NYC OPEN RESTAURANTS PROGRAM POTENTIAL CONFLICT ZONES

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BACKGROUND

In June 2020, NYC introduced a temporary Open Restaurants program per Executive Order as a way to support struggling restaurants during the pandemic (NYC DOT, 2021). Since its inception, the program has allowed for the expansion of outdoor seating for 10,300 restaurants city-wide (Barron, 2020), with the hope that New Yorkers would be able to dine at restaurants while maintaining social distancing guidelines. Currently, the NYC Department of Transportation (DOT) is in the process of making the Open Restaurants program permanent through zoning amendments (NYC DOT, 2021).

While the program has been a vital income generator for small business owners during the pandemic, the proliferation of outdoor dining structures has raised key issues surrounding how the built environment of specific neighborhoods might affect consistent policy rollout across the city.

As expected with any public program borne out of a time of crisis, the local response towards Open Restaurants has not been wholly positive across the board. In fact, in October 2021, a group of residents based in the West Village and Lower East Side in Manhattan filed a lawsuit in an attempt to prevent the DOT program from becoming a permanent fixture of the New York City landscape (Gothamist, 2021). Much of this local backlash has been complaint driven—from amplified noise to sidewalks crowded with garbage and pests, residents living in close proximity to participating restaurants have been vocal about their opposition to Open Restaurants, at least in the program's current iteration.

RESEARCH QUESTION:

> Which neighborhoods with high potential for conflict with the Open Restaurants program?

ASSUMPTIONS

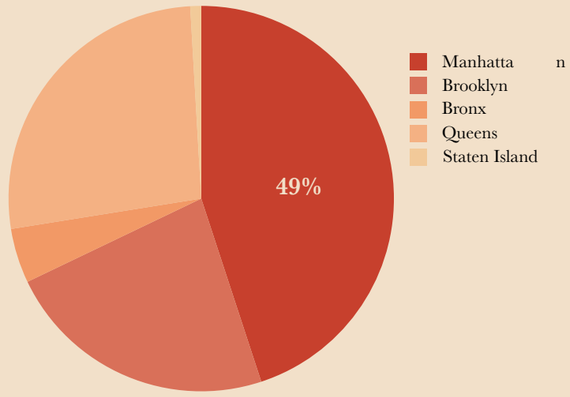
One of the biggest questions that arose in the early stages of our research was: **how do we define conflict?** Our starting point for this research was a collection of articles from NYC-based city blogs like Gothamist and StreetsBlogNYC that detailed conflicts between restaurant businesses and nearby residents. In these articles, conflict manifested in forms such as lawsuits, op-eds, or rants to reporters. Rather than attempting to measure the scale of conflict in all its varied forms, we are assuming that such conflict exists and that we can capture the potential for conflict by categorizing the types of complaints that were cited by certain groups of vocal community members.

SCOPE

Based on the map of all approved Open Restaurant participants as of November 2021, it is clear to see that most of the businesses participating in the Open Restaurants program thus far have been based in Manhattan. Therefore, the scope of our project will center concerns regarding the Open Restaurants program in Manhattan.

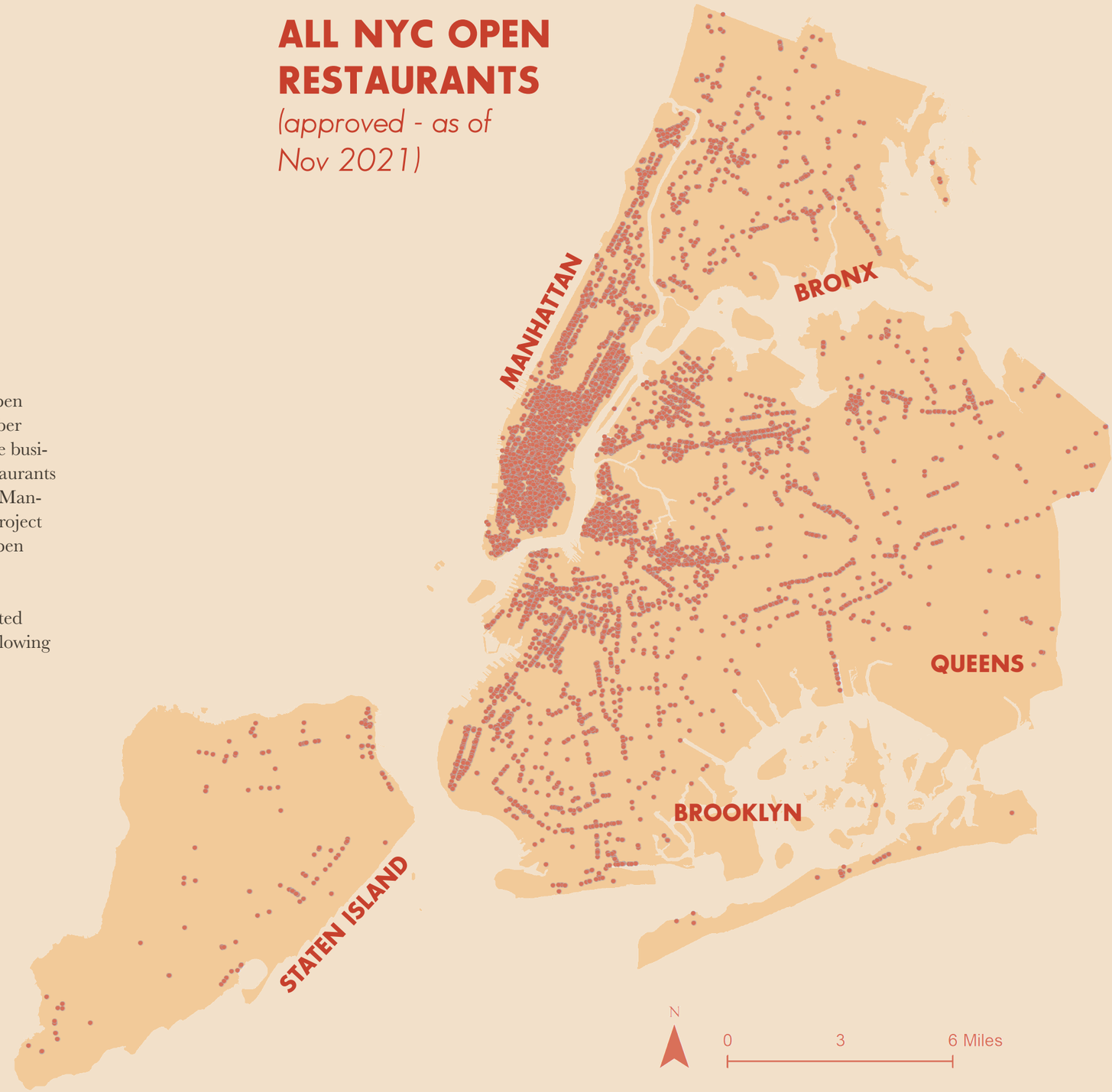
We also scoped our research to a limited number of criteria (detailed in the following section) to make our index.

