Photograph by Raymond Cho (Williamsburg Bridge Plaza)

Last-Mile Transit in Southeast Brooklyn – Case Study & Implications

Raymond Cho

CUNY Hunter College

Urban Studies 402

Professor L. Wolf-Powers

Spring 2024

___| Table of Contents |_____

- Introduction 3
- The Community of Southeast Brooklyn 4
- Public Transportation Commuters 7
- Defining "Subway Desert" & Implications 8
- Addressing the Issue & Current Approaches 10
- Dollar Van Service – New York's Shadow Transit 12
- Methodology & Documentation Modes 14
- Personal Observations of Bus Service & Route Conditions 16
    - Observations – Car-Oriented Infrastructure 16
    - Observations – Bus Lane Troubles 18
    - Observations – Bus Stop Impediments 20
    - Observations – Infrequent Service 21
    - Observations – Crowded Buses 22
- Testimonies – Hearing from the Community 23
- Key Informant – A Bus Transportation Planner's Perspective 25
- Possible Interventions & Projects Considered 29
    - Nostrand Avenue & Utica Avenue Subways 29
    - Interborough Express Light Rail (IBX) 32
    - Flatbush Avenue Transit Priority & ABLE Bus Cameras 33
- Major Constituencies & Stakeholders 35
- Concluding Remarks & Implications 36
- Acknowledgements & Gratitude 37
- "We Move New York" 38
- References 39

Raymond Cho

Prof. L. Wolf-Powers

URBS 402 Capstone

Spring 2024

Last-Mile Transit in Southeast Brooklyn – Case Study & Implications

___| Introduction |_____

People largely depend on public transportation in New York City as a form of mobility, which closely correlates to the lowest car ownership rate within the United States at 45.4 percent in the region as of 2022. [1] Public transportation allows residents to get around to places such as homes, worksites, and social spaces, or "3rd spaces," purposed to build community. [2] The Metropolitan Transportation Authority (MTA) facilitates this by operating different bus lines across five boroughs and a comprehensive subway network that attracted around 3.6 million people for daily ridership in 2023. [3] Even though the subway network covers many areas across the city, there are still areas that are underserved or far from its reach. In this research project, Southeast Brooklyn will be the focus of a broader case study regarding transit access in New York City, specifically the subway with limited transit options. This paper will characterize the communities in Southeast Brooklyn, detailing the current state of transportation landscapes by including ethnographic observations and analyzing the implications of approaches taken to address the issue. It highlights the inequitable landscape the public transit system presents for people

[1] U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): New York City; New York-Newark-Jersey City, NY-NJ-PA Metro Area (Part); New York (SE:A10030)." *Social Explorer*. Web. https://www.socialexplorer.com/tables/ACS2022_5yr/R13675395

[2] Oldenburg, R. & Christensen, K. (2023). "Third places, true citizen spaces." *The UNESCO Courier.* https://courier.unesco.org/en/articles/third-places-true-citizen-spaces

[3] Metropolitan Transportation Authority (2024). "Subway and bus ridership for 2023." https://new.mta.info/agency/new-york-city-transit/subway-bus-ridership-2023

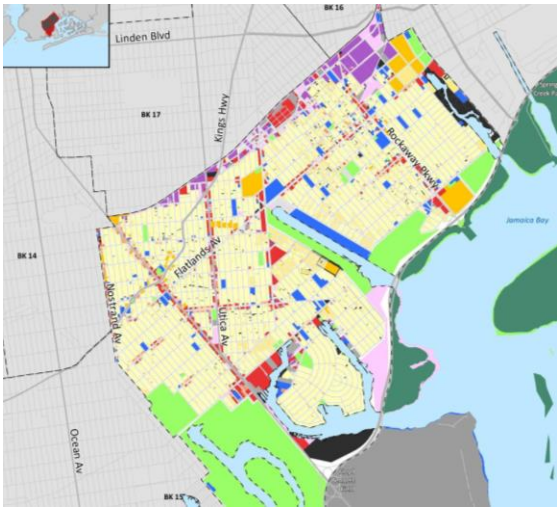
commuting in the area, especially those who live at least 15 minutes from the nearest subway station and must utilize other methods.

___| The Community of Southeast Brooklyn |_____

Southeast Brooklyn is a region in Brooklyn, New York, that comprises neighborhoods like Mill Basin (ZCTA5 11234), Marine Park (ZCTA5 11234), Flatlands (ZCTA5 11234), Canarsie (ZCTA5 11236), and East Flatbush (ZCTA5 11203). Most of the area encompasses commercial and residential developments of distinctive designs and purposes, including several large parks such as Marine Park, Paerdegat Basin Park, and Canarsie Park. Although park spaces are generally beneficial for residents and visitors, much of the geography closer to the shore presents issues of accessibility, especially the creeks that separate parts of Southeast Brooklyn.

Community Board 17 Land Use
East Flatbush (NYC DCP, 2024)

Community Board 18 Land Use
Mill Basin, Marine Park, Flatlands & Canarsie
(NYC DCP, 2024)



Mill Basin and Marine Park not only share the same zip code, 11234, but also have a similar issue regarding access to subways as they are situated far from the nearest line, influencing their

socioeconomic conditions. [4] While public transit access could be limited in numerous ways, one thing to note is that these areas include demographics that comprise a mainly white population of around 20,000 to 29,000 residents per the 2020 U.S. Census. [5] The area of 11234 contains a higher annual median income of around $91,379 in 2022 dollars, signifying a larger amount of wealth. [6] One visit around the neighborhood provides the feeling that the general landscape is situated around a suburban lifestyle, especially with roadway designs around Avenue U and Flatbush Avenue resembling "stroads." Stroads are a hybrid blend of street and road infrastructure that attempts to address the problem of urban sprawl. [7] Other aspects of suburban lifestyle include the Kings Plaza shopping mall, which houses many department stores and a massive parking lot, indicating the abundance of automobile culture and its impact on shaping public spaces. On further observation, one may even notice that many households in Mill Basin have either a pool in the residences' backyards or private property consisting of docking piers for recreational boating use, another key identifier of higher property values and the overall income of residents.

Flatlands is another neighboring community to Mill Basin and Marine Park, which share the zip code 11234. Even though the neighborhood's Northwest corner is near Flatbush Avenue subway station on the 2 and 5 lines, which is also the terminus, a glance at the MTA subway map indicates an increasing distance from any subway access further Southeast, where a commuter is situated in Flatlands. This continues to influence mass car dependency in the area, as seen with the various stroads and bus services that share roadways such as Flatlands Avenue alongside a mass

[4] Jackson, K. & Manbeck, J. (1998). *The Neighborhoods of Brooklyn*. New Haven & London: Yale University Press.
[5] New York City Department of Planning (2021). "Key Population & Housing Characteristics; 2020 Census Results for New York City." https://www.nyc.gov/assets/planning/download/pdf/planning-level/nyc-population/census2020/dcp_2020-census-briefing-booklet-1.pdf
[6] U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): ZCTA5 11234 (SE:A14007)." *Social Explorer*. Web. https://www.socialexplorer.com/tables/ACS2022_5yr/R13675572
[7] Marohn, C. (2017). "The Stroad." *Strong Towns Organization.* https://www.strongtowns.org/journal/2017/10/30/the-stroad

abundance of vehicles traveling crosstown. In addition, demographic data indicates that Flatlands includes a majority Black population of about 121,345 people, or 60.6 percent of the total population. [8] The median household income in Flatlands is around $85,464, which applies to Canarsie as it belongs to the same data cluster. [9]

Canarsie is situated across the Paerdegat Basin to the East, in zip code 11236, which includes access to the Rockaway Parkway station on the L line. However, like the previously mentioned neighborhood, that station also acts as a terminus. This requires passengers to transfer to bus services, as the subway network does not cover the bulk of Canarsie. One key attraction in the neighborhood is Canarsie Pier, which many people frequent and is surrounded by car-oriented infrastructure as the Belt Parkway passes by on an elevated structure. Residents can access this area using the B42 bus, which operates as a successor to the Brooklyn & Rockaway Beach Railroad, and the streetcar trolley that once ran from the L train terminal along the Right of Way (ROW) up to the pier. [10] Based on the geography of Canarsie on a map, many residents are situated at least half a mile from the nearest subway stop to their homes, correlating with suburban-like landscapes and car dependency. [11]

East Flatbush is the last neighborhood of this study in zip code 11203, which features access to the subway along its Western perimeter by the 2 and 5 trains along Nostrand Avenue and the 3 train near its Northeast corner. It is important to note that while these options are available closer to the borders of East Flatbush, residents who are situated deep in the neighborhood could live at least a mile from any subway access and must use the bus. Such an issue reveals a stark

---

[8] U.S. Census Bureau (2022). *"*ACS 2022 (5-Year Estimates): CB 18 PUMA (SE:A03001)." *Social Explorer*. Web. https://www.socialexplorer.com/tables/ACS2022_5yr/R13675617

[9] U.S. Census Bureau (2022). *"*ACS 2022 (5-Year Estimates): CB 18 PUMA (SE:A14006)." *Social Explorer*. Web. https://www.socialexplorer.com/tables/ACS2022_5yr/R13675617

[10] Cudahy, B. (2002). *How We Got to Coney Island: The Development of Mass Transportation in Brooklyn and Kings County."* Fordham University Press, New York.

