

Improving Public Engagement in Vision Zero

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**TRANSPORTATION
ALTERNATIVES**

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Executive Summary

New York City streets have long been unsafe for bicyclists and pedestrians. In 2014, New York kicked off its Vision Zero Initiative to first halve the amount of fatalities from collisions by 2025, then eventually eliminate fatalities altogether. It is part of the bigger international Vision Zero effort which started in Sweden. Several city agencies are primarily working towards this:

1. **City Hall**
2. Department of Transportation (**DOT**)
3. Department of Citywide Administrative Services (**DCAS**)
4. Department of Education (**DOE**)
5. Department of Health and Mental Hygiene (**DOHMH**)
6. New York Police Department (**NYPD**)
7. Taxi and Limousine Commission (**TLC**)

Since 2014, each of these agencies has worked on numerous projects which tackle the issue from different angles. Some of these projects approach the issue by utilizing new innovations. The agencies have used new technologies to collect and analyze data regarding traffic safety across the city to determine where exactly to install infrastructural improvements. They are also improving public access to this data. They have even installed devices on city vehicles to make them less likely to collide with their surroundings.

However, many of these projects approach the problem by directly engaging people. Drivers employed by the city are being taught how to drive safely. Public school students are being taught how to be more vigilant when biking and crossing streets. Ad campaigns are being launched to convince motorists to drive safely. Public meetings and events are being held in various neighborhoods to engage more of the public in the Vision Zero planning process. Websites have also been created to obtain input from people who could not attend meetings.

Successfully engaging the public is absolutely critical to the success of Vision Zero. There is much more the city needs to do to better engage the public. The best way to do this is to study what other cities have done to successfully engage their residents. Many cities have practiced successful engagement, but New York can especially learn from these six cities:

1. **Chicago, IL:** Established a traffic safety school for offending low-income drivers as an alternative to paying fines as part of their Vision Zero plan.
2. **Los Angeles, CA:** Empowered their local community organizations to lead Vision Zero engagement efforts.
3. **Brisbane, Australia:** Successfully utilized cutting-edge technologies like virtual reality to engage their residents on planning projects.
4. **Oshawa, ON:** Made their planning website very accessible to residents by enabling anyone who is hard-of-seeing and hearing to read the site, and by making data easy to find.
5. **Vancouver, BC:** Conducted unique engagement programs which closely connected residents to planners and empowered residents to design their own neighborhoods.
6. **Washington, DC:** Successfully involved their youth in the planning process by getting teachers to send their students to engagement events for class credit.

In addition to learning from these cities, New York must measure participants' engagement levels to ensure that participants are heavily and continuously engaged. The city can collect and analyze data on its participants at the conclusions of programs. This can be

especially accomplished by having participants and program leaders fill out special worksheets designed to quantitatively measure engagement levels.

Finally, each of the seven New York City agencies participating in Vision Zero must take further steps to improve their engagement efforts.

City Hall must:

1. Create digital versions of public meetings and measure participants' levels of engagement.
2. Utilize cutting-edge technologies at the meetings by entering public-private partnerships.
3. Further increase accessibility of all Vision Zero websites.
4. Enable local nonprofits to lead engagement events.

DCAS must:

1. Create a separate web page displaying DCAS CRASH data.
2. Use cutting-edge technologies in DCAS Defensive Driver courses.

DOE must:

1. Work with DOT and other agencies to expand the school curriculum programs.
2. Expand the Vision Zero Youth Council's size and scope.
3. Work with DOT and other agencies to seek more youth feedback about Vision Zero outside the classroom.

DOHMH must:

1. Work with the DOE and CitiBike to establish biking classes in public schools.

DOT must:

1. Host public design competitions for small-scale projects.
2. Create a program where volunteers construct temporary street improvements.
3. Hold events similar to "walkshops".

NYPD must:

1. Establish a driving safety education program to give poor offenders an alternative to paying fines.

TLC must:

1. Use cutting-edge technologies in TLC licensing courses.
2. Hold a research conference about traffic safety issues with autonomous cars.

1. Vision Zero Overview

1A. Where Are We Now?

The New York Vision Zero Initiative is a citywide effort to reduce deaths from traffic violence on city streets. One of its primary goals is to cut the amount of deaths from such violence in half by 2025. It is part of the bigger international Vision Zero effort which originated in Sweden. There are many New York government agencies involved with this effort: the Department of Transportation (DOT), Department of Citywide Administrative Services (DCAS), Department of Education (DOE), Department of Health and Mental Hygiene (DOHMH), the New York Police Department (NYPD) and the Taxi and Limousine Commission (TLC). A host of local nonprofit organizations also help with the effort.¹⁹

Public Transit Driver Training

In order to further fulfill the goals of Vision Zero, MTA, TLC and DCAS are giving special training to their drivers to strengthen their driving skills. Some of the training sessions feature Families for Safe Streets members talking to participants about the deaths of their loved ones from traffic violence. The MTA, TLC and DCAS also implemented new rules to prevent their drivers from working while excessively fatigued and from driving while using any type of phone.¹⁹

New Laws

Various new laws have been passed which are designed to further carry out the missions of Vision Zero. Ex-Governor David Paterson signed the Child Passenger Protection Act in 2009, making New York the first state to mandate ignition interlock devices for all people who have been convicted of drunk driving. Also, Cooper's Law was passed in 2014 by New York Council which gives TLC the power to revoke the license of any TLC motorist who seriously injures or kills a pedestrian or cyclist.¹⁹

Engineering Accomplishments

DOT is in the process of engineering New York's streets so they are safer for pedestrians and cyclists. They have implemented 105 out of their 242 planned safety engineering projects as of 2016, which is double the pace from before the start of Vision Zero. 18.5 miles of new protected bike lanes were installed in 2016, which broke records. 776 leading pedestrian intervals (LPIs) were installed in 2016, bringing the total to 1248, 5 times more than the amount which existed before Vision Zero. They also launched the Left Turn Traffic Calming pilot at 107 locations across the city. This reduced median left turn speeds by 24%. They have also added new streetlights at approximately 1,000 crosswalks across the city to improve the visibility of pedestrians crossing them.¹⁹

Data Collection and Actions

In addition to approaching Vision Zero through legal means, the city has also used technological means. DOT and NYPD collaborated to analyze crash trend data in 2016, and they found the early onset of darkness on fall and winter days is when most crashes happen. 60% of all traffic summonses NYPD issued in 2016 were for Vision Zero violations. This involved summonses for speeding, failing to yield to pedestrians in crosswalks, using cellphones

and other similar offenses. In response, the Vision Zero Task Force increased the amount of NYPD officers and TLC inspectors deployed during those times, and they placed them in locations which data showed had the highest rates of pedestrian injuries. The officers focused on punishing drivers who committed Vision Zero violations and other dangerous behaviors.¹⁹

Innovations

City agencies have been utilizing technological innovations to accomplish Vision Zero's goals. Each agency has used new technologies to collect more data about incidents of traffic violence, and they are even using safety innovations to make their vehicles sensitive to their surroundings. Many agencies have only conducted one innovation program. DOT has partnered with the data science nonprofit DataKind to conduct the Creating Safer Streets through Data Science program, in which injury/fatality data models were created to help DOT staff understand how improvements like pedestrian plazas and bike lanes affect traffic injuries and fatalities. DOHMH has conducted their Data Linkage Project, in which DOHMH staff have been matching hospital records with police crash reports to identify patterns of injuries associated with collision characteristics. For example, staff found how incidents of traffic violence have disproportionately affected children and older adults. MTA has initiated their Collision Avoidance Sensor Technology Implementation Project, in which they have installed sensors on buses which warn drivers of nearby cyclists, pedestrians and other vehicles. TLC has initiated their Vehicle Safety Technology Pilot program, in which they encourage companies which produce technologies like electronic data recorders, driver alert systems, driver-facing cameras, etc. to test their technologies in TLC-licensed cars for one year. Crashes per vehicle have slightly decreased for all vehicles participating in this.¹⁹

However, some agencies have conducted two programs. DCAS has initiated their Truck Sideguards Installation program, in which they are installing sideguard attachments on the fronts of their trucks, which prevent cyclists and pedestrians from being seriously injured or killed by trucks. As of 2016, 550 of their trucks have had sideguards installed on them. They are also conducting their CANceiver program, in which they are installing CANceiver devices in each DCAS car which capture information about drivers' speeds, their hard braking and hard acceleration habits. NYPD has conducted their Data-Driven Approach to Crime and Traffic Safety (DDACTS) campaign, in which they have upgraded and automated their crash reporting process. This allows NYPD staff to better analyze traffic data. They also have initiated their FORMS program which allows NYPD staff to better collect and analyze crash data. For example, FORMS allows officers to complete crash reports on desktops, tablets and phones.¹⁹

Public Engagement - Technology

In addition to engaging the public through communicating with them in-person, the city has also used technological methods to accomplish this. However, these programs are few in number, with many agencies having conducted little to no programs. DCAS has created CRASH, New York's first system which tracks the sites of collisions throughout the city. All CRASH data is publicly accessible through the Mayor's Management Report to ensure city agencies will be held accountable for their performance. Since this was implemented in 2015, fatalities involving city vehicles have declined 80%, injuries have declined 24% and preventable collisions declined 2%. DOHMH has created Epi Data Briefs, short publications posted on the

DOHMH website which compile and highlight data findings from different Vision Zero programs. These briefs cover topics like evaluating cycling among New York adults and high school students from 2007-14 and detail important statistics like pedestrian and driver fatalities based on death certificate data. TLC has created Vision Zero Base Reports, Public reports which display data about each TLC-regulated car service, such as the fleet safety information for each service. NYPD has created TrafficStat 2.0 which presents collision data updated weekly in a public user-friendly map format. Users can make maps of collisions and compare current statistics to data from previous years. Allows for the identification of locations which have had disproportionate amounts of collisions. NYPD and DOT have teamed up to create the Vision Zero Public Input Map. On this online map, residents submit recommendations and point out which streets and intersections need the most improvement. Over 10,000 recommendations were submitted in 2016.¹⁹