BREAKDOWN OF OPEN RESTAURANTS BY BOROUGH



ALL NYC OPEN RESTAURANTS

(approved - as of Nov 2021)



CONSTRUCTION OF A CONFLICT INDEX
CRITERIA SELECTION

To begin, we will be explaining how we chose and constructed the potential conflict index that will be used for the rest of our analysis. The highest weighted criteria in our analysis is restaurants density since in the absence of restaurants there can be no potential conflict with the Open Restaurant program. Articles and lawsuits detailing the nuisances caused by the Open Restaurants program have emerged over the course of the last year, even as the program has been a lifeline for the restaurant industry in the city. The rest of our criteria was chosen from snippets:

> "47. The streets around Petitioner Arntzen's residence are blocked by diners hanging out, socializing, and waiting for tables, outside restaurants by tables and chairs placed on sidewalks."
>
> "53. Tables and chairs and even outdoor heaters filled every available space on the public sidewalks."
>
> "55. The noise level is unbearable as petitioner Augustine is surrounded on all sides by restaurants and bars."
>
> "230. Petitioner is concerned for her daughter, especially as she starts to enter her teen years. [...] The people coming here are strictly coming to party in the sheds and the sidewalks.
>
> - **Arntzen et. al vs. City of New York (2021)**

> "Obviously my parents don't speak and read government English," says Garunrangseewong, who helped translate and walk her parents through the application process. "I really can't imagine how other immigrant-run businesses are doing the same thing." **
>
> *** this was said in the context of the application for the Paycheck Ptotection Loan programs - but we felt it was relevant as Open Restaurants is also a government program that could pose similar issues for immigrant business owners.*
>
> - **Eater NY article (Zhang, 2020)**

CONSTRUCTION OF A CONFLICT INDEX
OPERATIONALIZING CRITERIA

	Dataset	Criteria	Scores	Weight
DEMOGRAPHICS	Census Bureau American Community Survey (2019 5-Year Estimates)	**Population Density** (Total Population / Census Tract Area in Acres)	1-6	1x
		Age (Percent of population Under 18)	1-6	1x
		Language Spoken at Home and Ability to Speak English (Percent of population who speak english less than very well)	1-6	1x
BUILT ENVIRONMENT	Planimetrics Sidewalks Polygon Feature Class	Ratio of Sidewalks to street segment length	1-6	2x
RESTAURANTS	Department of Health and Mental Hygiene - Restaurant Inspections	**Restaurant Density** (Total Number of Restaurants / Buffer Area in Acres)	0-5	3x

CRITERIA CREATION
GEOGRAPHIC UNIT OF ANALYSIS

As our research goal is to identify areas that have potential for conflict with the Open Restaurants program, central to our project were the questions: **How should an area be defined? Additionally, how should we determine the boundaries of an area?**

To answer these questions, we aimed to break away from pre-determined geographic units such as census tracts and Neighborhood Tabulation Areas (NTAs). This led us to begin our analysis with the LION Single Line Street Basemap, which is a single line representation of New York City's streets. (**Fig. 1**)

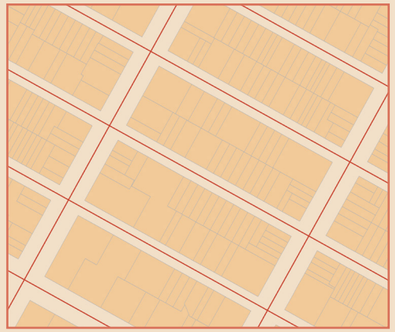


Fig. 1 LION Single Line Street Basemap

For each individual line segment in Manhattan, we created a buffer at a distance of 142 ft. as a representation of the segment of the street. (**Fig. 2**) 142 ft was chosen as the buffer distance as this was the average of the maximum width for all buffers in Manhattan.

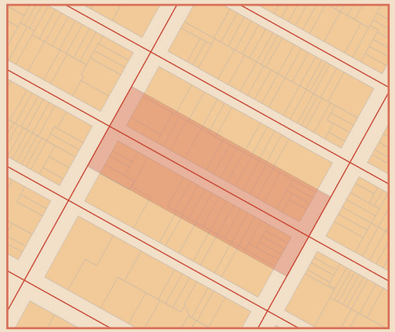


Fig. 2 Street Segment Buffers (at 142 ft. distance)

CRITERIA CREATION
RATIO OF SIDEWALK AREA TO STREET SEGMENT LENGTH

We used the ratio of sidewalk area to street segment length as a criterion for our index as this measure quantifies the presence of restaurants along any given sidewalk. Firstly, restaurants can only set up along the length of the street segment. Secondly, if these restaurants were to become Open Restaurant participants, the sidewalk area is what becomes contested as a potential site of conflict, as public space is now being privatized under Open Restaurants.

To find the ratio of sidewalk area to segment length for all the buffers, we used the Union tool to bring together the Sidewalks polygon feature class layer to the street segment buffers. The result of this step can be seen in **Fig. 3**.

