



VISION ZERO CITIES



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WELCOME!

Often the work to save lives on our streets can seem very complicated. There are policy intricacies, endless politics, and those unfortunate tradeoffs between budget and design. But at its core, Vision Zero is simple. So simple, in fact, that there is really only one thing that all successful Vision Zero policies and practices have in common. The orthodoxy among politicians, practitioners, and advocates has always been that we must be very careful not to say this thing too directly or too loudly. I call it “the elephant on our streets.”

Instead of talking about this thing, we talk about achieving a better balance between safety and “other considerations.” We encourage drivers to be more careful, suggesting that we can find creative ways to carve just a little more space for the most vulnerable people on our streets. We install sharrows and collect promises that we will do it a little bit better next time.

Does this sound familiar? It’s the sort of tinkering that may save a life or two, but not the thousands that we said we would save when we signed up for Vision Zero. Because until we look at the elephant on our streets, the thing we never say out loud, there is no reaching Vision Zero. That taboo, the elephant, of course, is the car.

The simple fact is that streets designed to speed and store automobiles kill and injure people. Parking obstructs sight-lines and hoards space. It is incredibly difficult to manage a multi-ton vehicle going faster than 20 mph in a crowded urban setting, even by the best-behaved motorists.

What all successful Vision Zero policies have in common is that they challenge the deadly primacy of the automobile. You know you are doing it right when drivers start crying foul about their parking spaces being turned into pedestrian refuge islands, or protesting the tickets they received for speeding. You are doing it right when the politicians who said they would champion Vision Zero start to get nervous.

On the following pages, you will find a lot of examples of doing it right, like Department of Transportation Commissioner Polly Trottenberg’s take on why New York City has seen such Vision Zero success (page 49) andCarolynn Johnson from the Institute for Transportation and Development Policy explaining how streets began to change in Mexico City (page 43). Don’t miss Leah Shahum, of the Vision Zero Network, breaking down the Safe System approach (page 9), researcher Peter Jacobsen on how the rise of new tiny vehicles will continue the “safety in numbers” trend (page 19), and an interview between Editor in Chief Jessie Singer and Naomi Doerner of the Seattle Department of Transportation about what happened when Seattle put Vision Zero equity first (see page 79).

You are reading this journal because you know it is not tinkering that will get us to Vision Zero, but these sorts of big ideas and bold decisions. The first step is taking a square look at the elephant in the street—and imagining what we can build in its place.



ABOUT

Paul Steely White is the Executive Director of Transportation Alternatives. He previously served as Africa Regional Director for the Institute for Transportation and Development Policy. In 2011, he received the Rockefeller Foundation’s Jane Jacobs Medal, which recognizes creative uses of the urban environment to build a more diverse, dynamic, and equitable city, and in 2015, he was honored by the New York Academy of Medicine for his work to make New York City streets safer and healthier. In November, he will leave Transportation Alternatives to become the Director of Safety and Advocacy at Bird.



Cuomo,
NYC Kids need
Protection From
Speeding Drivers

KIDS DESERVE SAFE
STREETS

MAKE
S

THIS IS MY STREET

PEDESTRIAN CROSSING
SCHOOL SAFETY CAMERAS

C.U.S.
WILD
BE UNITED TO REIN
CHECK SPEEDING

EVERY JOURNEY
EVERY CHILD



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Inside the Nation's First Transportation Equity Program

LEAH SHAHUM

The Safe System Approach Comes to America

Vision Zero is spreading across America without adherence to the Safe System approach, a foundational element of Vision Zero in other nations. Leah Shahum of the Vision Zero Network provides a lesson in the basics of the Safe System approach, and explains how U.S. municipalities have been getting that foundation wrong.

As Vision Zero commitments swell in cities across North America—and even some U.S. states move to embrace the term—it is important to step back from cheering the breadth of Vision Zero proliferation to instead examine the depth of Vision Zero dedication. Is what we are calling “Vision Zero” really Vision Zero? The answer rests, first, in understanding what makes Vision Zero different from the traditional approach to traffic safety—a topic that’s received scant attention in the four-plus years since more than 30 U.S. communities have made commitments to Vision Zero. This is a byproduct of too many U.S. leaders—despite their well-meaning, life-saving intentions—misconstruing Vision Zero merely as a flashy new safety program with a compelling tagline, a new name for old-fashioned car-centric transportation planning. Authentic and effective Vision Zero is more complicated than a rebranding effort of press conferences, new logos, and ad campaigns. Authentic and effective Vision Zero—the kind that saves lives and proves sustainable—is a radical rethinking of everything you know about transportation. And if it is going to succeed in the United States, community leaders need to start acknowledging this complicated reality as part of their commitment to undertaking it. The reality is that Vision Zero is not a tagline. It is not even a traffic safety program. Instead, Vision Zero is a completely new approach to transportation planning. Based on its start in Sweden and building momentum from Mexico City to Melbourne to Bogotá, this is called the Safe System approach, and it begins with a paradigm shift. Old-fashioned traffic safety sees individuals using the transportation system—be they on foot, on bike, or in a car or truck—as people who need to be moved from one place to another, and if they endanger others, then they need to have their behavior changed, largely through education or enforcement efforts. But true Vision Zero asserts that safety is also the responsibility of the transportation system itself, as well as its designers and

policymakers. This responsibility goes hand-in-hand with support, so system designers and policymakers can fully assert and live up to the responsibility to ensure safe transportation systems.

If this approach sounds antithetical to the American ideal of pulling yourself up by your own bootstraps, it is because it is. But instead of tired debates about unspoken rights that come with car ownership and the freedom of the open road, let’s look at a more important question: Does the Safe System approach really work? According to much analysis, the answer is a resounding *yes*. The World Resources Institute analyzed traffic fatalities in 53 countries between 1994 and 2015 and found that countries that have adopted a Safe System approach had both the lowest rates of fatalities per 100,000 inhabitants and the fastest rate of change in traffic fatality levels. Leading Vision Zero nations, such as Sweden and the Netherlands, have some of the lowest traffic death rates in the world after 20 years of progress since embracing the Safe System approach. The results are remarkable. But how have they been accomplished? It’s all about approach. Five core principles make up the Safe System approach, even though only one—that no death or serious injury is acceptable—is probably familiar to most U.S. proponents of Vision Zero. The other



ABOUT

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As a German Marshall Fund Fellow, Shahum researched Vision Zero strategies in Sweden, Germany and the Netherlands. Prior to that, she was the Executive Director of the 10,000-member San Francisco Bicycle Coalition and served on the boards of directors of the San Francisco Municipal Transportation Agency and the Golden Gate Bridge, Highway and Transportation District. Find out more about the Vision Zero Network at www.visionzeronet.org and by following @visionzeronet on Twitter.

four are: people make mistakes; people are vulnerable to injury; responsibility is shared; and both proactive and reactive improvements are critical.

The first—explicitly recognizing that people are fallible and make mistakes and so crashes will happen—means no longer pretending that we can perfect human behavior but rather planning for it. Given that reality, the Safe System approach directs greater energy toward improving the systems—particularly the built environment we move within—so that when people inevitably make mistakes, the results are less severe. This means focusing on improving systemic conditions rather than over-fixating on changing individual behavior.

