

Introduction & Community Context

- **Cycling, as a form of transportation, has been practiced in New York City since the late 19th century. Over the past half century, cycling has become increasingly more popular and in the last two decades the city has experienced somewhat of a “cycling renaissance”, characterized by infrastructure improvements, advocacy efforts, and an increasingly diverse and vibrant growing cyclist community.**
- **Recent data collected by the Department of Transportation (DOT) estimates that there are an average of over 580,000 cycling trips taken each day within the 5 boroughs. The DOT also approximates that 60,000 New Yorkers utilize bicycles to regularly commute to work.**

Introduction & Community Context

- **As of 2021, the city has installed and maintained at least 1,456 miles of bike lanes.**
- **As of 2021, of those 1,456 miles of bike lanes, 590 miles are considered protected bike lanes.**
- **The Vision Zero Initiative is a the DOT's headlining traffic safety program that commenced in 2014. The initiative advertised a goal of eliminating all traffic fatalities and severe injuries on NYC streets. Vision Zero claims to focus their extensive efforts on improving street design, enhancing traffic enforcement, raising public awareness, and facilitating legislative changes that lead to a safer transportation landscape for pedestrians, cyclists, and motorists.**
- **14 cyclists have been killed on New York City streets so far in 2023.**
- **If the current pace sustains, 2023 will be the deadliest year for cyclists in New York City since the Vision Zero initiative was launched.**

Introduction & Community Context

- **The first recognized bike lanes in New York City were built during the 70s and 80s under the Koch administration.**
- **Koch was especially supportive and attentive to the needs of the cycling community, even proposing projects involving early designs of protected bike lanes, after record breaking traffic deaths during his tenure as mayor. The projects were never executed.**
- **The first established protected bike lane design was initiated in 2007 on Ninth Avenue in Chelsea.**
- **The pilot lane on Ninth Avenue provided physical separation between cyclists and motor vehicle traffic using a buffer zone and parked cars.**

Introduction & Community Context

- **Since 2007, the city has rapidly expanded its network of protected bike lanes, with every project having their own unique design qualities.**
- **Protected bike lanes now exist in all 5 boroughs and the city has set aggressive goals to build 50 miles of protected bike lanes in 2023 and 250 additional miles in total by 2026.**
- **“Protected bike lanes make our streets safer by encouraging New Yorkers to get out of their cars and choose carbon-free modes of transit.”- DOT**
- **Over 1,456 miles of bike lanes. Over 590 miles of protected bike lanes. 14 cyclists dead.**
- **Time to Reevaluate.**

Origin of Research & Hypothesis

- **As a resident of Sunset Park, I experience (both as a cyclist and motorist) the dangerous and chaotic nature of the 4th Avenue protected bike lane.**
- **In my view many unprotected bike lanes in Brooklyn supplied a much safer and more orderly environment than the extensive 4th Ave protected lane. i.e 5th Avenue, Bedford Avenue, Ocean Avenue.**



Origin of Research & Hypothesis

This observational study originated with a two core questions.

- Why does the 4th Avenue protected bike lane feel so much more dangerous for cyclists than unprotected alternatives? Is this feeling based in reality?***
- Why are cyclists on New York City streets being killed at a record clip, 10 years on from the implementation of Vision Zero? Why are hundreds of miles of protected bike lanes failing to ensure the safety of cyclists?***

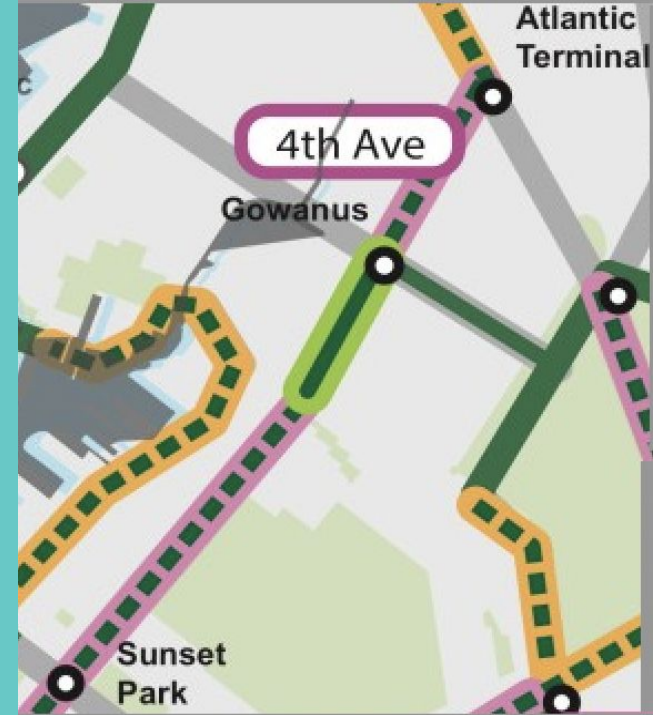
Origin of Research & Hypothesis

I began my observational study with a hypothesis that attempted to predict specific policy recommendations that my subsequent research would produce.