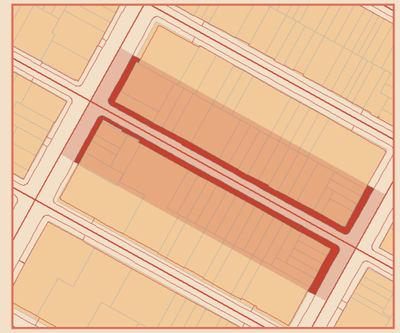


Fig. 3 Street Segment Buffers with Sidewalk Polygons (union tool)

CRITERIA CREATION
RESTAURANT DENSITY BY BUFFER

As this project is about the Open Restaurants program, the presence of restaurants is critical in the construction of a conflict index. Using a DOHMH dataset on restaurant inspections, we divided the number of restaurants within each buffer by the area in acres of that buffer.

A note about these restaurant point features: these do not represent Open Restaurant participants, but all restaurants as this index measures the potential for conflict, and any restaurant has the potential to become apply for Open Restaurants.

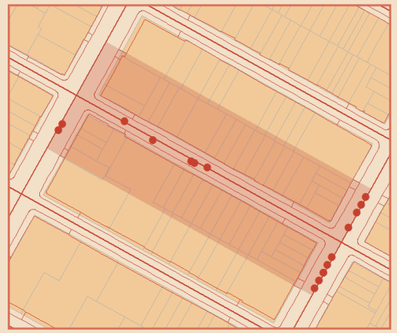


Fig. 4 Restaurant Point Locations within each Street Segment Buffers

CRITERIA CREATION
DEMOGRAPHIC VARIABLES

Population Density
The higher the population density where there are restaurants, the greater the chances that these parties will come into conflict. Using the Field Calculator tool, population density was found by dividing the total number of people in each buffer by the area of the buffer in acres.

Percent Under 18
Based on current news on Open Restaurant complaints as well as the ongoing lawsuit filed by residents against the program, a primary concern raised by community members has been the impact of Open Restaurants on children. This includes issues like amplified noise from restaurants interfering with sleep or study schedules for children.

Percent of Population who Speak English 'Less Than Very Well'
This criteria relates to the way that the Open Restaurants program might consider conducting outreach to ensure compliance under the program for restaurant owners interested in Open Restaurants. If program materials are not provided in multiple languages, technical jargon on siting regulations may be misunderstood, resulting in conflict between restaurants and the community.

The majority of buffers followed the scenario posed in **Fig. 5**, where the buffer is completely nested within a census tract. In these cases, the buffer took on the demographic characteristics of that census tract. In some cases seen in **Fig. 6**, a single buffer fell within 2 census tracts. In such cases, the buffer took on the average of the demographic characteristics from the 2 census tracts.

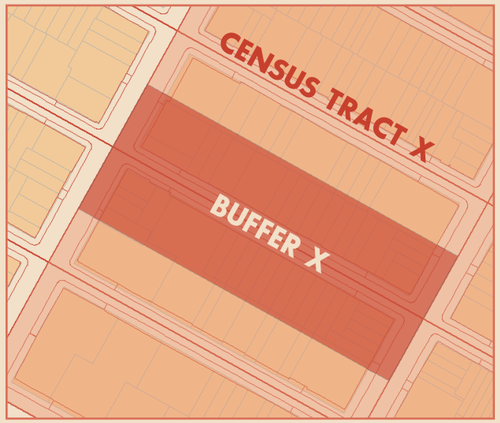


Fig. 5 Buffer nested within Tract X

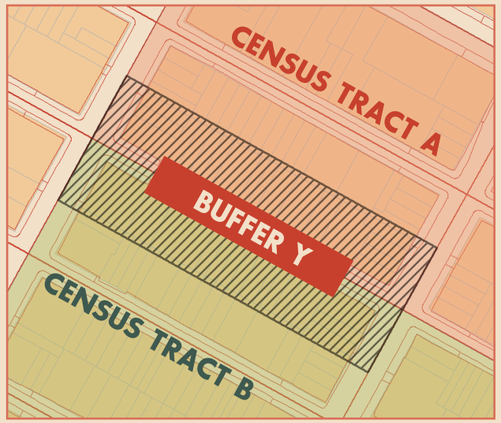


Fig. 6 Buffer Y falls within 2 different census tracts

ANALYSIS

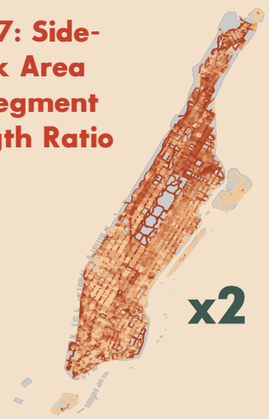
scoring results

CONFLICT INDEX SCORES BY STREET SEGMENT

Fig. 7-11 illustrate the individually scored variables that resulted in the final conflict index map as seen on the right. The criteria on sidewalk area to segment length ratio and restaurant density are the two most critical aspects of our conflict index as these factors determine both where existing restaurants are (and thus, the potential for these restaurants to become Open Restaurants) and how they can set up along the street segment due to siting regulations. Hence, their scores are weighted at 2 and 3 times the score of the demographic criteria, respectively.

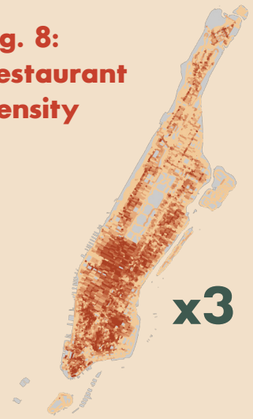
Each individual criterion except for restaurant density was ranked on a scale of 1-6, while restaurant density was ranked on a scale of 0-5. Therefore, the theoretical minimum of our final scoring map is 5 and the maximum is 45. The final map produced depicts buffers scored along our conflict index from a ranking ranging from 5 to 43. Darker buffers, then, suggest higher potential for conflict with the Open Restaurants program.

