

HW 3 Final Write Up

For this project, I used two datasets: yelp_pittsburgh.csv and zillow_pittsburgh.csv to create an interactive tool that helps users explore both entertainment/food and homes in Pittsburgh. The Yelp dataset includes details about restaurants, stores, and other places of entertainment, such as their name, rating, category, and location. The Zillow dataset provides information on homes for sale, including their price, number of bedrooms, neighborhood, and address. My goal was to design a simple and easy-to-use interface that allows users to filter and explore these datasets through an interactive map.

User Exploration Needs

People using this tool may have different goals. Some may be looking for a place to eat, while others might be searching for a home to buy. To make searching easier, I included filters for each dataset.

For entertainment/food, users can:

- Filter by rating (1-5 stars).
- Filter by category (Food, Nightlife, Shopping, etc.).

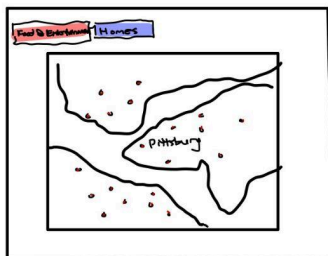
For homes, users can:

- Filter by price range to stay within their budget.
- Filter by number of bedrooms to find a home that suits their needs.
- Filter by neighborhood to focus on specific areas in Pittsburgh.

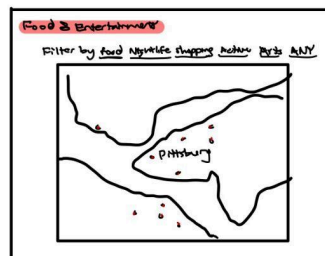
These filters allow users to quickly narrow down their search and find relevant results.

Storyboard & Design Decisions

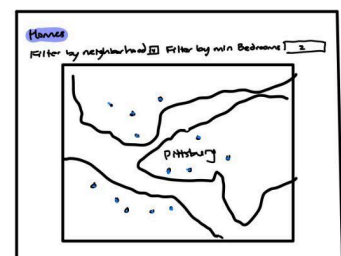
Storyboard : Explore Pittsburgh



Map of Pittsburgh. Two filter options, one for food & entertainment and one for homes.



Make a filter for choosing to only show places related to each specific category and have a show all option.



Have 2 filters for homes:
- one for filtering by number of rooms
- one for filtering by neighborhood with a dropdown bar.

The first panel shows the main interface, where users see a map of Pittsburgh with markers representing either entertainment/food or homes. A toggle switch lets users choose between these two datasets. The second panel focuses on entertainment/food filtering, allowing users to narrow their search by choosing a category. The third panel shows home filtering, where users can filter by neighborhood and minimum number of rooms.

I chose a map-based interface because it helps users see exactly where the restaurants and homes are located. This is useful for homebuyers comparing neighborhoods and diners looking for nearby restaurants or shopping centers. Instead of a long list of options, users can visually explore their choices on a map.

Final Interactive Visualization Overview

The final implementation of the Pittsburgh Explorer visualization successfully integrates entertainment/food and home listings into a single interactive interface. Users can toggle between viewing entertainment options and homes while dynamically updating the map based on selected filters.

Key Features:

- Toggle Button – Users can switch between entertainment/food and home listings.
- Dynamic Filters – Separate filtering options for restaurants (rating, category) and homes (price, bedrooms, neighborhood).
- Interactive Map – Locations are displayed with different colored markers (red for entertainment/food, blue for homes).
- Marker Click Popups – Clicking a location displays details in a popup and a sidebar.
- Sidebar for More Details – Displays information when a user selects a marker on the map.

The final design for the most part matches the storyboard. Users start with a map and filtering options, allowing them to refine their search dynamically. Clicking a marker displays additional details, helping users make informed decisions.

Challenges & Trade-offs

One of the biggest challenges in this project was keeping the interface clean while offering enough filtering options. Since different users have different needs, I had to ensure that filters were relevant and did not clutter the UI. To solve this, I used dropdowns and sliders to organize the filters.

Another challenge was data consistency. The restaurant categories in the Yelp dataset were not always standardized, which made filtering more difficult. To address this, I grouped similar categories together and added an "Any" option to allow users to view all entertainment spots.

I also considered marker clustering (grouping nearby points together), but this could have made filtering interactions confusing, so I chose to keep all markers visible instead.

Trade-offs Considered:

Marker Clustering – Could improve performance but would make filtering less intuitive.

Advanced Search Features – More filters (such as square footage for homes) could be added, but I prioritized keeping the interface simple.

Despite these challenges, I was able to create a tool that balances usability, performance, and interactivity effectively.

Development Process & Changes from Storyboarding

I started by exploring the datasets and selecting the most useful fields, like price, rating, category, and location. Then, I set up the basic map interface using Leaflet.js and added markers for both stores and homes. After that, I worked on filtering functionality, allowing users to update the map dynamically. Finally, I added popups and a sidebar panel to display details when a user clicks on a marker.

Some changes were made between my original storyboard and the final version. Initially, I planned to show details only in popups, but I later added a sidebar panel to provide more information in a clearer way. I also expanded home filtering options to include price range filtering and entertainment/food filtering options to include rating filtering, which was not in my original storyboard. These changes made the tool more useful and easier to navigate.

Time Breakdown

I worked on this project alone and spent time on different tasks:

Data cleaning and formatting – 3 hours

Setting up the map and UI – 3 hours

Implementing filtering and interactivity – 3 hours

Adding popups and sidebar functionality – 3 hours

Debugging and optimizing performance – 2 hours

Final testing and improvements – 2 hours

Storyboarding and documentation – 2 hours

In total, I spent around 18 hours developing and refining this project.