

Mapping Ideas: Community, Hatred, and Place among AAPI Communities

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ABSTRACT

Our project focuses on Asian and Pacific Islander (AAPI) communities in the United States. As more people rise up to combat hate crime and the lack of AAPI representation in the United States, we were motivated to support the communities. This project provides resources and maps. We are focusing on three areas: AAPI demographics, incidents of hate against AAPI community members, and AAPI restaurants & communities. Our maps aim to help AAPI people who would like to immigrate or move across the US by giving them data about hate crime rates and community resources. It is also our hope that these maps could provide some information for AAPI adoptees taken from their birth country to help them find their specific communities of heritage and explore the culture. During the design process of creating these visualizations, we also confronted difficult ethical questions around the harm and help of data specificity in regards to sensitive, amorphous topics like hatred and community.

Keywords: Altair, Asian American Pacific Islander (AAPI) communities, data visualization, abstract data representation, multivariate data representation, ethics

1 INTRODUCTION

On March 16, 2021, a 21-year-old man took away eight innocent people's lives, six of whom were Asian women. In the face of this brutal mass killing, the Cherokee County Sheriff's Office spokesperson justified the suspect's actions, saying "...yesterday was a really bad day for him and this is what he did."^[1] While people were still processing the sorrow from the shocking mass shooting, such a heartless statement ignited public anger and motivated many people who were not used to taking progressive actions to protest against the increasing hate crimes.^[2] Seeing vulnerable people being mistreated and "punished" across the country makes us deeply concerned for the most basic rights of AAPI community members. As anti-AAPI American hate crimes increased almost 150% over the past year^[3], we felt compelled to provide helpful information with easy access to those who are looking for safe and welcoming homes, while balancing the importance of relative anonymity for AAPI communities across the US that have historically been victimized through the destruction of their communities and forced relocation.

2 DESCRIPTION

The general goal of the project is to provide a helpful summary of information for AAPI demographics, hate incidents against AAPI communities, AAPI restaurants and community resources. We wanted to offer users the opportunity to interact with the visualization and the flexibility to view the graphs in different settings. We used [Figma](#) to prototype a general guideline that we used to develop the project (fig. 1-5). Though we were able to follow the plan of this prototype and map specific restaurants, we made the decision to remove this detailed information on AAPI community locations. For the final outcome we kept all our data at state-level. This was due to our research on historical intolerance and violence both within the United States and internationally, which we expand upon in our **DISCUSSION**.



Figure 1. Figma Prototype for AAPI population



Figure 2. Figma Prototype for hate incidents against AAPI members by state

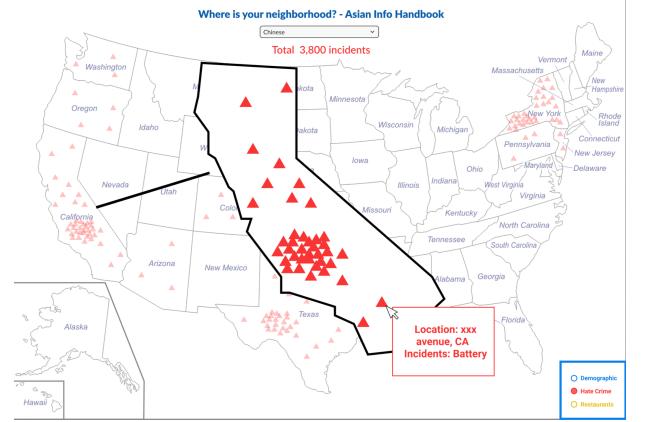


Figure 3: Figma Prototype for AAPI hate incidents in California



Figure 4: Figma Prototype for AAPI restaurants



Figure 5: Figma Prototype for AAPI populations, hate incidents and restaurants layered.