[11] Jackson, K. & Manbeck, J. (1998). *The Neighborhoods of Brooklyn*. New Haven & London: Yale University Press.

contrast to Flatbush in the West, which has access to the Brighton Lines (B & Q trains) and the Nostrand Avenue Lines (2 & 5 trains), among other bus transit. This could pose challenges to accessing timely and critical healthcare, as East Flatbush contains a cluster of three major hospitals: the Kings County Hospital, Kingsbrook Jewish Medical Center, and SUNY Downstate Medical Center. [12] Additionally, East Flatbush has instances of "stroad-like" infrastructure, especially with the wide roadways along Kings Highway, Linden Boulevard, and Utica Avenue. These major thoroughfares are situated around car dependency as no rapid transit subway covers the length of them, prompting the need for buses like the B7 and B46 Local & Select Bus Services to be operated in an attempt to fulfill the role. Furthermore, in terms of demographics, there is a majority Black population of 127,746 people, or around 82.1 percent of the total population in the area. [13] East Flatbush includes a median household income of around $66,893, the lowest of all the other areas in this study. [14]

___| Public Transportation Commuters |_____

Using data from the US Census 2020 Public Use Microdata Areas (PUMA) Program allows the study to focus on these neighborhoods closely with relatively new and detailed information sets. In discussing employment along the 2022 PUMA set, Community District 18 of Canarsie and Flatlands included 89,961 employed residents, while Community District 17 of East Flatbush contained 73,869 employed residents. [15] Regarding transportation, the US Census PUMA also

[12] New York Academy of Medicine (2014). "New York City Health Provider Partnership Brooklyn Community Needs Assessment: Final Report October 3, 2014." https://www.health.ny.gov/health_care/medicaid/redesign/dsrip/pps_applications/docs/maimonides_medical_center/3.8_maimonides_cna.pdf

[13] U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): CB 17 PUMA (SE:A03001)." *Social Explorer*. Web. https://www.socialexplorer.com/tables/ACS2022_5yr/R13675617

[14] U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): CB 17 PUMA (SE:A14006)." *Social Explorer*. Web. https://www.socialexplorer.com/tables/ACS2022_5yr/R13675617

[15] U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): CB 17 & CB 18 (SE:A17002)." *Social Explorer*. Web. https://www.socialexplorer.com/tables/ACS2022_5yr/R13587700

indicates that in Brooklyn Community District 17, 43,711 people used Public Transportation, including Taxicabs, as a Means of Transportation to Work. In Brooklyn Community District 18, this statistic measured around 39,586 people. [16] Between these two community districts, the top three commute times of 15-minute intervals for Workers 16 Years and Over ranked 27.9 percent at 60 to 89 minutes, 24.9 percent at 30 to 44 minutes, and 16.0 percent at 45 to 59 minutes. [17] In zip code 11234, this statistic ranks 27.4 percent at 60 to 89 minutes, 20.7 percent at 30 to 44 minutes, and 17.1 percent at 12 to 29 minutes. [18] Based on this statistic, commutes usually average between 46 and 49 minutes, although that is not representative of individual trips that could differ between residents' routines. Commuting times are connected to public transit dependency, which is essentially a norm and a way of life for many residents in Southeast Brooklyn. The population is concerned about the issue of mobility, as public transportation enables them to reach places that may be challenging to simply walk to or pay for other services like a cab.

___| Defining "Subway Desert" & Implications |_____

Many communities in Southeast Brooklyn face the problem of the "transit desert," which brings various issues resulting from not having direct subway access. A "transit desert" describes an area where the population primarily depends on modes of public transportation due to inadequate access to public transit services, combined with lower car ownership rates. [19] Instead of having a one-seat ride on the subway into the city centers or other places that the subway network reaches, people must utilize "last-mile solutions," including public transit services like

[16] Ibid.
[17] U.S. Census Bureau (2022). *"*ACS 2022 (5-Year Estimates): CB 17 & CB 18 PUMA (SE:A09002)." *Social Explorer*. Web. https://www.socialexplorer.com/tables/ACS2022_5yr/R13675617
[18] U.S. Census Bureau (2022). *"*ACS 2022 (5-Year Estimates): ZCTA5 11234 (SE:A09002)." *Social Explorer*. Web. https://www.socialexplorer.com/tables/ACS2022_5yr/R13675617
[19] Jiao, J., & Dillivan, M. (2013). "Transit Deserts: The Gap between Demand and Supply." *Journal of Public Transportation*, *16*(3), 23–39. https://doi.org/10.5038/2375-0901.16.3.2

the crosstown buses, dollar vans, or feeder bus routes, in order to reach the subway or their final destinations. Feeder bus routes are essentially bus routes that "feed" off the bulk of commuters from subway routes to provide access to neighborhoods and vice versa. [20] As buses and subways present a huge contrast in technology and capacity limits, there is often a gap in the level of service provided, especially since subway cars retain higher speeds, carry more people per stop, and experience fewer frequent stops or significant bottlenecks. Bus operators must strive to adhere to their paddles or assigned schedules; however, they also must be attentive to traffic laws and more frequent obstacles or events along their trip.

Residents of transit deserts face particular problems at transfer points. Often, transfer points between modes of public transit, like subway-to-bus or bus-to-subway, become inefficient as transportation methods utilizing the roadways encounter traffic congestion or fail to adhere to operating schedules. Such issues include bus lane impediments from double-parked vehicles, missing runs due to inadequate equipment or crews, intersection bottlenecks, and other factors. As a result, the issue of public transit inadequacy perpetuates social inequalities for people who rely on the method of travel as they face limitations in economic mobility. [21] Residents are the top stakeholders in the issue of public transit equity, as their quality of life depends on how well their needs are fulfilled. Public transit equity is a goal that incorporates community-based information and determination of needs to ensure that all residents have access to the network, regardless of any intersections of identity between socio-economic status, race, and gender, to address disparity. [22] In the New York region, this is currently not the status quo since, in the period of 45 minutes,

[20] Kuah, G.K. & Perl, J. (1987). "A Methodology for Feeder-Bus Network Design." *Transportation Research Board*. 1120, 40–51. https://onlinepubs.trb.org/Onlinepubs/trr/1987/1120/1120-005.pdf
[21] Jiao, J., & Dillivan, M. (2013). "Transit Deserts: The Gap between Demand and Supply." *Journal of Public Transportation*, *16*(3), 23–39. https://doi.org/10.5038/2375-0901.16.3.2
[22] Eells, J. et al. (2023). "Defining and Measuring Equity in Public Transportation." San José State University, California. https://transweb.sjsu.edu/sites/default/files/2100-Ferrell-Public-Transit-Equity-Metrics-Measurement_2.pdf

the average resident owning a personal automobile could access approximately 3,836,451 jobs compared to those utilizing public transit, yielding one-fifth of that amount. [23] Inequitable employment landscapes highlight another issue; the divide between "dependent riders," who solely rely on public transit, and "choice riders," who can afford automobile ownership and choose whether they are willing to take public transportation modes. [24] Access to public transit also directly impacts local businesses, as the level of access could influence how many customers traverse the area by convenience.

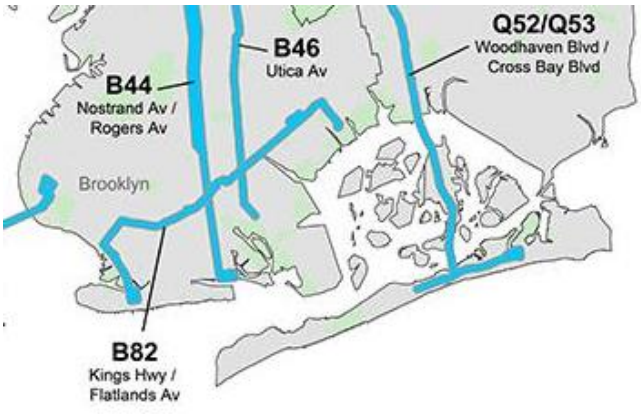
NYC Subway Map of Southeast Brooklyn
(Metropolitan Transportation Authority, 2024)

___| Addressing the Issue & Current Approaches |_____

Several recent discussions have highlighted the need to fulfill the shortcomings of bus transportation and other limited transportation methods that residents depend on. One includes the Utica Avenue subway, for which the MTA funded a needs assessment study for $5 million to

[23] Transit Center (2021). "The State of Transit Equity: Metro New York." https://transitcenter.org/wp-content/uploads/2021/06/NYCFactSheet.pdf
[24] Lachapelle, U. et al. (2016). "Active Transportation by Transit-Dependent and Choice Riders and Potential Displacement of Leisure Physical Activity." *Journal of Planning Education and Research*, 36(2), 225-238. https://doi.org/10.1177/0739456X15616253

determine the feasibility of various transit options. [25] This could be beneficial to the communities along Southeast Brooklyn, especially since the B46 Select Bus service became inefficient at times when dealing with crowds at the cost of reduced service when the MTA introduced longer articulated buses of 60-footer length (namely the New Flyer Industries XD60 and the Novabus LFS Articulated Series) to the line after years of only running standard 40-footer fleets. This issue arose from the assumption that articulated buses would pick up most passengers and require fewer running frequencies. Such a measure is counterintuitive, however, as more people would show up waiting for the bus if proper service was guaranteed. Similarly, its neighboring line, the B44 Select Bus service, encounters identical issues regarding timing. The buses face bottlenecks from vehicles parked in bus lanes, congested intersections, and longer dwell times when bus operators occasionally have to swap with other colleagues as their shift requires at Flatbush Junction. Both routes serve as continuous feeder routes for passengers who must commute beyond Crown Heights on Eastern Parkway or beyond the terminus of the 2 and 5 trains at Flatbush Avenue – Brooklyn College. It essentially acts as a scaled-down "subway line," but in a compact bus form to address the issue, like the M15 Select Bus on 2nd Avenue in Manhattan, mimicking the incomplete Second Avenue Subway and its proposed routing.