- I foresee recommending ,yield oriented, blinking right hand turn signals for all intersections where protected bike lanes are present. I also envision recommending a clear plan of protected bike lane enforcement that eliminates all motorist occupation of protected bike lanes.

Methods of Observation and Data Collection

- For my observational research, I focused on two separate and unique stretches of protected bike lane infrastructure in western Brooklyn
- A **2.5 mile** stretch from 4th Ave/36th Street to 4th Ave/Atlantic Ave and a **0.5 mile** stretch from 4th Ave/9th Street to Prospect Park West/9th Street
- For the purpose of the study, stretch one is referred to as **4th Ave protected lane** and stretch two is referred to as **9th Street protected lane**.



Methods of Observation and Data Collection

- **My observational research consisted of walking and driving parallel to the 3 miles of protected bike lane. I walked both stretches in each direction multiple times, attempting to capture traffic interactions at different times of the day.**
- **I spent a total of 26 hours collecting data as a pedestrian and countless more observing as a motorist throughout each of the two stretches.**

Methods of Observation and Data Collection

- **I recorded detailed notes during my observations and created various time-limited data sets, in an attempt to create a comprehensive understanding of how these protected lanes are functioning to create increased safety for cyclists.**
- **I collected measurements of the various components of the infrastructure and noted varying design qualities.**

Methods of Observation and Data Collection

- **My research also included field interviews with cyclists, motorists and uniformed city employees. The goal of my, mostly short and casual interviews, was to build an understanding of how all relevant parties interact with protected bike lane infrastructure and how they personally evaluate the efficacy of the DOT's protected bike lane designs.**
- **I feel it is important to note that for my observational analysis, I relied on my own previous experience, as well as the interviewees previous experience with various bike lane designs in New York City in order to perform comparative analysis.**
- **I collected data for this study over a 2.5 month period from February until April of 2023.**

Data Presentation

7 DSNY Vehicles (3 full size disposal trucks)
13 NYPD Vehicles (11 marked patrol vehicles)
4 On-Duty FF Medallions
1 FDNY Engine
3 Con-Edison Work Vehicles
12 Commercial Trucks and Vans
7 Private Vehicles (No tags or sleeve in the windshield)

OVER 70% of the blocks on the northbound side from 36th Street to Atlantic Avenue had at least one motor vehicle obstructing the bike path.

Data Presentation

“Protected lanes are just more parking spots for cars and free space for businesses.” Cyclist

“Going from 5th ave to 4th ave I'm sacrificing safety for speed, it's that simple” Cyclist

“There has to be more physical protections, I still feel like a sitting duck, protected lane or not.” Cyclist

“I gotta deliver this shit, where I'm supposed to be? You tell me?” Commercial Doritos Truck Driver













Data Presentation

- **Raw quantitative data and photographs highlight gross abuse of 4th ave protected bike lane; evidence points to limited abuse of 9th street protected bike lane.**
- **Interviews with cyclists indicated a clear preference and increased sense of security when travelling on 5th ave(unprotected) versus 4th ave.**
- **Observations and interviews highlight the dangerous nature of right-handed turns performed by motorists on 4th ave.**

Data Presentation

- **Interviews expose the largely dismissive attitudes of motorists and commercial workers, as it relates to the safety of cyclists travelling in protected bike lanes.**
- **Observations also highlight a culture of motor bikes and other micromobile vehicles, some surpassing speeds of 40 mph, utilizing the 4th ave bike lane. This occurrence was not nearly as common when observing the 9th street lane.**

Data Presentation

- **Observation of design features revealed clear size and structural differences between the 4th ave lane and 9th street lane. 4th ave, wider with buffer space and cyclist islands. 9th street, narrow with most blocks having no buffer space between cyclist lane and parked cars. Most blocks on 4th ave have extended buffer space at intersections, most blocks on 9th street do not.**
- **From the extensive data collected through first hand observations and testimonials, it is clear that the 4th ave lane presents a much more dangerous environment for cyclists, versus the 9th street lane.**

Analysis & Discussion

I worked to compile, sort and analyze all of the data collected over the 75 day period. Through my comprehensive analysis of the anecdotal data collected, I was able to identify several clear and consistent patterns of behavior that impact the efficacy of protected bike lanes.

