# MTA Public Safety Policy Reform Plan to Reduce Crime in Subway

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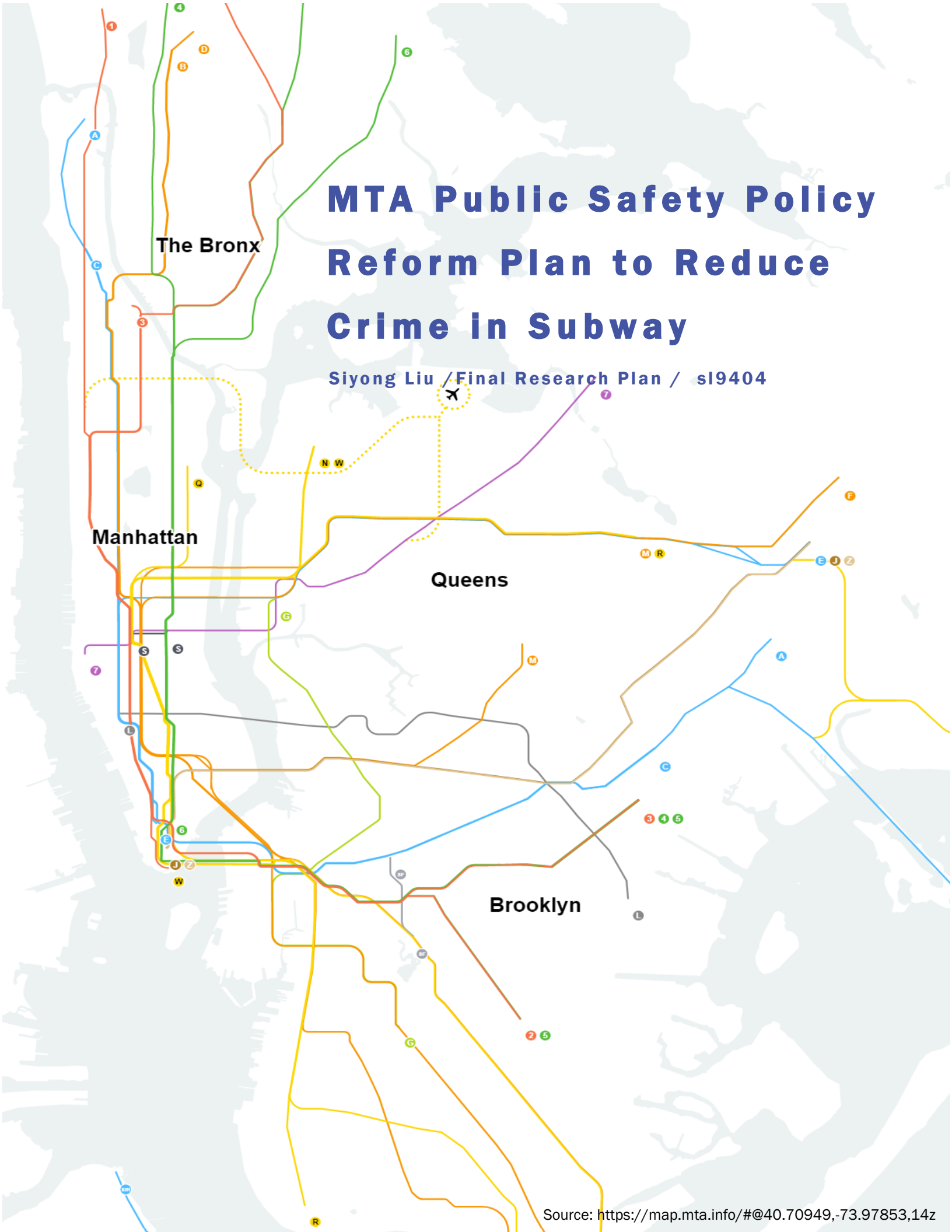


Source: https://map.mta.info/#@40.70949,-73.97853,14z

# BACKGROUND

## Organizational Structure

The current organization chart (Figure 1) is not available on the site [1]. The chart below is based on the people's bio from MTA's website and the 2018 MTA organizational chart. The people highlighted in yellow are directly associated with my proposed plan.