Public Engagement - In-Person

Each city agency has also been practicing public engagement by communicating with New Yorkers through in-person programs. Some agencies have not used many in-person engagement programs. City Hall has only conducted public meetings in neighborhoods across the city to gauge residents' opinions of the Vision Zero plans. DCAS only has held its GO Awards, an award ceremony recognizing the best city employee drivers. The only program NYPD has done on its own is their Operation Safe Passage enforcement initiative in which officers tell motorists about their responsibilities and obligations to share roads with bicyclists.¹⁹

TLC has conducted two programs. Their Safety Honor Roll recognizes the best TLC-licensed drivers. Many have been repeat honorees. They tend to have much driving experience, as they have had TLC licenses for 13 years on average. Their Taxi Driver Outreach program involved TLC staff working in 2016 with fleet managers and industry organizations to get out the safe driving message to TLC-licensed drivers. They distributed more than 20,000 small cards to TLC drivers at the city's airports. They also promoted the message on TLC social media, radio shows popular with drivers and through text messages. TLC staff also currently teach drivers working towards their TLC license about safe driving as part of this program.¹⁹

There are some agencies who have held many engagement programs, such as DOT. Firstly, DOT has worked with local nonprofits to establish a Vision Zero Youth Council, a council made up of students from 5 high schools and 1 middle school. The students primarily advocate for safer streets and hold events to get other students more involved in the process.²⁶ Secondly, DOT has conducted its Bell & Light Giveaways program, where each year, DOT distributes free bicycle lights and bells at engagement events throughout the city. More than 3,200 lights and 5,500 bells were distributed in 2016. Thirdly, DOT has conducted its Bicycle Helmet Giveaways program, in which staff provide free bike helmets and helmet fittings to children and adults. Many of these adults include bike delivery workers. These are usually distributed at engagement events. DOT distributed over 180,000 helmets in 2016. Fourthly, DOT has initiated its Bicycle Maps, in which it distributes free updated bicycle network maps through bicycle shops and community events each year. DOT distributed 4.5 million maps through the end of 2016. Fifthly, DOT has conducted its Bike Smart program, in which it distributed a free pocket guide on the rules of the road, how to use bicycle facilities, and tips for safe riding. To promote equity and accessibility, they are published in seven languages. Sixthly, DOT has initiated its

Truck's Eye View program, in which the agency works with its freight industry partners to teach cyclists and pedestrians about truck blind spots at community events across the city. Seventhly, DOT has conducted its Citi Bike Street Skills program, in which the agency works with Citi Bike to teach New Yorkers how to use Citi Bike and ride safely and comfortably on city streets. Eighthly, DOT has initiated its Heads Up Safety advertising program which reminds cyclists and pedestrians to obey the rules of the road. The ads were posted at high traffic locations, including bus shelters and newsstands. Ninthly, DOT has conducted its "LOOK!" Safety advertising campaign which reminds drivers to be aware of cyclists. Tenthly, DOT has initiated its "Don't Be a Jerk" advertising campaign which reminds bicyclists of how to safely ride on the streets.¹⁸

DOHMH has held a few different programs. Firstly, they have held their Weekend Walks, events which involve closing commercial streets throughout the city to promote the use of them as car-free spaces. In addition to having food from local restaurants, live music and fun activities, bicycles are distributed to children and adults, and they are taught how to safely use them. 5,217 people attended these events in 2015. Secondly, they have conducted their Prescribe-a-Bike Program, in which more than 40 patients received free annual Citi Bike memberships and helmets after being allowed by their doctors. Thirdly, they have initiated their Citi Bike to School Program, in which eight high school students completed an all-day bike safety class and received an annual free Citi Bike membership at the end. They will also serve as Citi Bike Champions to recruit more students to this program in 2017. Fourthly, they have held their Just One More Drink Can Hurt ad campaign which reminds New Yorkers about the dangers and illegality of driving while intoxicated. Fifthly, they have held their Research on the Road conference in 2016 which was attended by over 40 researchers from NYU, Columbia, CUNY, UConn and the University of Chicago. They discussed how to best evaluate the success of Vision Zero through research and data analysis. They will reconvene in 2017.¹⁹

Some agencies have teamed up to conduct engagement programs. Firstly, DOE and DOT teamed up to run their Cross This Way and Behind the Wheel curriculum programs for city students in grades K-12. Cross This Way teaches students of all ages how to cross roads safely, and Behind The Wheel teaches high school students how to drive properly so they do not hit pedestrians or cyclists. NYPD and DOT teamed up to conduct their Day of Awareness program in which street teams engage drivers and other people at various locations across the city, teaching them how to drive safely. They also conduct their Street Teams program, in which teams were deployed to 25 areas with high concentrations of senior citizens located along major truck routes. The teams reminded motorists to slow down and yield to pedestrians, and they alerted them about increased enforcement of those rules. Teams were additionally sent to sporting events and concerts to test attendees' blood-alcohol levels, and to encourage them to leave their cars at home before going out drinking. The Vision Zero Task Force, an inter-agency body also conducted two ad campaigns. Their Dusk and Darkness advertisement campaign used car radio ads, television ads, digital ads and billboards to warn pedestrians to be more careful when walking city streets, especially at dusk. This was created in response to the findings which show most crashes happen the early onset of darkness. Their Your Choices Matter ad campaign also used car radio ads, television ads, digital ads and billboards, but to encourage safe driving behavior, especially during the times it was found traffic violence most commonly occurs. This decreased traffic fatalities by 30%, made 75% of New Yorkers expect more enforcement, and convinced 82% of them to drive carefully and yield to pedestrians.¹⁹

1B. Where Do We Need To Be?

Finish All Initiatives

Statistics show the first three years of Vision Zero has been the safest time for pedestrians in New York history, so the program is clearly working. However, New Yorkers are still dying in crashes every 38 hours, showing how much work still needs to be done. One of the most significant objectives which still needs to be accomplished is all projects related to Vision Zero must be completed. Some initiatives are still in progress as of July 2017.

<u>Table 1.1 Vision Zero Initiatives Still In Progress as of July 2017</u>		
<u>Year One Initiatives</u>		
<u>ID#</u>	<u>Agencies</u>	<u>Name/Description</u>
1.26	DOT	Enhance street lighting at 1,000 intersections
1.27	DOT	Enhance maintenance of street markings
1.29	DOT	Implement additional street reconstruction safety projects
<u>Year Two Initiatives</u>		
<u>ID#</u>	<u>Agencies</u>	<u>Name/Description</u>
2.7	DOT	Implement Vision Zero Great Streets
2.13	DOT	Release motorcyclist crash study and list of proposed action items to aid in preventing future crashes
2.14	DOT	Conduct study on severe injury and fatal bicyclist crashes and list of proposed action items to aid in preventing future crashes
2.15	DOT	Install 75 Accessible Pedestrian Signals (APS) per year and develop additional accessibility measures
2.17	DOT	Continue to reform off-hours programs for commercial deliveries to reduce conflicts with pedestrians
2.18	1. DOT 2. NYPD 3. MTA	Partner with NYPD and MTA to develop and complete a study on large vehicles and use truck and large vehicle crash data to identify truck enforcement priority areas
2.23	NYPD	Implement and test a new model of enforcement which increases enforcement in areas both with high traffic fatalities/injuries and crime rates

<u>ID#</u>	<u>Agencies</u>	<u>Name/Description</u>
2.25	NYPD	Pilot a program to allow civilian members of the NYPD to work in the Intoxicated Driver Testing Unit
2.27	1. DOT 2. NYPD	Increase large vehicle and truck education and enforcement amongst precinct police and focus on truck safety education for drivers, pedestrians, and cyclists
2.29	TLC	Advocate for a change in the New York State seat belt law to remove the exemptions for taxis and liveries
<u>Year Three Initiatives</u>		
<u>ID#</u>	<u>Agencies</u>	<u>Name/Description</u>
3.10	NYPD	Explore the expansion of the criteria for Collision Investigation Squad (CIS) involvement
3.11	TLC	Explore developing a system of incentives to increase safe driving behavior
3.12	TLC	Evaluate the effectiveness of current enforcement programs
3.15	DOHMH	Analyze and disseminate data on traffic-related injuries and driving behaviors
3.18	City Hall	Pass legislation in Albany to expand speed camera hours and streets to target locations where crashes most often occur
3.19	DA	Organize legislative support to increase penalties for drivers who flee crashes
3.20	DA	Revise Public Health Law Section 3306 to include any impairing substances
3.21	DA	Improve DWI search warrant processing
3.22	DA	Support the purchase and operation of a Mobile Impaired Driver Testing site
<u>Year Four Initiatives</u>		
<u>ID#</u>	<u>Agencies</u>	<u>Name/Description</u>
4.1	DOT	Make high-visibility crosswalks the standard crosswalk citywide
4.2	DOT	Accelerate the replacement cycle for street markings
4.3	DOT	Install left-turn traffic calming upgrades to at least 100 additional intersections

<u>ID#</u>	<u>Agencies</u>	<u>Name/Description</u>
4.4	DOT	Make upgrades to at least 20 key cycling intersections within the bike network
4.5	DOT	Commence lighting upgrades at 1,000 intersections
4.6	DOT	Continue to pilot raised crosswalks
4.7	DOT	Install first neighborhood traffic circle pilots
4.8	DOT	Evaluate use of new sensors and data analytics systems for traffic safety purposes
4.9	NYPD	Apply precision policing principles to maximize efficiencies in deployment
4.10	NYPD	Continue to conduct safe cycle initiatives in the effort to reduce bicyclist fatalities
4.11	NYPD	Ensure school crossing guards at every post with the addition of 100 new crossing guard supervisors and a mobile replacement squad
4.12	NYPD	Add 120 new speed guns to local precincts, increasing speed enforcement capability by 50%
4.13	DCAS	Continue vehicular safety optimizations through Safe Fleet Transition Plan
4.14	DCAS	Partner with DOE/DOT to incorporate Vision Zero safety training into high school curriculum
4.15	DCAS	Implement Phase-2 of truck side-guard installation
4.16	DCAS	Pilot real-time speed and safety tracking
4.17	DCAS	Enhance and expand defensive driving training
4.18	TLC	Expand public outreach, official vehicle markings, and enforcement to reduce the prevalence of illegal vans
4.19	TLC	Expand public outreach, official vehicle markings, and enforcement to reduce the prevalence of illegal vans
4.20	TLC	Hold focus groups with TLC Safety Honor Roll members to determine effective safety messaging

<u>ID#</u>	<u>Agencies</u>	<u>Name/Description</u>
4.21	TLC	Promote discussion and research on the traffic safety issues related to automated vehicles
4.22	DOHMH	Disseminate findings from data set linking collision and hospitalization data
4.23	DOHMH	Convene external research partners to promote cross-disciplinary data sharing and collaboration
4.25	DA	Resolve legal challenges to Administrative Code 19-190
4.26	DA	Ensure precise and efficient ignition interlock monitoring in New York

Source: New York City Mayor's Office of Operations. "Vision Zero Year Three Report". *New York City Mayor's Office of Operations*. 2017. <<https://www1.nyc.gov/assets/visionzero/downloads/pdf/vision-zero-year-3-report.pdf>>.