Analysis & Discussion

- **Increased buffer and island area leads to more dangerous conditions for cyclists. Motorists will idle in spaces that they can easily access and in an environment of non-existent bike lane enforcement, “protected bike lanes” with buffer zones become environments where cyclists must weave in and out of traffic in order to travel. I call this the “subway surfer effect.” There is no realistic path to sufficient standards of safety for protected bike lane designs like 4th ave without a commitment to diligent and sustained enforcement.**

Analysis & Discussion

- **The dangerous nature of right-hand turns on 4th ave is a product of 1. The increased buffer space, leading to an expanded blind spot for motorists. 2. The presence of parked and idling vehicles in the buffer zones and island areas, leading to obstructed views of oncoming cyclists for turning motorists. My observations exposed an environment where motorists take blind right hand turns at high rates of speed and the responsibility is solely on the cyclist to recognize and adjust. This allocation of responsibility should be flipped, it should be on the motorist to be naturally cautious, recognize cyclists and adjust.**

Analysis & Discussion

- **Both segments of protected bike lane that I studied, do not employ physical infrastructure to guard cyclists. Green paint on concrete designating a lane for cyclists does not constitute “protection” for riders. Without concrete infrastructure and physical barriers that separate cyclists from flows of traffic, “protected” bike lanes like 4th ave and 9th street serve as additional space for parking, storage space for city agencies and loading zones for commercial use. “Protected” bike lanes, with no physical barriers, in an environment where traffic and parking regulations are not enforced, creates a uniquely dangerous ecosystem for cyclists. Bike lane obstruction leads to the “subway surfer effect”, increasing the likelihood of major injury or death for cyclists.**

Analysis & Discussion

- **I observed that due to its increased width and supplemental buffer zones, the 4th ave bike lane creates an environment where a high concentration of micromobile motorized vehicles travel and pass cyclists at speeds surpassing 40 mph. The 9th street lane's narrow design, due to lack of buffer zones, does not attract these micromobilists , who are looking to travel at high rates of speed and pass cyclists.**

Design Policy Recommendations

Even from the limited vantage point of this observational study, I feel confident in offering two concrete policy recommendations to the Department of Transportation and the City. At this point, the DOT's Vision Zero initiative does not have a functional Theory of Change, with plans to continue spending funds on inferior pieces of cycling infrastructure, through 2026. As the agency witnesses cyclist deaths set a record pace in 2023, it is time to take a step back and reevaluate how the city can truly keep riders safe and create an accessible cycling ecosystem for riders of all ages and experience levels. The department needs to prioritize outreach and dialogue with cyclists who experience and manage the dangers produced by dysfunctional designs. The design of bike lane infrastructure is clearly a matter of life and death. It is time that we see a commitment from the DOT to properly evaluate the efficacy of implemented designs, that reflects the dire nature of this policy issue.

Policy Recommendation 1

The Department of Transportation should mandate that all protected bike lanes in the city employ *Jersey Barriers*. *Jersey Barriers* should be added to all existing protected bike lanes and required for the any new protected lanes that are built. *Jersey Barriers* are cost effective and can be installed by a truck in seconds. *Jersey Barriers* physically separate riders from flows of traffic and make it impossible for motorists to utilize bike lane space for parking or idling. Cyclists in New York City need to be protected by real, physical infrastructure that prohibits motorists from occupying protected lanes and colliding with cyclists while in motion. I believe the implementation of *Jersey Barriers* for protected bike lanes will reduce the rates of severe injuries to cyclists. Without proper traffic enforcement, protected bike lanes without physical barriers, create a chaotic and deadly environment for cyclists. Supplementary to this recommendation, I believe that *Jersey Barriers* could easily be used to create space for specialty lanes that cater to other micromoblists and specifically delivery workers, who are travelling at speeds exceeding 20 MPH. These travelers deserve proper infrastructure that is separate from cyclists.





Policy Recommendation 2

If the DOT stubbornly remains reliant on soft infrastructure to protect riders, and the DOT and NYPD continue to ignore their responsibility to enforce traffic regulations, the department should prioritize eliminating buffer zones and super sidewalks from all protected bike lane designs. It is clear from my anecdotal comparison of the 4th ave and 9th street bike lanes, that supplemental space leads to a much more dangerous environment for cyclists. Trucks and cars will drive and park wherever they can fit. Eliminating buffer spaces and super sidewalks creates or more narrow lane for cyclists to travel through. A more narrow lane, like 9th street, prohibits vehicles from parking and idling in the bike lanes and also deters other micromobilists travelling at high speeds, as they are unable to pass cyclists. The elimination of buffer zones at intersections will also hopefully create a safer environment for right hand turns performed by motorists. Decreasing the distance between turning motorists and travelling cyclists, will work to decrease the severity of collisions.



Conclusions & Limitations

I believe the Department of Transportation's employment of poorly designed protected bike lanes have created a more dangerous environment for cyclists in New York City. The city has made it clear that the Vision Zero initiative is aimed at increasing metrics of safety, which in turn will make cycling more accessible for New Yorkers of all ages and skill levels. I believe this environment is only possible with the implementation of physical barriers of protection.

This observational study was anecdotal in nature and only produces a small snapshot of cycling in New York City. However, I believe it is important that the DOT collect data utilizing the methods I employed throughout this Spring. The department needs to overhaul the way they interact with cyclists and must tap into their experiences and valuable opinions. Cyclist participation is crucial as it relates to policy and design decisions for cycling infrastructure. The city should want hear what users have to say about their product. I am hopeful that specific and targeted changes to protected bike lane design, will have the potential to save hundreds of lives over the coming decades.

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