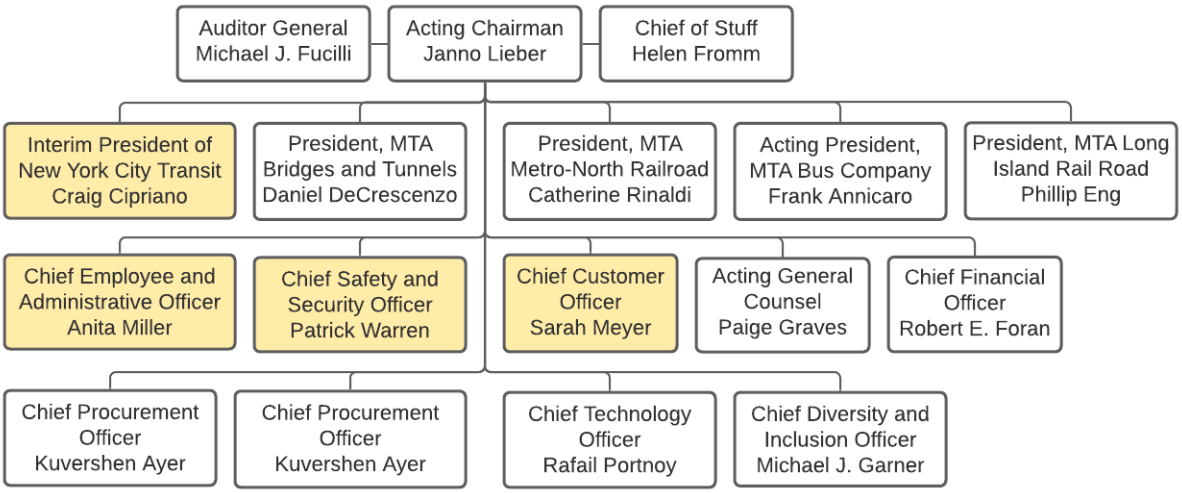


*Figure 1 MTA Organizational Structure*

- Patrick Warren:  Oversees the implementation of all-agency safety management policies.
- Craig Cipriano: manage the subway lines and system, and operations.
- Sarah Meyer: Charges with rebuilding and enhancing the customer experience
- Anita Miller: Oversees the strategic direction for labor and Work-Life Services.

## Funding and Budget

An overview of the MTA expense schedule for 2022 - 2025 is included in Figure 2. As we can see the total revenue is $5635 M, which is significantly lower than previous years. The decline in the total revenue was due to a pandemic. The labor expense is the largest expense in MTA, which is $10478 M until mid-year.  The non-labor expense is $3802 M. Resource from MTA Financial, and Budget Statement is shown below as per the MTA website [2].

# METROPOLITAN TRANSPORTATION AUTHORITY
## July Financial Plan 2022 - 2025
### Accrual Statement of Operations By Category
($ in millions)

