HCI Analysis: Interactive Map Exploration
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Goals & Motivation:

This project aims to explore the New York City boba shop scene. It will give the audience a light-hearted experience and a deeper look at where they can find boba and how they might want to drink it. This naturally diverges into two main goals: an opportunity to see and discover bubble tea locations across NYC

Intended Use Case:

The intended audience is NYC locals or visitors who are interested in learning more about bubble tea in the area and how to drink it. Users will be able to see an overall view of boba shops in NYC, then narrow down to a specific shop based on their preferences.

Then, after exploring where they can find bubble tea, viewers will learn about how to drink the tea based on personal habits.

Related Materials:

https://observablehq.com/@kristw/boba-science

The above article heavily inspired the second visualization. However, my chart is distinct in its mathematical formulas/calculations, as well as the weights/values of the sliders and how those sliders affect a given area on the chart.

The implementation was distinct as well. The methods and code used to build the graph, the areas, updating functions for the areas, etc. were unique.

Data Source:

NYC JSON:
https://github.com/nycehs/NYC_geography/blob/master/NTA.topo.json
Boba shops dataset:
https://github.com/mebauer/boba-nyc/blob/master/teaapp/store_neighborhoods.csv

The JSON data was used directly. As for the stores csv file, I used a python notebook to manipulate one of the columns into a more easily digestible format. Specifically, the “category” column, needed to filter by category, included a lot of unnecessary information that cluttered the values. I converted their category dictionary into a more simple list for ease of use.

Design Iterations:

The initial design was as follows: the page will open with a title and small text to introduce users to the page's subject. After scrolling through the text, viewers will reach the first visualization: the interactive map. This consists of two main components: a zoomable map & and a side panel for filters. The map will focus on NYC only. Tea shops will populate on both the larger main map and the mini map in the corner. Users can pan, drag, and zoom in on the map (which will be reflected in the mini map by a box highlighting the current view area). This mini-map view-box will also be draggable, so users can navigate to various portions of the map while maintaining the same zoom-level and a holistic view of where they are currently viewing relative to all of NYC.

Dots on the map can be hovered over to see more details such as rating, name, and price range. The dot will bolden/enlarge/change in some way to indicate interaction. Perhaps dots will have a clickable feature that takes users to the shop's website.

The side panel allows users to filter by borough or category (checkboxes) as well as price range or rating (sliders).

After interacting with the map, users can scroll down to read a bit more information/transition to the next visualization: a boba drinking graph. This area chart allows users to input their drink's metrics (such as cup dimensions, proportions of different ingredients, and drinking habits) to see their projected optimized bubble tea consumption over time. The graph shows volume of ingredients (tea, boba, ice in different colors) per sip until drink completion. Users can experiment with different slider metrics to see how each measurement might affect their optimal drinking strategy.

Sliders were used instead of text-input to constrain values of each metric. Cup dimensions may be simplified to a button system (where users can simply select small, medium, or large). Changes to the metrics are reflected immediately on the graph. (see below for preliminary sketches)

Final Compared to Sketches:

The final implementation is less ambitious with certain details than the initial plan. Sliders were not implemented in the map (leaving just the filter checkboxes) in order to simplify the process, and less sliders are used in the second chart for the same reason.

Thanks to feedback I had received from peers, I learned that the countless sliders in the second chart could feel overwhelming and meaningless. Some suggested changing up the methods of interaction, such as the button system for cup metrics mentioned above. That being said, I chose to cut down on the metrics all together and choose the 3 most meaningful sliders to showcase in the final implementation: the values corresponding to personal drinking habits (boba consumption rates, tea consumption rates, ice melting rates). This meant less clutter on the screen, cleaner and more simple calculations back end (for the volume equations), and a narrower scope. Less sliders meant less clutter/distraction for users and a clearer focus for the

story. The tradeoff is fewer interactions for the user and oversimplification of the volume computations.