Pass More Legislation

There have been some proposed laws which have not been passed as of June 2017. For example, in 2016, New York supported legislation to make criminal penalties for drivers who flee the scenes of crashes the same as for those who drive while intoxicated. Even though the state government has passed a bill relating to this issue, it did not provide any real solutions. As a result, City Council is still working to pass such a law. Also, District Attorneys supported legislation in 2016 to increase the criminal penalties for drivers who drive under the influence of recreational drugs. As of June 2017, such legislation has not been passed. In order to further achieve the goals of Vision Zero, such laws must be passed.¹⁹

Continue Engaging the Public

Engaging the public is important because Vision Zero cannot truly be successful with their cooperation and support. As important as public engagement is, it is much less useful if it is done in a way which does not truly inform the public about any plan. The city must make sure to engage the public in high quality ways, through technology, in-person or otherwise, so each resident feels they are included in the planning process.

As important as it is to finish all Vision Zero initiatives, it is crucial for the city to prioritize engaging the public throughout the Vision Zero planning process. A major effort the city is focusing on is completing all Vision Zero initiatives. As productive as this is, it is not enough for each city agency spearheading the Vision Zero effort to just focus on completing them. By doing this, city officials are not getting a clear enough picture of how well the public is engaged in the process. Without understanding how well the public is engaged throughout the process, the city risks not carrying out the Vision Zero Initiative effectively.

2. Public Engagement

2A. What is Engagement?

Methods

Public engagement is a crucial part of the planning process because it is important to understand how any project will affect the residents being impacted by it. By communicating with residents directly to understand what they think of any project, it will be easier for planners to understand how their proposals will impact the public. There are various methods which officials have used to engage the public during projects:

<u>Table 2.1 Public Engagement Methods</u>	
<u>Name</u>	<u>Description</u>
Advisory Boards	Groups of stakeholders who provide guidance on a project. Can consist of random citizens, much like a jury. Their outcome on the process is mixed.
Charrettes	A charrette is a period of intense design activity. These can be sessions where stakeholders draw pictures, maps, etc. to understand a project which has already been created by professionals. There are also other types of charrettes in which participants design brand new projects from scratch.
Collaborative Performance Measurement	Brings together managers of services with their users to evaluate performance of those services. For example, the Straphangers Campaign in New York brings subway riders and MTA managers together to evaluate the quality of MTA service. Riders first rate the quality of service on each line, MTA officials then record and analyze the riders' responses.
Focus Groups	Very similar to but not same as advisory boards. These can also involve randomly selected participants, but their purpose is to provide viewpoints on issues to help planners gain a better perspective on them.
Geographic Analysis of Public Comments	Planners track where comments are made on an online map by residents. This helps planners identify which locations are most in need of improvements. NYPD and other NYC agencies have done this for Vision Zero.
Interactive Optimization Tools	The public uses technologies to simulate what life would be like if a proposal is implemented. When tried in real life, participants have often been overwhelmed by the amount of choices. However, some found it helpful.
Interest Groups	Reaching out to groups who have stakes in an issue to learn their opinions.

<u>Name</u>	<u>Description</u>
Participatory Action Research	Regular citizens do the data gathering and analysis themselves while being led by a professional. This is a rare form of public engagement because it involves putting a lot of work into the hands of the participants.
Polling	Contacting people at random to see what they think of a planning issue.
Structured Public Involvement (SPI)	The public is involved at every stage of the planning process, from identification of the issue to generation of solutions. Typically, professionals complete these tasks on their own and then ask the public for feedback. SPI means the public is involved at each and every step.

Source: Quick, Kathryn S. and Zhirong Jerry Zhao. "Suggested Design and Management Techniques for Enhancing Public Engagement in Transportation Policymaking". *Humphrey School of Public Affairs, University of Minnesota*. 2011. <<http://www.cts.umn.edu/Publications/ResearchReports/pdfdownload.pl?id=1616>>.

Benefits of Public Engagement

There are numerous benefits of public engagement. Firstly, through various activities such as planning charrettes, participants can directly touch, sense, and feel what a project could look like in real life. This can especially help them grasp how a proposal can impact their lives, making such methods of engagement very beneficial to the public. Secondly, decision-making power gets redistributed from technocratic planners to the public. Planners do not necessarily know what daily life is like for the residents they are helping. If residents do not affect planning outcomes, planners may fail to help the residents. Therefore, redistribution of decision-making power to residents is very helpful since they can help prevent such failure.²²

Challenges of Public Engagement

There are numerous challenges to having good public engagement. Firstly, issues and choices need to be clearly communicated to the public so they understand them. To do this, planners can hire staffers with special communications expertise to help with the process.

Secondly, it needs to be clearly communicated what can and cannot be decided by the public. Participants are often unaware of the severe budget constraints transportation agencies deal with, affecting their suggestions and expectations. Also, laws mandating transportation performance standards cannot be negotiated, which residents may not know.^{4, 22}

Thirdly, the process must be equitable. Wealthier residents are more likely to participate in public engagement activities compared to poorer ones because wealthier residents often have the time, money and access to technology to be able to participate more compared to poorer residents. To remedy this, planners can hold engagement events in community facilities regularly frequented by underrepresented residents, such as churches in predominantly Hispanic American and African American communities.

Fourthly, transportation planners must take special care to not assume all members of a certain stakeholder group will hold the same opinions. Each person has a unique life story, which makes them see the world in their own unique way. Therefore, planners should not focus too much on groups' collective opinions, as they may not provide completely accurate pictures of what people think of a proposal.

Fifthly, public input must matter. The public can feel their involvement and input does not influence the decision making process, so they question the worth of coming to the table. This happens because managers and participants come with different expectations of the meeting outcome. Sixthly, engagement must start early in the process. Public involvement in the process needs to start early in the process, not late. If they get involved too late, it will be hard to implement their feedback.

Finally, planners must remember to not rely too heavily on using technology to engage the public because it can confuse them. Since some people are more technologically literate than others, relying too much on technology will benefit them more than less technologically literate people.²²

2B. What is Quality Engagement?

Principles of Authentic Engagement

There are numerous principles to authentic engagement. Firstly, all engagement events should be accessible. The main goal is to get input from an accurate demographic representation of the population being targeted. Events should be held at convenient times at notable locations, like churches. Events should not inconvenience residents. For example, attendees should be compensated. An event can be held electronically, such as through mass-video chats. However, this can be impractical in rural towns because they may have slower internet. Translation services for non-English speakers and the hard-of-hearing should be provided. Key stakeholders and community leaders should be invited and participate. Events should be well advertised, such as through TV and radio ads, digital ads on social media, mass mailings, mass text messages, and other means. Advertisements should be appropriate for their target audiences. For example, if a neighborhood with high amounts of Spanish speakers is targeted, the ads could be written in Spanish.²⁷

Secondly, all interactions should be engaging. The main goal of any event is to best convey information to attendees and receive quality feedback from them. Events should be fun, educational and can involve team games. Event environments must encourage discussion, not silence dissenting ideas. Leaders must prove how they will incorporate attendees' feedback. Event leaders must avoid using technical language and other words not widely understood by the public when talking to attendees. It must be easy for attendees to provide feedback. Everyone present, leader or attendee, should treat each other with respect.²⁷

Thirdly, feedback must meaningfully impact the decision-making process. The main goal is to show participants that this is the case. However, not every opinion needs to be implemented. Feedback from the public should be sought early in the process, not later after decisions are finalized. Public engagement staff must be given adequate funding and resources so they can afford to implement as much feedback as possible. Agencies must understand engagement is not just a checkbox on a list of steps to complete. It is a very important part of the process.²⁷

2C. Case Studies of Quality Public Engagement

Just like New York, Chicago and Los Angeles are practicing public engagement with their Vision Zero programs. However, Chicago and Los Angeles are approaching engagement a little differently than New York. As a result, New York can learn numerous lessons from those cities.