The next core tenet is comprehending vulnerability to injury—and planning for it rather than ignoring it. The Safe System approach recognizes the simple physics that the human body has a limited ability to tolerate the force of a crash before being harmed. Research shows that humans are unlikely to survive an un-cushioned impact at a speed greater than 30 kmh (or about 18 mph). Obviously, unprotected road users—those not wrapped in steel protection, such as people walking and bicycling—are most at risk.

Understanding these two tenets, the Safe System approach calls on road designers and policymakers to design and maintain transportation systems to be forgiving of these realities, so that inevitable human errors do not result in severe or fatal outcomes.

The next core principle of Vision Zero is shared responsibility between road users, and system designers and policymakers. This is not a dismissal of individuals' responsibility to behave safely, but rather an emphasis on the system itself—how a roadway is designed or a policy is set—and the responsibility of the designers and policymakers who are in control of these elements. The Safe System approach refutes victim-blaming, helping us understand that it is often systemic flaws, such as poor street design and speeds set too high for safe travel, that cause injurious and deadly crashes.

The final principle emphasizes that both proactive and reactive actions are needed to effectively prioritize safety. While the reactive approach—focusing on “hot spots” of known dangerous locations and behaviors—is worthwhile, the Safe System approach also requires a forward-facing focus on trends and patterns to help identify future problem areas in order to prevent severe crashes before they happen. This means determining, analyzing, and addressing the underlying risk factors that influence dangerous actions: where, how, and why serious crashes happen. How we manage speed is a critical illustration of how a Safe System approach differs from the traditional approach to traffic safety. Even though we know that inappropriate speeds are likely to severely injure or kill people, policymakers still set speed limits and designers still create roadways for speeds that kill. The good news is that we know what works to fix the deadly problem—and it's not another endless billboard campaign telling people to slow down. The answer is taking a systemic approach to managing speed by designing and operating roadways to reinforce safe speeds, with road diets, speed humps, roundabouts, and traffic signal timing. For those who are truly ready to commit to the Safe System approach, and therefore to real Vision Zero, know that solutions will not be quick or easy, and there is no step-by-step playbook on how to perfect the system. There is, however, one guarantee: with the Safe System approach, Vision Zero can work. If a community and its leaders truly embark on the Safe System approach and adhere to its core principles, the journey will be an increasingly safe one for all road users.

Read Core Elements for Vision Zero Communities – a new resource from the Vision Zero Network at visionzeronetwork.org/coreelements.



RIVER

Westminster
Pier

ZEIN
WILLIAMS

Soft
Ice-Cream

THE BENTLEY LONDON
Westminster
Puddings &
Sweets

PANCAKES • WAFFLES
ICE-CREAM
HOT LIPS • C...

NICOLE GELINAS

Vehicular Terrorism in the Age of Vision Zero

As global cities respond to a growing trend of vehicular terrorism with street redesigns, the very mobility of pedestrians and cyclists is at risk. Nicole Gelinas of the Manhattan Institute examines how new ideas about terrorism protection conflict with proven concepts in Vision Zero mobility.



London, New York, Toronto, Nice, Munster, Barcelona, Toronto, Charlottesville, Berlin, Stockholm—over the past two years, at least 146 people have died, and hundreds more have suffered injury, at the hands of killers wielding not guns or bombs, but using cars and trucks as weapons of mass destruction. In response, global cities have begun to erect physical barriers between the crowds of walkers who define their urban spaces and the multi-ton motorized vehicles whose drivers pose a new threat. The age of terror by car and truck is an additional challenge for urban planners who still haven't quite answered a pre-existing question: in historic cities with finite space, who gets access to the streets? Across the world, cities are responding to this new threat in an ad-hoc manner. The most misguided city policies are protecting people by caging them in.

Though some physical barriers are necessary, government officials need to create and adhere to core principles in protecting their residents, workers, and visitors. Anti-terror infrastructure should ease walking, biking, and public transit use, not impede it.

Paris

Over two decades, Paris has been a global leader in livable streets as one of the first major cities to offer municipal bike share, and one of the first cities to snatch highway space away from trucks and cars and give it over to walkers and cyclists, gradually forming its riverside thoroughfares into open public spaces.

It's distressing, then, that in response to several serious vehicle attacks in France—86 people killed by a truck driver in Nice in July 2016, six police officers injured in a ramming attack outside Paris in August 2017, and an attempted car attack on the Champs-Élysées that June—Paris has responded, not by controlling car and truck use, but by caging in pedestrians.

The Eiffel Tower is the most unfortunate example, where, up until two years ago, Parisians and visitors could walk freely under-

neath—a pleasant and efficient thoroughfare for walking from one side of the Seine to the other.

Starting in 2017, Sete, a company that is mostly owned by the city of Paris, began to wall the Eiffel Tower off, literally. This summer, under the advice of counter-terror police, the company debuted the first half of a 10-foot-tall, two-inch thick bulletproof glass barrier that flanks the tower's north and south sides. The glass is supposed to be strong enough to stop a truck attack, the company's chief told reporters in June. In case it is not enough, another 420 reinforced "anti-ram-raid" bollards line the sidewalks, still wrapped in their factory paper in August, and steel wire now surrounds the gardens.

Paris has tried to put a brave face on these changes. Sete executive director Anne Yannic insists that the "purpose is to improve the appearance of the tower." In case visitors don't like it, though, Sete also assures the public that the glass of the security booths and walls is "extremely clear." Project architect Jose Luis Fuentes says that "when you are on site, the three-meter-high walls, compared to the scale of the monument, are absolutely not visible. It will really look as if the square ... was open."

These assertions are absurd. Prior to the creation of this new "perimeter," the base of the tower and surrounding gardens were casually open to everyone. The new square doesn't look open, but even if it did, it is strange for an architect to want to maintain the illusion of openness rather than the reality, a more important consideration. The changes are



ABOUT

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akin to walling off the blocks around Rockefeller Center and insisting on universal stop-and-frisks before allowing anyone to enter. The practical result is to inconvenience and deter foot traffic. Tower tourists are now forbidden from taken the straightest path to their destination, and instead corralled on winding paths into long, fenced-in lines, sometimes waiting more than half an hour for their security check. These searches, too, have the effect of deterring local commuters and strollers from making this walk, which, in turn, has upset the delicate mix of the crowd. It's now a tourist-only group, encouraging far more aggressive street hawkers of souvenirs and selfie-sticks to people who are a trapped audience for such sales as they wait in line. It's not clear that these measures will save lives, rather than just moving the location of any attack forward by a few yards. People standing in line, trapped between fences, could be a tempting target for would-be knifers or mass shooters, as they could not escape these corrals quickly. Just outside this new "perimeter," as tower officials put it, unvetted drivers of trucks and cars still whiz by crowds of people on the Pont d'Iéna bridge. Paris has not moved to inconvenience these drivers with permanent search checkpoints. It is only walkers who must submit to intrusive searches to enjoy passing underneath a global landmark, or take a far longer, less scenic route around the tower just to get to work or see a friend.

London

London suffered two deadly attacks in 2017, on and near two iconic bridges. In March, an attacker killed four pedestrians with a car on Westminster Bridge leading to Parliament before fatally stabbing a police officer, and in June, three attackers killed three pedestrians on London Bridge with a van, then stabbed and shot to death five other victims. Like Paris, London responded with new barriers and bollards. An attack on Parliament this August demonstrated their effectiveness when a would-be rammer ran straight into new steel and concrete barriers, which did not give way.