MTA Select Bus Service Map (NYC DOT, 2024)

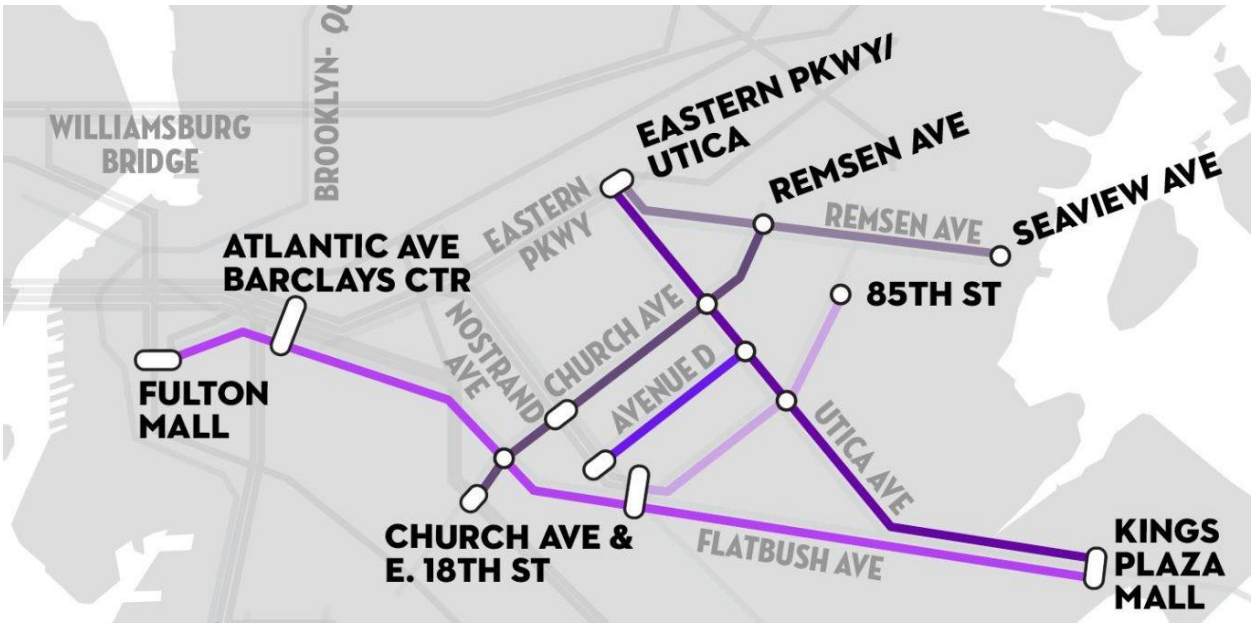
[25] Martinez, J. & Dowd, T. (2020). "Utica Ave. Subway Extension Dream Gets a Brooklyn Boost." *The City NYC.* https://www.thecity.nyc/2020/02/11/utica-ave-subway-extension-dream-gets-a-brooklyn-boost

___| Dollar Van Service – New York's Shadow Transit |_____

Dollar Van & B103 Limited Bus on Flatbush Avenue (Raymond Cho)

One common sight that defines the urban landscape around Southeast Brooklyn is the presence of dozens of dollar vans that operate as the "shadow" of New York's transit system. The unmistakable sound that accompanies these dollar vans is the blaring, high-pitched, loud air horns, sometimes pressed in rapid succession to capture the attention of commuters at bus stops and major intersections. Drivers of dollar vans usually park at bus stops or pass by them slowly, checking for potential passengers who might find the need to board to fulfill their commutes. While transit services like MTA buses and ride-share services accept various forms of payment, the dollar vans are strictly cash-based, with the fare being around two or three dollars. Although dollar vans do not establish a formal presence like city transit vehicles, drivers typically operate along major corridors, including Utica Avenue, Flatbush Avenue, and Church Avenue. The lack of subway access across these streets prompted the MTA to run services like the B46, B41, and B35 buses as a means of mobility; however, service could be unreliable or infrequent at times. Dollar vans address this issue by closely mirroring these bus routes and providing separate services not associated with the MTA, all while collecting profits from passengers. A typical practice that accompanies this is the utilization of bus lanes, where the vans are disguised as an informal "bus"

hail-ride service despite only managing a capacity of less than 20 people. Fulfilling the gap in transit access benefits many people using dollar vans; however, drivers often face problems with the legislation, as it is not legal for the vans to follow MTA bus routes.



Flatbush Dollar Van Network (The New Yorker)

Dollar vans across New York City have been around for decades, especially in areas like Southeast Brooklyn. The original name of this informal shadow transit system dates back to a time in the 1980s, when New York City Transit workers went on strike for eleven calendar days and operators of these vans fulfilled the lack of transit access at the cost of one dollar. [26] Even though these dollar vans continued to provide a source of flexible mobility for commuters along their routes, the City Council has attempted to pass legislation to reinforce the MTA and private bus monopoly through free-market competition, aligning with Ronald Reagan's neoliberalist ideals to regulate and minimalize the influence of the dollar van companies or operators. [27] Regarding the

[26] Reiss, A. "New York's Shadow Transit." *The New Yorker.* https://projects.newyorker.com/story/nyc-dollar-vans
[27] Goldwyn, E. (2017). "An Informal Transit System Hiding in Plain Sight: Brooklyn's Dollar Vans and Transportation Planning and Policy in New York City." Columbia University: New York. https://doi.org/10.7916/D8W959RP

dollar van economy, there is often the issue of competing interests between licensed and illegal dollar vans, as they both serve the needs of commuters but may undermine each other through uneven compliance with regulations, creating challenges for safety standards. [28] As of 2023, a few commuter vans are affiliated with the Taxi and Limousine Corporation (TLC) as a result of the lingering impacts of the COVID-19 pandemic and insurance costs that could amount to at least an annual rate of 36,000 dollars. [29] Even still, vast numbers of dollar vans make up the current landscape of areas across Southeast Brooklyn that continue to experience transit issues.

___| Methodology & Documentation Modes |_____

Documenting the shortcomings of last-mile transit within this case study required various components, ranging from academic works to news articles and blogs, and especially personal observations across the Brooklyn Bus Network. Academic discourses assist with the synthesis of complex terminologies and ideas in a way that the general public can understand. News articles and blogs carry vast amounts of information and testimonies from people who experience the issue firsthand, or, in a sense, "key informants," who may have more knowledge on the topic, despite possible biases. This leads to the next significant research component, comprising direct participant observation or personal ethnography of the case study. To understand the experience of the regular riding public, one has to take an approach apart from literature and actively participate in riding the buses like commuters do daily.

In this case, it would include riding buses such as feeder routes directly from the subway, like the B100 (Mill Basin) from the B & Q trains at Kings Highway and the B103 (Canarsie) from

[28] Santos, F. (2010). "Licensed and Illegal Vans Fight It Out." *New York Times.* https://www.nytimes.com/2010/06/10/nyregion/10vans.html
[29] Martinez, J. (2023). "Just 31 Licensed Dollar Vans left as Pandemic and Insurance Rates Take Drivers Off Streets." *New York Times*. https://www.thecity.nyc/2023/04/07/few-dollar-vans-high-insurance-rates

the 2 & 5 trains at Flatbush Avenue. Additional services include the B41 (Flatbush Avenue), B44 (Nostrand Avenue) & B46 (Utica Avenue) Select Bus Services, which service major corridors that the subway network does not reach. Other bus services of importance are crosstown routes like the B6 Local & Limited or B82 Local & Select Bus Services, which serve multiple corridors across Brooklyn and function as connectors outside the Central Business District (CBD). These observations included rush hour periods and non-rush hour times where bus services are not frequent. Another aspect is observing how dollar vans play a role in fulfilling the lack of subway access and unreliable bus service as a last-mile solution, especially ones that mimic existing MTA bus routes as an informal commuter travel mode.

Regarding the subject of interviews, collecting extra information and testimonies would involve specifically targeted interviews, especially with passengers who utilize these routes or live in the neighborhoods of the case study. Other possible candidates for an interview would be MTA bus operators, like those in New York City Transit (NYCT) or MTA Bus Company (MTA BC), since they have first-hand experience operating on city bus routes for tens of hours per week. Another strategy would be to focus on a key informant interview with an MTA Transportation Planner to gather information regarding the decisions and planning process for remapping and changing the organization around existing bus routes. Although they work with the MTA Queens Bus Network Redesign, various aspects of this process connect to the issues commuters experience in the Brooklyn Bus Network. By conducting this interview, more insights were made available into the current situation in bus planning and the factors utilized in determining the changing needs of commuters, especially before the COVID-19 pandemic and the trends that appeared after.

___| Personal Observations of Bus Service & Route Conditions |_____

Observing the bus network in Southeast Brooklyn is a process that takes many weeks, despite already having years of experience with changes and the overall commute. While this project had limitations on time, finding the challenges of last-mile commuting resulted in comprehensive data that could become redundant in its repetitiveness. In that regard, the next few sections will detail various observations of issues commuters face across Southeast Brooklyn in a simplified and compact manner to provide a general understanding.

___| Observations – Car-Oriented Infrastructure |_____

Car-Oriented Infrastructure (Raymond Cho)

When observing the current state of the bus network in Southeast Brooklyn, one common theme is the existence of car-oriented infrastructure and its influence on bus service and the overall traffic conditions. An example is the entire vicinity of Kings Plaza, which details major hints of suburban and car culture, especially at the intersection of Flatbush Avenue and Avenue U. In the

collage of images shown above, the upper left frame represents a view from inside Kings Plaza Mall facing West and across Flatbush Avenue, a typical point of conflict between several types of traffic. This slip merge lane allows buses like the B2, B9, B41, and B46 to access the bus bulb or series of bus terminal platforms connecting directly to Kings Plaza Mall. Buses like the B46 Select Bus pictured in the frame are often stuck waiting for traffic on Flatbush Avenue to clear as the traffic light cycles coincide with opposite-flowing traffic.

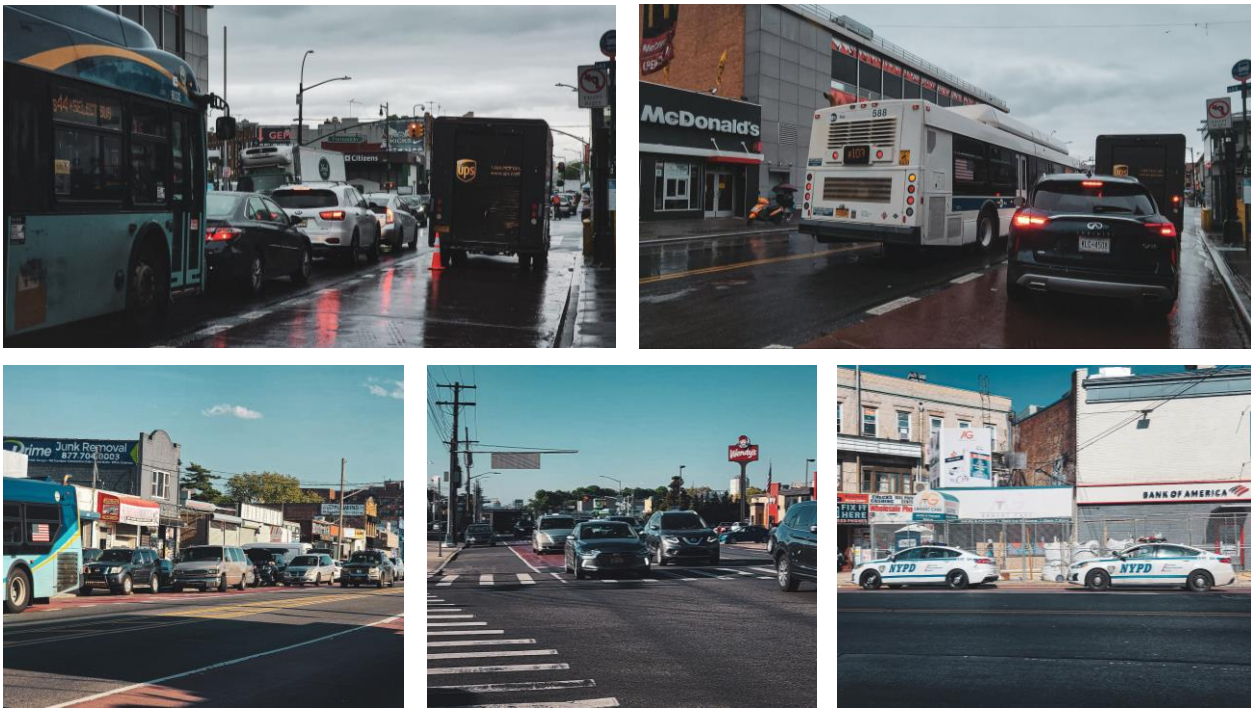
Combined automobile and truck traffic builds up from areas like the Rockaways, the Aviator at Floyd Bennett Field, and especially the Belt Parkway nearby. As traffic flows meet the urban landscape, heavy congestion becomes a result as wide "stroads" contribute to the issue by introducing additional vehicles from adjacent parking lots and garages. This is pictured in the upper right and bottom right images in the collage above, which both show a view facing Northwest towards Avenue U on Flatbush Avenue and facing East on Avenue U, respectively. Buses leaving the terminus or passing through the area face navigational difficulties and travel delays as congestion clears out slowly or moves at a crawl. Trucks also utilize Flatbush Avenue as a Through Route, including Local Routes like Avenue U or Flatlands Avenue based on the 2022 Truck Routes of New York City, causing extra delays as they require more clearance and acceleration time based on their cargo load. [30]