Fig. 7: Sidewalk Area to Segment Length Ratio



x2

Fig. 8: Restaurant Density



x3

Fig. 9: Percent Under 18

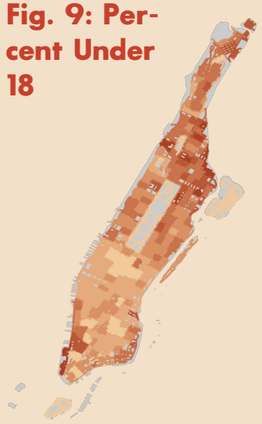


Fig. 10: Percent ESL

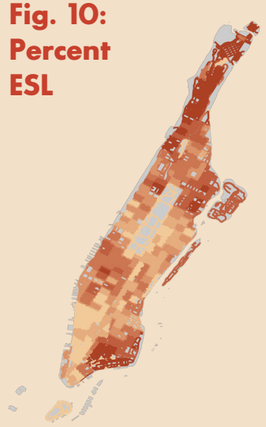
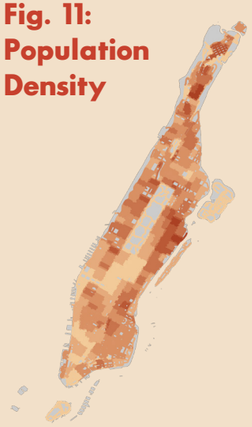


Fig. 11: Population Density



score: *5*
low conflict index score

score: *43*
high conflict index score

N

0 1.25 2.5 Miles

choosing case studies

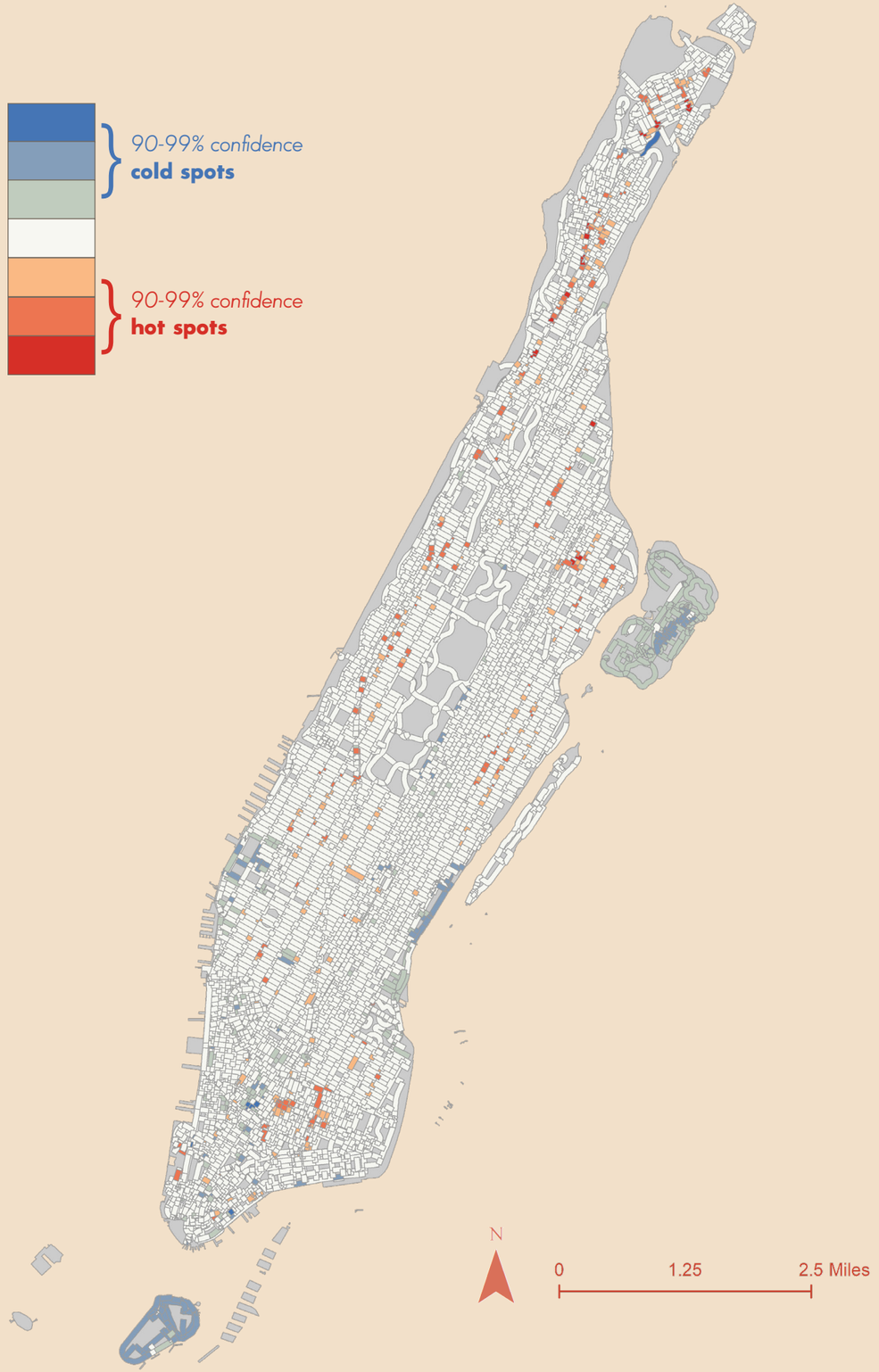
GETIS-ORD-GI* STATISTICAL TEST

From our conflict index map, we conducted a Getis-Ord Gi* statistical test to find statistically significant clusters of hot spots on the map. This step was necessary in helping us narrow down case study locations, which would comprise clusters of street segment buffers that have high conflict index scores.

The hot spots identified on the map indicate buffers with high conflict index scores located close to other buffers with simlarly high scores. Cold spots, on the other hand, indicate buffers with low conflict index scores located close to other buffers with simlarly low scores.