2.1 AAPI Demographics

Based on data from the 2010 Census[4], we were able to visualize Asian populations across the United States. We looked for specific AAPI subgroups and we gathered data on the six largest AAPI subgroups: Chinese, Filipino, Indian, Japanese, Korean, and Vietnamese community members. Since these six groups make up 83% of the total AAPI population in the US, we focused on them for the duration of this project iteration[5]. We acknowledge that there are no Pacific Island Nations represented through this method. Fig. 6 shows one of the first prototypes we created using the Altair library, a declarative statistical visualization library for Python, based on Vega and Vega-Lite [6] and state-level data mapped to the latitudes and longitudes of state centers [7] , to showcase the Asian population distribution. From the map, you can deduce that California has the largest Asian population.

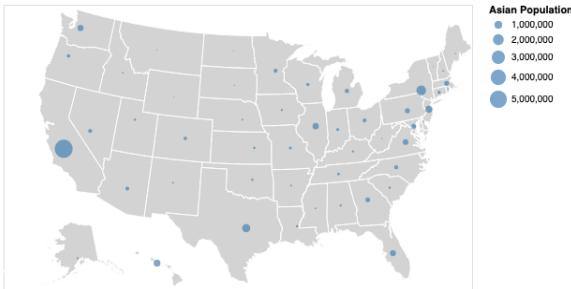


Figure 6: First Altair prototype for Asian populations in the United States

We also created a custom Google map from our dataset to showcase the population. That prototype (fig. 7) had some severe limitations as it wasn't able to visualize trends, or show size or color as specifically as we wished.

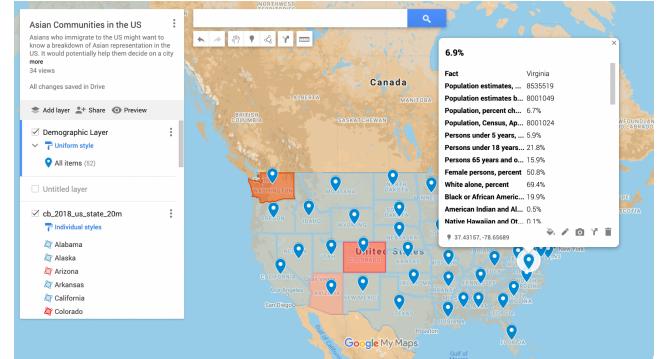


Figure 7: Google map prototype of AAPI groups in the United States

To help people understand the visualization, we ended up representing data in a different way using an Altair choropleth map[8][9]. We used color as a means to represent AAPI subgroup representation. In the map (fig. 8), the darker the color, the more Chinese individuals there are. You can click on a state to isolate the data for that particular state. You can also hover over the state and the bars to gather the specific population number and state.

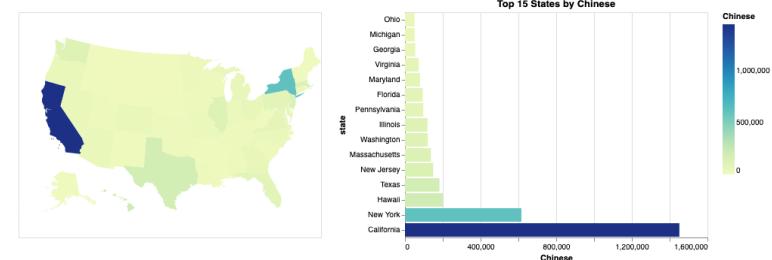


Fig. 8: Chinese Demographics in the United States

Additionally you can select which subgroup you would like to see using a dropdown menu.

2.2 AAPI Hate Incidents

How do you map hatred? For this element of the project, we created three visualizations based on reported hate incidents¹ and hate crimes. The incidents of hate were from Stop AAPI Hate, a multi-lingual online reporting center which takes self-submitted statements from AAPI community members. The incidents were collected from a report Stop AAPI Hate published [10] completed by unpublished numbers given by Stop AAPI Hate upon our request. We also used the FBI's federal-level hate crime statistics to show trends in anti-AAPI hate crimes from 2013-2019[11]. To provide several different perspectives on hate incidents, we created a bar chart showing the hate incident rate per 100,000 AAPI community members using the state-level population estimates given by the 2019 American Community Survey[12]. The purpose of this was to highlight areas where anti-AAPI hate incidents are more reported, and to understand where there might be anomalies in rate as compared to general AAPI population size.