Yet this result was not an unmitigated success, and the failures point to the weakness of any perimeter-based solutions to vehicular terrorism. Before hitting the crash barriers, the Parliament attacker swerved into 15 cyclists and pedestrians, injuring three, including a woman cyclist, who was seriously hurt. These vulnerable people were on the "wrong" side of the barriers—and thus completely unprotected.

Since the 2017 attack, London tried to deal with this problem with new physical infrastructure in particularly sensitive places. All along Westminster Bridge, a new waist-high heavy fence went up shortly after the 2017 attacks to protect the crowds of people commuting or taking pictures of the Thames view from future attackers. London, at least, chose to put the barriers in the street rather than on the sidewalk, theoretically taking room away from drivers and not walkers. Yet the barriers, spearheaded by the Metropolitan Police, are less friendly to pedestrians and cyclists than they appear. The walls do impede walkers; pedestrians now must funnel their way through narrow spaces at either end of the bridge before proceeding to more open space within the fences. More dangerously, cyclists have complained that they are on the wrong side of the barrier, stuck with the cars and trucks rather than the pedestrians, a fear that became reality in August's attack. They note, too, that the barriers themselves present a new "crush risk" in the case of trying to avoid an unintentional traffic crash. That is, a wayward driver with no ill motive would now force a cyclist into an unforgiving steel barrier rather than onto the sidewalk.

New York

In New York City, on Halloween 2017, a truck attacker killed eight people along the Hudson River bike path, and four months earlier, just before Memorial Day weekend, a car attacker killed a pedestrian in Times Square.

In response both to these attacks, as well as to the attacks in other world cities, New York, too, is erecting physical infrastructure

between people on sidewalks and people in vehicles. In April, Mayor Bill de Blasio reserved \$103 million in the long-term infrastructure budget “to install permanent barriers, bollards, granite blocks, concrete blocks at well-trafficked central areas.” As in Paris and London, police, not transportation officials, are the lead agency on this project. The visible results, so far, are not promising. In Times Square, steel bollards erected as part of the Bloomberg-era redesign of the area were unobtrusive to pedestrians. New cement blocks stamped “NYPD” and strewn haphazardly across entrances to sidewalks to supplement these barriers are highly obtrusive. These blocks can also be found at the Columbus Circle entrance to Central Park, where they force crowds through narrow “pinch points” as they scramble from the red zone to the green.

Last Christmas, the police department dealt with the threat of vehicular terrorism by dumping dozens of concrete barriers and metal fences all along the key sidewalks of Fifth Avenue and Avenue of the Americas. This measure cut off important crosswalks, forcing pedestrians to take detours, and crowded commuters, shoppers, and the hundreds of thousands of tourists who had descended on the area to take in the Rockettes or see the Rockefeller Plaza tree.

Conclusion

Car and truck terror is obviously a frightening development for cities—but cities like Paris, London, and New York can ensure that the response to it makes cities more livable, not less. Cities should keep a few precepts in mind in redesigning their streets. First, vehicle terror is a reason to speed up a positive urban trend: the increased pedestrianization of core areas. A decade ago, then-real-estate-developer Donald Trump chastised Mayor Michael Bloomberg for pedestrianizing much of Times Square, saying it was “an experiment” that “should be reversed.” Today, it would be unthinkable to reverse the protection the pedestrian plaza provides to the vast majority of people in Times Square—those on foot—from the

minority in cars and trucks. The city should similarly pedestrianize the streets around Rockefeller Center at Christmastime. London is already pedestrianizing parts of busy Oxford Street; why not do the same for the area around Parliament Square?

Paris wants to continue to cut car and truck traffic into the city. This should mean that the city needs fewer river crossings for such vehicles. Why not change the balance of Paris’s 32 vehicle and three pedestrian crossings over the Seine to 31 and four, and transform the Pont d’Iéna bridge into a haven for walkers and cyclists? With a security perimeter there, the Eiffel Tower could be freed to open strolling again.

Second, transportation and parks officials should have an equal role with police in deciding where and how to protect walkers and cyclists. In some places—New York’s Hudson River bike path, for example, right near a busy highway—direct physical barriers at the point of entrance may be the best solution. In other areas, it may be better to achieve the same goal in more indirect and elegant ways, like ramp checkpoints and, eventually, technology to prohibit access near a landmark to all but pre-vetted delivery and bus drivers, with speed and direction automatically governed by external sensors.

Finally, physical barriers take up space—which inevitably means someone has to lose that space. City officials should take the space occupied by physical barriers away from street users with the potential to do the most harm, rather than vice versa. If pedestrians face a fresh threat from drivers, it is the drivers, not the pedestrians, who should face new controls.

As record crowds and new security needs take away even more space in our cities, an inevitable part of the answer should be per-mile congestion pricing and better mass transit, including far better options for the handicapped, elderly, and people with small children. The terrorists can’t win this battle, but poor urban planning can help lose it.



PETER JACOBSEN & JOEL JACOBSEN

Tiny Vehicles and the New Safety in Numbers

With dockless bike share systems and electric scooters rolling into cities across America, a holistic reduction in crashes, fatalities, and injuries should follow. Peter Jacobsen, author of the seminal “safety in numbers” theory of traffic safety, with his brother Joel Jacobsen, looks at how masses of tiny vehicles can help us reach Vision Zero.

On any weekend night in Washington, D.C.'s trendy Adams-Morgan neighborhood, you can spot—amidst the laughter and loud music—crowds of people traveling between blocks of restaurants and bars. You might notice some heads gliding along the wide sidewalks at twice the pace of others. Those folks are riding the electric scooters that, in a remarkably short time, have become ubiquitous in urban neighborhoods around the country. First, we had tiny houses. Now, we have tiny vehicles. The first generation of shared public bicycles were rented from a sidewalk rack, a system familiar from airport luggage carts. Newer, dockless shared bicycles instead use a smartphone app to direct the user to the nearest bike, which can then be left anywhere for the next user to find. Battery-powered scooters, grown-up versions of the children's ride with a small electric motor installed, rely on a similar phone-managed dockless system. Two decades ago, the very idea of sharing vehicles with strangers would have struck most Americans as odd, even outlandish. Twelve years had to pass after Zipcar was founded before even three percent of adults in metropolitan areas had tried driving a shared car. But then, shared cars aren't visually distinctive. The installation of bicycle docks, by contrast, provided a constant visual reminder of the possibility of a shared ride, getting urban-dwellers used to the idea. The dockless versions trumpet their convenience everywhere they're left. Americans' growing comfort with shared rides is reflected in the uptake rate for electric scooters, which flew past the three percent mark in major cities in less than 12 months. It's not hard to understand scooters' appeal. Compared to other urban transport options, they're cheap, typically requiring just a dollar to start. They're convenient, needing no parking spaces. And, because they add little to congestion and produce zero tailpipe emissions, they can be ridden with a clean green conscience. But what does the proliferation of tiny vehicles mean for traffic safety? Do they bring

us closer to achieving the goal of Vision Zero, or are they just a faddish sideshow of no real consequence? The answer begins by considering falling off one of the many new tiny vehicles on the street.

Any physical movement involves some risk of falling, of course. A recent *New York Times* article interviewed emergency room doctors who are treating increasing numbers of scooter injuries ranging in severity from skinned knees to head trauma. The San Francisco Department of Public Health is inaugurating a plan to collect injury data. While we currently lack figures about scooters in particular, long experience has shown us that in an urban setting, walkers and bicyclists are unlikely to be injured fatally—unless they're hit by a motor vehicle, when the likelihood of serious injury instantly zooms. It seems reasonable to expect similar effects with scooters. Falling from a scooter rolling along at its top speed of 15 mph is doubtless painful, but nothing like being hit by a 4,000 pound hunk of metal hurtling at 30 mph or more.

