Patryk Strugacz

Bike Lanes and Traffic Flow in NYC

City College of New York

Professor Danielle Carr

ENGL 21007

Table of Contents:

Abstract……………………………………………………………………………………………3

Introduction………………………………………………………………………………………..3

Materials and Procedure…………………………………………………………………………..4

Discussion and Results……………………………………………………………………………5

Conclusion………………………………………………………………………………………...6

References…………………………………………………………………………………………7

**Abstract**

This experiment analyzes the value of bike lanes in NYC and if they reduce traffic or not. For a long time, bike lanes have been a controversial topic in NYC because they remove parking spots and are said to increase traffic. In order to find out, a team was sent out to drive down Columbus Avenue at a specific time each week and report on the time it took to go from 96th street to 77th street. These times would be averaged and compared to data prior to the installation of bike lanes. The results show that bike lanes actually reduce travel times. Prior to bike lanes, this distance of travel took an average of 4 minutes and 38 seconds, while it only took 3 minutes flat after bike lanes were installed. In addition, the team reported a similar vehicle volume, meaning the reduction of travel time was simply because of the bike lanes (Jaffe, 2014). This proved the hypothesis that bike lanes make traffic more efficient because there was a 35% reduction in travel time during rush hour on a very busy NYC avenue.

**Introduction**

Bike lanes are notorious in NYC because of American car culture. Unlike other European cities such as Amsterdam, a good portion of NYC relies on cars to travel, with 27% of residents commuting via car (NYCEDC, 2018). In NYC, the NYCDOT is an agency that it responsible for managing New York Cities transportation infrastructure. This means that they are also in charge of the construction of bike lanes (NYCDOT, 2020). The previous street design was 5 lanes, one 11’ parking lane, one 13’ parking/ am travel lane, and 3 12’ travel lanes. The new design still has 4 travel lanes, a parking lane and bike lane because the travel lanes have been reduced by 2 feet each.

Diagram

Description automatically generated

Figure 1, (Jaffe, 2014)

In order to understand how bike lanes can affect traffic, it is important to know how the

bike lanes have transformed the infrastructure of NYC streets. According to the DOT, the traffic became more efficient due to new turning lanes (NYCDOT, 2020). Turning lanes begin when the parking lane ends and cars can drive into the turning lane, out of the way of traffic as they wait for their green light to make a turn. These turning lanes are what cause traffic to move more efficiently since cars are no longer blocking the travel lane as they wait to make a turn. Despite having smaller travel lanes, this design is still more efficient for this reason.

**Materials**

* Any car
* Ability to drive
* Driver’s license
* Stopwatch
* A partner to use the stopwatch

**Procedure**

Prior to the installation of bike lanes, drive to the beginning of 96th street on Columbus Avenue during rush-hour (5pm on a Friday). Have your partner start the timer as you beginning to drive down 96th street. Continue to drive with usual caution through traffic, slowing down whenever necessary for optimal safety. Keep the timer running until you drive past 77th street and make it onto 76th. Record your time. Do two more trials once a week for the next two weeks. Make sure the days are similar in terms of the weather and avoid holidays because they can see large differences in traffic congestion. Finally, average your rush hour travel time and record the data. Once the bike lanes are fully constructed and traffic conditions are normal, return to Columbus Avenue and redo the same steps keeping all the variables constant except for the bike lanes (Friday at 5pm, make sure traffic and weather conditions are relatively the same). Once you have your data, compare the average commute times. In order to reconstruct this experiment, view city planning details to see other NYC avenues that will soon have bike lanes installed and find the average commute time prior to construction.

**Results**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Trial 1 | Trial 2 | Trial 3 | Average |
| Commute time before bike lanes (minutes) | 5.52 | 4.33 | 4.05 | 4.63 |
| Commute time after bike lanes (minutes) | 3.50 | 2.45 | 3.05 | 3.00 |

% change= x 100

% change= x100

% change= -34.78% decrease in commute time

The purpose of this experiment was to determine if bike lanes had a positive or negative impact on traffic flow in NYC. Through experimentation, it is shown that travel times have decreased by 35% since installing bike lanes on Columbus Avenue.