¹ "Hate incidents" is the terminology used by Stop AAPI Hate due to the narrow definition of a hate crime not generally applying to many hateful incidents, such as cases of verbal harassment.

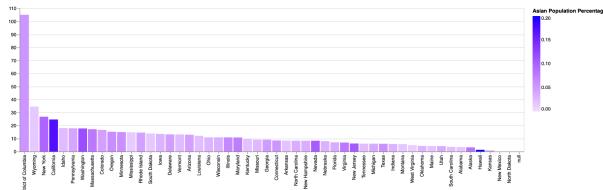


Figure 4: Hate incident rate as related to AAPI population size

The colors of (fig. 4) correspond to the AAPI population percentage within the state, with a deeper color corresponding to a higher percentage AAPI population which is also echoed in the tooltip that appears when hovering over the visualization. This visualization allows the analyzer to, on a state-by-state basis, explore where there are higher and lower levels of hate incidents both by the number of incidents and rate as related to AAPI community size, and shows that larger incident rates are not necessarily tightly correlated with population size or overall numbers of incidents. The colors for this visualization were created with assistance from the VisualLab ColorCrafter.[13] Using this tool improved distinguishability for the 50 different states.

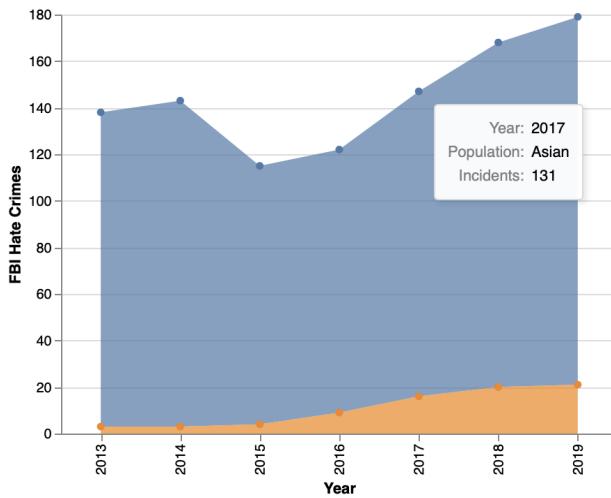


Figure 9: FBI Reported Hate Crimes over time with Asian [blue] and Pacific Islander [orange] populations

We also created an FBI reported hate crimes visualization to show in a stacked additive bar chart the number of hate crimes reported to the FBI by local law-enforcement jurisdictions for both "Asian" and "Pacific Islander" demographics from 2013-2019. Here we attempt to disentangle the pan-AAPI categorization (which we will touch on more in our **DISCUSSION** section) and show the trend of increasing anti-Asian and anti-Pacific Islander hate crimes since 2016. This serves to show that though the COVID-19-specific incidents of hate are a newer face of anti-AAPI hate, anti-Asian and anti-Pacific Islander reported hate crimes have been growing over the past 5 years. It is also important to consider that though AAPI is general enough to overly reduce complex and individual cultures, heritages and histories, there are reports of pan-AAPI harassment directed at "Chinese" people who are not from China. Talking to Dr. Russell Jeung of Stop AAPI Hate, we learned that Latinx and indigenous americans have been told to "go back to China".[14]