However, a narrow retrospective focus on injuries incurred overlooks the possibility of injuries prevented. Strong empirical evidence suggests that the best thing we can do to ensure the safety of scooter riders is to increase their number. We have no shortage of data about pedestrians and bicyclists, and there's every reason to expect the experience of tiny urban vehicles will follow the pattern. The risk to walkers and bicyclists of being hit by a car decreases rapidly where more people walk and bike. Simply put, there is safety in numbers. Where three times as many people walk and bicycle, the risk to any individual



ABOUT

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injury prevention to activity promotion.

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walker or biker halves. Even better than that, cities that encourage more bicycling with infrastructure changes experience a decrease in the raw number of bicycle injuries, and cities that implement bike share programs also see a reduction in the number of bicycling injuries. Five major cities that introduced bike share had a 28 percent reduction in injuries. These findings, which may at first seem counterintuitive, are a product of human perception. Our brains, which evolved over the long millennia before cars were invented, are too efficient for our own good. We scan our landscapes, as our hunter-gatherer ancestors did, for the common hazards, not the rare ones. There is little reward in devoting mental energy to a search for things we're highly unlikely to see, and so our visual cortex generally doesn't. Consequently, in cities where bicycles and pedestrians are rare, drivers are slow to perceive them. And at automotive speeds, "slow to perceive" is almost the same as not perceiving.

Moreover, this "low-prevalence effect" is unrelated to size. In places where motorcycles, and even buses, are rare, drivers find it disturbingly hard to perceive them. As pedestrians, bicycles, motorcycles, and buses become more common—as they move into the category of "known hazards to be scanned for"—the risk of collision steadily sinks. There's no reason to believe the low-prevalence effect will exempt electric scooters and other tiny vehicles. By the same token, there's likewise no reason to believe they won't benefit from safety in numbers. As tiny

vehicles become more common, motorists will increasingly be on the lookout for them. More rapid motorist perception will translate into fewer collisions.

Not only that, but as the number of urban scooters increases, collisions will likely become less severe. In places where pedestrians and bicyclists are common, motorists' collisions are not only rarer but less likely to be lethal, presumably because motorists slow down, reducing the kinetic force involved in the collisions that do occur.

The proliferation of tiny vehicles also has the potential to encourage more people to leave their cars at home, at least for short trips.

Motorist deaths vary on a nearly one-to-one basis with motor vehicle use. The fewer car trips, the fewer driver deaths. If drivers can be persuaded to hop on scooters for everyday errands, we'll be that much closer to Vision Zero.

Over time, street design will likely adjust to better accommodate tiny vehicles. Their small size might give them a political advantage over bicyclists, who require relatively more space and have had to fight long years for the precious inches of asphalt cities grudgingly dedicate to bike lanes. Although it's hard to predict what accommodations might suit tiny vehicles, they are unlikely to involve that same scale of trade-off.

Already tiny vehicles offer the benefit of fun. They promise serious benefits, too. Their advent may be the best thing to happen to the Vision Zero movement since the separated bike lane.

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SAMUEL I. SCHWARTZ

No One at the Wheel

Driverless Cars and
the Road of the Future

No

One at the

Wheel

SAMUEL I.
SCHWARTZ



SAM SCHWARTZ

Excerpt from *No One at the Wheel*

In his new book about autonomous vehicle technology—*No One at the Wheel: Driverless Cars and the Road of the Future* published by PublicAffairs in November 2018—American transportation engineer and former New York City Traffic Commissioner Sam Schwartz describes what bicycling, walking, car traffic, and Vision Zero could look like in the era of driverless cars.

One of my pet peeves with transportation engineers and researchers—and this goes back many decades—is that they almost always solve the vehicular problem first and then try to deal with those pesky pedestrians. Certainly, foot traffic, if it is allowed in proximity to driverless cars, will be an additional cause of vehicle stopping and starting, jerking, delays, and congestion.

I was reminded of this when I was in Barcelona not long ago. While in a car, I observed pedestrians as they came out of buildings and maneuvered on the very narrow sidewalk flanking a very narrow side street where we were traveling. Any pedestrian trying to move past another pedestrian would see that their trajectory had to extend into the path of the cars on the road. My colleague, Xavier, was driving, and he did not hesitate. Since he was a local, he knew the pedestrian would turn and not enter the street. How would an autonomous vehicle react? It seemed to me that an AV, unable to predict the movements of pedestrians, would have had to stop or slow repeatedly, creating a very uncomfortable and jerky ride. The result? Congestion, as overall travel time increases and overall speeds decrease, at least in many walkable areas.

Will foot traffic outsmart AVs, knowing they can never hit walkers? Will this trigger an AV traffic rules movement that “fences in pedestrians,” as in the 1900s through the 1930s, when pedestrians suddenly couldn’t walk any way they wanted (as they had done for 200,000 years) but were relegated to walking only adjacent to buildings and only allowed to make perpendicular movements at corners? Prior to about 1915, the streets allowed the intermingling of both pedestrians and vehicles. After 1915, fast-moving cars threatened the status quo and were responsible for numerous pedestrian deaths. Public officials originally sided with the pedestrians but eventually capitulated as the auto industry successfully propagated the belief that automobiles belonged on the streets and that sidewalks were the place for pedestri-

ans—who were “criminalized” if they didn’t follow the rules.

In his book *Fighting Traffic*, Peter Norton argues that to accommodate automobiles, the American city required not only a physical change but also a social one: before the city could be reconstructed to serve the interests of motorists, its streets had to be socially reconstructed as places where motorists belonged—and people didn’t. I fear that something similar will happen this century as AVs, towns and cities, and pedestrians renegotiate common space.

With AVs, anti-pedestrian laws could become even more draconian, and a new excuse to hassle citizens. Jaywalking laws can be applied inequitably to target minority groups and the homeless, disproportionately affecting the poor. Stricter jaywalking laws could also shift the way people view walking and turn potential pedestrians into drivers—causing more congestion in the process.

The Honolulu City Council introduced a bill in 2017 that outlaws looking at a mobile device while crossing the street on foot.

However, it is still lawful for a driver to look at his or her dash-mounted phone while crossing an intersection. Research on pedestrian distraction that expects to confirm the conventional wisdom that distracted walking is dangerous nevertheless has concluded that such laws are unnecessary and, again, inequitable. The blog Systemic Failure demon-



ABOUT

Sam Schwartz is CEO of Sam Schwartz Transportation Consultants. He also writes a column on traffic for the *New York Daily News*. Previously Mr. Schwartz was New York City’s Traffic Commissioner. He started his transportation career in the late 1960’s as a New York City cab driver, and joined the Traffic Department in 1971. He is often referred to by his nom de plume “Gridlock Sam,” having released the word “gridlock” into the lexicon during the 1980 New York City transit strike. He obtained his Bachelor of Science degree in physics at Brooklyn College and a Master of Science degree in engineering at the University of Pennsylvania.

"With AVs, anti-pedestrian laws could become even more draconian, and a new excuse to hassle citizens."

strates the hype over this concern.