Flatlands Avenue is pictured in the bottom left slide of the collage above, which shows the car-oriented landscapes in Canarsie. Many automobiles typically come to a crawl or a standstill while waiting for light cycles to change, creating a long queue on the roadway. Bus services, including the B6, B82, and B103, often encounter roadway congestion daily along Flatlands Avenue, compromising service factors like turnaround time. This roadway also has no bus lane

[30] NYC Department of Transportation (2022). "2022 New York City Truck Route Map." https://www.nyc.gov/html/dot/downloads/pdf/map-2022-truck-map.pdf

running across it, which prompts buses to share the congested roadway with automobile traffic. It should be noted that further East are Starrett City and the Gateway Center Mall, both connected by car-dependent landscapes along the Belt Parkway and public transit scarcity.

___| Observations – Bus Lane Troubles |_____



Bus Lane Troubles (Raymond Cho)

Another obstacle to facilitating bus service is the challenges associated with bus lane troubles, a repetitive occurrence closely juxtaposed to the issue of bike lanes in New York City facing obstructions. The picture collage above details several ways that obstructions and lane misuse render the bus lanes unusable, leading to inefficiencies as other motorists become inclined to follow the actions of the initiating offender. On the top left and right slides is the intersection of Nostrand Avenue and Flatbush Avenue facing North, where delivery trucks and automobiles tend to park in the bus lane. This strip is designed as a bus stop for both the B44 Local and Select Bus Services; however, the usual obstructions often result in buses sharing the roadway with a queue

of cars, preventing bus operators from jumping ahead of the line. In addition, buses may fill up the capacity of the remaining bus lane and force buses behind to block the intersection.

More instances of bus lane misusage are pictured in the bottom left and center images, depicting an intersection on Avenue J and Utica Avenue. These lanes are purposed for the B46 Local and Select Bus Services; however, car repair shops have service vehicles parked in the local bus stop, including double-parked extras alongside, impeding the bus lanes. Other instances include motorists utilizing the bus lanes as travel lanes to skip over traffic. Upon observation, most of these drivers are not using the bus lane to make right turns off at the next intersection, but rather out of impatience. Additionally, when a driver merges on the regular travel lane to avoid being ticketed, this results in more disruptions to traffic as they force others to account for the deviation, including a situation where a bus is following close behind on the bus lane.

The last picture on the bottom right of the collage indicates mixed perspectives on the bus lane enforcement issue. Occasionally, the NYPD and Traffic Division will prompt people to leave the premises of the bus lane and issue tickets, although that could be rare. In the last slide, two NYPD police cruisers are parked at the bus lane and stop at the B44 bus services, which is quite ironic considering that their department is at the forefront of enforcing laws. Remaining idle and obstructing the lanes usually results in bus operators needing to facilitate off-the-curb passenger flows at bus stops, posing an inconvenience and accessibility issue.

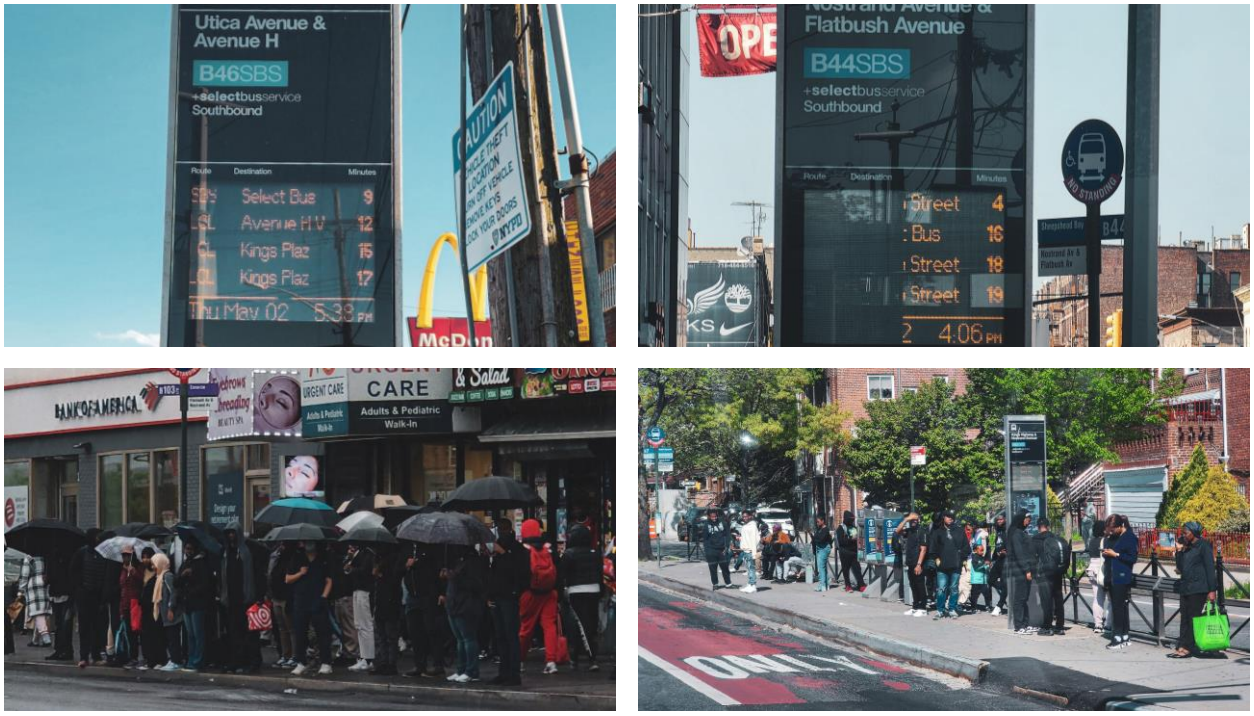
___| Observations – Bus Stop Impediments |_____

Bus Stop Impediments (Raymond Cho)

Besides facing obstacles in the bus lanes, bus operators must deal with bus stop impediments daily, as pictured in the image collage above. The top left image depicts an instance where the B46 Local bus has to make a passenger stop on an active travel lane as a stationary dollar van is situated at the bus stop. Customers must step away from the curb to board the bus, which poses an inconvenience but highlights an additional issue regarding accessibility. Those with wheelchairs or mobility devices may have difficulties boarding in this type of situation. Images on the top right and bottom left of the collage show the same problem on the B3 bus by Kings Plaza and the B41 bus at Flatbush Junction, posing challenges such as bottlenecks in traffic flows. Many bus stops are considered “No Standing” zones, which serve as an aiding factor for bus clearances and ease of access. As vehicles block these areas to pick up passengers, bus operators may have extra trouble navigating tight spaces since buses have a wider turning radius than cars and require more travel distance to be aligned with a lane or the curb. The images on the

bottom center and bottom right display challenging conditions around Flatbush Junction from cars parked in bus stops that require evasive maneuvers to clear them.

___| Observations – Infrequent Service |_____



Infrequent Service (Raymond Cho)

Bus service often presents a huge gap in comparison to the subway system and its running frequencies in New York City. Both have differences in technology and travel conditions, including speed limits and factors along the Right of Way (ROW). While subways run on separate paths away from streets and cover long distances in a short amount of time, buses do not have that ability. Typical speed limits keep operations at a maximum of 25 Miles Per Hour (MPH) and signal cycles could slow down bus routes at intersections in addition to traffic. One resulting factor of this is infrequent bus service, which could lead to long wait times, especially when buses bunch up or follow each other closely. Missing one bus could mean waiting anywhere from five minutes to more than 30 minutes. This may prompt passengers to resort to other methods of travel, such as

walking, to make up for the lost time. Passengers become increasingly frustrated when service frequencies are not fulfilled with consistency, specifically on days where weather conditions are unfavorable and cause discomfort.

___| Observations – Crowded Buses |_____

Crowded Buses of Brooklyn (Raymond Cho)

Infrequent bus service across Southeast Brooklyn results in a domino effect where stops continue to fill with enormous amounts of passengers. In the picture collage above, the top left and right images show an already crowded B44 Select Bus at Flatbush Junction with people waiting to

board. The center row of images depicts a daily occurrence in the same area on the B103 feeder bus route: a massive crowd attempting to board a bus that is nearing capacity. Crowding at this stop compares to the feeder and thru-running bus scene in Downtown Flushing, where long lines of commuters wait to board at the "7" train's terminus. At times, even three standard length (40-foot) buses arriving at once are not enough to address the crowd of people in demand for bus service. Bus operators may occasionally opt to open the rear doors to facilitate quicker boarding, which skips over a decent amount of fare collection and requires the press of the "F5" button to record fare evasion per audible beep. All-door boarding is a practice used across all Select Bus Service routes except for the S79 in New York City alongside off-board fare collection; however, it is not an established practice on local and limited bus routes. Furthermore, the last two bottom slides on the picture collage display crowded conditions onboard the B6 and B103 buses, respectively. One personal observation to note is a trend where commuters tend to stay in the lower floor portion toward the front and center of the bus rather than try to fill in space at the raised portion in the rear of the bus. Despite this point, buses could get crowded to the point that passengers may find themselves overstepping the white safety line at the front, which indicates the designated driver's area. This poses a safety issue for all people onboard, especially since an empty driver's area ensures proper visibility for turning and navigating in traffic.