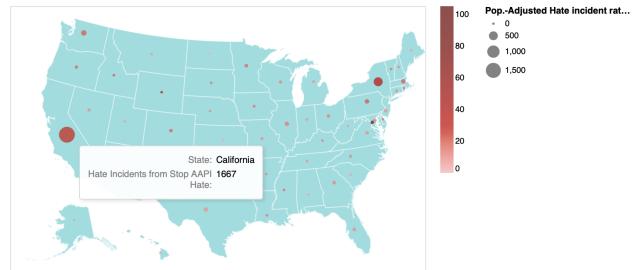


Figure 10: Geographic map highlighting state Hate Incident counts

Additionally, we created a geospatial visualization to highlight the incidents at state level across 50 states (fig. 10). The purpose of this map is to see more into the raw number of incidents without the size-based pre-processing present in the bar graph, while using a color range based on the state-adjusted rate of anti-AAPI harassment to highlight lower numbers that might be overlooked without the rate highlighted, as is the case for Washington DC. This color range was also produced with assistance from the VisualLab ColorCrafter. The map was created using the Vega-dataset geoJSON which maps the United States.

2.3 AAPI Restaurants and Communities

Food is closely tied to culture, religion and diets in Asia. [15] Having food that resonates with one's culture can help one adapt life in the US, where the dominant food choices are significantly different from AAPI food. However, many AAPI restaurants have been greatly impacted or even forced to shut down because of declining customer flow and increasing operating costs. [16] We collected data from Yelp Dataset and Yelp Fusion API and mapped the distribution of AAPI restaurants by state onto the visualization. Since many of the restaurants offer a mixture of AAPI cuisines, we did not separate restaurants by AAPI subgroups. To provide an inclusive outcome, we gathered data on these Yelp-created dining categories: Asian Fusion, Bangladeshi, Burmese, Cambodian, Cantonese, Chinese, Conveyer Belt Sushi, Dim Sum, Filipino, Guamanian, Hainan, Hawaiian, Himalayan/Nepalese, Hong Kong Style Cafe, Indian, Indonesian, Izakaya, Japanese, Japanese Curry, Korean, Laotian, Malaysian, Mongolian, Noodles, Pakistani, Pan Asia, Polynesian, Ramen, Shanghainese, Singaporean, Sri Lankan, Sushi Bars, Szechuan, Taiwanese, Teppanyaki, Vietnamese, Bubble Tea, Hot Pot, Thai, Taiwanese, Szechuan and Pan Asian categories. Fig. 11 shows our original attempts to include mapping the latitudes and longitudes of AAPI restaurants from the Yelp Dataset, to help users find the exact location of each restaurant. Upon research and further consideration (see more in **DISCUSSION**), we decided to only showcase the layer where we used color to represent the number of restaurants in each state (fig. 12). Concluded from the final map, you can see what the top 15 states by number of restaurants are.

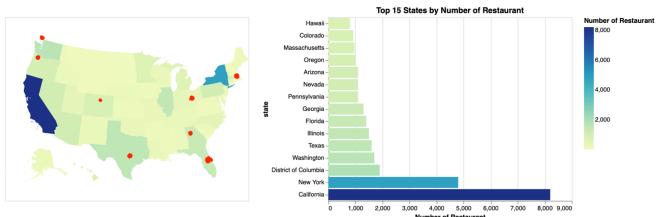


Figure 11: Geographic map highlighting AAPI restaurant locations

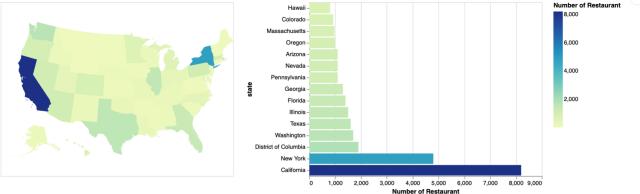


Figure 12: Geographic map highlighting Asian restaurant counts

3 DISCUSSION

Our project provides general information of AAPI community demographics, AAPI hate incidents and AAPI restaurants and communities. As many Americans do not distinguish between the different AAPI subgroups[17], we saw the importance of highlighting the differences in AAPI subgroups. However, given the nature of hatred directed across AAPI communities, we determined that a pan-AAPI view was also useful[18]. There were also 41 different Yelp dining categories that are either explicitly connected to AAPI communities or that could be tied to Asia and Pacific Island Nations, but due to the limited quality of data, amount of preprocessing necessary, and concerns over anonymity, we did not disaggregate the data into each of the 41 different categories.

