

Houston-Canal Low Traffic Neighborhood Study

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LTN implementation at 6th Ave & Grand Street [imagined by ChatGPT Image 2.0]

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ABSTRACT 1

New York is often praised as the most walkable city, yet the city infrastructure is still primarily car centric, DOT have been stuck since the pioneer of Plaza Program in the Bloomberg Administration. A MIT research in 2026 just closed the gap in the city's pedestrian counting, and published the first city-wide block-level pedestrian demand research.

This thesis examines the scalability of Low Traffic Neighborhoods (LTN), a modal filtering infrastructure used in London and other European cities, to a New York context. The Houston-Canal Corridor was selected because Open Plans documented 90 percent through-traffic in Lower Manhattan. International precedents like London LTN, Barcelona superblocks, and Tokyo shōtengai all provide different models for my proposal.

This thesis uses a mix of qualitative and quantitative analysis, from the historical and cultural context, to the NYC Walks pedestrian volume data, NYPD crash data, and MTA subway ridership data to identify blocks where modal filtering would yield the highest public-realm return.

The thesis is proposing three levels of policy intervention that translate into New York City's context. First is a weekend Open Streets on a regular basis, second is a full LTN, last is to expand into a Japanese shōtengai model, into a public market corridor.

ABSTRACT 2

New York is often praised as the most walkable city, but the policy still prioritizes cars. This thesis studies whether Low Traffic Neighborhood (LTN) can be implemented in the Houston Canal Corridor. The site is a top candidate in both qualitative and quantitative analysis, from the historical and cultural context, to the NYC Walks pedestrian volume data, NYPD crash data, and MTA subway ridership data to identify blocks where modal filtering would yield the highest public-realm return. This thesis proposes a phased policy pathway, from a weekly Open Streets to Full LTN, and last a Public Market Corridor, for New York future policies.

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INTRODUCTION

Problem Statement

New York is often praised as a pedestrian city, the infrastructure is completely built for cars, despite the fact that "more trips are made on foot (41%) than by car (28%)" (Sevtsuk et al., p.1). The city has historically pioneered the Plaza Program, which became the global model, but has since then fallen behind on pedestrian policy, London has implemented the Low Traffic Neighborhood modal across the city, and Barcelona is building Superblocks. It has now fallen behind its international peers in producing a neighborhood scale pedestrian policy.

While other cities are building dedicated pedestrian streets, New York is still struggling to expand its sidewalk. In SoHo Broadway Initiative's 2021 Public Realm Vision Plan, they measured the space allocation in their district, Broadway through SoHo is allocated 59 percent to vehicles and 41 percent to pedestrians; Broome Street, just one block away, is 84 percent to vehicles and 16 percent to pedestrians (SoHo Broadway Initiative, 2021: 37, 53). On Canal Street, NYCDOT data shows a similar result, that roughly 90% of the roadway is dedicated to vehicles, while about 66% of people using the corridor are on foot (NYC DOT, 2025). This shows that the space allocation doesn't match the volume of traffic modals, despite pedestrian dominantes in most city blocks they don't get relative space allocation.

The space-allocation mismatch is also incompatible with the city's climate trajectory. New York City's *Roadmap to 80x50* (NYC, 2014) commits the city to reduce greenhouse gas emissions of 80% below 2005 level by 2050. A street system that allocates most of the space to gas emitting vehicles is inconsistent with the city's commitment.



Figure 1. Broome Street

The problem goes beyond space allocation, the street is not designed for people that live on the street. Most residents in the neighborhood don't own a car, with only about 21% of residents owning a car (U.S. Census Bureau, 2023, table B08201). According to an Open Plan (2023) analysis on Replica Mobility Data, about 88% of the traffic is through traffic rather than visiting the neighborhood. The residents not only have to absorb traffic the street was never designed to carry, along with the noise, pollution, and collision risk that come with it.