___| Testimonies – Hearing from the Community |_____

Throughout the research observations throughout the semester, common themes resonated between passengers and residents of Southeast Brooklyn who utilize last-mile transit. Other testimonies included operators of last-mile transit, such as bus operators, dollar van drivers, and cab drivers. Pure observation only entails a basic level of understanding of the issues; however, listening to people who experience these issues almost daily is a better way of gathering missed

insights. This process allows the observations to focus on target areas that may present significant delays to public transit or be a cause of unreliability. Below are various testimonies people have stated about commuting in Southeast Brooklyn, based on different observations of routes and interviews conducted at random.

"Every day, it is like this. I wait 30 minutes, the bus ah no come! I see more than four or five buses going the other way, but no bus going to Kings Plaza. Even I see ya finish yuh rasta pasta and this is taking forever. They need to make the bus service better over here. This is ridiculous. It's too cold to be dealing with this!" – Commuter that needs the B3 to get to the B46 bus (2/16/2024)

"I bring people from Point A to Point B as safely as I can, but unexpected delays may happen along the way. You have people parked at the bus stops and double parking, lots of traffic, as well as vehicles that block the bus lanes. Sometimes, I wish I could zap cars out of my way, kinda like that MTA cartoon video about bus lanes, but that's just not how things work, and they have to do something about it." – MTA Bus Operator on the B82 SBS (3/19/2024)

"Commuting is like playing bus roulette… Will I be late today? Is the next one gonna be in service or not? Or will it be a can of sardines? Ya just can't be too sure; it can be anything. And that's why I prefer walking when I can't swim." – Commuter on the B44 SBS (3/21/2024)

"And the trains are not working, so I gotta take the B82 home. That is another forty-five-minute ride that I have to deal with." – Commuter on the B82 bus (4/28/2024)

"I think that in certain destinations, you often have no other alternatives, which forces you to walk and hope the bus comes. I think that the MTA could definitely increase Select Bus Service and maybe consider subways in the future." – Commuter using the B44 and B49 buses (5/1/2024)

"Honestly, I'm not satisfied at all. The B3 is always congested, especially during peak times, and it takes around an hour for my commute on most days. Most of the time, walking is faster than the bus, and missing one could mean waiting a long time for the next, cause they all bunch up. The B44 is even worse, always packed and never on time. This area is hard to travel around in general because the nearest subway routes are far away." – Commuter from Marine Park area (5/2/2024)

"It's nice when politicians and planners pay attention to the problems in this area, but it just feels like I live in a localized flyover state. Ya got Coney Island over there, but then Kings Plaza is all the way to the other side. We're literally just sandwiched between the two and it feels as if no one has been listening to our concerns the whole way." – Resident in Marine Park area (5/2/2024)

"Ideally, having a train station closer to our area or more routes like the B44 would be better. Adding stuff like Citi Bikes would be a lifesaver because everything's just too far. I think it's important to invest in better transit infrastructure to enhance connectivity and attract more businesses." – Resident in Marine Park area (5/2/2024)

"Aww, I'm gettin' too old for dis sh*t… my back hurts from sitting all day long. But one thing fo sure is that I get my passengers around FAST! There is no such ting as delay. You pay, I get you to go yuh way. FLAATBUUUSH, FLATBUSH!" – Dollar Van Driver (5/10/2024)

"Yeah, naw… F*ck this, I'm getting on the next one. This is too much for me." – Commuter leaving a crowded B103 through the rear door after boarding (5/10/2024)

___| Key Informant – A Bus Transportation Planner's Perspective |_____

Personal observations of bus service and last-mile transit could complement the testimonies of people situated around mobility concerns; however, consulting with a transportation planner provides another perspective regarding the current situation. For this purpose, the key informant interview was situated around an MTA Transportation Planner who holds a master's degree in urban planning and policy. It is important to note that, for confidentiality reasons, the name of the planner has been omitted to protect their identity. While this planner is not a part of the Brooklyn Bus Redesign, their involvement with the Riders Alliance advocacy group and work on the Queens Bus Network Redesign represent their overall expertise in the field and active role in these issues.

By working with the bus redesign project, the planner highlighted various aspects of planning, such as ridership trends, frequency, accessibility, and community feedback, among other colleagues who are either recent graduates or experienced professionals. Taking a data driven approach is important to gauge ridership levels and demand, especially in light of the vast impacts of the COVID-19 pandemic. To analyze statistics, planners establish close connections with the data team at the MTA, one of which allows them to obtain any type of data about the buses, such as time-based metrics like ridership, speed, and performance. [31] While much of the data for the bus redesign is situated around pre-pandemic ridership levels during the drafting phase, changes have occurred over the years; some of which include tele-commuting or remote work from home and

[31] Unnamed MTA Transportation Planner (2024). *Personal Zoom Interview*. 5 May 2024.

car ownership. Bus planners must account for these changes by analyzing recent data from seasonal "picks" around April or October to make decisions about the planning and implementation of bus routes. [32]

One of the most important factors in bus transport planning is community feedback and engagement. During the process of drafting bus route proposals, one specific route could garner anywhere from one thousand to four thousand comments from the community, such as complaints and concerns. [33] A significant challenge to this is weighing feedback with practical planning measures, especially concerning bus stop removals. Stop-balancing is a practice that removes about 30% of bus stops to increase bus speeds and spacing; however, people mention complaints about having to walk an extra block. [34] Transportation planners perform a very thorough analysis of each bus stop and ensure that stops removed have the lowest ridership, but they also make sure to keep stops in high-need areas that service schools, many seniors, senior centers, main transfer points, and key destinations. Another key factor is accessibility and mobility, which planners must account for in making decisions on new stops and adjustments. An accessibility review is conducted for bus stops; however, stops that may be inaccessible require the Department of Transportation (DOT) to make the appropriate adjustments. This process could take a long time and highlights the current state of accessibility in the subway, where only one-third of all subway stations are accessible to some extent as of May 2024. [35]

For all these issues, transportation planners hugely rely on the insights of community members, as they know their routes the best from a commuting and personal standpoint, seeing things that observers and planners might not catch. Although there are bus redesign open houses

[32] Ibid.
[33] Ibid.
[34] Ibid.
[35] Metropolitan Transportation Authority (2024). "MTA Accessible Stations." https://new.mta.info/accessibility/stations

and community outreach events, there is still a gap in this process, as some people might be completely unaware of planning decisions until the implementation is done. This is a huge issue, especially among community members who are older, as they might not be well versed in technology or have limited to no access to digital networks. People might also have busy schedules that make it a challenge for them to take time out of their day to attend an open house or voice their concerns, even if it is a straightforward survey.

Another set of issues that the transportation planner acknowledges is bus lane & stop enforcement, collaborating with the authorities, and collaborating with the Department of Transportation (DOT). On occasion, when addressing the issue of impediments in the bus lane or bus stop, the enforcing agency may encounter various difficulties and challenges. One common occurrence is harassment from the public, specifically in instances where Road Operations fine motorists that are double-parked or parked in bus stops. The transportation planner discussed a dangerous aspect of enforcing these issues by referencing a case from March 2024 in Far Rockaway, where an NYPD (New York Police Department) officer from the Critical Response Team was shot and killed when performing a traffic stop for a vehicle that was illegally parked at a bus stop. [36] While this level of enforcement addresses the public directly, there is another layer of transportation planning that involves MTA's collaboration efforts with the Department of Transportation (DOT), which can enhance bus lanes, transit signaling priorities for buses, and assist with overall bus lane enforcement. Despite various efforts, the question remains on how to properly address the enforcement problem, as many motorists continue to repeatedly park in dedicated bus layover spaces and no standing areas, even despite the consequences.

[36] Eyewitness News (2024). "On-duty NYPD officer shot and killed while conducting vehicle stop in Far Rockaway." https://abc7ny.com/far-rockaway-queens-shooting-nyc-crime/14570095

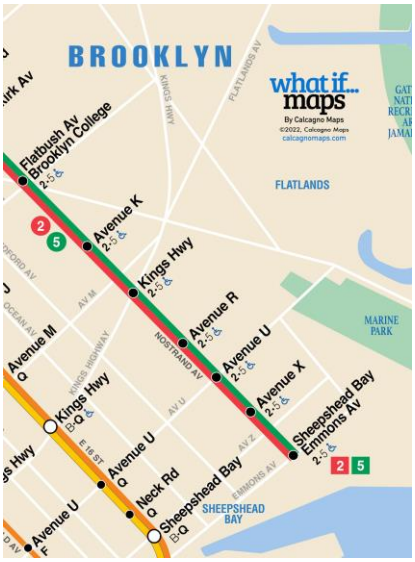
Transportation planners could draft proposals and consider community needs by facilitating suitable adjustments, but ultimately, a major deciding factor is support and funding. In the initial phase, many proposed ideas could include comprehensive plans and those that could be beneficial to the ridership base; however, when establishing the final draft plan, the transportation planners often have to cut down on ideas for the entire network as it goes over the MTA budget. [37] Another issue that the MTA faces is fare evasion, which, in substantial numbers, can impact revenue towards operating budget dollars since fares make up 23 percent of that amount. [38] This parallels the current MTA initiative that facilitates five fare-free buses across five different boroughs, like policies established in 2020 to protect the bus operator during the pandemic by facilitating fare-free rear-door boarding at all times. [39] Fare-free transit could relieve the financial burden of paying costly fares for many people in New York City. In addition, there is the Fair Fares program that allows eligible New Yorkers to pay half the fare, but the eligibility criteria may not be sufficient. [40] High ridership levels indicate demand for public transit; however, they do not fully account for MTA's projections, as the authority faces a massive amount of debt and a deficit in federal aid funding purposed towards recovery and transit bailouts from the pandemic. [41]