3.1 Findings & Challenges - AAPI Demographics

During the data collection, it was difficult to find data on each AAPI subgroup. The 2010 census, which is now 9 years out of date, provided us with Asian populations overall, as well as some subgroups, but the data preprocessing was taxing, given the census' formatting. Following the cleaning of our dataset for Asian demographic data, we visualized the data to see where you can find larger and smaller Asian populations for the six most populous AAPI groups in the United States.

3.2 Findings & Challenges - Incidents of Hate against AAPI community members

The data that we have has multiple levels of uncertainty. STOP AAPI Hate's data is a collection of self-reported incidents. This of course leads to questions of authenticity and reliability. However, given the difficulty of legal recourse for hate crimes, we find it an important qualitative and quantitative initiative. We must also acknowledge the limits of data if we are to use it not just as an arguing point, but as an informative source. Hatred is an idea, one that has real effects, but which is wrapped in societal expectations, histories and fears. This is not to diminish the lived experiences of those who have experienced hatred, but rather to argue for an expansive understanding of how people feel these data points, how they reverberate through their lives and tragically sometimes their deaths.

We sit in a difficult valley. On one side, sits minimization, where a man can kill 8 women, six of whom are Asian, and have any possibility of a connection written off as "a bad day". However, the other side of the valley can create consequences too. Could over-policing ensue in the name of keeping neighborhoods safe? Could the changing definitions of hate incidents be used by radical nativists to dismiss the entire situation? These hypotheticals are already generating think pieces and speculation. How do we give proper space, grief, and energy to the losses and injustices AAPI community members are feeling and not retreat into overly simplistic descriptions of perpetrators that could reduce effective change-making? Given that this initiative is new, trends over time are difficult to calculate. In addition, to protect the anonymity of reporters, the data has been disaggregated to the extent that some multivariate trends (age and ethnicity, for example) are impossible for someone without the private data-set to accurately compare. Further, though the center is called Stop AAPI hate, Dr. Jeung wants to further conversations with Pacific Islanders to understand

whether Stop AAPI hate also serves their communities with its mission.

3.3 Findings & Challenges - AAPI Restaurants & Clinics

The data collecting process was difficult. Although the Yelp Dataset API provides a well organized dataset, it only included information for 8 states: Oregon, Texas, Georgia, Florida, Massachusetts, Ohio, Washington and Colorado. We were surprised to find out that many platforms do not give access to their complete dataset for academic or research purposes. For example, the Yelp headquarters rejected our request for a more comprehensive dataset, and TripAdvisor specifically mentioned that they do not grant permission for data analysis and academic research projects. To fill out the missing data for the other states, we tested many APIs such as Google Place API and the Yelp Fusion API. Unfortunately, most APIs only allow developers to retrieve a limited amount of entries per call, and only Google Place API provides a "next page token" parameter where you can retrieve the next page of result. Collecting a full set of data for all 50 states, Washington DC and Puerto Rico can max out the daily allowance for calls. Given all the factors listed above, we decided to collect 50 samples (the maximum number of entries you get from one Yelp Fusion API call) from each state and map the total number of entries in each state to our visualization. By adopting this methodology, the data may not be as accurate or comprehensive. For example, the total search result for "California" was 256 while the total search result for "Los Angeles" was 5900. To address this issue, we used total search results from cities where the most Asian restaurants are located for some states.

Pre-processing the data was also challenging. We had to convert each JSON file from the scraped data into a csv file using Alexander Vingardt's Python and Shell scripts [19] because Altair wasn't able to read the JSON format given by the scraped data. After that, removing non-AAPI restaurants and reorganizing the information categories were also time consuming.