| | Actual 2020 | Mid-Year Forecast 2021 | Preliminary Budget 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|
| **Non-Reimbursable** | | | | | | |
| **Operating Revenue** | | | | | | |
| Farebox Revenue | $2,623 | $2,826 | $4,859 | $5,398 | $5,483 | $5,478 |
| Toll Revenue | $1,640 | $2,140 | $2,257 | $2,268 | $2,274 | $2,295 |
| Other Revenue | $4,571 | $669 | $764 | $826 | $857 | $875 |
| Capital and Other Reimbursements | $0 | $0 | $0 | $0 | $0 | $0 |
| **Total Revenues** | **$8,835** | **$5,635** | **$7,881** | **$8,492** | **$8,614** | **$8,649** |
| **Operating Expenses** | | | | | | |
| **Labor** | | | | | | |
| Payroll | $5,306 | $5,363 | $5,604 | $5,709 | $5,855 | $5,997 |
| Overtime | $910 | $986 | $893 | $912 | $931 | $950 |
| Health and Welfare | $1,304 | $1,430 | $1,551 | $1,647 | $1,753 | $1,868 |
| OPEB Current Payments | $633 | $741 | $803 | $873 | $947 | $1,029 |
| Pension | $1,510 | $1,445 | $1,451 | $1,470 | $1,472 | $1,503 |
| Other Fringe Benefits | $790 | $938 | $980 | $1,019 | $1,053 | $1,090 |
| Reimbursable Overhead | ($380) | ($425) | ($425) | ($416) | ($422) | ($425) |
| **Total Labor Expenses** | **$10,072** | **$10,478** | **$10,857** | **$11,214** | **$11,591** | **$12,012** |
| **Non-Labor** | | | | | | |
| Electric Power | $385 | $424 | $471 | $484 | $497 | $510 |
| Fuel | $103 | $170 | $173 | $170 | $169 | $225 |
| Insurance | ($5) | $32 | $61 | $98 | $118 | $148 |
| Claims | $237 | $353 | $436 | $444 | $454 | $468 |
| Paratransit Service Contracts | $326 | $396 | $519 | $553 | $588 | $625 |
| Maintenance and Other Operating Contracts | $772 | $901 | $975 | $997 | $999 | $1,028 |
| Professional Services Contracts | $447 | $703 | $621 | $572 | $590 | $602 |
| Materials and Supplies | $543 | $644 | $733 | $717 | $724 | $740 |
| Other Business Expenses | $152 | $179 | $199 | $219 | $221 | $231 |
| **Total Non-Labor Expenses** | **$2,960** | **$3,802** | **$4,188** | **$4,255** | **$4,361** | **$4,578** |
| **Other Expense Adjustments** | | | | | | |
| Other Exp Adjustments | $80 | $37 | $26 | $28 | $23 | $24 |
| General Reserve | $335 | $170 | $180 | $190 | $195 | $200 |
| **Total Other Expense Adjustments** | **$415** | **$207** | **$206** | **$218** | **$218** | **$224** |
| **Total Expenses Before Non-Cash Liability Adjs.** | **$13,447** | **$14,487** | **$15,251** | **$15,687** | **$16,169** | **$16,814** |
| Depreciation | $3,010 | $3,126 | $3,142 | $3,207 | $3,255 | $3,304 |
| GASB 75 OPEB Expense Adjustment | $927 | $1,576 | $1,619 | $1,665 | $1,702 | $1,739 |
| GASB 68 Pension Expense Adjustment | ($65) | $7 | $51 | $75 | ($24) | $21 |
| Environmental Remediation | $122 | $6 | $6 | $6 | $6 | $6 |
| **Total Expenses After Non-Cash Liability Adjs.** | **$17,442** | **$19,203** | **$20,069** | **$20,640** | **$21,108** | **$21,884** |
| Conversion to Cash Basis: Non-Cash Liabilities | ($3,995) | ($4,716) | ($4,817) | ($4,953) | ($4,939) | ($5,071) |
| Debt Service Expenses | $2,703 | $2,843 | $3,065 | $3,514 | $3,560 | $3,614 |
| **Total Expenses with Debt Service** | **$16,151** | **$17,330** | **$18,317** | **$19,201** | **$19,729** | **$20,428** |
| Dedicated Taxes and State/Local Subsidies | $6,686 | $7,744 | $7,613 | $7,930 | $8,156 | $8,400 |
| **Net Surplus/(Deficit) After Subsidies and Debt Service** | **($629)** | **($3,952)** | **($2,823)** | **($2,779)** | **($2,960)** | **($3,379)** |
| Conversion to Cash Basis: GASB Account | $0 | $0 | $0 | $0 | $0 | $0 |
| Conversion to Cash Basis: All Other | $648 | ($862) | ($34) | $280 | $207 | $43 |
| **Cash Balance Before Prior Year Carryover** | **$18** | **($4,814)** | **($2,857)** | **($2,499)** | **($2,752)** | **($3,337)** |
| Below the Line Adjustments | $0 | $4,311 | $2,857 | $2,499 | $2,752 | $3,337 |
| Prior Year Carryover Balance | $485 | $503 | $0 | $0 | $0 | $0 |
| **Net Cash Balance** | **$503** | **$0** | **$0** | **$0** | **$0** | **$0** |

*Figure 2 MTA July Finance Plan*

Source: https://new.mta.info/transparency/financial-information/financial-and-budget-statements

# ASSESSMENT

## Culture Assessment

Based on my organization research, I identified MTA's and Transit system culture as old school, bureaucratic, and a culture of fear. The executive management is appointed or influenced by the government while the senior management follows their footstep and rarely go against their superiors. The labor force is union labor, which is also old; they have negotiated contracts to protect their jobs, responsibilities, and benefits. Some teams and departments within NYC Transit Authority are effective and determined to make a meaningful impact to help the public. However, it's hard for them to make a change as they are powerless to act independently.

