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HW#3 Write-up

We chose to use the Yelp dataset about Pittsburgh establishments. Each row in the dataset represented a specific establishment, and most of them also had information about what “type” of establishment it was, what “category” (of food) it fell into, its geographic location, its rating, the neighborhood it existed in, and more. After deciding that we wanted to build our visualization on a map, we also joined the geographic information in this dataset with a geojson file we found online for Pittsburgh. The two datasets did not quite match up, so we had to filter out a few restaurants that were located outside of the bounds of the Pittsburgh area provided by the geojson map we used. Recognizing the relative density of this dataset, we wanted to aid our users in their exploration of the data, without overwhelming them, by empowering them with the ability to tailor the visualization to their liking.

With the aforementioned challenge in mind, after storyboarding, we settled for a visualization that would allow users to actively filter the points shown on the map by category, neighborhood, and rating — this would allow users to tailor the points shown on the map to fit their interests. As certain neighborhoods also had more establishments than others, and in some cases the stores were overlapping (at least on the map), we also enabled a zooming function (not originally a part of our storyboard), which would help users gain a clearer view of all the establishments in a certain region.

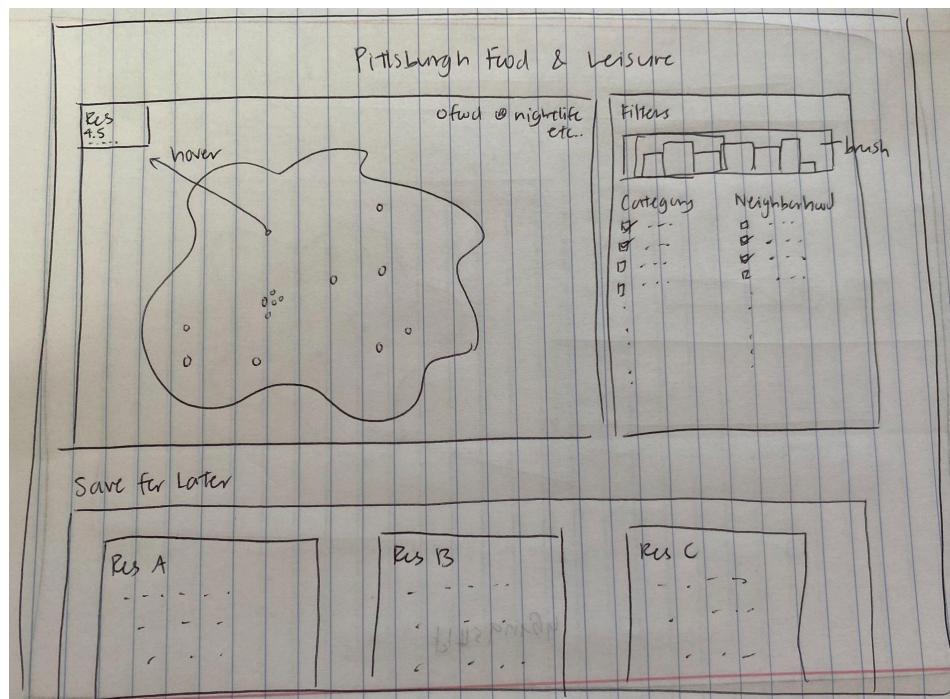


Figure 1: Storyboard Design

To help users quickly get a sense of what stores they were looking at, we also added a hover function, so that when users hovered over an establishment, its name, category, and rating would appear. Rather than having the store-specific information pop up right next to the store

being hovered over, we decided to put the hover “panel” on the top left corner of the map. The thinking there was that this design would not detract from the map or block any other stores presented on the map, which the user may be interested in. We also decided not to show all the information about that store in the hover, instead opting to allow users to curate a selection of establishments they were more interested in in a “save for later” section which would show more detailed information about the stores and allow for easier comparison between different user-selected options. Users could add any store to their save for later tab by clicking on the circle representing it on the map.

We decided to orient all the components of our visualization — the map in the center left, the filters to the right, and the save-for-later tab on the bottom — the way we did because we wanted the map to be the main focus of the user. Recognizing that our audience would likely be reading from left to right, that is also why we positioned the map on the left and the filters on the right. We positioned the save-for-later tab at the bottom because it was not as central to what we imagined the user’s end goal was and was intended to be more of a supplementary tool designed to support comparative analysis.

This storyboard translated into our final design, shown in the two figures below. As can be seen in the first of the two figures presented, our map supports zooming, filtering, and hovering. We added select all and deselect all buttons for the category and neighborhood filter buttons, figuring that this would allow users to more easily reconfigure the filters to their liking, should they wish to do so. We also opted to start by having all the establishments shown on the map (and therefore all the filter buttons toggled to selected), as the toggled buttons communicate to users that they have the power to click or unclick them to filter the data. There was a slight tradeoff involved here, between potentially overwhelming users (which we did not think would be a major issue, considering the dataset is not huge, and we made very deliberate design choices about how to represent the stores, as will be explained below) and communicating by showing that users had the power to filter.

