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INFO 4310  
HW #3 Write-Up

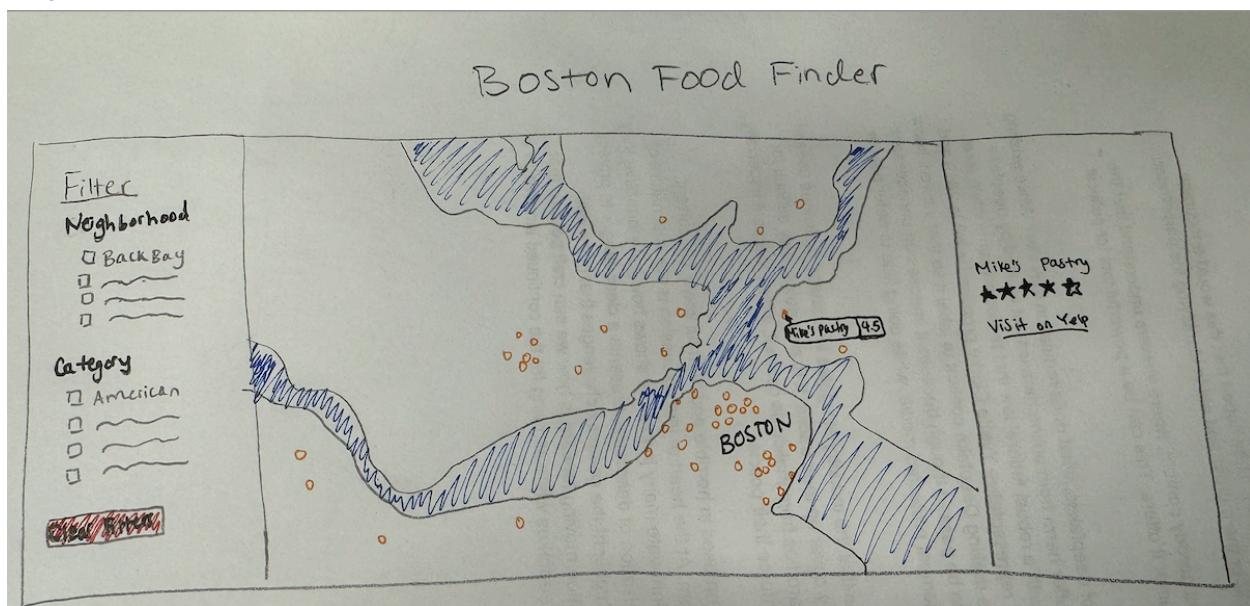
## Data Description

The data I chose was the Yelp dataset of 343 restaurants in the Boston area. This dataset includes various attributes for each restaurant, such as name, location, neighborhood, categories, ratings, review count, and a snippet of review text. Users of this Boston Food Finder tool are seeking to explore restaurants based on various criteria to suit their dining preferences or curiosity about what is available in different parts of Boston. It is catered specifically towards the more indecisive users who might be overwhelmed by the sheer volume of dining options available. User exploration needs may include wanting to discover restaurants that align with their preferences, find the highest-rated establishments, or just wanting to see what's available in a particular Boston neighborhood.