The mass hysteria over distracted walking originated with a paper published in 2013 by Jack Nasar of Ohio State University and his student Derek Troyer. Arguing that the increasing use of cell phones had caused a spike in pedestrian injuries, they were featured in major newspapers, such as the *New York Times*. Cell phones, it was reported, were causing over 1,000 serious injuries per year. And that was just the “tip of the iceberg,” they argued, because many injuries didn’t require hospitalization. In absolute terms, those numbers may seem catastrophic. But in relative terms, they are insignificant. In 2010, 1,506 pedestrians were injured while using a mobile phone, but that accounts for any kind of injury, not just ones involving motor vehicles, and covers injuries that occurred while using a cell phone in any kind of public space, not just on sidewalks or in roadways.

Systemic Failure points out that laws like the one in Hawaii could increase traffic risks by creating a more permissive atmosphere for driving behaviors that pose a greater threat to everyone. Meanwhile, however, towns in New Jersey and other places have also suggested additional laws criminalizing pedestrians.

The separation of pedestrians from streets to “improve” traffic—which really means privileging cars over people in downtown areas—could become a reality if we allow city planners to be seduced by carmakers. The architecture and engineering firm EDG proposed a new traffic grid that would do just that for Manhattan. Its LoopNYC would supposedly create a safe environment for pedestrians when AVs come along. But it’s really just a way to remove people from

streets and force them into cattle-chute-type walkways. EDG’s plan would optimize the traffic flow into and out of the city by creating AV-only lanes on major parkways like the FDR Drive and West Side Highway that would connect to selected exclusive cross-town lanes at 14th, 23rd, 42nd, 57th, 86th, and 110th Streets. Once inside Manhattan, driverless vehicles would use these as designated expressway loops.

Pedestrian overpasses and underpasses would keep pedestrians separated from driverless vehicles, ostensibly to increase pedestrian safety. With the proposed auto-grid in place, a route that currently takes a car forty minutes to cover, Grand Central Station to Lower Manhattan and back, would take eleven minutes—saving thirty minutes a day for the average commuter, according to the plan. That plan doesn’t say how much time would be added to a walk along the same route, or how many people might be dissuaded from walking, as they were by similar plans in the twentieth century. What the plan really does is remove people from streets in favor of cars. The argument is nearly identical to those used by interstate highway builders fifty years ago when they planned two elevated highways across Manhattan’s Central Business District, one just south of Madison Square Garden in Midtown (where my New York office is today) and one barreling through SoHo (there was no SoHo yet in the 1950s when Robert Moses first proposed the Lower-Manhattan Expressway). Solutions like these have shown time and time again that far from reducing congestion, they induce more traffic and end up increasing congestion.



JULIA D. DAY, MAYRA MADRIZ,
& EWA WESTERMARK

A People-Centered Approach to Street Safety

What if Vision Zero shifted focus from the prevention of death and injury to the promotion of joy and health made possible on streets built for people? From Julia D. Day, Mayra Madriz, and Ewa Westermark of Gehl—the people-centered urban design firm founded by architects Jan Gehl and Helle Søholt—a look at the potential for Vision Zero to create streets where people not only survive, but thrive.



One of the strengths of the Vision Zero initiative is its clarity of purpose: eliminate traffic deaths—period. This ambitious yet tangible goal has been adopted by municipalities around the United States and Europe, and is making its way across the globe as a policy driver. Considering that 90 percent of deaths due to road crashes occur in developing countries, this drive is welcome and needed. However, while this narrow focus on safety is needed, and has been key to communicating a complex idea like Vision Zero in the U.S. and Europe, it is essential that the professionals working to implement Vision Zero initiatives approach mobility and streets in a more holistic manner. What if the question Vision Zero posed was about more than eliminating death, but identifying how safer streets could promote greater connection and quality of life? What if we saw Vision Zero as an opportunity to promote happiness, not just prevention? And what if we put people—their desires, travel patterns, stories, and lived experiences—at the heart of the campaign? By focusing on the interplay between human behavior and urban design, and analyzing what people do in streets and other public spaces, Vision Zero professionals can develop design solutions that improve safety as well as quality of life, without ignoring the behavioral insights that indicate how people will really use redesigned streets.

More Than Safety

About 50 million people worldwide will be injured in road crashes this year. It is estimated that these crashes will cost low- and middle-income countries \$65 billion, more than they receive in development aid. This is a crisis that needs attention, and also recognition that safety alone is not enough. Research shows that 80 percent of health is determined by environmental and behavioral factors. Safety is one of those factors, but so are physical activity and social cohesion—two things that streets designed for safety and well-being can support. Vision

Zero needs to be combined with a very clear priority for the most vulnerable travelers: children, seniors, pedestrians, bicyclists—not only to keep them safe, but also to consider their needs for health and well-being. Are there places on the street where they can rest or converse? Be separate from loud noises? Or simply to look at interesting things? In failing to consider these qualities, safe streets are built that protect from vehicular traffic, but don't necessarily create opportunity for social connection or a stimulating experience. A Gehl study of two Copenhagen streets, each with 8,000 pedestrians a day, found that the higher quality street, Strædet—which had little vehicular traffic, slow car speeds, and places to socialize in both the shade and sun; was protected from noise, was well-connected to the existing street network, and had interesting things to see—had 258 people staying at a time. In comparison, the lower quality street, Kay Fiskers Plads, despite having sidewalks, bike lanes, and slow car speeds, had only 19 people staying at a time due to its environment: blank ground-floor facades, no trees, no opportunities for interaction, and nothing interesting in one's line of site. While physically designated walking and biking space is essential to safe streets, infrastructure alone will not make streets

Gehl

ABOUT

Gehl is an interdisciplinary urban design and research consultancy offering expertise in the fields of architecture, urban design, landscape architecture, and city planning. Gehl addresses global trends with a people-focused approach, utilizing empirical analysis to understand how the built environment can promote well-being, and applies this analysis to strategic planning and human-centered design to empower citizens, decision-makers, company leaders, and organizations. **Julia D. Day** is an Associate at Gehl New York, **Mayra Madriz** is a Team Lead at Gehl San Francisco, and **Ewa Westermarck** is a Partner and Director at Gehl Copenhagen.

places people want to be.

The public health possibilities are infinite if we can re-imagine Vision Zero to be as much about streets built for human connection and inclusivity, where more people walk and bike, as it is about preventing deaths and serious injuries. Even more lives could be saved through the increased health benefits that result from more active transport, time outside, and socializing.