In addition, we decided to not to map the exact location for each restaurant to ensure the safety in anonymity. In the United States, various AAPI enclaves (Chinatowns, Japantowns, etc.) have been persecuted since the beginning of mass emigration from AAPI countries to fill US labor shortages in the early 1900s [20][21]. These persecutory actions also included the removal of Japanese-American citizens to internment camps during World War II[22]. Internationally, we have to consider the use of condensed and easily available records through history to perpetrate violence against groups of people. Nazi intelligence officers used records from synagogues to find Jewish people [23].. In 2015, mass killings in Burundi were made possible by lists collected in part through social media [24] Easily accessible information that highlights for anyone and everyone where Chinese-owned businesses are could make it easier for people to make targeted attacks. Though we understand the possibility of others creating this, we feel it is our duty to not increase the possibility of harm ourselves. We thus switched the exact geolocation (Fig. 11) to a Yelp URL (Fig. 12) where people can find restaurant lists for each state. We then did similar summary level statistics for our AAPI clinics sample in the United States, linking to the general database of businesses which advertise on jinti.net (今題) [25] in Chinese.

4 RESEARCH

For our project we committed to intensive research both in domain and in visualization technique. To understand our target group better, we read more about Asian American communities. Asian Americans are the largest group of new immigrants to the US and the most educated. The largest immigration influx from Asian is from India.[26] The Asian population highly values family and hard-work; they have a strong sense of culture and also feel a degree of cultural separation from other Americans.[27]

We were able to interview Dr. Russell Jeung, one of the co-founders of Stop AAPI Hate.[14] His insight into the importance of relative anonymity was one of our primary pivot points during the project. We originally wished to provide a map that showed very specifically where hate crimes and hate incidents had taken place. However, Dr. Jeung cautioned against doing anything below the state level due to the possibility for compromised anonymity. Given that some states have extremely small AAPI populations, or in the case of Rhode Island or Washington DC, are geographically very small, we decided to purposefully summarize our data. This choice was also influenced by the historical research we did on the use of easy-to-collect records to perpetrate atrocities [20]-[24].

An important visualization influence in this project was A Declarative Rendering Model for Multiclass Density Maps [31]. Through this paper we were able to gain a deeper understanding of the complexities of multivariate analysis. In the first stages of our project, we were considering layering demographics, hate-crimes and communities into one visualization that could toggle between views. The paper enumerated many of our concerns, including legibility and occlusion. Given that we decided to do summary level statistics, we determined that putting all of the information on one map would decrease legibility while not significantly increasing data, especially given the different levels of disaggregation in our data.

5 CONCLUSION

Based on the data presented, we gathered a diverse set of data to create useful visualizations. We created interactive maps to show different angles of the data. These are meant to help AAPI community members who want to immigrate or move to the US choose a state to move into. The Asian demographics maps are meant to assist the search of a specific state based on a specific subgroup. The anti-AAPI hate crime maps are helpful visualizations to provide an overview of safer areas. The AAPI restaurants and clinics maps are meant to support the importance of food and health in Asian culture and provide this rich source of information to help them feel connected to their culture. This project taught us a lot about ethical dilemmas while designing visualization for a vulnerable population. It also provided us with new technical skills like using firebase to deploy a static website, using Yelp API, using web scraping to gather data, using a Json to csv converter, using geoJson, collaborating through git, and creating a custom google map. Further research directions could be to map the historic destructions and relocations of AAPI communities in the United States, to create a visualization from the Center for the Study of Hate and Extremism's data from police departments for 2020 [3] and comparing it with forthcoming FBI hate crime statistics to see how well it predicted overall trends. It could also be helpful to create perhaps city or county-level counts for Asian restaurants and businesses to balance the need for privacy with useful granularity. It could also be rewarding to reach out to various AAPI communities and adoptees who feel severed from their heritage to ask if there are ways of mapping that they would find helpful for their journeys of self discovery.

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