In addition, the MTA and Department of Transportation (DOT) have collaborated to implement the Congestion Zone Pricing tax, which is set to take effect on June 30th, 2024. As the first official congestion pricing plan in the United States, it draws inspiration from similar

[37] Unnamed MTA Transportation Planner (2024). *Personal Zoom Interview*. 5 May 2024.
[38] Metropolitan Transportation Authority (2024). "MTA Operating Budget Basics." https://new.mta.info/budget/MTA-operating-budget-basics
[39] Metropolitan Transportation Authority (2024). "Fare-free pilot on five MTA bus routes." https://new.mta.info/guides/riding-the-bus/fare-free-bus-pilot
[40] Kuntzmen, G. (2023). "Un-Fare: Council Members Demand More Funding for Fair Fares." Retrieved 6 May 2024, from https://nyc.streetsblog.org/2023/06/27/un-fare-council-members-demand-more-funding-for-fair-fares
[41] Colon, D. (2024). "MTA Admits Federal Aid May Run Out Sooner Than 2025." *Streetsblog NYC*. https://nyc.streetsblog.org/2022/05/24/mta-admits-federal-aid-may-run-out-sooner-than-2025

strategies in cities like Singapore, Stockholm, and London. [42] This tax aims to reduce traffic congestion by charging automobile drivers a base rate of $15 per day when entering or exiting the designated congestion zone. The zone encompasses Manhattan below 60th Street, known as the Central Business District (CBD). [43] While the plan includes specific charges for different vehicle types, it exempts commuter buses, city vehicles, and emergency vehicles. Revenues from this tax will be directed towards the MTA, although much of it will be dedicated to capital repairs rather than daily operations. [44] Congestion Pricing is expected to impact bus ridership and traffic patterns, and the MTA plans to monitor trends and adjust services after implementation; however, there is debate on how this plan will impact the outer boroughs.

___| Possible Interventions & Projects Considered |_____



Nostrand Avenue Subway (What If Maps)

Utica Avenue Subway (MTA, 2024)

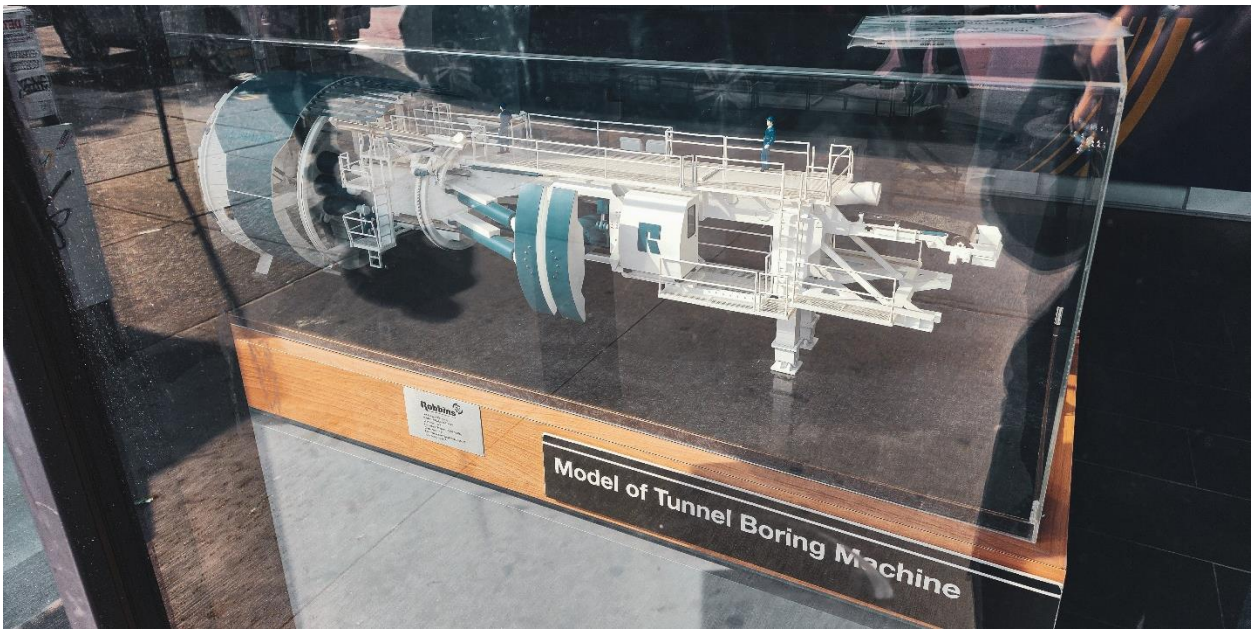
[42] Regional Planning Association (2019). "Congestion Pricing in NYC." https://rpa.org/work/reports/congestion-pricing-in-nyc
[43] Metropolitan Transportation Authority (2024). "Central Business District Tolling Program" https://new.mta.info/project/CBDTP
[44] Colon, D. (2024). "MTA Admits Federal Aid May Run Out Sooner Than 2025." *Streetsblog NYC*. https://nyc.streetsblog.org/2022/05/24/mta-admits-federal-aid-may-run-out-sooner-than-2025

Throughout the course of the New York City Subway system, the integration of the three major companies—BMT (Brooklyn-Manhattan Transit), IND (Independent Subway Lines), and IRT (Independent Rapid Transit)—has allowed the MTA to facilitate operations across these lines. Planners and commuter advocates have proposed numerous projects to extend subway lines for further reach and to serve more communities. One of these on the maps above is the 2.7-mile extension of the IRT Nostrand Avenue line to the South, which could provide additional service to Flatlands, Midwood, Marine Park, and Sheepshead Bay. [45] Currently, the 2 and 5 trains only run down to their terminus at Flatbush Avenue – Brooklyn College, while the B44 Local and Select Bus Services serve the rest of Nostrand Avenue down to Sheepshead Bay. Another project is a 4-mile extension of the IRT Subway branching off Eastern Parkway along Utica Avenue, which would service Crown Heights, East Flatbush, Flatlands, Marine Park, and Mill Basin. [46] In the absence of this subway, the B46 Local and Select Bus services run down Utica Avenue towards Kings Plaza Mall.

Even after all this time, the status quo remains, as the last time these projects underwent a huge policy action dates back to 1968, when the Metropolitan Transportation Authority submitted a comprehensive "Program for Action" report to Nelson A. Rockefeller, Governor of New York at the time. [47] Despite the vast proposals and the clearly ambitious efforts to expand subway lines and regional rail, this program was cut short due to the city's fiscal crisis in the mid-1970s, resulting in a deficit of funds required for the projects. [48] Regarding funding, rapid rail infrastructure in places like New York City tends to exceed the cost of one billion dollars per mile,

[45] Calcagno Maps (2022). "What If Maps: Nostrand Avenue Line." *Calcagno Maps.* https://www.reddit.com/r/nycrail/comments/ugipdq/what_if_map_of_the_nostrand_avenue_extension_as
[46] Metropolitan Transportation Authority (2022). "Utica Avenue Transit Improvements Study." https://new.mta.info/project/utica-avenue-transit-improvements-study
[47] Internet Archive (2024). "Metropolitan Transportation, A Program for Action. Report to Nelson A. Rockefeller, Governor of New York." https://archive.org/stream/metropolitantran00newy/metropolitantran00newy_djvu.txt
[48] Raskin, J. (2014). *The Routes Not Taken: A Trip Through New York City's Unbuilt Subway System.* Fordham University Press: New York.

often due to overengineering and design of physical structures, massive labor costs per union contract, minimal competition between bidding contractors, and a lack of coordination with government and utility agencies. [49] Pictured below is a replica model of the Tunnel Boring Machine the MTA used to bore bedrock for deep caverns along the Second Avenue Subway project; one of the huge factors leading to the expensive cost and delays of its construction.



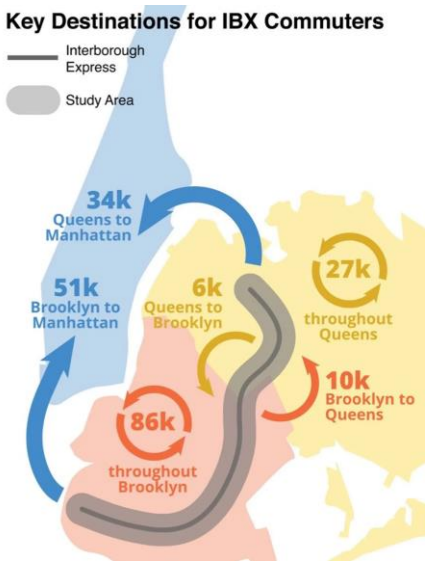
Second Avenue Subway Tunnel Boring Machine
Model at Harlem Community Center (Raymond Cho)

Under the proposals designated for MTA's "Program for Action," constructing these subway routes would lead to huge costs, especially when considering the water table profiles for Southeast Brooklyn in proximity to the Atlantic Ocean that are prone to flooding. [50] This requires the transition to an elevated subway structure at some point of the line, which could lead to reduced costs, although historically, communities have had mixed reactions as they believe the "EL" might

[49] Goldwyn, E. Levy, A., and Ensari, E (2023). "Transit Costs Project: The New York Case." NYU Marron Institute of Urban Management: New York. https://transitcosts.com/wp-content/uploads/NewYork_Case_Study.pdf
[50] Monti Jr., J. and Ronald Busciolano (2009). "Water-Table and Potentiometric-Surface Altitudes in the Upper Glacial, Magothy, and Lloyd Aquifers beneath Long Island, New York, March-April 2006." *U.S. Geological Survey*. https://pubs.usgs.gov/sim/3066/pdf/SIM3066_s1p.pdf

lower property values or cause quality of life issues. [51] While older elevated structures of the subway do include noisy rail joints to account for structural stress and expansion, newer and advanced structures with Continuous Welded Rail (CWR) and concrete structures like those on the JFK Airtrain could significantly reduce these issues.