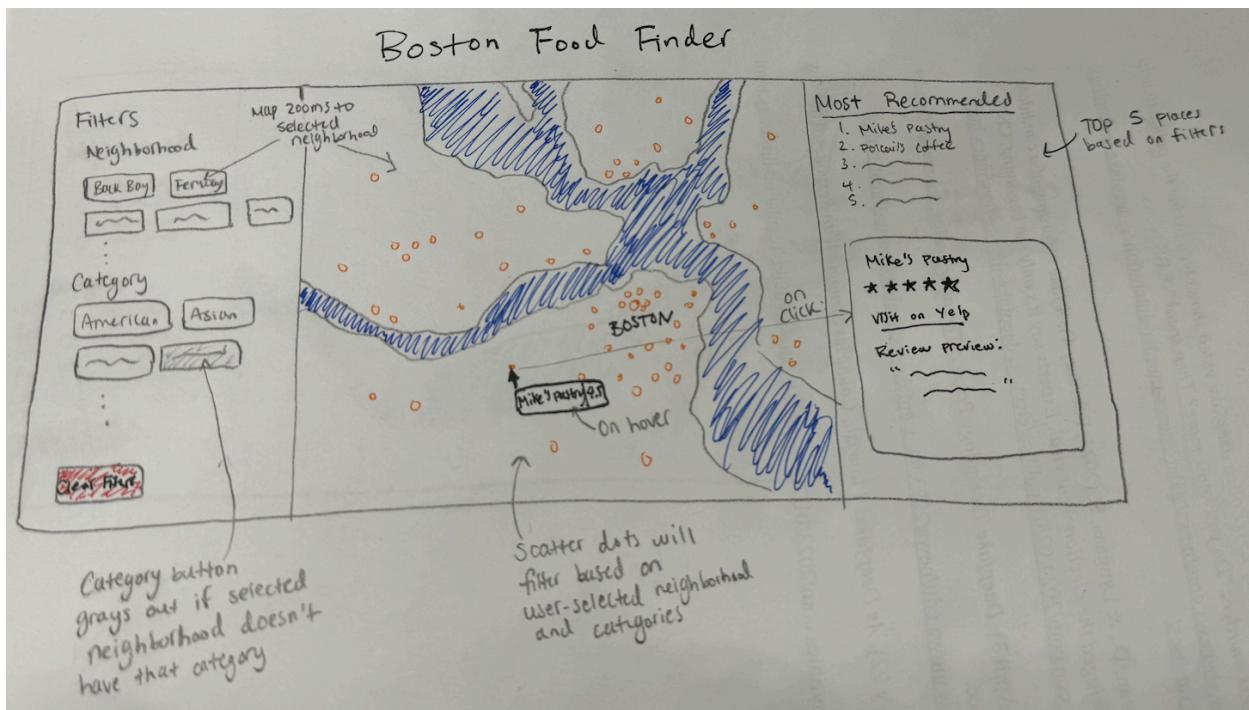
## Storyboards

The following sketches outline the interactions I designed for the data. I began the design process intending to have a filter panel (using only check boxes), zooming, a mouseover label, as well as a detailed view of restaurant details when clicked on the map.

Original sketch:



Iterated sketch:



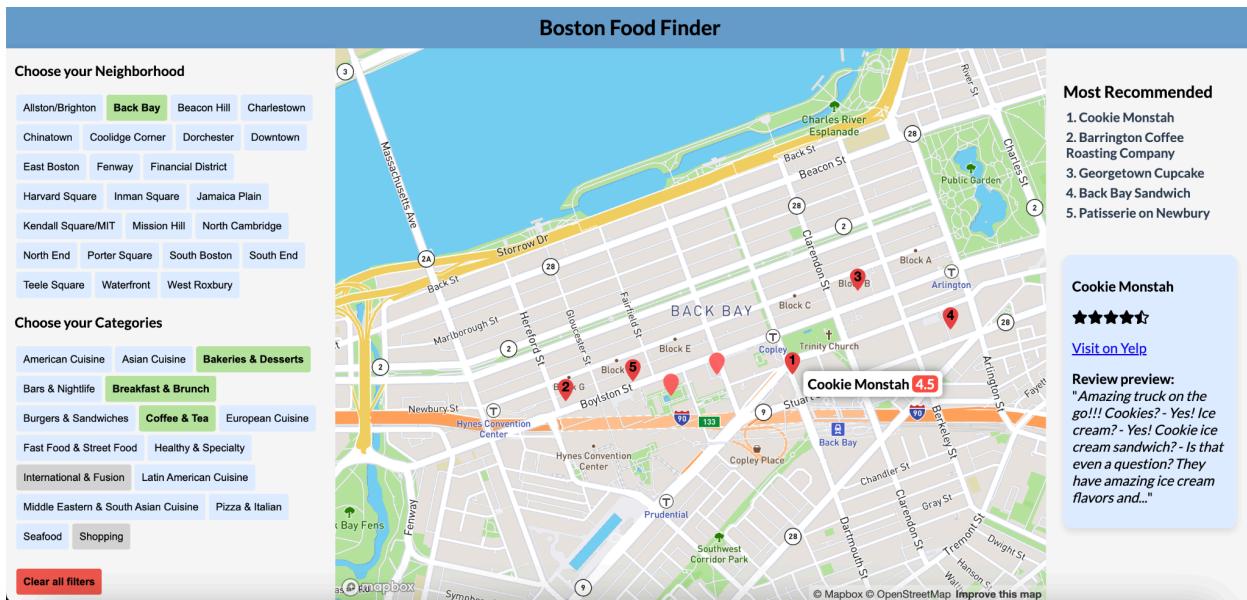
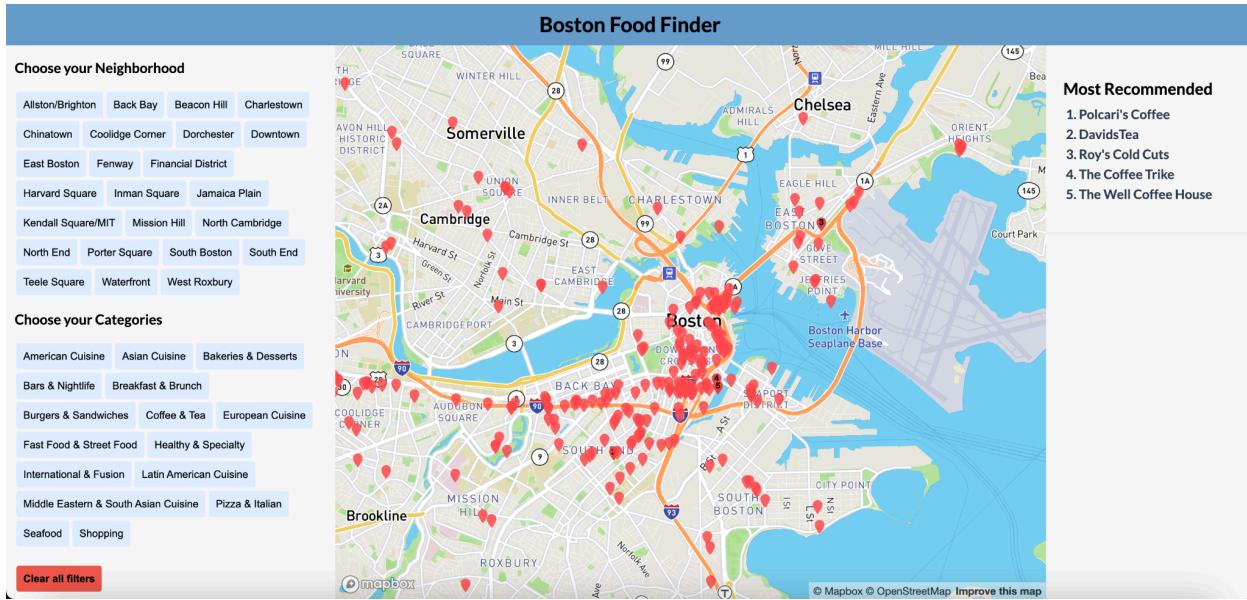
In my final iterated sketch, I decided to follow the overview, filter, and details on demand framework to best allow users to explore the data. The first key interaction will be the ability to zoom in and out of the map without any filters applied. This allows the user to get an overview of the dining options across the city, providing a sense of scale and distribution. The user will then be able to filter by a single neighborhood and multiple categories. The map zooms into the selected neighborhood and the Category filter shows which categories are available for that neighborhood by graying out the ones that are not. This specificity in filtering will eliminate the frustration of selecting categories with no results in the chosen neighborhood.

Upon selecting a neighborhood and category(ies), the map dynamically updates to zoom into that area and shows only the restaurants that meet that category. Concentrating on one neighborhood at a time helps users to plan their dining based on specific areas, making the exploration more relevant and manageable. This decision was also informed by the understanding that most users are likely interested in what's available within a specific vicinity rather than across the whole city. Allowing users to filter by multiple categories, on the other hand, acknowledges the diverse preferences that people may have. Through this combination of filtering options, I hope to strike a balance between specificity and breadth, allowing users to narrow down their search effectively while still being able to explore the variety within a chosen neighborhood.

On the map, each restaurant marker will be interactive. Upon hover, the user will be able to see the name of the restaurant and its rating. Upon click, a box will pop up to the side that includes more information about the establishment, including a snippet from a review and a direct link to its Yelp

page. This “details on demand” feature is useful for people who wish to delve deeper into what each restaurant has to offer before making a decision. Another feature that I decided to add after my initial sketch will be a list of top restaurants based on the applied filters that is shown in the right panel. This recommendation tool serves as a quick reference for those looking for highly regarded dining options without the need to sift through the map individually. These top-rated restaurants will also be reflected in the map, with unique markers to distinguish them from other restaurants.