The corridor's through traffic bottleneck is not an accident, Robert Moses proposed the Lower Manhattan Expressway (LOMEX) in 1941, an elevated road that would have connected the Holland tunnel to the Manhattan Bridge by cutting through the neighborhood. The plan was later defeated by protest leaders like Jane Jacobs and other local residents, and was officially canceled in 1969. The cancellation saved the neighborhood from physical destruction, but the traffic didn't evaporate, it got absorbed by the neighborhood too as car traffic continued to grow in the city, now the pedestrians have to share the already limited space with car traffic the streets weren't designed to carry. In SoHo Broadway Initiatives (SBI) Public Realm Vision Plan, this was mentioned "The regional use of otherwise local city streets to enter or exit the Holland Tunnel continues to deliver

chronic and worsening traffic congestion, which is a significant drag on SoHo's quality of life, public health, culture, and economy." (SoHo Broadway Initiative, 2021: 24)

A second structural part of the problem was identified by a recent MIT research, "What gets counted, counts. Nowhere is this more evident than in the planning and design of our cities, where what and who is measured shapes what is planned, prioritized, and funded." (Sevtsuk et al., 2026:1). The American Community Survey only captures commuting trips, which are less than one-third of all travel. The NYC DOT Bi-Annual Pedestrian Counts only samples roughly one hundred locations. Until Sevtsuk's team, there is no pre-existing pedestrian volume data in New York City. The direct result is proposals like the SBI's LTN proposal failed at Community Board meetings.

The city also carries significant legal barriers from building a fully pedestrian space, any removal of existing vehicle space is considered "damapping" a city street, and requires a Uniform Land Use Review Procedure (ULURP), a process involving the Community Board, City Planning Commission, and City Council. This is the reason why the 1997 Lower Manhattan Pedestrianization Study flagged even one block of pedestrianization will trigger a ULURP action (NYC DOT 1997).

Low Traffic Neighborhood (LTN)

This thesis proposes the LTN as a solution for NYC's pedestrian problem. An LTN does not fully pedestrianize the street, it preserves vehicle access for all local residents and emergency vehicles, therefore keeping the street active as a city street. As mentioned by Open Plans, the neighborhood carried much through-traffic (Open Plans, 2023), by instating a LTN, it removed the traffic from the streets that wasn't designed for high volume traffic to the outer-boundary streets, which are often designed for high-volume traffic. And since LTN doesn't pedestrianize the street it avoids the problem of triggering a demapping process in New York.

Purpose and Outline

The purpose of this thesis is to assess the feasibility of establishing a LTN in the Houston-Canal Corridor of Manhattan. This thesis goes over the policy history and existing policy landscape, goes through international counterparts, then analyzes with existing data to exhibit the demand of a

LTN in the study area, and concludes with a policy recommendation to create a LTN in Houston-Canal Corridor.

Policy Landscape

NYC Policy

New York's pedestrian policy has developed mainly throughout the past 50 years, since the Lindsay Administration, the city cancelled the LOMEX planned by Robert Moses, pioneered the first municipal attempt at shifting street space allocation during his administration, he introduced the weekend car ban in Central Park in 1966, which later became permanent in 2018, and the first open street like program in the city by closing Fifth Ave to traffic for hours during summer. This laid the foundation of modern day Open Street programs, and established the idea of reallocating street space from cars.

During Giuliani's administration, it's the first time the city attempted to address the pedestrian problem, the Lower Manhattan Pedestrian Study, which studied the area south of Chambers Street. Despite the title, the study did not end up with a full pedestrianization, but rather suggest sidewalk widening, and other soft methods, and flag any street removal will require Uniform Land Use Review Procedure (ULURP) (NYC DCP/DOT, 1997). Simultaneously the city is doing the opposite of pedestrianization, by putting up barricades in Midtown to block pedestrian crossings to speed up car traffic (NYT, 1997).

