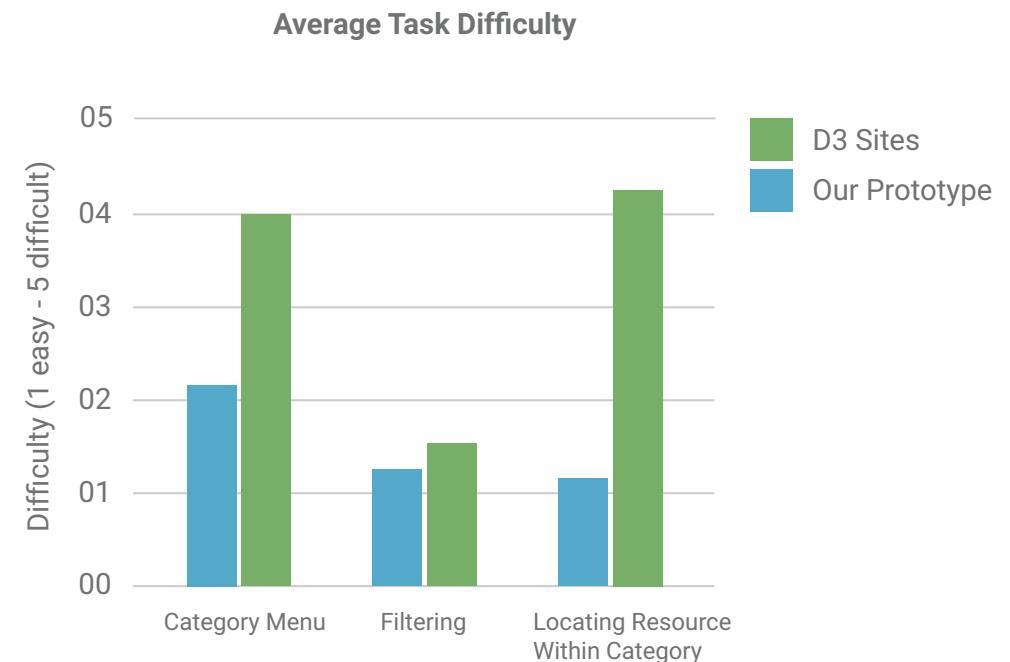
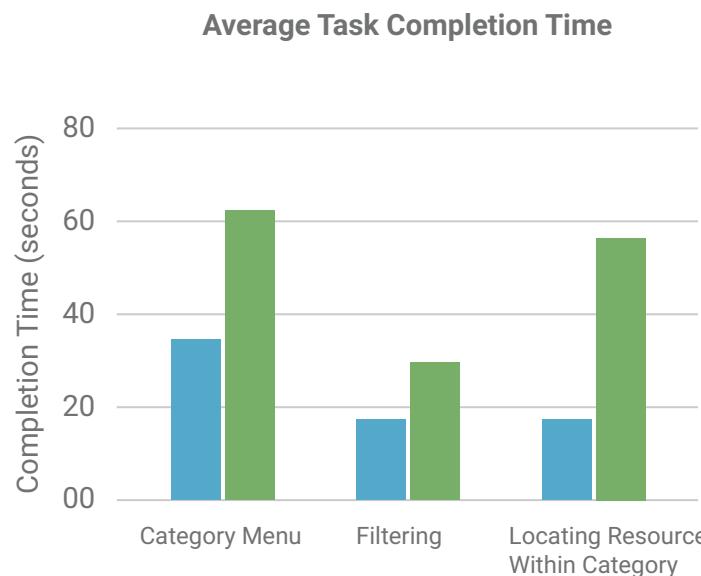
[Presentations & Reports](#)

Validation

Conducted user testing on our prototype and D3's sites

Metrics: measured completion time for tasks and ease of tasks

Found that our prototype outperformed D3 sites in terms of completion time and ease of completion for all of the tasks we tested.



Final Prototype

**DATA
DRIVEN
DETROIT**

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Toolbox

Interactive tools to find data, maps, and other visualizations. Use these resources to make informed decisions.

Resource Categories

- All Categories
- Kids & Education
- Housing & Neighborhood
- Business & Workforce
- Demographic
- Health & Environment

Resources 1,487

Resident Workers Blocks 2014

Data Tool

Timeframe: 2014
1098 Locations
9 Attributes
Raw Data Available

Detroit Census Blocks, 2010

Dataset

Timeframe: 2010
Filesize: 30 MB
Filetype: CSV
[Download](#)

Graduation Rates by Zip

Dataset

Timeframe: 2015-2017
Filesize: 3 MB
Filetype: CSV
[Download](#)

Healthy Detroit

Project

Timeframe: 2013-2015
Partners:
Detroit Downtown Partnership
Detroit Planning Department
Woodward Planning Commission

Population Over 18 by Highest Level of Educational Attainment, 2013

Maps & Infographics

Timeframe: 2013
Filesize: 67 MB
Filetype: PDF
[Download](#)

DDOT Bus Stops 2017

Dataset

Timeframe: 2017
Filesize: 200 KB
Filetype: TXT
[Download](#)

1 2 3 4

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Final Recommendations

These recommendations are based on our research and tests with your sites, however, not all of them may be technically feasible. We present these to you as “best practices” to follow when creating a user-friendly site.