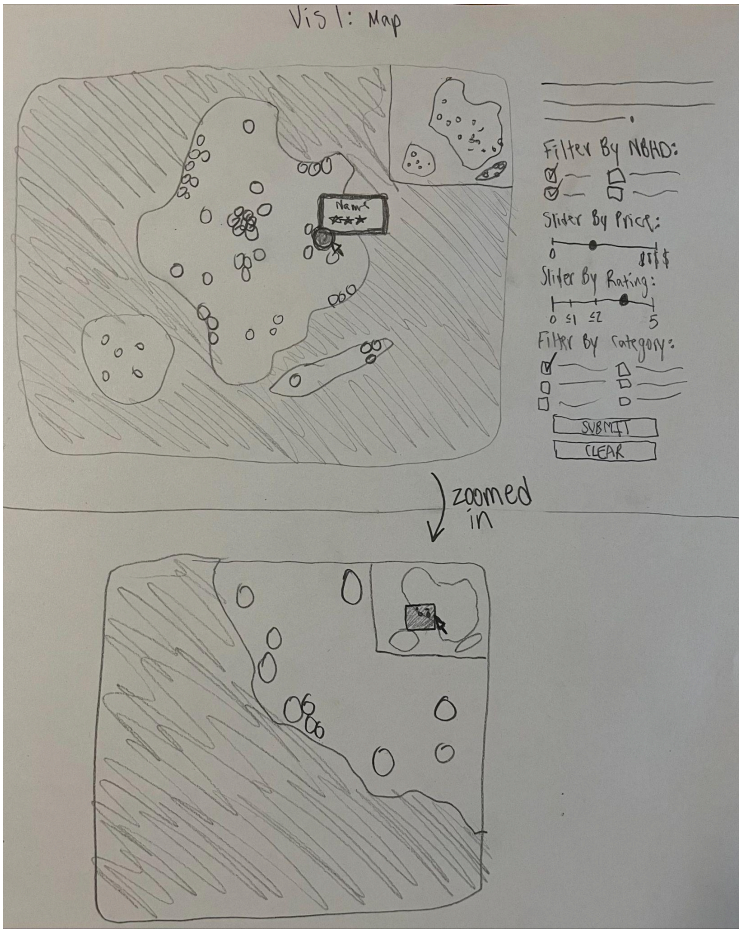
Further Details on Final (See below for screenshots):

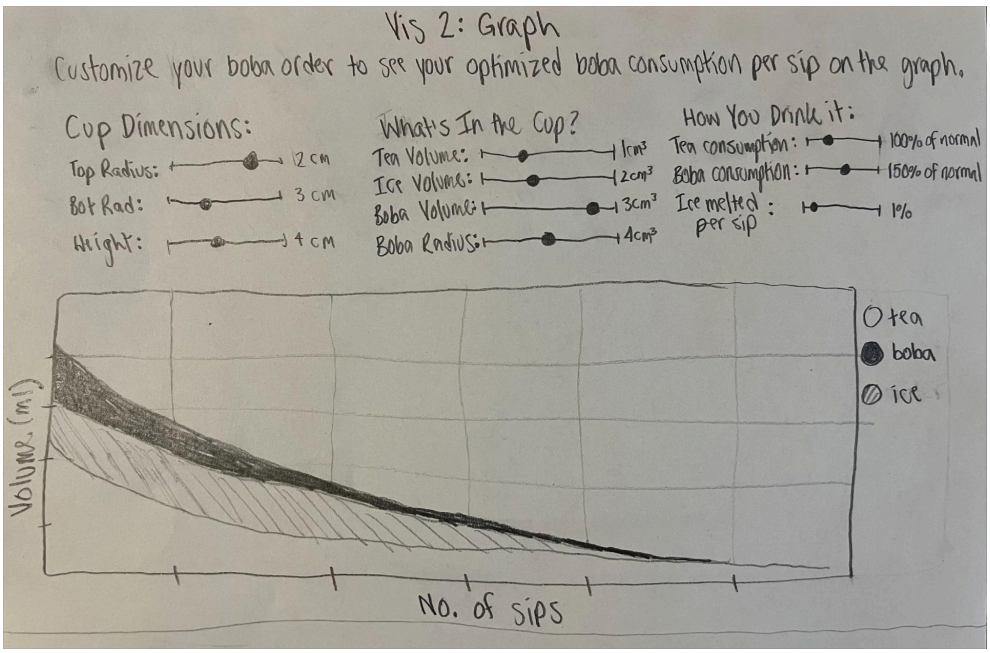
The fonts, colors, and text are casual and inviting. The warm, neutral color scheme and conversational tone are meant to feel welcoming and comfortable for viewers.