World Class Streets (NYC DOT and Gehl Architects, 2008) released under Bloomberg administration, with Commissioner Janette Sadik-Khan in 2008, introduced “public realm” as a policy term, and the Plaza Program which later became a global model, many global urban planning following like the Japanese MLIT has cited this as their model for building 歩きたくなるまちなか, “a downtown that makes you want to walk” (MLIT, 2020). This is also the foundation of many current day pedestrian space policies, the Plaza Program led to the pedestrianization of Times Square, removing traffic from Broadway, which later expanded to Broadway Vision Plan, SoHo Business Initiative's Vision Plan that considered the LTN model, is a response to the public realm push. The

2008 World Class Streets report showed that Times Square consisted of “89% road space” and “11% people space” (NYC DOT and Gehl Architects, 2008). The administration also attempted to introduce congestion pricing, but later failed to pass in Albany. Most of the policy is still limited to producing plaza, sidewalk expansions, not neighborhood-scale traffic filtering, redesign.

During the de Blasio administration, the city passed Local Law 55 of 2021 codified the COVID-era Open Streets program, created the “limited local access” of city street, while this does not legalize LTN, but it establishes the “limited local access” framework on which an LTN could be operationally built on, without ULURP, through regulatory change not demapping if fully pedestrianized is proposed. Under his administration, the SBI proposed its LTN plan, while not being denied by the Community Board, did not get approval either.

Under the Adam administration, the biggest change was to implement the congestion pricing (Central Business District Tolling Program), while not directly a pedestrian policy, it was proven in London’s case that it could provide foundation for LTN as it provides the legal and institution structure for a traffic modal filter.

DOT Current Plan

Plaza Program & World Class Streets

Current DOT pedestrian works are still highly based on the foundation established by the Bloomberg administration, from the Plaza Program and the World Class Street that introduced the program, which later expanded to public realm plan. The Plaza Program converts underused city streets into pedestrian plazas.

Many current DOT plans are expansion of this model. The Broadway Vision Master plan transformed the corridor into a street “prioritize pedestrian space and bicycle access” (NYC DOT, 2025). The same pattern can be seen in new proposals for Fifth Avenue and Canal Street, mainly limited to expanding sidewalks and building bikeways. These projects can minimize the car dominance and the space misallocation, but neither solve the through traffic problem in the interior streets.

Congestion Pricing

New York State introduced the Central Business District Tolling Program, which is more commonly referred to as congestion pricing. The program charges vehicles when they enter Manhattan south of 61st street, which is the first congestion pricing program implemented in the United States. The international precedents are decades longer, with Singapore pioneered in 1975 and followed by London in 2003, which is one of the foundations of London's Low Traffic Neighborhood. Both programs documented reductions in CBD vehicular volume in the years following implementation.

New York's result matched its international counterparts, a year-one report (MTA, 2026) showed an 11% average decline in daily traffic in the Tolling Zone (MTA 2026). The program demonstrates that NYC has the institutional capacity to implement large-scale, area-wide traffic interventions, even at a scale bigger than what this thesis is proposing.

West Village Slow Zone

The Neighborhood Slow Zone program, launched by DOT in 2011, is the closest precedent in NYC to an area-wide pedestrian policy at a neighborhood scale. A slow zone reduced the speed limit in the area from the usual 25 mph to 20 mph and added traffic calming treatments. DOT reported, for slow zones citywide, 14% reduction in injury crashes, and a 31% reduction in injuries caused by vehicles.

Public Realm & SoHo Broadway Vision Plan

SoHo Business Initiative submitted the *SoHo Broadway Public Realm Framework + Vision Plan* to Community Board 2 in 2021. The plan proposed a LTN, stating that this would unlock more public space. While the Community Board did not formally reject the plan, the meetings were concerned about the lack of community outreach, and engagement.

International Case Study

London

London is the principal case study for this thesis. It is the model this thesis is proposing for the study area of Houston Canal Corridor. LTN uses modal filters to reduce through traffic in the neighborhood, while preserving local access, deliveries, and emergency access (Transport for London, 2024). It doesn't require the complete pedestrianization of every street in the neighborhood, which in NYC would trigger the demapping process, instead it changes the access logic of the neighborhood. Through-traffic are forced to use exterior streets, while interior streets are kept locally accessible.

London's LTN is built on top of the city's long-standing congestion pricing, Central London Congestion Charge, introduced in 2003, which was adopted by New York in 2025. Transport for London (2024) reports traffic reductions of 56 to 61 percent on interior streets. London's cases provided strong evidence for this thesis that this kind of modal filtering can reduce interior traffic.