Toolbox Page Recommendations

Feature Popular/Useful Resources at the Top

- We used badges to highlight useful resources. You could adopt this method to feature different resources for being “Most Popular” or having a high “Community Impact”, for example.



Business Impact



Featured Dataset



Community Impact

Use Colors to Visually Distinguish Resources

- Using something like our colored labels to distinguish between Datasets, Reports & Presentations, Maps & Infographics, etc. allows users to easily scan the resources and identify tools they are interested in.
- We used badges to highlight useful resources. You could adopt this method to feature different resources for being “Most Popular” or having a high “Community Impact”, for example.

Data Tool

Dataset

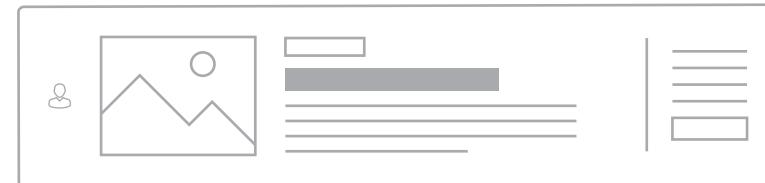
Project

Maps & Infographics

Reports & Presentations

Present Important Information in a Scannable Manner

- Using horizontal boxes for each resource allows a lot of information to be shown without taking up too much screen space



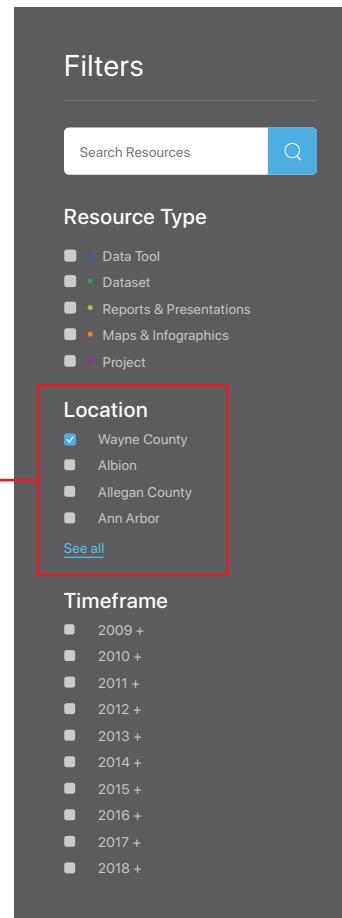
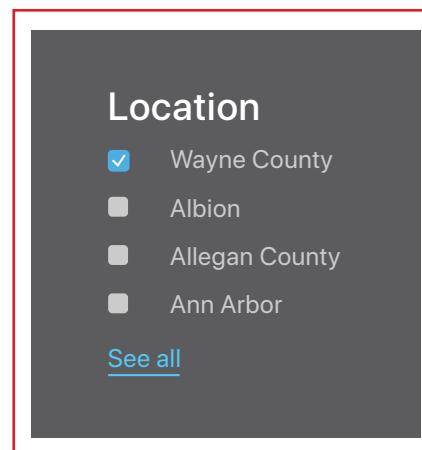
Toolbox Recommendations (Continued)

Have Category Buttons Filter Results List

- Clicking on a category button and having it scroll down the page to that category confuses users about where they are on the overall page. Using category buttons instead as filters allows a user to view the desired resources without moving down the page.

Show Examples of Possible Filters on Left

- Always-Visible Filtering Menu (instead of drop-downs)
- Include “See More” for filters with many options
- Within the “See More” menu, include drop downs



Overall Recommendations (Based on D3's current prototype)

Avoid Data Jargon

- Replace or eliminate most technical terminology from titles, headers, and informative bodies of text
-

Put the most important information at the top of the page (so a user can see it without scrolling)

- If you continue designing a site where there is a lot of information available when a user scrolls (AKA a "long scroll" site), make sure to put headers at the top. That way, users know what information is available below.
-

Provide More Guidance to Users on the Home Page

- Include a button to your "What is Data" page on your home page
This is an important page for users who are starting from square 1, but it isn't featured on your home page
 - Either indicate that a user can scroll down to see featured projects and how to get started, or add buttons for that on the homepage that take them to those pages.
-

Change the colors used in your Wordpress theme to match your brand colors

- Visually, there is a big contrast between your logo and the rest of your site. Updating the website colors will allow users to more readily associate your site with your brand.

Further Steps

Validation

If you proceed to implement any of our designs, proceed to continue validation testing. We were able to validate with seven users, but the more the better.

Design and Functionality

Our project does not require more screens/pages to be designed. We have been working with the toolbox page, which already exists. Our design ideas work with the current web pages D3 already uses.

Implementation

Due to the constraints of Wordpress, D3 cannot implement everything in our prototype however we provided a list of final recommendations and best UX practices that D3 can take into consideration when refining their design.