**Discussion**

The focus of this experiment was to determine if bike lanes increase or decrease traffic congestion at peak hours in the city. Traffic is something that everyone wants to avoid, so it was important to answer this question. After analyzing the data, it is clear that my hypothesis was correct. Bike lanes decreased travel time on Columbus Avenue, by 35%. There seemed to be an outlier in trial 1, prior to bike lanes, where it took 5.52 minutes for the car to travel from 96th to 77th street. This may have been due to an accident or some construction. However, the overall pattern is that traffic moves faster with bike lanes. To further support my argument, other researchers have found similar results on other Manhattan streets. On Eighth Avenue, bike lanes were installed in 2008 and 2009. After the changes, the DOT found a 14% decline in daytime travel times from 23rd to 34th street after the installation of bike lanes (Jaffe, 2014). This decrease was also seen throughout other times of the day: travel time decreased during midday (21%), and the evening rush (13%) (Jaffe, 2014). This depicts how Columbus avenue was not an isolated incident, and bike lane traffic reduction is a pattern that can be seen throughout the city.

One possible error of this lab is the fact that you can’t control the exact amount of traffic there is in a day. I did my best by limiting the experiment to Friday’s at 5o’clock with the same weather conditions and making sure it is not a holiday, but you can never guarantee the same number of cars each day. This difference in congestion could have slightly altered the commute time, but as an overall trend, it is clear that commutes with bike lanes are faster. Another error is that traffic accidents can’t be controlled. If there is a bad accident on a busy street, it could affect traffic congestion around the whole neighborhood.

This was a relatively simple experiment that anyone could perform as long as they have the time and patience to wait for a bike lane to be built on the street they experiment on. This experiment did not use any complex concepts and used simple math to calculate the percent change of commute time. However, this lab required consistence and punctuality to make sure I was on Columbus Avenue at 5pm every Friday.

**Conclusion**

The purpose of this experiment was to help us understand how traffic flow is affected by bike lanes. I hypothesized that bike lanes would decrease traffic for drivers since my research showed that the new street design that includes bike lanes is much more efficient and prevents cars from waiting on other vehicles to make left or right turns. Through this experiment, we collected data that showed bike lanes decreased travel time on Columbus Avenue, a very busy Manhattan street, by 35%. This is most likely a pattern seen on all other large avenues in the city such as Columbus Avenue. Therefore, it would make sense to build more bike lanes on busy avenues, as it would decrease commute times for both cyclists and drivers, which is good for all parties involved.

References

Jaffe, E. (2014, September 05). *When Adding Bike Lanes Actually Reduces Traffic Delays.* <https://www.bloomberg.com/news/articles/2014-09-05/when-adding-bike-lanes-actually-reduces-traffic-delays>

NYCEDC. (2018, April 5). *New Yorkers and Their Cars*. https://edc.nyc/article/new-yorkers-and-their-cars

NYCDOT. (2020). *About DOT*. <https://www1.nyc.gov/html/dot/html/about/about.shtml>

Reflection

My group and I struggled to think of a lab report. We discussed what sorts of topics and ideas we are interested in, but we couldn’t all agree on something. Finally, we decided to think about issues that we can all relate to. Since all of us are from NYC, we decided on public transport because that is a major issue in our city. At first, we wanted to do something with the MTA, but we could not think of an experiment that could be done regarding that topic. Finally, one of the group members suggested bike lanes. Luckily enough, many of our group members enjoy biking and would like more bike lanes, so we decided to analyze how bike lanes effect traffic conditions, since that is a common argument against bike lanes.

The audience of this lab report is the NYC department of transportation, more specifically, the commissioner, Polly Trottenberg. Trottenberg is a Barnard college graduate with a master’s degree in public administration and has over 25 years of career public service experience. At her job at the DOT, she is responsible for focusing on the mobility, safety, equity, sustainability and economic growth in NYC through NYC’s infrastructure. She has oversight of roads, bridges, bicycle lanes, pedestrian walkways, and the Staten Island Ferry. Trottenberg may not have time to read my entire lab so she will probably read the abstract first. If she finds that the issue of bike lanes and traffic are important, she may continue reading.