Tokyo

While Tokyo doesn't use the term Low Traffic Neighborhood, we can see many district planning with similar ideas. Historically *shōtengai* (商店街, "shopping street") are built in city center or next to train station, it's basically a form of LTN, but limit to commercial use, delivery vehicle only, its a model that predates LTN and proven works across the country. For the Houston-Canal Corridor, this model is especially relevant to Chinatown, where small-format retail, senior population are similar to Japanese towns.

Another Japanese case is the *Hokōsha tengoku* (歩行者天国, pedestrian paradise) launched in 1970 under Governor Ryokichi Minobe, Tokyo closes its equivalent of New York's Fifth Avenue to traffic on Sunday, Ginza's *Chūō-dōri* has continued this weekend pedestrianization for decades, showing that a recurring closure can be more than just a temporary event like New York's Open Street. Ginza's Vision 2040 plan now transforms this from a recurring closure to permanent closure, demonstrating another route for NYC policy. (All Ginza Association, 2024). This model is actually

the closest one we could implement in NYC, as the city's Open Street operates on a similar concept, and had recently legalized under Local Law 55 of 2021, which won't trigger a ULURP.

STUDY AREA: HOUSTON CANAL LTN

Why Houston Canal Corridor?

The corridor is the strongest candidate for a LTN implementation, the area is bounded by two of the main through-traffic streets in Manhattan, Houston Street and Canal Street. While other areas like Midtown have higher raw pedestrian count, it lacks the cultural and economical distinction of this corridor, which contains the SoHo cast-iron neighborhood, the Little Italy and Chinatown historic ethnic clusters. This area also has historically been burdened by through traffic, which is the key reason why a traffic modal filter is needed. With Houston and Canal Street continuing to serve as the main cross-town road carrying through-traffic, the rest of the interior street returned to the neighborhood, limiting interior street traffic to local and necessary traffic. This is also coincidentally the same area proposed by SBI's SoHo Broadway Public Realm Framework and Vision Plan (SoHo Broadway Initiative, 2021).

Quantitative Analysis

The site selection is supported by three data analyses: pedestrian volume, crash exposure, and subway access. Pedestrian volume shows where pedestrians are using the street in the city, crash exposure shows where the conflict of vehicle and pedestrians are, and subway access is to show where the city already has enough non-car options.

The analysis uses modeled pedestrian volume from NYCWalks, NYPD motor vehicle collision data, MTA subway station map, land use context from PLUTO and census geography (Sevtsuk et al. 2026, NYPD 2026, MTA 2024, NYC DCP 2025). Codex, a Large Language Model (LLM) released by OpenAI, was used to build tools as an alternative to GIS, as NYCWalks are a prediction model which are not processable by traditional GIS tools like QGIS or ArcGIS. The calculations in the analysis were not processed by LLM, but by GeoPandas, PySAL and scikit-learn.

Pedestrian Volume

The foundation of the pedestrian volume analysis is the NYCWalks dataset published by Sevtsuk and colleagues (2026). Until this dataset, the city had no dataset on pedestrian volume, other than the commuting trip surveyed by the American Community Survey, which didn't calculate any block-scale or neighborhood-scale pedestrian volume, and the NYC DOT biennial pedestrian count, which only counts roughly 100 locations citywide. The Sevtsuk team filled that gap by training six calibrated random forest regressors from weekdays to weekends, and three periods during the day: morning, midday, and evening, producing a model of 315,577 segments of pedestrian network.

To compare how the Houston Canal Corridor compares with other Manhattan neighborhoods, I aggregated NYCWalks pedestrian data with Neighborhood Tabulation Areas (NTA). The results show that the thesis study area, SoHo-Little Italy-Hudson Square, ranks third among Manhattan NTAs.