Study Human Behavior to Develop Better Solutions

If a city is serious about implementing Vision Zero, the study of pedestrian and bicyclist behavior needs to be taken much more seriously than it is today. Around the world, ineffective design solutions disguised as safety are installed without consideration of how people actually navigate streets. For example, installing a pedestrian underpass or foot bridge, or placing a crossing in a less than convenient location for walking, creates long detours and can have serious consequences. On one London street, St. Giles Circus, a study by Gehl, *Towards a Fine City for People: Public Spaces and Public Life*, (2004), found that 72 percent of pedestrians chose not to use the underpass provided, but rather juggle their way through traffic at grade, simply to follow the more direct route, despite the danger presented by heavy vehicular and bus traffic. In *Public Space, Public Life: Chongqing, China (2013-2014)*, we found 90 percent of the pedestrians “jaywalked,” running across four lanes of traffic instead of using the intended pedestrian footbridge—built for millions of dollars in the name of safety—but not connected to pedestrian desire lines, or how people actually travel or use a place. In the U.S., the Columbia, South Carolina *Public Space, Public Life Action Plan (2016)* found that over 1,000 people a day crossed against the walk signal, or mid-block outside of the pedestrian crossings, on downtown Main, Greene, and Assembly Streets. Crosswalks at intersections existed, but their placement without regard to walking patterns, as well as neglect for the surrounding pedestrian

environment—blank ground-level facades, narrow sidewalks, no seating, and car-oriented way-finding—did not contribute to safer walking behaviors. We also see that when crosswalks are located in response to pedestrian desire lines, jaywalking and crashes decrease. In *Moscow: A City for People (2018)*, Gehl found a reduction in jaywalking from 21 percent in 2013 to seven percent in 2017, after the installation of at-grade crosswalks at intersections where underpasses existed, at Pushkinskaya Square. As crosswalks aligned with walking patterns are being installed in multiple locations, fatal traffic crashes are decreasing citywide, from 313 in 2015 to 258 in 2016. While more specific before and after safety impact data is needed, these correlated trends suggest that improving the quality of the walking experience can come hand-in-hand with crash reduction. Stories like these are testament to the need to incorporate human behavior and desire into Vision Zero—ignoring it actually makes streets less safe.

Streets as Public Spaces

Outside of the suburban North American context, streets often hold an ample number of functions and activities beyond mobility. In rural, informal settlements in Latin America, the street serves as an extension of the living room, a place where families gather and children play, and of the market, a place where people make a living by selling, repairing, cooking, and connecting with opportunities. Such an intricate and complex environment requires more than safety from traffic; it requires sensitive solutions that balance mobility with the wide range of activities that take place there. In the U.S., streets can also foster social interaction. In New York City’s public plazas—created in place of roads that once held car traffic—a joint study by Gehl and the J. Max Bond Center in 2015 found 75 percent of visitors to plazas in the boroughs of Queens and Brooklyn recognize or know more people since the street was transformed.

"If a city is serious about implementing Vision Zero, the study of pedestrian and bicyclist behavior needs to be taken much more seriously than it is today."

Reimagine What Streets Are For

Today, Vision Zero is characterized as an anti-death campaign with grim public service announcements: severed limbs, bloody asphalt, and somber faces—but Vision Zero can deliver so much more than safety. It can also make our streets more comfortable public spaces where all can spend time, engage in physical activity, connect with neighbors, play, or overall enjoy themselves. Streets where such activities are possible are safer by design—the space for and presence of people on the street signals to all, including drivers, that this is a place where pedestrians have priority. In this way, streets become places that improve traffic safety, not only through crash reduction, but also by improving other forms of safety by keeping more eyes and activity on the street.

In a globalized world, increasingly diverse cities need streets that can be platforms to engage with different people and places, building tolerance through exposure and interaction. A study to be published in a forthcoming report, *Public Space, Public Life (2018)* about a small city in Denmark, found that citywide, the spaces where all ages were best represented at the same time were most often

streets. Having neglected pedestrians for decades, it is a victory when cities prioritize road safety. But a vision for safety should not lose sight of what makes streets thrive: their diversity of people and the various, spontaneous activities fostered on them.

Re-prioritizing Vision Zero around people's experience is not as far off as it may seem. Vision Zero was first developed in reaction to human behavior. It is a recognition that humans, as a species, make mistakes and should not have to die from them. Designing for human behavior is at the heart of the policy. As Vision Zero is adopted around the globe, it should be celebrated as an initiative to create opportunities to put people, and how they want to live, at the heart of its agenda.



NICHOLAS FERENCHAK

A Call for Proactive Road Design

Many dangerous streets are overlooked for improvement by traffic engineers because the sheer risk of biking or walking there produces a nil rate of use, and following that, crashes. Nicholas Ferenchak, a professor of Civil Engineering at the University of New Mexico, breaks down the tool he built to proactively analyze streets that children might use to walk to school based on crash-fear trip suppression instead of crash rate.

When transportation safety analysts prioritize areas for pedestrian and bicycle safety improvements, they look for evidence of crashes, injuries, or fatalities. In doing so, are they ignoring parts of the built environment that are so unsafe that they are never used by pedestrians and bicyclists, and thus do not generate a crash history?

At the University of Colorado, Professor of Civil Engineering Wesley Marshall and I set out to answer this question by looking specifically at child pedestrian and bicycle trips to school—or lack thereof. Based on survey results from more than 1,300 parents in the city of Denver, Colorado, we were able to pinpoint roads with design characteristics that act as barriers for kids walking and biking to school. Children can avoid some of these barriers by simply taking another route. Other times, the alternative route is further than a child will walk or bike, and the trip is effectively suppressed because of perceived safety concerns. With this information on trip suppression, we were able to create a new tool that can help us proactively prioritize projects based on desire lines. Barriers that suppress walking and biking to school—such as sidewalk gaps or high-speed corridors—populate an interactive map that we hope will be used to broaden and deepen discussion of traffic safety priorities, because there are many places—in Denver and around the country—that are so unsafe, they are invisible in traditional safety analyses.

Examples of these invisible safety issues are found throughout our cities. Survey respondent Lisa Kline told us that she would love to have her son bike the six blocks on Steele Street to his school in Denver. Those six blocks only have sharrows, however, which Ms. Kline doesn't believe provide a safe refuge from all the traffic that uses the road to get over I-25. "Shouldn't middle schools and elementary schools have bike lanes connecting them? It's dangerous and I won't let my 7th grader ride his bike to school. So, I drive." Ms. Kline's concern with traffic safety—a concern that is surely echoed hundreds of

thousands of times over by parents throughout the country—illuminates a fallacy in the reactive way that we currently think about traffic safety. Look at any of Denver's crash-based traffic safety reports from the last decade and you'll see that this segment of Steele Street has never been identified as an issue. This is because there were no bicyclist injuries or fatalities—or any bicyclist crashes at all, for that matter—over the last few years. Could it be that there were no crashes precisely because people like Ms. Kline and her son got in a car after they perceived the road as unsafe for cycling? This is a question every traffic engineer needs to begin asking. According to the Vision Zero Network, the goal of Vision Zero is to "eliminate traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all." Right now, because of the "zero" in the name, and the visceral relationship we have with injuries and fatalities, the first part of the definition gets most of the attention. However, the latter part is just as important. By focusing on where crashes are occurring, we are currently taking a reactive approach to our traffic safety issues, possibly only accounting for the fearless walkers and bikers who are out there today. If we want to unlock our streets for interested but concerned users—like Ms. Kline and her son—we need to think about safety more proactively by devising a way to prioritize roads such as Steele Street, before the worst occurs. Professor Marshall and I are currently working with Denver Public Schools, and officials with the city and county of Denver, to do just that. Our proactive safety initiative accounts for neglected traffic safety issues by measuring the number of trips suppressed



ABOUT

Nicholas Ferenchak is an Assistant Professor in the Department of Civil, Construction & Environmental Engineering at the University

of New Mexico. His research focuses on active transportation and safety.

"Are we ignoring parts of the built environment that are so unsafe that they are never used by pedestrians and bicyclists, and thus do not generate a crash history?"

because of safety concerns. If we can identify a road where numerous trips are being suppressed because of these concerns, we can say that something is wrong in terms of safety, even if currently there is no crash history on the road. Recent research shows that these types of facilities that suppress trips are endemic to our cities.