Interborough Express
(MTA, 2022)



IBX Commuter Study
(MTA, 2022)

Another current project that the MTA is actively focusing on is the Interborough Express rapid rail project, which links communities across South Brooklyn and Queens. The MTA has decided to utilize the existing 14-mile Right of Way (ROW) of the Bay Ridge Branch and New York Connecting Railroad as a feasibility study zone for IBX. [52] Based on personal observations over the years, different freight trains travel over this trackage, the most common trip being on Wednesdays at around 10 PM, typically hauled by a green New York Atlantic Railway locomotive. In the MTA's proposal, alongside the Regional Planning Association and Governor Kathy Hochul, the project aims to turn this inactivity into a light-rail designation, connecting 17 subway lines, 51

[51] Raskin, J. (2014). *The Routes Not Taken: A Trip Through New York City's Unbuilt Subway System.* Fordham University Press: New York.
[52] Metropolitan Transportation Authority (2024). "Interborough Express." https://new.mta.info/project/interborough-express

current bus routes, and the Long Island Railroad. The MTA estimates that the IBX will target around 86,000 commuters throughout Brooklyn by reducing redundant commuting routes and transfers, keeping the total runtime within 40 minutes. [53] While the MTA is currently conducting environmental reviews and other development studies, the actual start date of construction is unknown, and considering the historical circumstances of rail development, the projected finish date of the project will not be anytime soon. One beneficial circumstance of this project, however, is that New York City is acknowledging that it requires a diffused transit system that serves more than just the Central Business District (CBD), similar to the operations of the Yamanote Line Loop in Tokyo, Japan, by the Japan Railway East (JR East) company. [54]

Transit Workers Union Petition (TWU Local 100, 2019)

MTA Bus ABLE Program (MTA, 2019)

Besides rapid rail projects and the countless years that will be spent in the development process, a practical approach would be to address issues with last-mile transit at present. One

[53] Ibid.
[54] Levy, A. (2011). "A Transit City is a Centralized City." *Pedestrian Observations.* https://pedestrianobservations.com/2011/11/21/a-transit-city-is-a-centralized-city

corridor in Southeast Brooklyn that requires an extensive study and transit priority implementation process is Flatbush Avenue, which the B41 buses service. Often, bus riders along Flatbush Avenue face difficult commutes, experiencing instances of slow speeds and infrequent service that is unreliable, forcing them to take the dollar vans that compete with bus service. [55] This presents a case study for a 7-mile bus priority project, which can improve bus travel and commuting by incorporating Bus Rapid Transit (BRT) measures such as bus lanes, pedestrian-oriented improvements, and signals that prioritize the flow of transit. [56] Bus priority along Flatbush Avenue is an issue that even the Transit Workers Union Local 100 rallied about and garner support from bus operators and those impacted by travel conditions, as pictured above.

Another additional proposal in the current MTA Bus Redesign projects is the introduction of "Rush" routes such as the B40, which basically connect passengers to the subway faster in the outer boroughs and serve as feeder routes. In this type of bus route, a portion of it keeps service to local stops; however, the larger and busier corridors only retain stops at main destinations, such as major transfer points to other buses and subway lines. [57] To facilitate the smooth flow of bus operations like these across transit priority corridors, the MTA would also need to expand factors of enforcement such as their ABLE (Automated Bus Lane Enforcement) bus cameras. ABLE is a program that implements the use of installed cameras onboard buses to capture information from bus lane violators before sending the data over to the NYC Department of Transportation (DOT) and issuing the citation through the NYC Department of Finance. [58] While this may be beneficial

[55] Edwards, C. (2024). "Flatbush Avenue Buses Remain a Nightmare for Many." *BKReader*. Retrieved 20 April 2024, from https://www.bkreader.com/featured-news/flatbush-avenue-buses-remain-a-nightmare-for-many-8327019
[56] Colon, D. (2022). "DOT Begins Flatbush Ave. Bus Improvement Project With Everything on the Table." *Streetsblog NYC*. Retrieved 20 April 2024, from https://nyc.streetsblog.org/2022/07/01/no-promises-dot-begins-flatbush-ave-bus-improvement-project-with-everything-on-the-table
[57] Unnamed MTA Transportation Planner (2024). *Personal Zoom Interview*. 5 May 2024.
[58] New York State (2023). "Governor Hochul Announces Significant Expansion of Bus Lane Enforcement Across New York City." Retrieved 20 April 2024, from https://www.governor.ny.gov/news/governor-hochul-announces-significant-expansion-bus-lane-enforcement-across-new-york-city

for bus lanes primarily, one recommendation may be to expand this program using cross-checking AI (Artificial Intelligence) algorithms to enforce bus stops and layover spots.

___| Major Constituencies & Stakeholders |_____

Addressing such a policy issue requires collaboration between many diverse groups and levels of government, which is typically difficult to achieve in New York City or almost any American city containing car-centric influences. Residents usually address the root of the issue when they connect with their community organizations, which could represent their interests and needs to garner public support and awareness. While local governments hugely influence policy implementation, the state government has authority over legislation and the funding it provides for public transit. In addition, the federal government has a huge role in this issue, especially with policy and funding for infrastructure projects and, in the case of the COVID-19 pandemic, by administering federal aid to address MTA's budget deficit. Being a public transit agency and independent corporation, the Metropolitan Transportation Authority (MTA) oversees the design and implementation of transit programs and policies. The MTA could bid for contracts and issue service changes and cuts alongside other administrative actions; however, recently, they had to put various projects on hold in conjunction with a myriad of pending lawsuits against the policies of Congestion Toll Pricing in Manhattan's Central Business District (CBD) area. Changes regarding public transportation usually take a long time to establish as there is a complex interplay of issues between actors and mixed opinions among the "public interest," especially since a number of former planner Robert Moses' discriminatory decisions and unchecked power still impact many urban landscapes across New York City today. [59]

[59] Caro, R. (1975). *The Power Broker: Robert Moses and the Fall of New York*. Vintage Books Edition. Random House Inc. New York.

___| Concluding Remarks & Implications |_____

M14D Crosstown Bus Before Busway in 2015 (Raymond Cho)

Overall, securing public transit equity for all is the ultimate goal, especially in underserved areas like Southeast Brooklyn. Approaching this policy issue includes addressing the specific needs of low-income and minority communities. Buses should also account for factors such as accessibility and mobility by providing user-friendly amenities. Everyone should have access to reliable public transit, regardless of race, socio-economic background, and gender. This aligns with the idea that David Harvey and Henri Lefebvre placed emphasis on, which promotes inclusivity in communities and the right a the city for all. [60] Additionally, by running buses at shorter intervals alongside transit priority measures, ridership could increase with the overall transit experience. [61] In the current day, leveraging the use of technology is especially important to keep buses on schedule and maintain a level of efficiency and transparency for commuters. Currently, the impacts of the Brooklyn Bus Network Redesign and future transit projects on the local communities and

[60] Harvey, D. (2008). "The Right to the City." https://davidharvey.org/media/righttothecity.pdf
[61] Higaside, S. (2019). *Better Buses, Better Cities: How to Plan, Run, and Win the Fight for Effective Transit.* All Island Press, United States of America.

the people utilizing these last-mile solutions daily to fulfill their commuting needs have yet to be measured, which could be a topic for another study.

___| Acknowledgements & Gratitude |_____

This capstone project was a labor of love and was made possible by many factors. I have always had a huge interest in public transportation, ever since I was a toddler at the age of three. My first ever recollection of riding transit vehicles with my family and my collection of toys and models represent this passion. I am glad my mom always tagged along on these journeys as I waved with cheerful grins at train conductors, train operators, and bus operators, observing the different details, sounds, and passing landscapes. Growing up, I became fascinated with how the public transit system acts as the main arterial connection to the heart of the city, facilitating the movement of people and their daily interactions with the landscape. If there were no transit system, New York City would not be as full of life as it is now. It is a moment of realization when you begin to see fresh faces moving the equipment you grew up with, as well as changes around the city. In the blink of an eye, those transit crews that greeted you as a kid have either retired or hit veteran status, along with any old and iconic transit fleets that you just stopped seeing one day. I would like to thank all the transit crews for their service, as they always follow the slogan “We Move New York!” and ensure that people get to the places they need to be.

In addition, I would also like to thank professors at Hunter College such as Elizabeth Marcello for being an inspiration to pursue the Urban Studies degree track, Jason Brody for instructing me about issues of metropolitan landscapes and guiding me in writing a paper about CBD and Diffused transit systems, Sigmund Shipp for introducing detailed research methods with lighthearted humor, and especially Laura Wolf-Powers for facilitating a capstone course where students like me could express their full passion for an urban policy issue of interest!

"We Move New York!"

Q17 Bus Operator in Flushing
Rocking Vintage MTA Cap (Raymond Cho)

| References |

Calcagno Maps (2022). “What If Maps: Nostrand Avenue Line.” *Calcagno Maps.* Retrieved 6 March 2024, from https://www.reddit.com/r/nycrail/comments/ugipdq/what_if_map_of_the_nostrand_avenue_extension_as

Caro, R. (1975). *The Power Broker: Robert Moses and the Fall of New York*. Vintage Books Edition. Random House Inc. New York.

Cho, Raymond (2024). *All Photographs of Bus Network.* Retrieved 24 May 2024 from Personal Photograph Collection.

Colon, D. (2024). “MTA Admits Federal Aid May Run Out Sooner Than 2025.” *Streetsblog NYC*. Retrieved 6 May 2024, from https://nyc.streetsblog.org/2022/05/24/mta-admits-federal-aid-may-run-out-sooner-than-2025

Colon, D. (2022). “DOT Begins Flatbush Ave. Bus Improvement Project With Everything on the Table.” *Streetsblog NYC*. Retrieved 20 April 2024, from https://nyc.streetsblog.org/2022/07/01/no-promises-dot-begins-flatbush-ave-bus-improvement-project-with-everything-on-the-table

Cudahy, B. (2002). *How We Got to Coney Island: The Development of Mass Transportation in Brooklyn and Kings County.”* Fordham University Press, New York.

Edwards, C. (2024). “Flatbush Avenue Buses Remain a Nightmare for Many.” *BKReader*. Retrieved 20 April 2024, from https://www.bkreader.com/featured-news/flatbush-avenue-buses-remain-a-nightmare-for-many-8327019

Eells, J. et al. (2023). “Defining and Measuring Equity in Public Transportation.” San José State University, California. Retrieved 10 March 2024, from

https://transweb.sjsu.edu/sites/default/files/2100-Ferrell-Public-Transit-Equity-Metrics-Measurement_2.pdf

Eyewitness News (2024). “On-duty NYPD officer shot and killed while conducting vehicle stop in Far Rockaway.” Retrieved 5 May 2024, from https://abc7ny.com/far-rockaway-queens-shooting-nyc-crime/14570095

Goldwyn, E. (2017). “An Informal Transit System Hiding in Plain Sight: Brooklyn’s Dollar Vans and Transportation Planning and Policy in New York City.” Columbia University: New York. Retrieved 30 March 2024, from https://doi.org/10.7916/D8W959RP

Goldwyn, E. Levy, A., and Ensari, E (2023). “Transit Costs Project: The New York Case.” NYU Marron Institute of Urban Management: New York. Retrieved 30 March 2024, from https://transitcosts.com/wp-content/uploads/NewYork_Case_Study.pdf

Harvey, D. (2008). “The Right to the City.” Retrieved 25 April 2024, from https://davidharvey.org/media/righttothecity.pdf

Higaside, S. (2019). *Better Buses, Better Cities: How to Plan, Run, and Win the Fight for Effective Transit.* All Island Press, United States of America.