Chicago

For their Vision Zero Plan, Chicago decided to approach the issue of safe streets by making action plans for individual neighborhoods. City planners identified the neighborhoods with the most occurrences of traffic violence, which they termed High Crash Areas (HCAs). They did this to concentrate limited resources in areas with the most need of them. They accomplished this by collecting and analyzing citywide data about collisions. In order to engage Chicagoans in their Vision Zero planning process, the city created task forces in each HCA who coordinated efforts to get the word out about their engagement plans. They held Corridors for Safe Routes Ambassadors events, in which special staff educated Chicagoans of all ages about safe mobility. Children and seniors were especially targeted, since it was found they have been affected most by traffic violence there. Since 2011, 100,175 people have attended these events.⁷

Chicago also created Traffic Safety Schools: When punishing poor drivers for Vision Zero infractions, police officers have been giving them the option to take these mandatory 4-hour classes run by the National Safety Council. This is equitable for three reasons. Firstly, it eliminates the financial burden of costly fines because it is free. However, they are charged \$46 and face further penalties if they skip the course. Secondly, the course is offered in English, Spanish and Polish. Thirdly, the course can also be taken online.^{7, 10} They created a High Visibility Traffic Missions program, in which the Chicago Police Department has deployed officers in locations data has shown to be in need of more enforcement. At them, they are looking out for drivers who are committing Vision Zero offenses, such as failing to yield to pedestrians. CPD has also publicized this through ad campaigns to warn drivers. This program has reduced incidences of dangerous driving behaviors in the city. CPD will also have access to improved data to further determine where officers should be deployed. They created a Crosswalk Missions program, in which a plainclothes officer gets deployed to a crosswalk, with police in-uniform parked down the street. The plainclothes officer repeatedly crosses the street until a passing car fails to stop for the officer. When this happens, the plainclothes officer notifies their parked colleagues, who then pull over the driver. From 2010-2015, CPD conducted an average of 76 of these programs per year. All of these engagement programs were evaluated the engagement programs based on their outcomes and benefits to residents of the HCAs. The evaluations were made publicly available.⁷

Los Angeles

In order to better engage the public for their Vision Zero Plan, Los Angeles has pursued numerous programs. They created Active Streets LA, in which the city government has enabled numerous local community organizations to work with residents to design improvements for streets most in need of them. Many of these improvements have been constructed by the city,

to the delight of the residents who use them. They also created the Great Streets Challenge, in which \$200,000 is provided to community organizations so they can hold community street festival engagement events. In addition to containing food and merchandise stands from local businesses, live music, games and other draws, they contain activities which encourage residents and planners to think about how to best redesign streets. They also created Safe Routes to School, a program in which the California state government awarded funding to the Los Angeles Department of Transportation to install improvements to streets with schools. This especially stimulated interaction between planners, teachers, parents and others.¹⁶

Figure 2.1 Los Angeles Great Streets Festival Planning Activity



Source: "SORO NC". Twitter. 2017. <<https://twitter.com/SORONC/status/871891632282632192>>.

There are also other examples of cities who have been practicing quality engagement with non-Vision Zero plans they have created. New York can learn many different lessons from those cities when considering how to best improve its own engagement practices.

Auckland

In Auckland, New Zealand, Transportation planners are in the process of creating a new bus network for the city's central suburbs. In order to obtain feedback from the public about this project, they created a website in 2015 using a special software called EngagementHQ created by the company Bang the Table. Visitors to the site are only given four tools to provide feedback: an interactive map, surveys, a Q&A tool and a discussion forum. The site makers did this because they believed offering too many tools would confuse visitors. The interactive map is especially notable because it allowed users to put a pin on a map of Auckland corresponding to the locations their comments applied to. These are not easy to find among cities' engagement

efforts, but they serve as a great tool for engagement. The Q&A tool is also notable because it increases the transparency and accessibility of the process by letting residents directly communicate with planners. They also clearly outlined how long it takes for them to respond to comments. This controls participants' expectations of the process. Over 50% of visitors participated in the site throughout the process.²

Brisbane

Planners in Brisbane, Australia have held events in which participants viewed still images, watched fly-through videos and used virtual reality technology to view plans for a new residential development. Participants simulated flying in a helicopter above the plans and walking along its streets. After these events, it was found residents often walked away feeling they thoroughly learned about how the development would impact their lives. As a result, they were better suited to provide valuable feedback. When attendees were asked whether or not this technology affected their views of the project, 90% said it convinced them to support the proposal. Event leaders also distributed viewing goggles and instructions for examining the plans on any smartphone or computer to the rest of the community. This made the engagement more equitable by allowing people who did not attend who own at least a computer to view the plans. Despite virtual reality's usefulness, it is still very costly. Because of this, planners in other cities still face challenges in using it for engagement events.⁹

Figure 2.2 Brisbane Virtual Reality Flythrough Screenshot



Source: Connors, Nathan. "Using Virtual Reality To Engage On Development Projects". *Bang The Table*. 2017. <http://www.bangthetable.com/blog/using-virtual-reality-engage-development-projects/>.

Canberra

In 2015, planners in Canberra, Australia created a website using EngagementHQ which involves surveys, online forums and emailing feedback to facilitate public engagement on development plans for the Canberra region. The public can post feedback for each project primarily through surveys, interactive maps and filming videos of themselves speaking. An

important feature of the website is pre-made maps and drawings of plans are posted on the site, and instructions are given for how to provide feedback through surveys and emailing staff. The site is also used in tandem with in-person forums. Throughout the website, planners made sure to explain how exactly public feedback would be implemented.¹²

Christchurch

In March 2017, planners in the southern English town of Christchurch have been working on improving open space near the town's coast to spur economic development. In order to engage the public, they focused on using technologies by creating a website using EngagementHQ. The website allows users to: answer surveys, use interactive maps, write comments about coast-related projects and write their own personal stories about their relationships to the coast. In the website's first 3 weeks, it received hundreds of comments, survey votes and stories.²⁵

Gatineau

Transportation planners created an easily editable online map of Gatineau, QC's bicycle network which asked cyclists to drop points on it where they felt improvements should be made. Just two days after it was launched, over 800 contributions were posted. As of May 2017, over 1300 contributions have been made, giving planners valuable feedback on how to improve the bicycle network there. To spread the word about the map, transportation planners reached out to local cycling organizations so they could notify their members. Planners also set up stands along the busiest bike routes to tell cyclists about the website and to give donuts to them.¹³

Grand Rapids

Since 2009, planners in Grand Rapids, MI worked to engage the public when devising their Green Grand Rapids plan. When planners worked on the city's bike lanes, they held multiple meetings with the city's biking groups to create diagrams of how their ideal bike-friendly streets would look like. They created a steering committee composed of participants from diverse backgrounds who will be most affected by the plans. The city also held fun and interactive design charrettes with them. They maintained clear communication channels between session participants and leaders. Participants were frequently and clearly told of the bureaucratic steps city agencies would need to take to implement participants' ideas. At the end of the process, it was found all city agencies affiliated with the project became very friendly with constituents. For example, the traffic safety engineering department used to be very unresponsive to cyclists' concerns, but after this process, they have become more responsive.²²

New Orleans

In 2010, artist Candy Chang got everyday residents thinking about how to best make use of underutilized space in New Orleans, LA with her "I Wish This Was..." project. She was especially inspired to do this after attending in-person public hearings on planning issues, where she felt the loudest, most extroverted attendees drowned out the voices of the quieter, more introverted participants. Chang left tables, "I Wish This Was..." stickers and markers at a number of underused sites throughout the city, which passersby used to express their wishes on how those sites should really be. The sites mostly consisted of abandoned buildings and

vacant lots, but passersby got creative and stuck the stickers on adjacent worn-out infrastructure, like badly paved roads and broken bicycle racks. It also inspired her to eventually help develop Neighborland, a computer application which allows urban planners to more easily collaborate with the public on projects.⁵

New York

An anonymous radical grassroots group called the Department of Transformation in New York City has taken it upon themselves to install improvements on New York streets. They have done this in locations in desperate need of renovation which have often been neglected by the city. For example, they have placed traffic cones along the edges of bike lanes to alert planners about those lanes being in need of better permanent protection from adjacent cars. Through doing this, the group has engaged passersby by challenging them to think twice about how public space is being used and arranged. The Department of Transformation has succeeded in inspiring the formation of similar groups in cities like Dallas and Miami. This planning method can also be beneficial since it puts planning power back into the hands of the people. However, vandalizing public property and preventing the flow of traffic is against the law without prior permission from city officials.²³

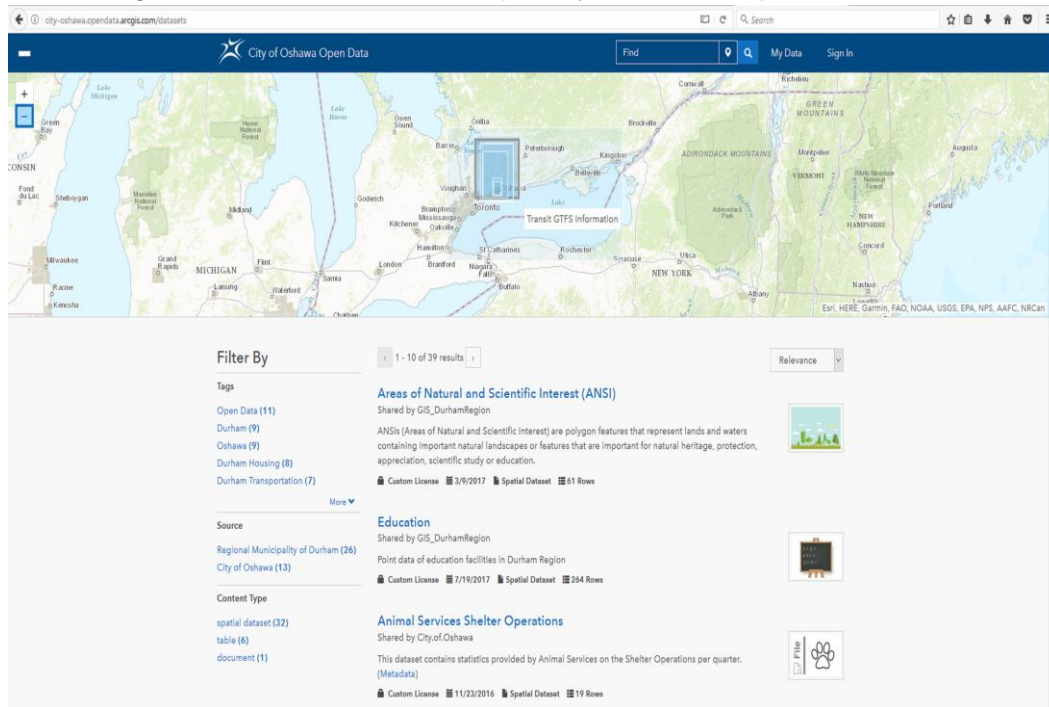
Local Spokes, a coalition of New York City nonprofits on the Lower East Side, worked with the League of American Bicyclists to study how to best get the Lower East Side's youth to bicycle more. They first organized a Youth Ambassadors Program, which involves Lower East Side high school students meeting up over the summer to bike and to discuss how to advocate for bikers. They then created and distributed surveys to 7 Youth Ambassadors to learn about their demographic backgrounds, their bike riding habits and how adults have treated them during decision-making sessions. After analyzing the results from the process, they issued recommendations for people who want to carry out future projects. Surveys should be made more accessible to more youth, such as by distributing them on social media. Advocacy meetings should be held during times when students are not in school. During advocacy meetings and other similar events, adults must treat teenagers with respect and not condescension. More than one youth should attend each meeting, so if a meeting consists of only one youth and many adults, the youth will not have to feel they are speaking for their peers.⁶