## Race, Bias and Equity Assessment

In March 2021, a vicious beating on the New York City subway caused a 68-year-old man to bleed. Witnesses who came to help him described the attack as anti-Asian motivated. At the time of the attack, NYC struggled to cope with the increase in anti-Asian violence.

MTA updated its anti-hate public information campaign in response to the recent disturbing increase in attacks against Asians in New York City. In addition, MTA currently has a form that anyone who believes they have been discriminated against can file a Title VI complaint form. But all of them are so weak. The offender will not stop attacking because of the warm words on the billboard, and the victim will not be left unchanged because of a form.

## Data Issue

### *Collect*

MTA does collect data for crime; However, this data is not readily provided for civic purposes because of outdated design. All the data currently available do not accurately represent location and crime detail. For example, it is impossible to find out the crime location was in the station or subway car. Our proposal will reduce the barrier allowing MTA to collect a more detailed, robust, and accurate dataset.

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### *Use*

MTA should ban misuse of data. Take Predictive policing as an example. It uses computer systems to analyze large data sets, including historical crime data, to help decide where to deploy safety personnel or identify hot spots. However, if the dataset or algorithm has a bias, we should keep away from them. Like the ImageNet, which is regarded as a milestone of deep learning. It is recently proved to have serious racist tendencies.

## Security Assessment

### *Previous security implementation*

The Metropolitan Transportation Authority (MTA) revealed that all 472 subway stations had installed security cameras [3]. According to the existing data after deploying a part of cameras, a decline in major felonies was observed, felonies dropped to 20.6% in 2021 through August 31 and a 28.6% increase in arrests were made over the same time. As the responsible security department of NYCTA, NYPD boosts its unarmed volunteer forces in subways to help combat crime [4]. They have increased the number of auxiliary officers on high crime-rated stations.


*Picture 2 NYPD boosts its unarmed volunteer forces in subways to help combat crime [4]*

### "We need more eyes and ears" – *Interim President MTA, Sarah Feinberg*

To increase security, MTA recently launched a volunteer program, the program held 18 Mask Force events since July 2020. The participant in the program, included MTA leaders, local elected officials, staff members, and citizens. They distributed an estimated 800,000 free masks to riders [5]. Since its inception, more than 1,100 New Yorkers have volunteered for the Mask Force. The local community is interested in helping MTA to improve subway quality. There are also some existing platforms that provide security services such as RapidSOS; built the emergency response data platform to help first responders get their needed data in real-time. MTA publishes its crime data in a monthly security report [6]. However unfortunately location data is not accurate.

*Picture 3 MTA Mask Force Event [5]*

## *Current Situation*

The MTA currently does not record misdemeanor behavior instances. However, we can estimate that from the crime data. Recently, the number of crimes in various regions has increased, and the subway is no exception. Since January, there have been multiple attacks against Asians in the subway system.

The measures taken by the MTA are to display advertisements on the screen and to launch anti-discrimination forms on the official website. Even though the number of crimes has decreased because of the pandemic, the rate of crimes increased significantly.

**"We want to limit the perception of insecurity" – Chief Safety and Security Officer, Patrick Warren**

The MTA is already aware of this phenomenon and is thinking of increasing the enforcement which will control the environment and bring peace. However, increasing enforcement cost a lot of money and has limited effect. There is a slight chance if the enforcement drops back to normal to the initial rate, the crime can grow. Thus, long-term programs and technology can have a more significant impact in the long run.