To quantify the number of trips that are being suppressed because of safety concerns, the survey we administered to parents in Denver asked which roadway characteristics would cause them to allow or disallow their children to walk or bike to and from school. Each parent was provided pictures from several roadway scenarios throughout Denver that included various design characteristics previously identified as important factors to parents in Safe Routes to School surveys. Characteristics included the number of travel lanes, presence of sidewalks and bike lanes, vehicle volumes, and vehicle speeds. The presence of sidewalks was the most important factor in the decision to walk, followed by vehicle volumes. For bicycling, vehicle volumes were the most important determinant, followed by the presence of bike lanes. With these results, we were able to derive the rate of disallowance—what we called our suppression rates—for every roadway in Denver, as well as identify specific traffic safety barriers.

However, just because a road is perceived as unsafe doesn't mean that it should be prioritized. What if there is an unsafe road in the middle of nowhere with few possible users? Prioritization must be a combination of safety perceptions and user demand.

To account for user demand in our model,

we first estimated the location of children who would be possible pedestrians and bicyclists. We considered children within half a mile of their closest school as possible pedestrians, and children within one mile of their closest school as possible bicyclists. We then entered traffic safety barriers—as defined by parents in the survey—into our model and determined how far children must walk or bike to avoid those barriers. If the distance a child had to travel to get to school while avoiding those barriers increased beyond the distance they were willing to walk or bike, we considered their trip to be suppressed. The final element of the tool we developed is an interactive map that defines where trips are being suppressed because of safety concerns—regardless of crash history—and which barriers are responsible for that suppression. With this map, traffic safety professionals can, for the first time ever, take a proactive approach to traffic safety. Roads can be made safer for those currently walking and biking while also opening our streets to those who are interested but concerned. Evidence shows that, at least for children walking and biking to school, the majority of our traffic safety issues are neglected by solely focusing on where crashes are occurring. As traffic safety practitioners, advocates, and researchers, we must end this reactive and myopic approach to traffic safety, whereby injuries and fatalities are the only indicators of built environment problem areas. Instead, we must remember to proactively account for unsafe and unused places so that we can encourage safe, healthy, and equitable mobility for all.



BLACK GIRLS DO BIKE: NEW YORK CITY

ING AND SUPPORTING A
UNITY OF WOMEN WHO
ATION, PRESS
ND

DREAM TO
PLAY TOUGH

Every Amazing Lady

TRACEY CAPERS

Build Bike Share for Equity First

No transportation safety project—even in the name of Vision Zero—should move forward without interrogating equity by asking who gets to lead, who makes decisions, who benefits, and who could be harmed by the effort. Tracey Capers, a lead force behind a New York City bike share partnership, models a framework for transportation projects based in racial equity, developed as she introduced bike share to a low- and middle-income black neighborhood in Brooklyn.



Kingston Av & Herkimer St
St. Andrew's Playground

citi bike

W&A NYC

Around the world, in communities large and small, bike share has taken root as a convenient and affordable transportation alternative. United States municipalities are learning what many of their European counterparts have long recognized: bike share is an ideal means of facilitating mobility and providing connections between public transit options. At the same time, the landscape continues to evolve with dockless and pedal-assist bikes, and with for-hire vehicle companies like Lyft and Uber claiming a share.

However, when bike share first came to New York City, and to Brooklyn's Bedford-Stuyvesant—a neighborhood with more low-income residents and residents of color than any neighborhood where bike share had previously launched—I was skeptical. As a senior executive at Bedford-Stuyvesant Restoration Corporation—the nation's first community development corporation—it is my job to support the organization as it relentlessly pursues strategies to close gaps in family and community wealth, to ensure all families in Central Brooklyn are prosperous and healthy. When Citi Bike and the New York City Department of Transportation asked Restoration to encourage neighborhood adoption of bike share into Bedford-Stuyvesant, I wondered, with some doubt, how a bike could address resident displacement or economic disparity, or help build wealth. Residents felt this skepticism, too, having never asked for bike share while the program simply popped up in their backyard. Was bike share meant for them, they asked, or for the new residents moving into the neighborhood in droves?

I decided to suspend my disbelief, and with early funding made possible by the Better Bike Share Partnership and the help of Citi Bike, the New York City Department of Health and Mental Hygiene, and the Department of Transportation, the Bedford-Stuyvesant Restoration Corporation launched a multi-tiered engagement campaign to promote bike share in Bedford-Stuyvesant. The campaign involved promoting riders of

color, weekly guided rides led by community leaders, community-wide events with helmet fittings and giveaways, discount programs and corporate subsidies to make membership more affordable, and innovative pilots providing free memberships for select patients and students.

Equity Before Ridership

Our efforts worked. In just three years, bike share membership in Bedford-Stuyvesant increased by triple digits, growing at a faster rate than it was citywide.

Yet, a year into the effort, it was clear that we had to make the measure of our success much deeper than the number of butts on bikes. We convened 50 partners for a training and workshop on racial equity with PolicyLink—a pioneering national leader in the space—that defines equity as “fair and just inclusion.” Even in an effort as seemingly basic as introducing a new transportation system like bike share, equity necessitates that efforts account for those communities that have been historically affected by disinvestment, and underlying policies and systems that have marginalized residents of color.

The moderators of that training and workshop left us some thoughtful questions to consider as we moved forward and assessed



ABOUT

A Brooklyn resident, **Tracey Capers** is Executive Vice President for Programs at the Bedford-Stuyvesant Restoration Corporation,

responsible for overseeing economic mobility programs and initiatives focused on health disparities. Her leadership in the area of bike share equity is chronicled in various publications, including *Bringing Equitable Bike Share to Bedford-Stuyvesant*, a report co-authored by NACTO and Bedford-Stuyvesant Restoration Corporation. She recently joined the board of directors of Transportation Alternatives and is a winner of its 2017 David Gurin Award. Capers received her undergraduate degree from Yale University and Masters from the University of Pennsylvania, Fels Center of Government.

our work: Who leads? Who decides? Who benefits? And who is harmed? Our partnership gelled as we defined our mission: to develop inclusive programs and policies to promote racial equity through bike share and increase the diversity of bike share riders, in order to improve health and financial outcomes of New York City neighborhoods. Further, we would work to reduce economic and health disparities by addressing social determinants of health and acknowledging historical and current-day inequities rooted in systemic racism. It was a major shift to equity before ridership, and it has made all the difference.

Developing an Equity Model

Too often, new efforts—be they bike lanes or zoning amendments—are thrust upon communities, and residents are denied agency and voice in what impacts them. When Restoration was approached to take on the challenge of bike share's introduction to the neighborhood, I insisted Bedford-Stuyvesant Restoration would only do so if we led the partnership. From a leadership position, we could honor and lift up community voices as the authors and messengers of their fate, early on and in all phases of our efforts. Put simply, movements must reflect the people they seek to engage. Beyond bike share companies, this means all safe streets enthusiasts from city government to private sector, from the advocacy organizations to training and educational institutions, must be prepared to offer ownership and opportunity to the communities where they seek to change transportation. Taken further, when we think job creation, we should not just be thinking of entry level ambassadors and bike mechanics, but also of opportunities for employment and advancement across management. From the street ambassador to the board member, leadership must mirror the communities served.

Economic benefits to the community should always be top of mind. In bringing bike share to Bedford-Stuyvesant, we asked how residents could be better off economically by accruing savings from their membership and

how bike share could be used as an opportunity to get people banked. No doubt, transformative change to the streetscape requires a heavy lean on the organizing power of social movements. We must in turn compensate and value the leaders and organizations we lean on to usher in success.