The purpose of this lab report is to convince Polly Trottenberg that more bike lanes in the city is a project that will increase the mobility of the city, while also increasing safety. By doing so, she will hopefully fund more bike lane building projects because it would help her achieve her jobs duty of making NYC infrastructure increasingly mobile and safe.

My stance on this lab report is that contrary to the popular belief that bike lanes cause more traffic, they have actually been seen to reduce traffic in areas with high congestion. Therefore, I believe that bike lanes should be constructed on more NYC streets because they are effective in the places where they have already been built.

The genre of this assignment is the lab report. This is a kind of manual for an experiment which is meant to persuade either your boss or anyone overseeing your projects, that your project is relevant and should receive funding and permission to continue. Lab reports are also used by your audience to judge your credibility as a researcher, making them very important to engineers at work. In addition, the lab report should have a clear procedure which can be able to be replicated by others.

The medium of this lab report is a digital writeup. It begins with an abstract which is supposed to inform the reader on what they will encounter when reading the lab report, and the results of the experiment, along with their implications. Next is the introduction, which gives the reader background information on any science or terms that they should know before moving forward. These sections are meant to persuade the reader to read on and look at your experiment and what your results meant. This will also allow the reader to decide if they feel you have done your research or not.

The exigence of this lab report was my groups shared distaste for NYC transportation and discovering ways in which it can be improved. I wanted to see if bike lanes really deserve all the hate that they get from people who rely on cars to get to work in the city. It was interesting to find out that bike lanes actually improve traffic congestion due to their turn in lanes, which stop the other lanes from having to slow down whenever someone tries to make a left or a right turn.

Through completing this assignment, I was able to achieve a couple of the course learning outcomes. I was able to clearly articulate a stance within my writing, showing that I support the construction of bike lanes in NYC without explicitly stating it. In addition, while writing my draft, I also engaged in writing a genre analysis and exploring other disciplinary contexts. I did so by looking at and grading lab reports that did not involve engineering. Finally, I also enhanced my strategies in drafting and revising because I did peer review with my group members and took into consideration the feedback that they provided me with.

### Audience Profile Sheet

|  |  |
| --- | --- |
| Reader's Name:  Polly Trottenberg |  |
|  | |
| Reader's Job Title:  NYCDOT Commissioner |  |
|  | |
| Kind of Reader: | Primary\_\_X\_\_\_\_ Secondary\_\_\_\_\_\_ |
|  | |
| Reader’s Level of Education: Barnard College graduate with an MPA from JFK school of government. |  |
|  | |
| Reader’s Professional Experience:  Current commissioner of the NYC Department of Transportation. She was also a board member of the Metropolitan Transportation Authority. Also served as a transportation policy advisor |  |
|  | |
| Reader’s Job Responsibilities: |  |
| Directs the NYCDOT’s mission, focusing on mobility, safety, equity, sustainability and economic growth in NYC through NYC’s infrastructure. She has oversight on roads, bridges, bicycle lanes, pedestrian walkways, and the Staten Island Ferry. | |
| Reader’s Personal Characteristics:  Determined to make NYC safe and for it to prosper and grow economically. |  |
|  | |
| Reader’s Cultural Background:  Trottenberg is very interested in helping the public sector. She has over 25 years of career public service. She also looks to be a woman of white or Latino origin. |  |
|  | |
| Reader’s Attitude Toward the Writer (you): None |  |
|  | |
| Reader’s Attitude Toward the Position you’re applying to: None |  |
|  | |
| Reader’s Expectations for an employee in that position: None |  |
|  | |
| Reader’s Expectations about the Résumé and Job Letter (as documents): None |  |
|  | |
| Reader’s Way of Reading the Document: | Skim it \_\_\_X\_\_ Study it \_\_\_\_\_  Read a portion of it \_Y\_\_ Which portion? Probably the abstract first in order to see if she would be interested in the document. She is a busy woman so she won’t read the entire document unless it is compelling.  Modify it and submit it to another reader\_\_Y\_\_  Trottenberg may send this document to a secretary if she is too busy to read the whole thing. |
|  | |
| Reader’s Reading Skill: Probably beyond college level |  |
|  | |
| Reader's Physical Environment: An office, on her commute or at home |  |
|  | |

Adapted from Markel (7th Ed.), p. 88