# POLICY

## Proposed Policy Design

The plan is to hire citizens for patrols and surveillance, they will be the eyes and ears of MTA. The concept is like the auxiliary police force in NYPD, a community helping the community. It will reduce the misdemeanor rate in the subway. The whole plan includes two important steps, one is how to plan the employment and deployment of personnel which will include training, and the other is the establishment of a supporting security system. Combining both the resources together will help us provide short-term and long-term solutions. Deployment of personnel can rather be quicky thus have a controlling effect on crime rate while the technology is adopted and deployed. Another great advantage of this personnel is that people like to interact with people and are more comfortable. This will have a psychological effect on the commuters and will increase confidence in MTA overall. The reason why commuters or students are chosen is that compared to hiring employees, commuters have a rigid need to use the subway, which will enable the MTA to hire these employees in a low-cost manner while allowing the students who are interested in pursuing a career in law enforcement to get first-hand experience. To maximize the benefits of both parties, it is a win-win strategy.

## Body-worn Devices

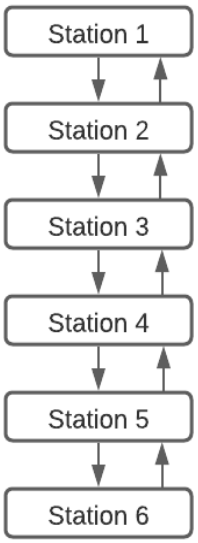
Body-worn cameras are small battery-powered digital video cameras that volunteers attach to their uniform shirts or winter jackets. The purpose of body-worn cameras is to record incidents, record data for encounters, facilitate review of events by supervisors, foster accountability, and encourage lawful and respectful interaction. The cameras may also provide potential evidence in real criminal and civil proceedings as well as resolve civilian complaints. Volunteers must manually activate the record function on the camera to begin recording and will only be allowed when on-site for help. The MTA will review the video each time volunteer records and classify it as archived, please note this would be a property of MTA.

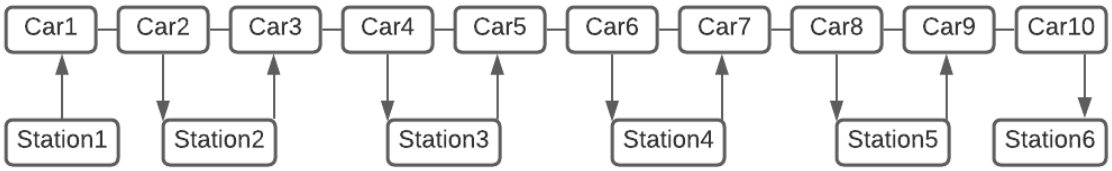

*Picture 4 California Mayor Urges Cops to Wear Body Cameras After Ferguson, https://bit.ly/3F8KhXl*

## Proposed Operation Design

The estimated number of volunteers needed is projected to be 40 every day. Every volunteer was assigned six stations on the same line. They will walk through 6 stations during each working day, around 40 subways cars. There are 472 subway stations in New York City; per this schedule, the volunteer will cover all stations for 1 hour each day.

A typical New York City Subway train consists of 8 to 11 cars, so I designed a patrol path. Between 2 stations, the volunteer will walk through 2 subway cars and use the next station to move the third car. Because in most subway lines, it is still dangerous to go through between subway cars when the subway car is running, so we must reduce the walk time between subway cars during train running. Each volunteer only needs a walkthrough 8-10 times each hour in this loop.




In addition to reducing the crime and safety of passengers, volunteers' safety is important during working hours. All volunteers will wear the uniform and carry the body-worn camera. According to my schedule, MTA needs to prepare 100 body-worn cameras, which is not a high cost. Even though volunteers are not law enforcement, their existence would increase customer perception and lead to MTA caring about passengers' security and comfortable commuting. The plan compensates for the last surveillance hole in the subway system.

MTA must put volunteers' safety in the first place. Volunteers' task is to persuade and de-escalate potentially volatile encounters rather than solve the problem. MTA should at least do the following training before working on the subway car to achieve it.

- *Persuasive skills*
- *Self-defense and community defense*
- *Policing laws and procedures, which would include training protocols, reporting*
- *Data collection, use, and protection*
- *Use of body-worn camera*

## Proposed Platform Design

Currently, the crime dataset does not have a minor crime category and a customized positioning system. So, it is impossible to understand the real-time situation in the car, which hinders the policymakers to make the correct decisions. In the future, this data collection methodology must improve to make effective decisions.