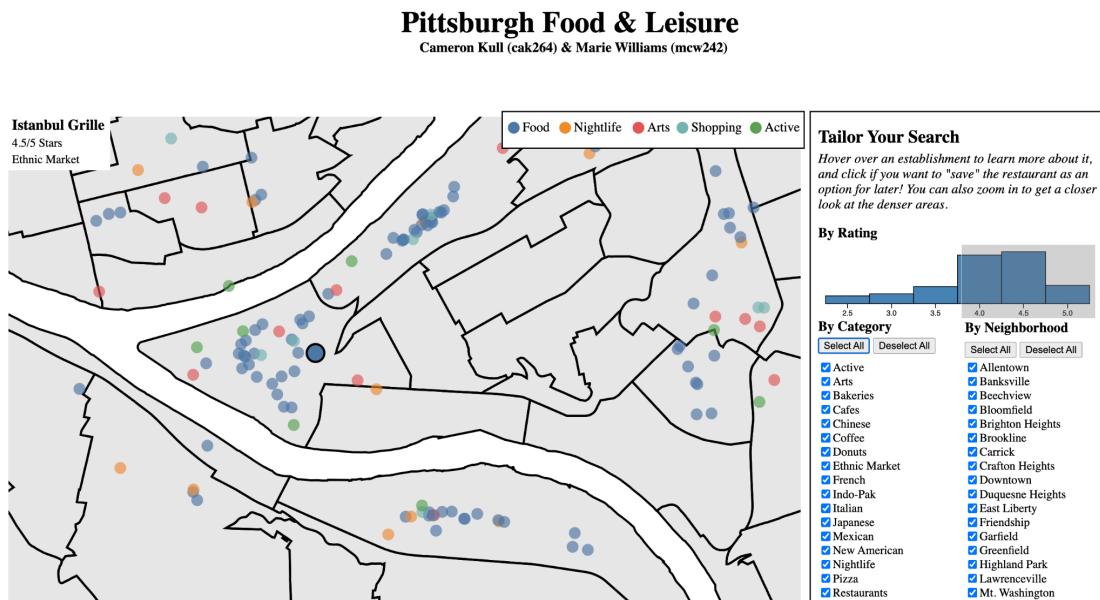


Figure 2: Map + Filters

Users also had the power to filter by rating via a brush element. We wanted to show the distribution of establishments with certain ratings, which is why we opted for a histogram style design, though we recognize now that a brush may not be the most intuitive choice for such a plot, because the ratings do not fall along a continuous scale. To make the design slightly more intuitive, we decided to make the brush a 1D brushX element rather than a 2D one. If we had had more time, we also would have looked into making the brush element adjust its width so that if a user's selection covered just part of a bar, say the bar representing restaurants with 4.0 ratings, the brush canvas would automatically adjust to cover the entire bar; this would help mitigate confusion about whether all stores with a certain rating were showing on the map. Also, had we had more time, we would have tried to adjust the histogram so that it reflected the distribution of stores that fit the other filters selected. On our end, we were hoping to become familiar with the brush design, which was the primary motivation behind that design choice.

Save for Later		Clear Saved
<i>Choose up to 3 establishments to save, view in further detail, and compare them to aid in your decision.</i>		
Name Istanbul Grille	Name Jimmy John's	Name Piper's Pub
Rating 4.5	Rating 4	Rating 4.5
Category Ethnic Market	Category Sandwiches	Category Restaurants
Neighborhood Downtown	Neighborhood Downtown	Neighborhood South Side
Review Count 31	Review Count 19	Review Count 247

Figure 3: Save for Later

With our save-for-later bar, which again was designed to help users learn more details about establishments they found interesting or support comparisons, we ultimately settled for allowing a maximum of comparisons between 3 establishments. This was partially in the interest of time and effort, but also because we wanted to represent the information effectively, and we figured it would be difficult to make comparisons if too many stores were showing in the save for later tab. If we had more time, we would have added the function of users being able to clear a specific establishment from the save-for-later bar, rather than the entire bar, and made the positions of the boxes responsive to when an establishment was added. We also would have added additional stylistic elements, like photographs of the establishments or their food so users could have a visual association with each establishment.

Another tradeoff alluded to earlier had to do with representing the stores on our map. We used circles to represent the establishments, as is the relatively conventional approach, but we struggled a lot with the sizing of these circles. We wanted them to be visible as soon as a user saw the map, but as some areas were pretty densely packed with stores, we did not want them to be so large that some circles became completely invisible. We settled by setting the opacity of these circles to be lower, so users could somewhat see "through" them to know that there were

more circles underneath in denser areas, and by adding a zoom function so that users would be able to explore those more densely packed areas. The problem with zooming, however, is that users might then miss other stores that they may have found interesting. If we had had more time, we would have looked into adding a mini map and showing what stores the user's zoomed-in view was inadvertently excluding.

In terms of changes we made from our storyboard, the main change was adding a zooming function after we recognized how hard it was to distinguish points from one another in areas that were particularly full of activity. Adding the zooming allowed users to get a more close-up view of the spread of stores in those areas. We also slightly adapted the original design of our save-for-later section. We had planned to allow users to "x" out of each establishment that had been added to that area, but given the time constraints we opted to just have a "clear" function instead that would wipe the user's entire selection. In all, there are a few designs that, provided the time we were given, we could only very simply implement. Even so, every choice we made was very carefully thought out, and we made sure to prioritize our time on functions that we knew would be more important to our users (like zooming).

Member Contributions:

Cameron:

- Imported the data, set up the geojson map, and populated it with the data (1.5 hours)
- Category and Neighborhood Filters (3 hours)
- Save-for-Later Bar (2 hours)
- Styling (1 hour)
- *Note:* trouble shooting the category and neighborhood filters being responsive to each other was where I spent most of my time

Marie:

- Implemented the hovering + filtered out restaurants outside of the map (1.5 hours)
- Styling (1 hour)
- Zooming (2 hours)
- Brush rating filter (2.5 hours)
- Write up (2 hours)
- *Note:* both the zooming and brush took a lot of behind the scenes coordination to make sure everything still displayed correctly and the filters all worked as planned

Both:

- Brainstormed visualizations (1 hour)
- Troubleshooting with the filters (1 hour)