Oshawa

Planning officials in Oshawa, ON, a town just east of Toronto, launched an accessible and mobile-friendly website using EngagementHQ in the fall of 2015 called Connect Oshawa. The site enables residents to give feedback on over 20 projects within the city, such as the extension of a highway through town. The site contains many different feedback tools such as: discussion forums, Q&A forums, interactive maps, surveys and videos. For example, not only does the site consist of pre-made videos explaining projects to residents, but residents can also film themselves explaining their comments on projects. City officials also partnered with ESRI to create a spatially-illustrated open data portal on the site. In order to make the process equitable, there are many accessibility features built into the site. The text can be increased in size and read aloud. The website is also used in tandem with traditional in-person events to fully take advantage of both methods. In April 2017, the Oshawa government won a Hermes Creative

Award for the site, an award which honors professionals who create and design websites.¹¹

Figure 2.3 Connect Oshawa Spatially Illustrated Open Data Portal



Source: City of Oshawa Open Data. 2015. <<http://city-oshawa.opendata.arcgis.com/datasets>>.

Perth

Planners in an inner-ring suburb of Perth, Australia launched a website using EngagementHQ called Your Thoughts which contains information about all projects within the town, and allows for residents to provide feedback about them. The website was born out of community outrage when officials implemented downtown improvement projects which failed because the planners did not seek much public input. They created the website to avoid future similar mistakes. The website has done a good job in reaching residents who would not normally attend in-person events due to time constraints. It has been found one of the biggest benefits of the website so far is it has increased government transparency, thereby repairing the relationship between residents and town officials after the failed downtown projects.¹⁴

Philadelphia

Transportation planners in Philadelphia, PA have made public engagement a crucial part of the implementation of their citywide Indego bike sharing program. They engaged the public in many ways throughout the process. Firstly, they made students Youth Bike Share Ambassadors (YBSAs) who had responsibilities such as helping run events in lower-income neighborhoods to spread the message about Indego and helping build and repair the bikes. Secondly, they obtained feedback from the YBSAs themselves to improve the program. Thirdly, they partnered with schools in poor districts to run bike safety classes in them. Fourthly, they established a separate program for people aged 18-26 which involves AmeriCorps volunteers constructing new bike facilities throughout the city. Finally, they engaged both youths and adults with citywide family bike rides to further spread the message about Indego.³

Reykjavik

In 2009, an extremely successful website called Better Reykjavik in Reykjavik, Iceland was created to establish new ways of promoting public participation in solving planning problems. Conditions in the country were already conducive to establishing such a website because 95% of Icelanders use internet very frequently. Also, after the economic collapse of 2008, Icelanders were yearning for new ways to communicate with their government. This website provided such an opportunity. The site is unique for multiple reasons. Firstly, it allows citizens to not only petition changes to their communities, but to discuss amongst each other how to best carry out those changes. Secondly it was founded by a grassroots nonprofit as opposed to the government, and it is still managed by the nonprofit. Finally, it was accepted throughout Reykjavik extremely fast. Right after the site was established, much of the city's citizens and public officials used it, and as a result it became an accepted way for citizens to interact with their leaders.¹⁵

Sydney

In March 2016, planners created a website using the software EngagementHQ called Sydney Your Say in Sydney, Australia to allow residents to provide feedback on planning projects. The website notably consists of document libraries for each project which contain important information about them. The site also consists of quick and easy to complete surveys and other useful engagement tools. This is one of the most visited websites in the world created using EngagementHQ. The planners partially accomplished this through posting on social media and sending out press releases to spread the word about the site.⁸

Vancouver

Vancouver, BC has employed many successful and simple public engagement practices throughout many of its planning projects. They have held online events, usually on Twitter and other similar social media websites. They involved people tweeting or commenting questions about projects, with officials on the other end giving answers. This made it easier for people who could not attend in-person events. They created online consultation platforms in which citizens sign up once, provide background information about themselves, and then receive invitations to provide feedback on planning issues, both online and in-person. This allows for larger amounts of people to provide feedback on planning issues, especially without having to leave their homes. They created cellphone apps and mobile-friendly webpages which provide local government planning services. Planners especially use this to advertise engagement events. The apps and web pages make it easier to spread information about public engagement events to anyone with a cellphone. They have held in-person events in locations convenient to the community, such as schools and senior centers. They have especially done this in districts with poor public transit access so residents do not have to travel far to meetings. They have made in-person events fun and interactive, and geared them towards families. Their events have festival-like environments. Officials did this by offering food, music, movies, kid's activities and prizes. They have held in-person interactive community asset mapping sessions, where participants identified locations which matter the most to their neighborhoods and needed the most improvements.²⁴

Figure 2.4 Vancouver Sewer Cover Design Competition



Source: Hager, Mike. "Best manhole cover designs announced by City of Vancouver". *Vancouver Sun*. 2013. <<http://www.vancouversun.com/Best+manhole+cover+designs+announced+City+Vancouver/8468475/story.html>>.

Out of all of Vancouver's efforts, there are two which are the most unique compared to other cities. Firstly, Vancouver has held "walkshops", which are foot and bike tours planners and residents took together of neighborhoods. Residents showed planners and other officials where new infrastructural improvements can be implemented, such as new bike lanes, new crosswalk infrastructure, etc. This allowed for the collective and collaborative education about neighborhood planning issues, strengthening relationships between planners and residents. Secondly, they have held public art and design competitions for small-scale public planning projects, such as designs for sewer covers and viaduct roadway portals. This empowers the public to take charge of the designing of their neighborhoods.²⁴

Washington DC

In 2015, the Washington, DC District Department of Transportation (DDOT) asked residents for feedback about their 2040 transportation plan for the city. Since the last time they created a plan 20 years before, the city's population has grown tremendously, especially its African American and Hispanic populations. DDOT transportation planners took numerous steps to ensure they skillfully engaged the public. Firstly, they located \$2.2 million for the engagement process. Secondly, they aimed to get feedback from a true cross section of DC by targeting not just native residents, but residents of surrounding areas who work in downtown. Thirdly, they advertised through: social media, television, newspapers, mass-mailed postcards and posters in bus shelters and subway stations. Finally, they held successful interactive activities, such as games which involved participants designing their own dream streets and managing the use of

DDOT's budget for the plan. All in-person activities also had online versions for people who could not attend them. Those were also very successful because they gave planners much information about what people wanted. DDOT also made sure to make the engagement process equitable by reaching out to DC residents of all backgrounds. When schoolteachers heard about it, they made their students attend for class credit.²²

Figure 2.5 Washington DC Students Mapping their Daily Commutes



Source: Smart Growth America. "A Capitol Idea for Public Engagement". *Smart Growth America*. 2015.
<<https://smartgrowthamerica.org/a-capitol-idea-for-public-engagement/>>.

Comparisons

There are numerous common qualities among all public engagement programs those cities used. Firstly, all of these cities heavily utilized technological methods to engage the public. The cities often created websites, especially using the EngagementHQ software to utilize digital surveys, interactive maps and other related applications to gather input from the public on planning projects. One major benefit of this is it has enabled more people to take part in the process than before. This is because the technology removes the need for them to take the time out of their busy lives to attend in-person meetings, where their opinions may be drowned out by louder people. A lot of cities have been successful with using technology to engage the public, especially when they were able to effectively spread the word about their programs.

Secondly, even though many cities heavily utilized new technologies, many cities also focused on improving in-person engagement methods. For example, New Orleans utilized participatory public art to gather opinions about what should be done with some public spaces. Also, Vancouver made sure to make their in-person events fun and interactive by turning them into festivals with food, live music, and other fun activities.²⁴ By doing this, cities like New Orleans and Vancouver have successfully attracted people to their public engagement events by persuading them to attend, not forcing them to.

Thirdly, many of the cities made sure to make their engagement process as equitable as possible, especially through utilizing technology. With in-person events, people must take a pre-determined amount of time out of their busy schedules and go to a location which could potentially be inconvenient to them. As a result, in-person events can shut some people out of the process and makes input not come from a true representative of the population. This is unlike websites, where people can provide feedback from any location at any time which is convenient for them. This can make the portion of the population which provides feedback to be more truly representative of the population at large. There were some cities who took the process even further. For example, Oshawa, ON made their website accessible to people who are hard-of-seeing and hard-of-hearing.¹¹ This shows how many of the cities successfully utilized technology to make their engagement processes more equitable.

Some cities also took measures to make sure their in-person events were as equitable as possible. For example, Washington D.C. made their engagement events accessible to school children by advertising their events to schoolteachers, who would then make their students go for class credit.²² This let students give their say on planning issues without forcing them to miss school. This is in agreement with the findings of Local Spokes in New York, who recommended holding events which inconvenience students as little as possible.⁶ Also, Chicago took a unique spin on this with its Traffic Safety Schools, in which punished drivers who cannot pay fines have the option to instead attend mandatory classes in which they are taught how to drive more safely.¹⁰ Not only does this take the financial burden off of lower-income drivers, it can potentially engage them heavily enough so they can avoid future infractions.