Using the Dissolve tool, we dissolved contiguous buffers that were determined to be hot spots. In this way, each cluster of hot spots became its own polygon feature

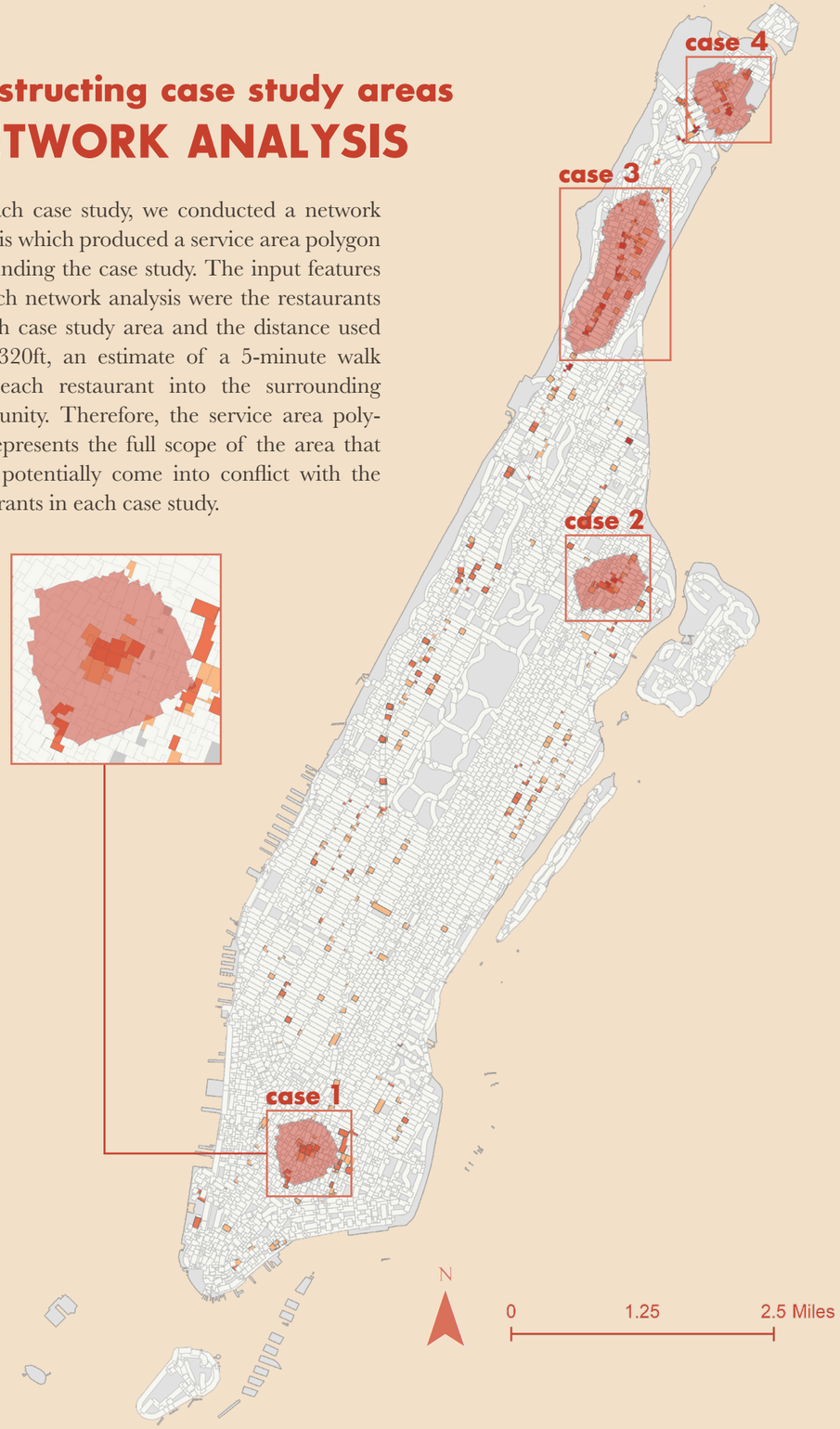
From there, we were able to narrow down 4 case studies (i.e. 4 hot spot polygon features) across Manhattan that posed interesting case studies for neighborhoods that have high potential for conflict with the Open Restaurants program.



constructing case study areas

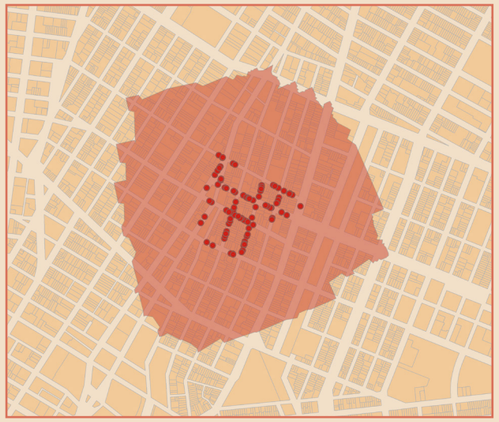
NETWORK ANALYSIS

For each case study, we conducted a network analysis which produced a service area polygon surrounding the case study. The input features for each network analysis were the restaurants in each case study area and the distance used was 1320ft, an estimate of a 5-minute walk from each restaurant into the surrounding community. Therefore, the service area polygon represents the full scope of the area that could potentially come into conflict with the restaurants in each case study.

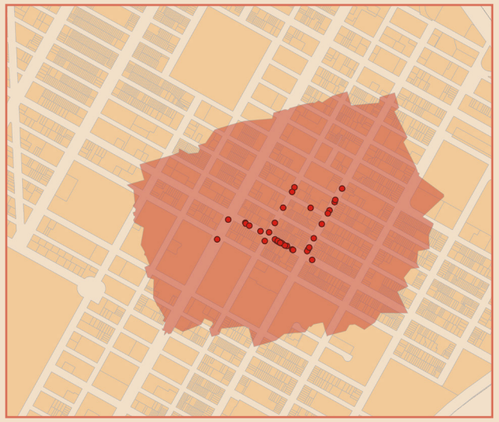


With the narrowed down case studies and their service areas, we wanted to glean information on the residential population in each area in order to quantify how many people could potentially be affected by the restaurant point features as seen in the figures below. To do this, we made use of the MapPLUTO dataset to locate residential tax lots within each case study service area. As we had total population information by census tract from the ACS 2019 5-year estimates, we conducted a proportional split analysis to gain a more accurate, on-the-ground picture of the population living in the residential tax lots in each case study service area. With this estimate on residents living around the restaurant point locations, we constructed neighborhood profiles for our case studies.