### *Database*

The first database improvement is adding a new column to identify the misdemeanor location. Currently, it is hard to identify the location based on latitude and longitude. So, our location of entry is based on subway lines and stations. For example, if a volunteer finds a potential crime, they will turn on the camera and the camera will automatically record the location because of its position. The volunteer will be designated to only one line, so the camera could get the subway line data from pre-recording. The station's information could be detected by a signal generator in each station, they will help the camera identify the train running between which two stations.

The second database improvement is designing a new category of a misdemeanor. They will use the following methods to classify:

- *Intercept the train, and forcibly get on and off the train when the alarm bell is ringing at the train door or platform door, and the door is closed after the door or platform door is closed.*
- *Operate buttons and switch devices with warning signs without authorization and use emergency or safety devices in a non-emergency state.*
- *Enter the driver's cab, track, tunnel, or other areas with warning signs without authorization*
- *Damage, move, cover safety signs, monitoring facilities, and safety protection equipment.*
- *Smoking inside the train and lighting an open flame.*
- *Pushing, frolicking.*
- *Scribbling, portraying, or posting or hanging articles privately.*
- *Bring animals (except guide dogs and military police dogs) into the station and ride in the station and bring articles with serious peculiar smell and pungent smell into the station and ride.*
- *Promoting products or engaging in marketing activities, begging, performing arts, singing, and dancing performances, making loud noises, noises, and using electronic devices to make loud noises.*
- *Riding balance bikes, electric bikes (excluding mopeds for the disabled), bicycles, using skateboards and roller skates.*
- *Spitting, defecation, spitting gum, littering wastes such as peels and confetti, lying down, or stepping on seats.*

Data collection and data diversification is critical step to making new policies and further research, this project will provide an opportunity for MTA to collect new data in subway car from this video.

## APP

To maximize the effectiveness of the policy, the app will allow the passenger to find the nearest volunteer if they find misdemeanor behavior. Currently, we can work with some existing system. For example, RapidSOS has made the backend of the application, which allowed the MTA to build a system to connect to volunteers, 911, and passengers. Most of the time, the police officer will not arrive at the subway car because the misdemeanor is too small for enforcement. But volunteers can take these tasks and would be beneficial as they are likely in the same line with reports and can react faster. More important, such a task has a lower risk than crime.

# EVALUATION

The predicted impact on the budget is limited in the initial phase when deploying volunteers, while the technology implementation will have a huge upfront cost which will offset over the years. So, to evaluate the correct cost of the whole project we would have to review union labor agreements and how much would personnel cost while looking at the cost for the technology and its implementation.

The effectiveness of policy depends on reducing the crime rate, so we should also evaluate the side effects, Crime Prevention Through Environmental Design (CPTED) is a type of side effect [7]. It shows the crime rate could be reduced by just seeing the volunteer.

There are two major legal issues in this plan. Every volunteer will have a camera that will be recording other commuters. The policy issue includes allowing an informal employee to register and how people would feel for random recording. The second legal issue is over-enforcement. On August 30, passenger Guo (female) was asked by another passenger to lower her voice when she made a louder call. Then they have a minor physical conflict. During the period, the subway security guard Chen stopped the conflict and asked them to get off the train, but Guo refused. After the subway arrived at the Station, security guard Chen forcibly pulled Guo to get off the train, causing part of Guo's body to be exposed, negatively impacting the subway corporation [8]. Although the passenger did misdemeanor behavior in the subway car, the volunteer should always be aware that they are not law-enforcement. In our program, body cameras can also surveillance volunteer behavior to reduce over-enforcement.

## Looking Ahead

First, the beauty of this policy is that it helps MTA get in touch with the passenger, which protects them from small crimes and helps them understand what happens in the car. And this policy will allow creating a program for customers' safety while not significantly affecting the budget.

Secondly, according to the research, increasing police enforcement is still the best way to reduce the crime rate. No matter how many camera installations, they could not use them to prevent the crime, but a volunteer can be there to stop the crime or prevent the situation from spreading.

# REFERENCES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