All of this shows how cities have been utilizing technology to improve their engagement processes, especially by making them more equitable. Using digital tools like websites clearly has various advantages over traditional in-person events, and as a result they can increase the amount and diversity of people who provide feedback on projects. Increasing the role of technology in the process is the direction public engagement is headed. In order to best improve the process, however, ways of measuring how well the public is engaged need to be devised.

Lessons for New York

New York has already accomplished some of the same public engagement goals these cities have, such as with technological engagement. For example, New York has already created a Vision Zero Input Map in which New Yorkers mark the locations of street problems and then elaborate on them through comments. Commenters can also interact with each other on the site, where they can agree or disagree with each other. The city has also created Vision Zero View, a map which lets users view the locations of crashes and how many street safety improvements have been made throughout the city. The site also allows users to learn how many improvements have been made throughout the city over time, which proves to them how much work the city has been doing since the start of Vision Zero.

In addition to creating these maps, the city has also taken steps to make their data as publicly available and easy to find as possible by posting the raw data on DOT's website. This shows how the city has taken steps to publish crash and streetscape improvement data in a user-friendly format, just like what some other cities have already done. This also proves how just like many other successful cities, New York is attempting to gain public input on issues from

as wide a segment of the population as possible by reaching out to them through online methods.

New York has also done what other cities have. For example, Vancouver turned engagement events into big festivals with live music, food from local restaurants and other related attractions. New York has their Weekend Walks which are similar. By attracting substantial amounts of attendees, the Weekend Walks also increased the pool of people who provide feedback in a way which attracted them to, not forced them to.

Despite these similarities, however, there are some ways in which New York's methods differ from what other successful cities have done. For example, New York has not necessarily gone as far as some other cities have in transferring decision-making power to its citizens. For example, Vancouver city officials clearly saw their residents' desires to really take charge of the designs of their communities, and as a result they implemented their public art and design competitions for small-scale projects. This is unlike New York, where this need was not as recognized, and as a result, some residents took it upon themselves to anonymously and illegally modify their communities. This shows how New York must be more attentive to the desires of its citizens, and they must work with citizens to transfer more planning power to them.

Also, New York can utilize the cutting-edge technologies Brisbane, Australia used in their engagement events, such as virtual reality. It is commonly known how many major technology companies have offices in New York. Officials can partner with these companies so they can provide the city with such cutting-edge technologies to use in their engagement programs. Doing this strengthens engagement programs in two ways. Firstly, using new technologies like virtual reality can attract people since people will be attracted to the newness of it. Secondly, virtual reality can help give participants better pictures of what projects can look like if implemented. This increases the quality of their feedback, since they will have clearer ideas of the projects.

New York can also follow Oshawa, ON's example in making Vision Zero-related websites more accessible. For example, Oshawa took careful effort to make their websites accessible to people who are hard-of-hearing and hard-of-seeing by letting them increase the size of the text and by letting them make the text read aloud. New York can learn from Oshawa by making all of their Vision Zero websites accessible in the same ways.

No matter what engagement method is practiced, planners must be able to measure how well the public is engaged with their programs. If they do not do this, they risk pushing potential participants away from their programs, and as a result they will risk not obtaining feedback from an accurate representation of the population.

3. Metrics

3A. How Is Engagement Measured?

Measuring how an agency engages the public is measuring their performance, because they are performing tasks by engaging the public. Performance measurement is the measurement of the results and outcomes of a process. It can also be the measurement of the efficiency of programs and services. Performance measurement is important because it holds public officials accountable, which increases government transparency and can therefore potentially increase public trust in the government. If agencies do not understand how they are performing, they will not understand how close they are to achieving their goals. This applies to engagement because if agencies do not understand how well they are engaging the public, it will be impossible for them to know the chances of their projects succeeding.²¹

There are some tasks agencies must complete before they measure how well they engage the public. Firstly, they must establish what specific goals they are attempting to achieve. Secondly, they must use the information gathered to make concrete steps to improve their performance. If they do not do this, gathering the data to measure performance in the first place is pointless. Agencies should be careful when measuring performance. For example, during the improvement process, they must be careful about using performance data to incentivize improvement. Essentially, agencies should not focus on quantitative data alone to measure engagement. Doing this can make those agencies ignore how some factors affecting performance are outside their control. This can hamper the performance improvement process as a result. Measuring public engagement is very challenging due to two main reasons. Firstly, there has been a lack of focus on analyzing impact and outcomes. Officials have often analyzed engagement activity, not on what attendees did with what they learned. Secondly, there is a lack of standardized engagement measurement tools and methods. More will need to be devised.²¹

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However, this does not mean it is impossible to measure public engagement. Researchers have devised some ways to measure it, and while doing so, they have realized there are some criteria which must be analyzed no matter which method is used:

1. How accessible the engagements are.
2. How many events were held, and how often.
3. How early the public gets involved.
4. How timely information about the process and projects is provided to the public.
5. How much effort was put into reaching out to the public.
6. How much participants interacted with each other and the event leaders during activities.
7. How much was public input actually considered and implemented.
8. How much input from underserved communities was sought out and implemented.
9. Level of transparency of process of implementing feedback into project.
10. How much participants actually learned from the sessions.
11. Strength of relationships formed during sessions.
12. Levels of agreement and/or conflict among stakeholders.

Also, officials will need to remember two important lessons when measuring engagement. Firstly, always start measuring very early in the process. For example, with in-person events, start measuring right after the event ends. Secondly, indicators used need to be quantifiable and

meaningful. Those who read the indicators must be able to understand why they are important.²⁷

Measurement Methods - Data Analysis

This method is designed to measure both online methods and in-person events equally. There are two steps to this method:

1. Collecting the data. This data about the engagements must be collected:
 - Who participated: Number of participants, their demographic information and their prior levels of engagement in other projects, if any.
 - How much or little feedback was implemented: Stated goals, unintended consequences and effectiveness of implementation.
 - What changed/what the impact was. This involves creating goals for the process and collecting relevant data to see if those goals were reached or not.

Always collect data from participants and event leaders. Collecting this variety of data puts each set of information into perspective. Also, it is important to collect both quantitative and qualitative data. Not all data can be measured numerically.²¹

2. Visualizing the data. Simple graphs and other data visualizations can be created measuring the variables listed above. These can be very effective because they can give planners great pictures of characteristics about an event or website. This can potentially give planners insights as to how successful or unsuccessful the event or website was. For example, a graph which analyzes the age or racial groups of participants can show how diverse or homogenous the participants were, which can show whether or not planners succeeded in getting feedback from a diverse group of people.²¹

Figure 3.1 Data Visualization Methods



Source: Popowsky, Vadim. "How to Measure Success in Online Citizen Engagement". CitizenLab. 2017.
<<https://www.citizenlab.co/blog/civic-engagement/measure-success-online-citizen-engagement/>>.

Measurement Methods - Data Analysis

This method is designed to measure in-person events more than online methods. It involves using a special chart which measures how well an agency performs in the three principles of authentic engagement: accessible events, engaging interactions and outcome-oriented process. This method involves surveying participants about the activity and calculating the percentages of who gave which answer for each question. There are various questions which could be asked in a survey: Did you feel they could participate with comfort? Did you know anyone who could not attend? If yes, why were they unable to attend? Did you feel your opinions were heard, respected and taken into account? Did you feel the process encouraged collaboration? Overall, how successful did you think the activity was? Etc.²⁷

Figure 3.2 Scorecard

Principle	Objective	Measure	Goal	Results
Accessible	All who wished to participate had the ability to do so without an undue burden	Individuals felt they were able to participate without an undue amount of trouble	80 percent or more affirmative responses	70 percent
		Individuals who declined to attend, did so out of choice and not inability	80 percent or more affirmative responses	90 percent
		Individuals felt comfortable providing input in at least one of the platforms utilized	80 percent or more affirmative responses	80 percent
		Individuals felt the platforms facilitated their attendance and participation	80 percent or more affirmative responses	80 percent
	Events were democratic and representative of the population	Individuals attending the events roughly represent the population	Minority groups' attendance rates were within 5 percentage points of their actual share in the population	Yes
Engaging	The process fostered an environment favorable for input and collaboration	Individuals felt their opinions were heard and valued	80 percent or more affirmative responses	70 percent
		Individuals felt the process encouraged collaboration	80 percent or more affirmative responses	90 percent
		Individuals felt the activities were engaging	80 percent or more affirmative responses	70 percent
	The process was ongoing	Individuals used the feedback mechanisms	50 percent or more of the individuals used the feedback mechanisms	60 percent
Outcome-oriented	The input provided from the public influenced the decision-making process	Individuals felt their opinions would influence the decision-making	70 percent or more affirmative responses	70 percent
	The process successfully engaged the public	Individuals felt the engagement process, as a whole, was successful	70 percent or more affirmative responses	75 percent

Source: Wagner, Jason. "Measuring the Performance of Public Engagement in Transportation Planning: Three Best Principles". *Texas Transportation Institute, Texas A & M University*. 2012.

<<https://tti.tamu.edu/group/planning/files/2013/01/Measuring-the-Performance-of-Public-Engagement-in-Transportation-Planning-Three-Best-Principles-FINAL.pdf>>.

Measurement Methods - ILG Worksheets

This method is designed to measure in-person events more than online methods, but could work for either. The Institute for Local Government (ILG) has created a four-step process to measure how much participants were engaged in an event: reviewing participants, reviewing event leaders, comparing their opinions, and then devising process improvements. This involves distributing four worksheets which correspond to each step to both participants and event leaders after an event to analyze how they thought an engagement event went.