Internet Archive (2022). “Metropolitan Transportation, A Program for Action. Report to Nelson A. Rockefeller, Governor of New York.” Retrieved 2 April 2024, from https://archive.org/stream/metropolitantran00newy/metropolitantran00newy_djvu.txt

Jackson, K. & Manbeck, J. (1998). *The Neighborhoods of Brooklyn*. New Haven & London: Yale University Press.

Jiao, J., & Dillivan, M. (2013). “Transit Deserts: The Gap between Demand and Supply.” *Journal of Public Transportation, 16*(3), 23–39. Retrieved 22 February 2024, from https://doi.org/10.5038/2375-0901.16.3.2

Kuah, G.K. & Perl, J. (1987). "A Methodology for Feeder-Bus Network Design." *Transportation Research Board*. 1120, 40–51 Retrieved 22 February 2024, from https://onlinepubs.trb.org/Onlinepubs/trr/1987/1120/1120-005.pdf

Kuntzmen, G. (2023). "Un-Fare: Council Members Demand More Funding for Fair Fares." Retrieved 6 May 2024, from https://nyc.streetsblog.org/2023/06/27/un-fare-council-members-demand-more-funding-for-fair-fares

Lachapelle, U. et al. (2016). "Active Transportation by Transit-Dependent and Choice Riders and Potential Displacement of Leisure Physical Activity." *Journal of Planning Education and Research*, 36(2), 225-238. Retrieved 20 March 2024, from https://doi.org/10.1177/0739456X15616253

Levy, A. (2011). "A Transit City is a Centralized City." *Pedestrian Observations.* Retrieved 25 April 2024, from https://pedestrianobservations.com/2011/11/21/a-transit-city-is-a-centralized-city

Marohn, C. (2017). "The Stroad." *Strong Towns Organization.* Retrieved March 30, 2024, from https://www.strongtowns.org/journal/2017/10/30/the-stroad

Martinez, J. (2023). "Just 31 Licensed Dollar Vans left as Pandemic and Insurance Rates Take Drivers Off Streets." *New York Times*. Retrieved 22 February 2024, from https://www.thecity.nyc/2023/04/07/few-dollar-vans-high-insurance-rates

Martinez, J. & Dowd, T. (2020). "Utica Ave. Subway Extension Dream Gets a Brooklyn Boost." *The City NYC.* Retrieved 22 February 2024, from https://www.thecity.nyc/2020/02/11/utica-ave-subway-extension-dream-gets-a-brooklyn-boost

Metropolitan Transportation Authority (2024). "Central Business District Tolling Program" Retrieved May 10, 2024, from https://new.mta.info/project/CBDTP

Metropolitan Transportation Authority (2024). “Fare-free pilot on five MTA bus routes.” Retrieved May 12, 2024, from https://new.mta.info/guides/riding-the-bus/fare-free-bus-pilot

Metropolitan Transportation Authority (2024). “Interborough Express.” Retrieved 20 March 2024, from https://new.mta.info/project/interborough-express

Metropolitan Transportation Authority (2024). “MTA Accessible Stations.” Retrieved 10 May 2024, from https://new.mta.info/accessibility/stations

Metropolitan Transportation Authority (2024). “MTA Operating Budget Basics.” Retrieved 6 May 2024, from https://new.mta.info/budget/MTA-operating-budget-basics

Metropolitan Transportation Authority (2024). “New York City Subway Map.” Retrieved 22 February 2024, from https://new.mta.info/map/5256

Metropolitan Transportation Authority (2019). “NYCT Bus – Twitter Post.” Retrieved 20 April 2024, from https://x.com/NYCTBus/status/1177973191148539906

Metropolitan Transportation Authority (2024). “Subway and bus ridership for 2023.” Retrieved 20 March 2024, from https://new.mta.info/agency/new-york-city-transit/subway-bus-ridership-2023

Metropolitan Transportation Authority (2022). “Utica Avenue Transit Improvements Study.” Retrieved 6 March 2024, from https://new.mta.info/project/utica-avenue-transit-improvements-study

Monti Jr., J. and Ronald Busciolano (2009). “Water-Table and Potentiometric-Surface Altitudes in the Upper Glacial, Magothy, and Lloyd Aquifers beneath Long Island, New York, March-April 2006.” *U.S. Geological Survey*. Retrieved 20 April 2024, from https://pubs.usgs.gov/sim/3066/pdf/SIM3066_s1p.pdf

New York Academy of Medicine (2014). “New York City Health Provider Partnership Brooklyn Community Needs Assessment: Final Report October 3, 2014.” Retrieved 20 April 2024, from https://www.health.ny.gov/health_care/medicaid/redesign/dsrip/pps_applications/docs/maimonides_medical_center/3.8_maimonides_cna.pdf

NYC Department of City Planning (2024). “Community District Profiles: Brooklyn Community District 17.” Retrieved 22 February 2024, from https://communityprofiles.planning.nyc.gov/brooklyn/17

NYC Department of City Planning (2024). “Community District Profiles: Brooklyn Community District 18.” Retrieved 22 February 2024, from https://communityprofiles.planning.nyc.gov/brooklyn/18

NYC Department of Transportation (2022). “2022 New York City Truck Route Map.” Retrieved 20 April 2024, from https://www.nyc.gov/html/dot/downloads/pdf/map-2022-truck-map.pdf

NYC Department of Transportation (2024). “Better Buses: Select Bus Service Routes.” Retrieved 20 March 2024, from https://www.nyc.gov/html/brt/html/routes/routes.shtml

Oldenburg, R. & Christensen, K. (2023). “Third places, true citizen spaces.” *The UNESCO Courier*. Retrieved 25 April 2024, from https://courier.unesco.org/en/articles/third-places-true-citizen-spaces

New York State (2023). “Governor Hochul Announces Significant Expansion of Bus Lane Enforcement Across New York City.” Retrieved 20 April 2024, from https://www.governor.ny.gov/news/governor-hochul-announces-significant-expansion-bus-lane-enforcement-across-new-york-city

Raskin, J. (2014). *The Routes Not Taken: A Trip Through New York City's Unbuilt Subway System.* Fordham University Press: New York.

Regional Planning Association (2019). "Congestion Pricing in NYC." Retrieved 6 May 2024, from https://rpa.org/work/reports/congestion-pricing-in-nyc

Reiss, A. "New York's Shadow Transit." *The New Yorker.* Retrieved 2 March 2024, from https://projects.newyorker.com/story/nyc-dollar-vans

Santos, F. (2010). "Licensed and Illegal Vans Fight It Out." *New York Times.* Retrieved 22 February 2024, from https://www.nytimes.com/2010/06/10/nyregion/10vans.html

Transit Center (2021). "The State of Transit Equity: Metro New York." Retrieved 20 March 2024, from https://transitcenter.org/wp-content/uploads/2021/06/NYCFactSheet.pdf

Transit Workers Union Local 100 (2019). *B41 Petition Poster*. Retrieved 20 April 2024, from https://www.flickr.com/photos/91750459@N04

Unnamed MTA Transportation Planner (2024). *Personal Zoom Interview*. 5 May 2024.

U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): CB 17 PUMA (SE:A03001)." *Social Explorer*. Web. Retrieved 22 February 2024, from https://www.socialexplorer.com/tables/ACS2022_5yr/R13675617

U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): CB 17 & CB 18 (SE:A09002)." *Social Explorer*. Web. Retrieved 22 February 2024, from https://www.socialexplorer.com/tables/ACS2022_5yr/R13587700

U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): CB 17 – East Flatbush PUMA; New York (SE:A09005)." *Social Explorer*. Web. Retrieved 22 February 2024, from https://www.socialexplorer.com/tables/ACS2022_5yr/R13587704

U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): CB 17 PUMA (SE:A14006)." *Social Explorer*. Web. Retrieved 22 February 2024, from https://www.socialexplorer.com/tables/ACS2022_5yr/R13675617

U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): CB 17 – East Flatbush PUMA; New York (SE:A17002)." *Social Explorer*. Web. Retrieved 22 February 2024, from https://www.socialexplorer.com/tables/ACS2022_5yr/R13587700

U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): CB 18 PUMA (SE:A03001)." *Social Explorer*. Web. Retrieved 22 February 2024, from https://www.socialexplorer.com/tables/ACS2022_5yr/R13675617

U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): CB 18 – Canarsie & Flatlands PUMA; New York (SE:A09005)." *Social Explorer*. Web. Retrieved 22 February 2024, from https://www.socialexplorer.com/tables/ACS2022_5yr/R13587704

U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): CB 18 PUMA (SE:A14006)." *Social Explorer*. Web. Retrieved 22 February 2024, from https://www.socialexplorer.com/tables/ACS2022_5yr/R13675617

U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): CB 18 – Canarsie & Flatlands PUMA; New York (SE:A17002)." *Social Explorer*. Web. Retrieved 22 February 2024, from https://www.socialexplorer.com/tables/ACS2022_5yr/R13587700

U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): New York City; New York-Newark-Jersey City, NY-NJ-PA Metro Area (Part); New York (SE:A10030)." *Social Explorer*. Web. Retrieved 22 February 2024, from https://www.socialexplorer.com/tables/ACS2022_5yr/R13675395

U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): ZCTA5 11234 (SE:A09002)." *Social Explorer*. Web. Retrieved 22 February 2024, from https://www.socialexplorer.com/tables/ACS2022_5yr/R13675617

U.S. Census Bureau (2022). "ACS 2022 (5-Year Estimates): ZCTA5 11234 (SE:A14007)." *Social Explorer*. Web. Retrieved 22 February 2024, from https://www.socialexplorer.com/tables/ACS2022_5yr/R13675572