The map filter interaction is form-like, where users can take time selecting what they like before submitting or clearing preferences. This provides further diversity in the kinds of interactions users can take: pan/zoom/etc. with the map body, clickable buttons with the filters, and eventually draggable sliders with the graph.

For the graph, color-coded sliders provide tightly-coupled changes to their respective chart areas. The interaction is immediately upon release (unlike the map, where the filters are submitted like a form). This was necessary to allow for instant changes to the volumes that users could notice distinctively. However, numerical values are not greatly emphasized in the visualization. For the sliders, it would likely be difficult to quantify vague preferences about drinking habits, thus the ends are marked with exclamations that users can slide to agree or disagree with. The values on the axes are also not particularly large, since meaning is mostly conveyed through the areas and their proportions to one another as they are altered.

Preliminary Sketches:





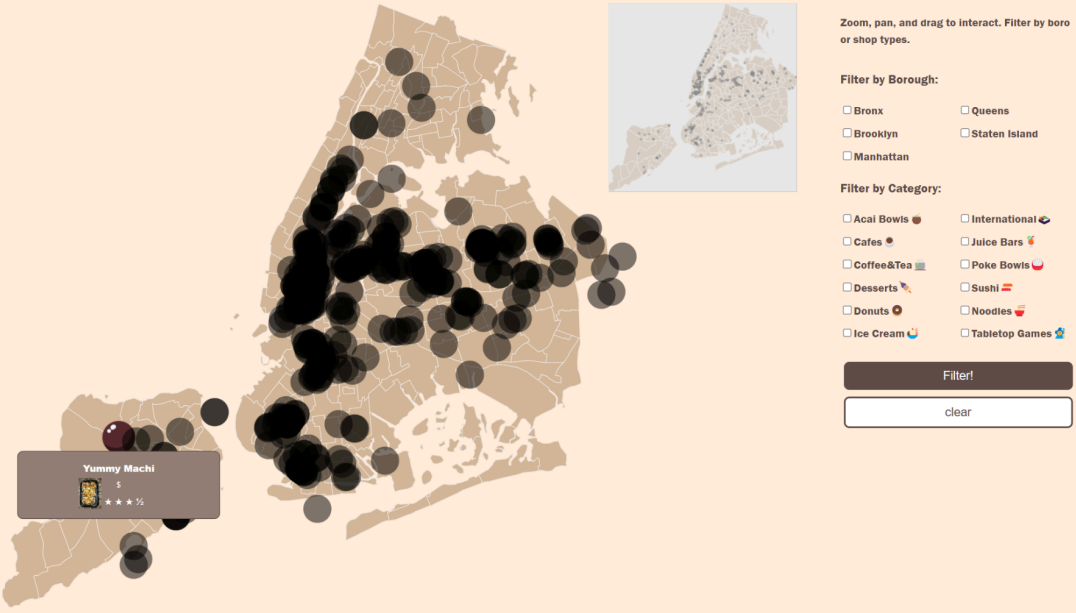
Final Design (with random shop hovered on map to see tooltip):

Welcome! Expore the NYC Boba Scene

Slowly but surely, New York City's boba scene keeps growing. The craze over tapioca pearls swimming in tea-based drinks, aka bubble tea, started in Taiwan. But these days, international chains and small businesses keep popping up thanks to everyone's endless appetite for the drinks.

With such diverse flavors, it can be overwhelming to choose from teas, toppings, and milk options in a store. But how do you find a store in the first place??!? If only there were a way to visualise shop distributions across NYC... oh wait... THERE IS! The interactive map below should help you get a better idea of where you might want to stop by.

Find your new favorite boba place. The world is your oyster.



Now that you've settled on a shop, what's the best way to enjoy it? When you drink bubble tea, you might like to finish with the same proportions of boba and tea that you started at. Or maybe you've felt frustrated before when the ice melts at a horrifically faster rate than you can drink your tea.

This next visualization simulates optimized sip strategies based on personal preferences when it comes to tea drinking.

Customize your drink order to discover optimized boba consumption per sip!

% Tea Consumption

Not much tea sipping, slow pace. — Sip like life depends on it!!

% Boba Consumption

In the boba conservation society — Chew boba at record speed!

% Ice melted per sip

Keep that ice cold and plentiful... — Let the ice melt yippee!!!