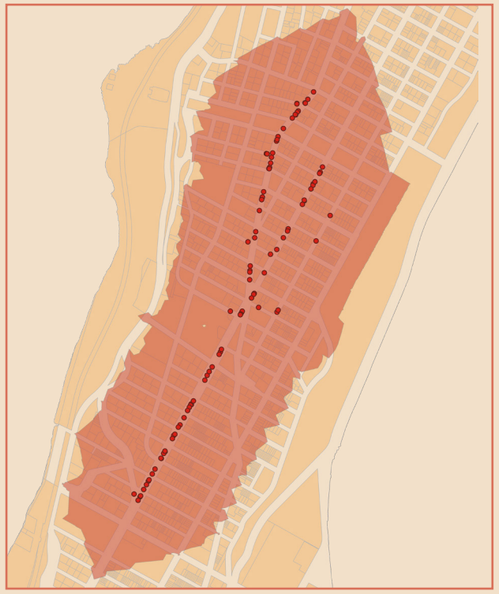
case 1 /



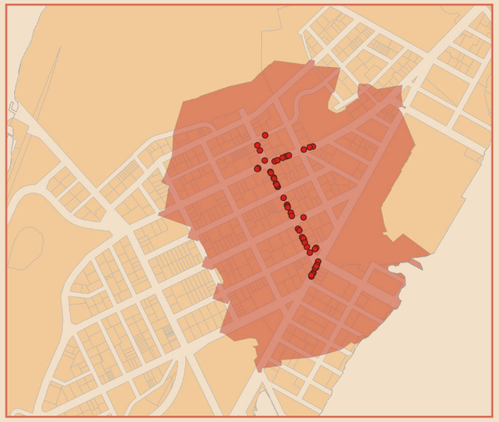
case 2 /



case 3 /



case 4 /



restaurant locations

case study 1 /
DESCRIPTION

total population
19,352
service area area (acres)
183.7

Within 5-minute walk buffer from restaurants point, our first finding is situated in the area of Lower Manhattan. For this area, sidewalks are an area of concern. As one of the most multicultural sites in New York City and a place for other parallel commercial activities happening in the area, this neighborhood would greatly affected by the permanent Open Restaurant program.

area characteristics /

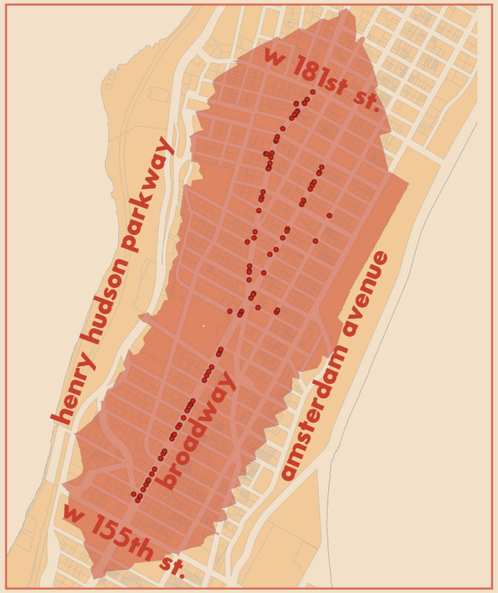
case study 2 /
DESCRIPTION

total population
29,979
service area area (acres)
188.7

East Harlem is widely-known for its foodies pilgrimage to its mix of Latin American and Carribbean restaurants. As its diverse culture also reflects in the community, DOT should prioritize the accessibility of the Open Restaurants program application and materials for the area's small business owners.

area characteristics /

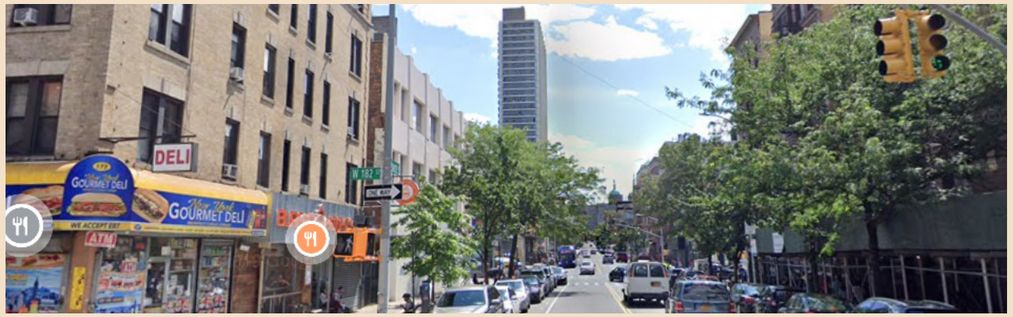
case study 3 /
DESCRIPTION



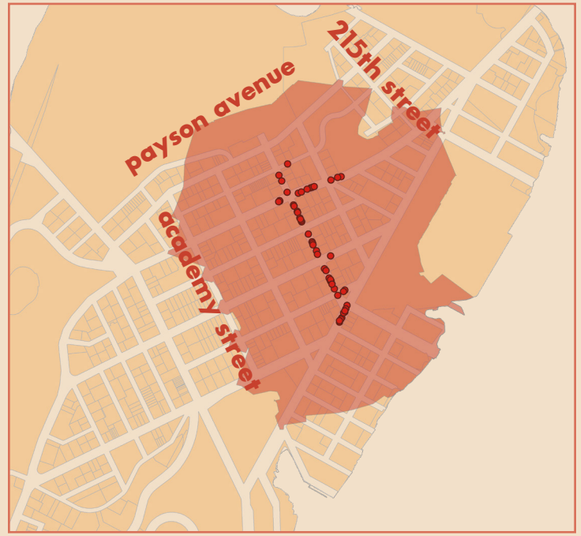
total population
99,049
service area area (acres)
459.78