Figure 3.3 Worksheet A

Assessing Public Engagement Effectiveness:
Rapid Review Worksheets

Participant Review Worksheet A

Participant Review Worksheet A:

Meeting _____

Date: _____

Location: _____

Step One: Please rank the following statements from 1 to 4 depending on if you (1) strongly disagree, (2) somewhat disagree, (3) somewhat agree or (4) strongly agree. Circle 1, 2, 3 or 4 for each item, add up the totals for each category. [Example: 2 responses for "Somewhat Agree" = 6, 3 responses for "Strongly Disagree" = 3; Total for category = 9. Do the same for each category.]

RATE YOUR EXPERIENCE				
	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree
CATEGORY 1: PREPARATION				
1. The notice, advertisement or invitation to participate was clear and welcoming.	1	2	3	4
2. Information about the meeting topic, provided to me before or at the meeting, helped prepare me to participate more effectively.	1	2	3	4
3. The purpose of the meeting was clear to me	1	2	3	4
4. Before the meeting, I believed that any <i>individual</i> views offered would be taken seriously by policymakers.	1	2	3	4
5. Before the meeting, I believed that any <i>collective</i> views or recommendations developed would be seriously considered by policymakers.	1	2	3	4
SUBTOTAL	+	+	+	=
CATEGORY 2: PARTICIPANTS				
6. The participants in the meeting reflected the diversity of the people and views of our community.	1	2	3	4
7. The mix of participants was appropriate for the topic of the meeting.	1	2	3	4
8. I felt comfortable with the other participants.	1	2	3	4
9. Meeting participants treated each other respectfully.	1	2	3	4
10. Other participants were constructive in their comments.	1	2	3	4
SUBTOTAL	+	+	+	=

Source: "Assessing Public Engagement Effectiveness: Rapid Review Worksheets". Institute for Local Government. <http://www.ca-ilg.org/sites/main/files/file-attachments/resources_Worksheet_A_secured.pdf>.

1. Worksheet A (Participant Review): This paper worksheet is meant to be distributed to participants to gauge their opinions about their experience during the process. It consists of 20 statements about the process, which participants must numerically rank how much they agree or disagree with them. They then add up the numbers of their answers to get a total score measuring how much they were engaged. This allows for the quantitative measurement of how engaged participants were. There is also an optional second part to the sheet where participants can respond in words to questions about the process.

Figure 3.4 Worksheet B

Assessing Public Engagement Effectiveness:
Rapid Review Worksheets

Local Officials Review Worksheet B

Local Official Sponsors/Conveners Review Worksheet B:

Step One: Please rank the following statements from 1 to 4 based on *how you think participants experienced the public engagement process*: (1) strongly disagree, (2) somewhat disagree, (3) somewhat agree, or (4) strongly agree. Circle the 1, 2, 3 or 4 for each item, and, if requested, add up the totals for each category. [Example: 2 responses for "Somewhat Disagree" = 4, 3 responses for "Strongly Agree" = 12; Total for category = 16. Do the same for each category.]

ASSESS YOUR PERCEPTIONS OF HOW PARTICIPANTS EXPERIENCED THE PUBLIC ENGAGEMENT PROCESS	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree
CATEGORY 1: PREPARATION				
1. The notice, advertisement and/or invitation to participate was clear and welcoming.	1	2	3	4
2. Information about the meeting topic, provided to attendees before or at the meeting, helped prepare them to participate more effectively.	1	2	3	4
3. The purpose of the meeting was clear to participants.	1	2	3	4
4. Before the meeting, participants believed their <i>individual</i> views would be seriously considered by policymakers.	1	2	3	4
5. Before the meeting, participants believed their <i>collective</i> views or recommendations would be seriously considered by policymakers.	1	2	3	4
SUBTOTAL	+	+	+	=
CATEGORY 2: PARTICIPANTS				
6. The participants in the meeting reflected the diversity of the people and views of our community.	1	2	3	4
7. The mix of participants was appropriate for the topic of the meeting.	1	2	3	4
8. Participants felt comfortable with each other.	1	2	3	4
9. Participants treated each other respectfully.	1	2	3	4
10. Those attending believed that other participants were constructive in their comments.	1	2	3	4
SUBTOTAL	+	+	+	=

Source: "Assessing Public Engagement Effectiveness: Rapid Review Worksheets". *Institute for Local Government*. http://www.ca-ilg.org/sites/main/files/file-attachments/resources_Worksheet_B_secured.pdf.

2. Worksheet B (Event Leader Review): This paper worksheet is formatted in the exact same way as Worksheet A, except the questions are for event leaders. This allows for the quantitative measurement of how engaged participants were based on what event leaders perceived. There is also an optional second part to the sheet where event leaders can write in paragraphs about the event.

Figure 3.7. Worksheet D

Assessing Public Engagement Effectiveness:
Rapid Review Worksheets

Process Improvement Worksheet D

Process Improvement Worksheet D

Step One: Discuss and document ideas from Comparison Worksheet C or brainstorm new ideas for improvement based on Worksheet A and B Responses.

STATEMENT	POSSIBLE IMPROVEMENTS
PREPARATION	
1. The notice, advertisement and/or invitation to participate was clear and welcoming.	
2. Information about the meeting topic, provided to attendees before or at the meeting, helped prepare them to participate more effectively.	
3. The purpose of the meeting was clear to participants.	
4. Before the meeting, participants believed their <i>individual</i> views would be seriously considered by policymakers.	
5. Before the meeting, participants believed their <i>collective</i> views or recommendations would be seriously considered by policymakers.	
PARTICIPANTS	
6. The participants in the meeting reflected the diversity of the people and views of our community.	
7. The mix of participants was appropriate for the subject matter of the meeting.	
8. Participants felt comfortable with the other participants.	
9. Meeting participants treated each other respectfully.	
10. Meeting participants felt that other participants were constructive in their comments.	

Source: "Assessing Public Engagement Effectiveness: Rapid Review Worksheets". *Institute for Local Government*.
<http://www.ca-ilg.org/sites/main/files/file-attachments/resources_Worksheet_D_revised_secured_Nov_2011.pdf>.

4. Worksheet D (Process Improvement): This paper worksheet is meant to stimulate discussion between officials about how to best improve future engagement events. The worksheet is divided into three parts. In the first part, officials brainstorm ideas on how to improve future engagement events based on results from Worksheets A, B and C. In the second part, officials further discuss how to improve future events based off of prompts. They do not record anything. In the third part, officials come up with an action plan to improve events.²⁷

Comparisons

All of the methods involve collecting and analyzing data about everyone involved in an engagement. In order to do this, all methods involve surveying the people associated with an engagement. However, they differ in terms of how to display the data. Through the pure data analysis method, multiple graphs and other similar visualizations can be created to display the data. The scorecard and worksheet methods also provide for data analysis, but unlike the pure data analysis method, the scorecard and worksheets present the data in their own unique ways. This could be due to how the pure data analysis method is designed for primarily displaying quantitative data, and the other two methods are primarily designed for presenting qualitative data. This shows how data collection and visualization is a key part of measuring public engagement.

3B. Measuring Engagement in Vision Zero

Collecting Data

Before how well the public is engaged in Vision Zero can begin to be analyzed, certain data must be collected and analyzed for each program. Doing this can reveal how much participants are engaged in Vision Zero programs as of June 2017. As a result, actions can be taken for each program which allow officials to measure how well they are engaging the public.

<u>Table 3.1 Data That Must Be Collected and Analyzed for Each Vision Zero Program</u>		
<u>Data</u>	<u>Description</u>	<u>Corresponding Actions for Vision Zero Events</u>
Lessons	This data can help planners get a sense of how much participants actually learned from the sessions.	Have all attendees fill out either paper or digital forms of the Institute for Local Government's Participatory Review worksheet after attending either an in-person event or visiting a website. All event leaders and website managers would then fill out the Event Leader review worksheet. After this, event leaders can numerically analyze all the participants' responses and all the event leaders' responses, and then fill out the Institute for Local Government's Comparison excel sheet. They can then use this information to figure out how much everyone involved with the processes learned. This can give officials a clear picture of how well everyone was engaged in both processes, which allows those officials to devise how to improve the engagement processes.
Participant backgrounds	This data can help planners know the number of participants, their demographic backgrounds and their prior levels of engagement. This can also measure equity because this can provide crucial insights about how much input from underserved communities was sought.	Have all attendees first fill out a sign-in form with their names, and then a separate anonymous questionnaire saying their demographic information at the beginnings of in-person events or digital programs to understand how many people participate and their backgrounds. These forms can be either digital or paper depending on the event type. At in-person events, tablet computers can also be set up on which the participants enter their information to save paper. Planners can then take all of this information and quantitatively analyze it. For example, they can create graphs to see if there were any groups who were represented the most or least at engagement programs.

<u>Data</u>	<u>Description</u>	<u>Corresponding Actions for Vision Zero Events</u>
Participant interaction	This data can help planners get a sense of: How much participants interacted with each other and the event leaders during activities, the strength of relationships formed during the sessions and the levels of agreement or conflict among stakeholders.	The Institute for Local Government's Participatory and Event Leader Review worksheets can be modified so they include more detailed questions about people's interactions with each other during the events. This can give planners a better view of how people interacted with each other during the events, which can reveal information about the exchange of ideas between participants and event leaders.
Transparency	This data can help planners get a sense of: <ul style="list-style-type: none"> - The level of transparency in process of implementing feedback into project. - How early or late in the process city officials disseminated information about Vision Zero and the engagement process to the public. - The number and frequency of programs. - How early or late public feedback was actually received. 	<p>Researchers will have to create publicly available reports which:</p> <ul style="list-style-type: none"> - Contain schedules detailing when and how the city first started distributing information about the engagement process for each Vision Zero program. - Contain schedules detailing the locations each in-person program was held in, and the dates they were held on. - Contain inventories of how many in-person events have been held and how many digital programs are in operation. - Contain schedules detailing when public feedback was actually implemented, and a written analysis of the steps the city took to make the process transparent.