NTA	Name	Pedestrian intensity %
MNo502	Midtown-Times Square	96.0
MNo501	Midtown South-Flatiron-Union Square	93.5
MNo201	SoHo-Little Italy-Hudson Square	84.8

Table 1. Top three Manhattan NTAs by pedestrian intensity

Crash Exposure

To further expand on the pedestrian intensity, I look into the NYPD's motor vehicle collision data in the neighborhood. This thesis uses KSI count, killed or seriously injured, normalized by the pedestrian volume in previous analysis. This prevents the analysis from simply ranking the highest pedestrian volume neighborhoods, but exposes where pedestrians face the most harm in the city. The result supports the thesis claim that the study area is not only pedestrian intensive, but is in fatal threat by vehicle traffic.

NTA	Name	Crash exposure %
MNo502	Midtown-Times Square	83.8

NTA	Name	Crash exposure %
MNo201	SoHo-Little Italy-Hudson Square	77.4
MNo501	Midtown South-Flatiron-Union Square	76.1

Table 2. Top three Manhattan NTAs by crash exposure

Transit access

The third data analysis is the subway access, to prove that a traffic modal filter is feasible, we need to prove that the neighborhood already has sufficient transportation options. The study area is situated in one of the densely served areas in the city by the city's subway. The thesis uses a ridership-weighted subway access percentile, computed distance from MTA station locations for each census tract and the station's monthly ridership. The results show that the study area ranks third among all NTAs, proving the study area not only has cultural significance and pedestrian volume, it is also already served by strong subway access.

NTA	Name	Transit access %
MNo502	Midtown-Times Square	87.2
MNo501	Midtown South-Flatiron-Union Square	86.3
MNo201	SoHo-Little Italy-Hudson Square	82.8

Table 3. Top three Manhattan NTAs by subway access

CONCLUSION

This thesis set out to assess the feasibility of establishing a LTN in the Houston Canal Study Area. The result of the data analysis proves that the study area does have the pedestrian demand, the fatality of vehicle-pedestrian conflicts, the basis of a well-served transportation system. In addition to existing cultural significance and being one of the most important ethnic hubs in the city, it should be considered as a feasible pilot area for LTN implementation.

Limitation of This Study

While this thesis was able to finish a quantitative analysis of the study area using newly published data from NYCWalks (Sevtsuk et al., 2026), it retains a secondary dataset rather than an original

field count by the city. The data gap that had been identified over decades still hasn't fully closed. This thesis also did not include any community engagement which was a concern of the SBI's proposal at the Community Board meetings.

Policy Recommendation

To

DOT, Office of the Chief Public Realm Officer, Community Board

Summary

The Houston-Canal corridor is one of the highest pedestrian volumes in Manhattan by every measure by Sevtsuk et al. (2026). SoHo Broadway Initiative's 2021 Public Realm Vision Plan proposed a LTN plan, however got stalled at Community Board 2's hearing as insufficient.

This policy recommendation proposes a three level pathway: Weekly Open Street, Full LTN, and Public Market Corridor, derived from the international case study in my thesis.

Recommendation

This proposal recommended a three-level pathway to achieve LTN: a neighborhood scale weekly Open Street, then a Full LTN implementation, last is to build a Public Market Corridor. All three-phase is built from international case study, from Mexico City to London to Tokyo.

Weekly Open Streets

The first phase is drawn inspiration from Mexico City's Muévete en Bici and Ginza's Hokōsha tengoku, Pedestrian Paradise. Both cities closed one of the main streets in their city to vehicle traffic on the weekends, it provides open spaces in the city for its people, a space otherwise occupied by the cars. This is the easiest implementation and a way to see how the public responds to it, and could even do research on the traffic rerouting, business benefits, and emergency access.

This phase could start with one block in SoHo, then expand to one street in SoHo, later expand to the whole Houston Canal Corridor. This would later be the proof of concept that this could be further developed into the next phase as a full LTN.

Full LTN

The second phase is run a pilot after London's LTN model, which preserves local access. This would actually start to filter through traffic from local traffic, unlike the weekly open street, which basically just blocks all traffic for the weekends. This phase would require modal filters, like the one used for congestion pricing.

Public Market Corridor

The third phase is a full LTN implementation with public market integration. This model is inspired by Japanese shōtengai, in the Houston Canal Corridor, this will move beyond just traffic filters, or pedestrian policy but expand into a real “public realm”.



Image 1. Phase 3 simulation generated by ChatGPT

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