This area of case study has the largest network buffer of service area, and is around a string of restaurants along Broadway. Of all our case studies, this one stands out as the high conflict area is represented vertically along an avenue instead. Here, the criteria of sideawlk area to street segment length should be closely considered in mitigating potential conflict along busy commercial corridors such as Broadway.

area characteristics /



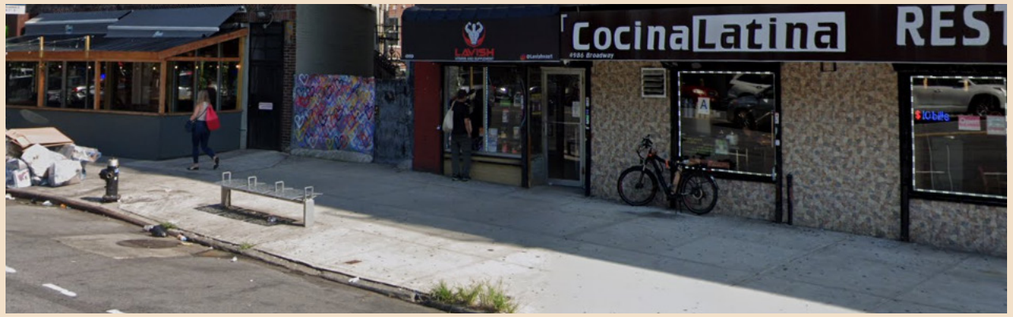
case study 4 /
DESCRIPTION

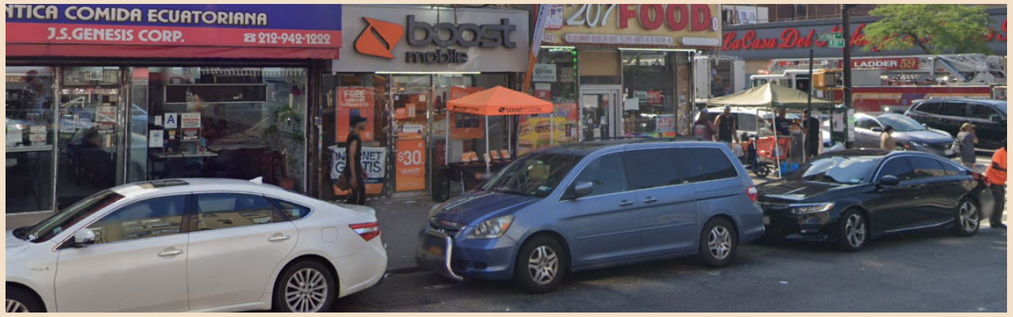


total population
29,536
service area area (acres)
184.5

This case study has the highest population density within the service areas with approximately 215 people per square feet living within the 5-minute walk buffer from restaurants in the lower area of Inwood. In this case study, specific attention should be directed towards integrating the goals of the Open Restaurants program and the needs of the existing residential community around restaurants.

area characteristics /





CONCLUSION & IMPLICATIONS

Referring back to our research question - our conclusion is that yes, there are areas in the city that have a higher potential for neighborly conflict with the Open Restaurants program based on our narrow criteria. In our research, we have identified four case study spots where there were clusters of street segment buffers that scored highly on our conflict index - which was based on select built environment and demographic variables.

This finding does not mean that these areas should be barred from having Open Restaurants - rather that as the city prepares to move forward with making the Open Restaurants program permanent, it should be prepared to tailor eligibility criteria based on neighborhood-specific characteristics.

The transition of programs that were meant to be temporary fixes to the extraordinary demands that COVID wrought upon our cities to permanence is one that has the power to change the way residents interact with the built environment and with each other. That the Open Restaurants program is a lifeline to the restaurant industry as the pandemic continues onward is undeniable, however in a space as densely packed as Manhattan, the guidelines for this program should be more carefully attuned to the specificities and demands of different neighborhoods.