<u>Data</u>	<u>Description</u>	<u>Corresponding Actions for Vision Zero Events</u>
Feedback Implementation	This data can help planners get a sense of how much feedback was implemented. This involves stating goals of the process, researching how the effective the process was in the end, and seeing if any unintended consequences arose.	A new publicly available report can be written detailing the goals of each Vision Zero program both in-person and digital, what input was given exactly for each program, the successes and failures of each program and how public input was integrated into the programs. For some programs, it is too early to accomplish this since they may have started not long before June 2017. As a result, it will be a long time before officials can analyzed how much public feedback was truly implemented.
Impact	This data can help planners get a sense of what changed/ what the impact was. This involves creating goals for the process and collecting relevant data to see if those goals were reached or not.	When the impact of each in-person and online engagement program eventually gets analyzed, a new report can be written detailing the goals of each Vision Zero program, what input was given exactly for each program, the successes and failures of each program and how public input was implemented. For programs started not long before June 2017, it is too early to accomplish this because it will take some time before their impact can truly be seen.

4. Conclusion: Next Steps

Finally, there is still much left for New York officials to accomplish. In addition to completing all Vision Zero initiatives, the city must make public engagement a key part of their agenda. Each city agency must take further steps to not only increase the qualities of their engagement programs, but to measure how much participants are engaged. New York can gain much inspiration from what other cities have done when improving their engagement programs.

City Hall

There are four important steps City Hall must take. Firstly, they must **create digital versions of public meetings and measure participants' levels of engagement**. The current Vision Zero public meetings being held around the city are limited in accessibility because they are only held in-person. Following Vancouver and Washington DC's examples, the city must add digital versions of their hearings. Doing this allows people who cannot attend meetings to still participate in them. Before accessing the digital versions, participants must fill out their personal information so the backgrounds of participants can later be analyzed. Meetings should then be livestreamed on an easily findable web page and archived so they can be seen after they end. The digital versions should contain spaces for people to comment on what is being discussed. Staffers should be on hand in the meetings to observe the digital comments so they are treated the same way as comments made by people physically present. Comments made online after the meetings end must also be responded to accordingly by staffers at city agencies. After users exit livestreamed hearings and in-person attendees leave, they must fill out surveys such as the ILG worksheets detailing what they did in the meetings, how they think the meetings went, and the lessons they learned. Staff later fill out their own sheets and analyze the attendees' sheets as well. All of this combined with the analysis of the participants' background information leads to the measurement of engagement levels.

Secondly, City Hall must **utilize cutting-edge technologies at the meetings by entering public-private partnerships**. In order to further give participants better pictures of what Vision Zero plans can look like in reality, New York can follow Brisbane's example in letting participants use virtual reality and other three dimensional simulation technologies at events. In-person attendees can use virtual reality goggles to observe simulations of the plans. Online attendees can use similar three dimensional simulation technologies, in which they move through a simulation on their screens simply using their mouse and arrow keys. In order to implement these technologies in the meetings, the city government can partner with any of the various technological firms who have offices in the city. Staff from those organizations can be on hand to help people use the technologies both in-person and online. After meetings end, participants should be surveyed on topics like what they learned from using the technologies and how much or little those helped them visualize a plan. This can help staff measure how well the public was engaged in the events.

Thirdly, City Hall must **further increase accessibility of all Vision Zero websites**. Many Vision Zero web sites do have some accessibility features built in, such as text being available in different languages and different sizes. However, many more features should be added. New York should follow Oshawa's example in having: all site text be read aloud, subtitling all public meeting recordings and using simple, non-technical language.

Fourthly, City Hall must **give more power to local nonprofits so they can lead engagement events**. New York should follow Los Angeles' example and empower local

community organizations to lead their own engagement events. Community organizations can often be more in tune with their neighborhoods' needs than city agencies. As a result, city officials should give these organizations more power in the planning process by letting them host their own meetings and events. Doing this can greatly benefit residents because it further simplifies the process of applying their unique views of their streets towards creating solutions.

DCAS

There are two important steps DCAS must take. Firstly, they must **create a separate web page displaying DCAS CRASH data**. This data is currently only displayed as a summary in the Mayor's Management Report. The public can have much more access to this data by creating a separate web page. This site should also include a map showing accident locations to further help the public understand the data. The site will also have to be accessible with text that: is in simple language, can be read aloud, can be made larger and can be displayed in multiple languages. The site must also enable users to provide feedback.

Secondly, they must **use cutting-edge technologies in DCAS Defensive Driver courses**. In order to fulfill their initiative of expanding their Defensive Driver courses, DCAS can use new technologies to better teach participants. For example, special computer driving education programs can be used to give students more life-like representations of what they are taught. Tests and surveys distributed at courses' conclusions will help teachers gauge their students' levels of engagement.

DOE

There are three important steps DOE must take. Firstly, they must work with DOT and other agencies to **expand the school curriculum programs**. In order to measure the students' levels of engagement in the classes, surveys like the ILG worksheets can be distributed to both students and teachers after lessons to gauge how much they are taking away from the classes. The curriculum can also be expanded in two ways. Firstly, teachers should provide incentives for their students to attend Vision Zero public meetings and other similar events, following Washington DC's example. DOT and other city agencies must make sure to hold all Vision-Zero related events not during school hours, and they should not treat students with condescension. New technologies can also be used in classrooms to help students better absorb what they learn. They can especially benefit from this since they tend to have more experience with new technologies.

Secondly, they must **expand the Vision Zero Youth Council's size and scope**. As of July 2017, the youth council only contains students from a very limited number of schools. DOE and DOT officials must work to spread the message about the council to all city public schools. City officials can individually reach out to school staff, who can then spread the message to their students about upcoming youth council meetings and events. City officials can also directly communicate the message to students through Twitter and Facebook. City staff can additionally work with the youth council to help add online components to their meetings and events to make them accessible to students who cannot attend. Surveys like the ILG worksheets can also be distributed after meetings and events end to help the student leaders learn how to better engage attendees.

Thirdly, they must work with DOT and other agencies to **seek more youth feedback**

about Vision Zero outside the classroom. School and public events are not the only way in which youth can be asked about their opinions. Following Washington DC's example, city staff can target youth from all schools on social media, where students can be directly connected with online Vision Zero resources like surveys and public input maps. By bringing such resources straight to them on the sites they use the most, it will be easier for them to participate.

DOHMH

There is one crucial step DOHMH must take. They must work with the DOE and CitiBike to **establish biking classes in public schools.** DOHMH's Citi Bike to School program can be turned into a bike safety course all students can take inside their schools. The best performing students in the courses can receive an annual free Citi Bike membership at the end as a prize. This can incentivize students to become more engaged in the courses. At the end of the classes, surveys can be distributed to all students and teachers to measure how engaged students were. Testing them on their knowledge of bike safety can also measure how much they took away from the courses, and how engaged they were as a result.

DOT

There are three important steps DOT must take. Firstly, they must **host public design competitions for small-scale projects.** DOT should follow Vancouver's example and allow New Yorkers to design small-scale streetscape improvements, such as artistic messages on crosswalks alerting pedestrians to look out for bikes and cars, messages on bike lanes alerting bikers to watch out for cars, and other similar improvements. DOT can utilize social media and notify local media to spread the word about this.

Secondly, they must **create a program where volunteers construct temporary street improvements.** Even though the New York Department of Transportation's work has often been illegal, their work should not be ignored. DOT can channel this energy into a new program in which they not only teach members of the public how to construct small temporary streetscape improvements, but supervise them as well. DOT can also utilize social media and notify local media to spread the word about this program. This can be beneficial because it gives locations which are desperately need of improvement small temporary solutions to hold them over until DOT staff can make those permanent. While the volunteers construct the temporary improvements, at least one DOT staff member must be there to supervise them. At the end of the program, surveys can be distributed to volunteers to gauge their opinions on how the program has influenced their views of the planning process, as the program can inspire them to become even more involved with the planning process in the future.

Thirdly, they must **hold events similar to Vancouver's "walkshops".** This would involve DOT staff touring neighborhoods on foot or even on bike with residents and community leaders. Residents would show their leaders and DOT staff where they feel new streetscape improvements like new bike lanes and crosswalk infrastructure should be implemented. This allows for the collective and collaborative education about how to make streets safer, and it strengthens relationships between planners, politicians and residents. These should be held on weekends so they do not conflict with residents' work hours. After these end, all of them can fill out ILG worksheets to analyze how much they gained out of the programs, and how much they were engaged as a result.

NYPD

NYPD must make one important step. They must **establish a driving safety education program to give poor offenders an alternative to paying fines**. Such a program can take the financial burden off of low-income drivers and instead educates them about how to drive more safely. This would provide an incentive for them to become engaged since this helps the drivers avoid fines and gives them second chances. New technologies can also be used in the classrooms to better teach them so they are less likely to run into future infractions. Surveys and tests can be distributed to the drivers and teachers at the end of the programs for officials to understand how much participants were engaged.

TLC

Finally, TLC also must take two important steps. Firstly, they must **use cutting-edge technologies in TLC licensing courses**. TLC can take advantage of new technologies like virtual reality and driving simulation programs in their licensing courses. These technologies can be used to better train TLC drivers compared to traditional teaching methods, so they are less likely to run into future infractions after they have received their TLC licenses. TLC can take advantage of the relationships they formed with technology firms during their Vehicle Safety Technology Pilot program to bring such new teaching technologies into the classroom. Surveys and tests can be distributed to the drivers and teachers at the end of the courses so officials can understand how much the participants were engaged.

Secondly, they must **hold a research conference about traffic safety issues with autonomous cars**. TLC should follow DOHMH's example and create their own research conference, in which they invite academics from universities across the country to discuss traffic safety issues with autonomous cars, and how New York City can adapt to them. TLC can work with other city agencies on this. For example, DOHMH can help them coordinate the conference since they have already done a similar one themselves. The DOHMH, DOT, TLC and any other interested city agency can alternatively team up to have one joint research conference on this issue and other similar ones.

Notes

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