## Final Visualization



My final visualization, the Boston Food Finder, was designed to help users navigate and discover restaurants in the Boston area through an interactive map, filtering, and detailed listings. Users are initially presented with an overview of the entire Boston area, allowing them to get an unfiltered look at the geographical distribution of restaurants. They can then zoom in and out of the map to see more or less detail, as well as filter by neighborhood and categories to refine the overview. These filters dynamically alter the map's content, helping (indecisive) users focus on options that match their preferences. Clicking on a restaurant marker triggers the details-on-demand feature that opens a popup providing more details about the selected restaurant. There is also a recommended list of the top 5 restaurants that is dynamically generated based on the filters applied, providing quick access to the highest-rated restaurants within their chosen filters. Overall, this visualization caters to various user needs, from those who have a clear idea of what they're looking for to those who prefer to explore different options before making a choice (but does so in a more focused and efficient manner).

### **Trade-offs and Considerations**

The choice to filter by a single neighborhood was made to keep the interface and experience simple. However, this might limit users interested in exploring restaurants across adjacent neighborhoods. I considered implementing multi-neighborhood filtering, but decided against it because I realized it would potentially overwhelm users with too many options. Focusing on a single neighborhood at a time instead encourages users to deeply explore the dining options in a neighborhood they plan to visit.

Another tradeoff was the user interface of the filters, since not all filters were able to fit on the screen. Initially, I played around with dropdown selection since it seemed like a way to accommodate the extensive list of categories in the dataset, but a concern with this was the reduced visibility of options. Users would not be aware of all available categories without scrolling through the entire list within the dropdown which could hinder discoverability. So, I decided to map the categories into more broad categories, which then allowed me to present the filters as clickable buttons without the need to scroll. I also added visual cues of highlighting selected filters and graying out unavailable options based on the selected neighborhood. This visual feedback helps users understand the impact of their selections and eliminates the frustration of selecting categories with no results in a chosen neighborhood.

### **Development process**

As the project evolved from storyboards to final implementation, several changes were made to refine the user experience. For example, the top restaurants feature was not part of the original storyboard, but was included to offer users a quick reference for highly regarded dining options. This

was calculated by developing a weighted score for each restaurant based on their Yelp rating and the number of reviews, with more weight being placed on the rating.

Filtering was implemented using buttons dynamically generated from the dataset. When a neighborhood is selected, the map zooms into that area, and the category buttons update to show which categories are available within the selected neighborhood. This dynamic updating was achieved by mapping the available categories to the selected neighborhood and adjusting the button states accordingly. A button to clear all applied filters was added for convenience so that users can easily reset their search criteria and explore all restaurants again.

The interactive map was created using Mapbox GL JS, centered on Boston's coordinates with an initial zoom level that provides a city-wide view. Restaurants are marked on the map, with their locations based on latitude and longitude data from the dataset. Restaurant markers change appearance (labeled 1-5) based on whether they are part of the top recommended restaurants so that users can identify highly rated places quickly.

When a restaurant marker is clicked, a detailed view is generated dynamically and shown in a separate section within the right panel. Ratings are visually represented using Font Awesome star icons to allow for a common depiction of ratings that makes it more visually engaging for users.

In terms of styling I decided to put the map visualization in the center, since it is the primary interaction element through which users explore the restaurant. Surrounding the map, the filtering options were positioned to the left side to allow users to intuitively adjust their search criteria without diverting focus away from the map. The list of recommended restaurants and detailed view of each restaurant were placed in the panel to the right of the map to create a logical flow of interaction and the information presented. This positioning aligns with how users typically read and interact with content, moving from left to right, allowing for a natural progression from filtering options to the map, and finally to detailed information about restaurants.

## Project breakdown

I completed this homework individually. The following is a breakdown of how much time I roughly spent on each part:

- Ideation (1hr)
- Data-processing (0.5 hr)
- Developing map SVG (1 hr)
- Filtering (4 hrs)
- Mouseover and pop-up details (1.5 hr)
- Recommended restaurants (2 hrs)
- Styling (1.5 hr)
- Writeup (2 hr)