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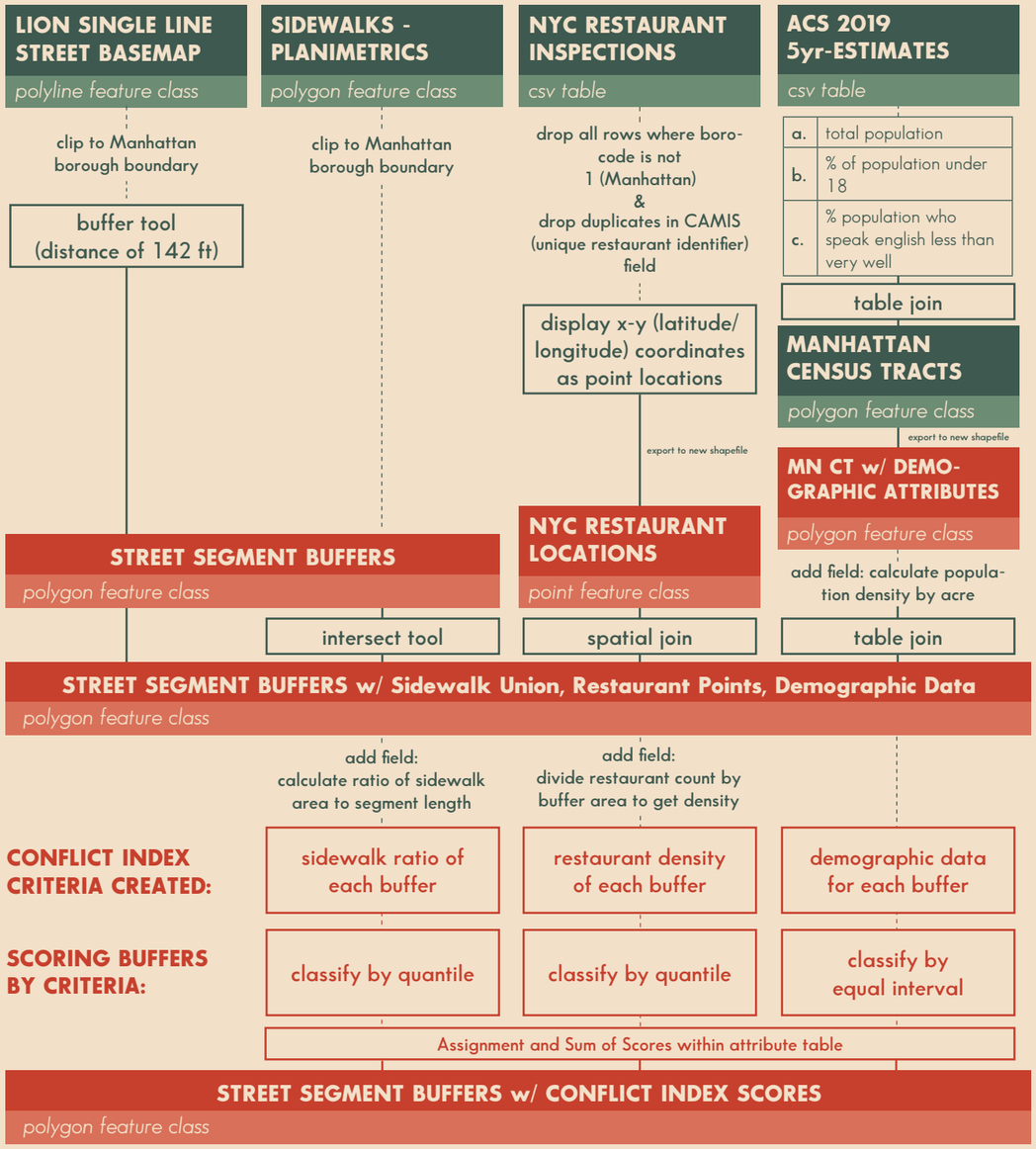
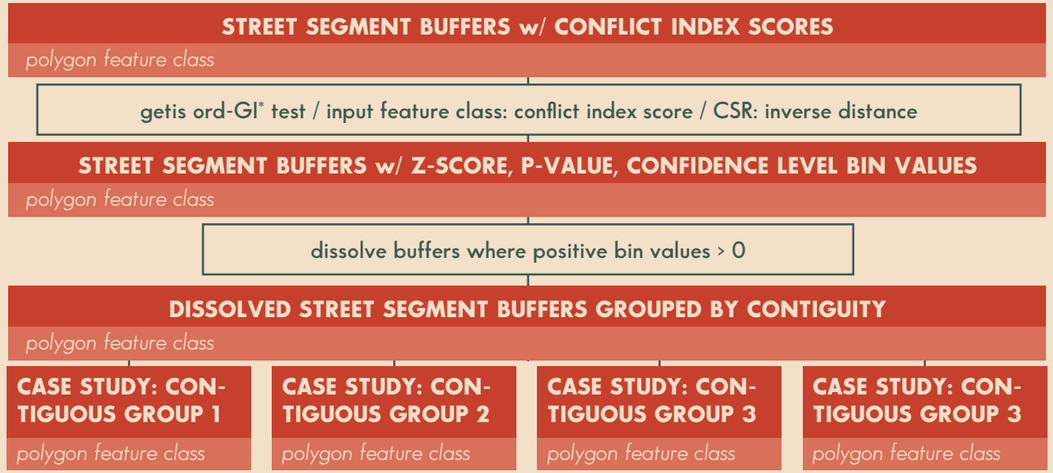
[Case Study Area Characteristics images] Google Maps. (2021) Accessed 11 December 2021.

appendix / METHODOLOGY

part 1 / SCORING STREET SEGMENT BUFFERS BY CONFLICT INDEX CRITERIA



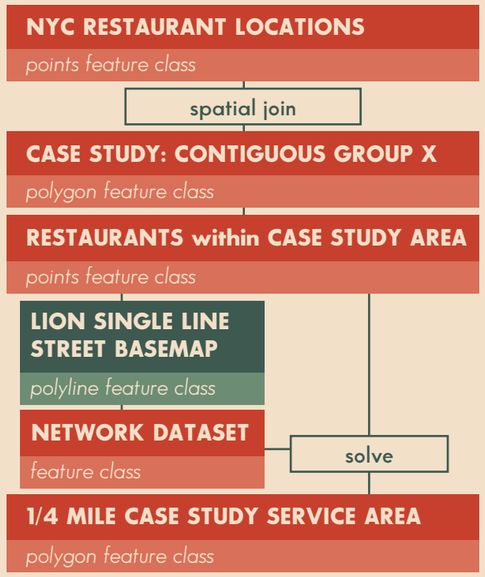
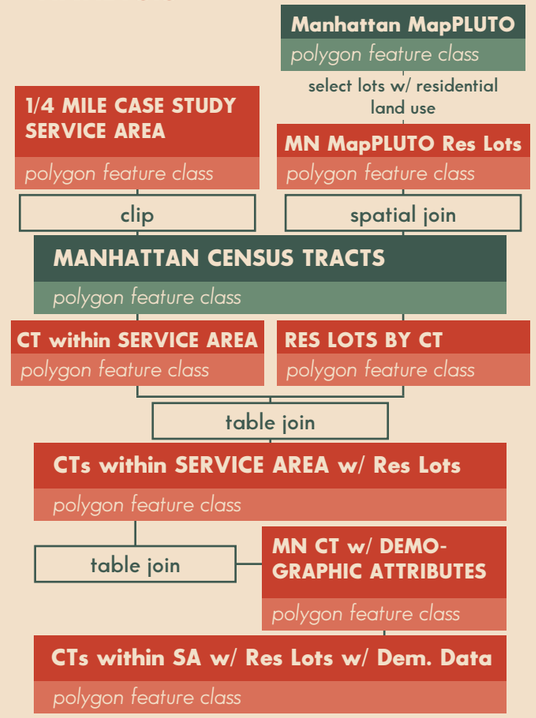
part 2 / GETIS-ORD GI* TEST CHOOSING CASE STUDIES



part 3 / CASE STUDIES ANALYSIS

* the following analysis was performed for each individual case study

3a / CREATION OF NETWORK STUDY AREA



3b / PROPORTIONAL SPLIT ANALYSIS