Further, no resident of any community should have to choose between a meal and traveling across town. As safe, healthy transportation is a public benefit, advocates, employers, and public agencies must work toward making all forms of transportation accessible in price for all people. In New York City, the Better Bike Share Partnership pushed for new payment options, including monthly payment and affordability options for food-stamp recipients, as well as a cash option, given the numbers of unbanked residents in our communities. Partial and full corporate subsidies are a way employers can connect staff to the program in order to help them save money on transportation costs. But accessibility extends beyond pricing. For bike share, for example, station placement is an accessibility issue. In neighborhoods adjacent to Bedford-Stuyvesant, such as East New York and Canarsie, residents have not tried bike share because there are no docks by them. Dockless bike share is a promising solution, and evaluation of the newest technologies is always the right step forward for determining the best way to bring bike share equitably to all communities.

Safety, too, is a conversation that has long been led without racial equity considerations. In a bike share roll-out, for example, long before stations are sited, the overall conditions of roads, bike lanes, and lighting need to be considered, as well as which neighborhoods' street designs suffer from historic disinvestment. These conversations must involve the residents themselves, especially when determining what is needed, where, and when. And safety goes beyond infrastructure. If racial equity is our goal, then safety from police profiling must be a consideration in the improvement of any transportation system. For example, in Bedford-Stuyvesant, while pilot programs

**"Too often, new efforts—
be they bike lanes or
zoning amendments—are
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and residents are denied
agency and voice in what
impacts them."**

abound to get young people on bikes and pre-diabetic patients rolling, members report being pulled over for seemingly no other reason than their riding a bike and the color of their skin.

Transportation equity is a two-sided coin. We cannot expect our transportation projects to be successful if we do not consider equity in their roll-out and construction. We also cannot say that we believe in racial equity without intentionally evaluating the intended and unintended impact on residents of color, some of which may not be obvious. This is why we measure. For bike share programs, it is as important to collect data on membership and ridership by race, as it is by age or location. We must study the unintended results of enforcement policies that disproportionately impact people of color, even if that means discouraging some police traffic enforcement.

A Model for Equity in All Planning

At the end of the day, the forces behind any transportation project must remain interested in gauging how—if at all—communities and residents are better off because of their efforts. This gauge must include economic viability, health outcomes, and community

cohesion in equal measure to safety. If safety is the only mark on your barometer, you are failing.

The paradigm shift we undertook at the Better Bike Share Partnership, based on lessons learned bringing bike share to Bedford-Stuyvesant, can be a model for leading all transportation projects with equity first. To build an equity framework for any transportation project, or movement working toward safe streets and livable communities, consider agency and voice, ownership and opportunity, accessibility and pricing, all types of safety, as well as how and what you will measure.

Imagine if bike share, and every local Vision Zero improvement to the streetscape, truly advanced and achieved equity. Transportation could be a vehicle for economic prosperity and racial equity; economic mobility and health would no longer be a dream but reality for underserved communities; and we would all benefit, from the private operator to the government to the residents themselves.



CAROLYNN JOHNSON &
GONZALO PEON CARBALLO

Teaching Road Safety in Mexico City

From economics to education, many factors complicate local acceptance of Vision Zero. To take up the challenge of integrating Vision Zero into Mexico City, the first city in a low- or middle-income country to adopt it, Carolyn Johnson and Gonzalo Peon Carballo of the Institute for Transportation and Development Policy designed and implemented a project that used youth education as a tool of culture change.



In 2015, Mexico City became the first city in a low- or middle-income country to adopt Vision Zero. In the three years that followed, Mexico's largest city created new road safety regulations, set an ambitious target of reducing fatalities by 35 percent by 2018, and according to data from the Procuraduría de Justicia de la Ciudad de México (city attorney), saw a 21 percent decrease in overall road deaths.

But changing driving culture in a city where, before Vision Zero policies were implemented, around 1,000 people were killed every year—more than half of whom were pedestrians or cyclists—would be no small task. In 2015, road collisions were the most common cause of death for children between the ages of five and nine in Mexico, and the second most common cause among adolescents and young people ages 10 to 20. The vast majority of child fatalities from road collisions happened when children were walking to and from school. Three years after adopting Vision Zero, people were still being killed due to unsafe road conditions at a rate of almost two people a day. Children in Mexico City remained especially vulnerable.

Furthermore, many of the Vision Zero interventions implemented by officials in Mexico City were contested by citizens. Speed humps and sidewalk extensions, a reduction in city speed limits, and automated enforcement cameras faced a backlash from car users. Unfortunately, this backlash was often heard louder than the prevention of loss of life.

To take up the challenge of changing a culture of unsafe roads in a low- and middle-income country, and to settle opposition to this potentially lifesaving culture change, the Institute for Transportation and Development Policy (ITDP) began in the schools. In 2017, ITDP began working in a public middle school in the central borough of Cuauhtemoc, Secundaria 4 Moisés Sáenz, known for its active school community and committed teachers. The goal was to improve road safety around the school zone and secure lessons to replicate the project further.

ITDP engaged the school community in the process, including the parents, administration, teachers, and students. We held informational sessions with the parents to educate them about the road safety challenges in Mexico City and taught the faculty about road safety principles. The teachers integrated these ideas into their classrooms, and together we started to design a one-day road safety intervention around the school. The school fully embraced the project. Students in the architectural design class addressed street composition, analyzed dangerous intersections and potential areas of collision, and learned about turning circles and other traffic calming measures. Others created traffic barriers, using crates and buckets, for the street crossing. The graphic design classroom developed messaging about road safety and created vibrant, visual posters for the intervention. ITDP was able to secure the support of a local insurance company, which provided volunteers and supplies, and brought local press to cover the event. Critical crossing points going into the school's entrance were painted with bright colors, and traffic barriers were aligned to



ABOUT

Carolynn Johnson is the Partnership Development Manager at the Institute for Transportation and Development Policy (ITDP) and works with ITDP's offices around the world to develop and communicate world-class projects and build strategic partnerships. For more than 12 years she has worked with international environmental public sector partners, including the Rainforest Alliance, New York City's Office of Long-Term Planning and Sustainability, and the U.N. Commission on Sustainable Development. **Gonzalo Peon Carballo** is the Deputy Director at ITDP Mexico and is responsible for managing projects related to urban governance, planning and infrastructure, environmental policy and regulation, and international cooperation. His work has helped bring forward policy innovations such as the Climate Change General Law of Mexico, Vision Zero for Youth, Mexico's Street Design Manual, and Mexico City's parking reform.

SECUNDARIA MOISES SAENZ



reduce vehicle speeds and create more space for the students.

The implementation was a success. Students were energized to see the impact of their work and felt the difference in the street environment that day, as they had more space to cross and get to school. Parents were happy to know that their children's safety was a priority and being taken seriously. The community had a greater awareness of the issues and potential solutions.

After the implementation, the administration of the school insisted that these temporary measures stay until the city built permanent ones. Throughout the school year, the traffic barriers were brought out before and after school to ensure that students still had a safer crossing. ITDP was also able to work with Urban Management Agency in Mexico City, which committed funds to make permanent changes to the school zone, including wider sidewalks, a reduction in the pedestrian crossing length, and the installation of speed humps in the school zone.

ITDP is now aligning this effort, and other efforts around road safety in schools in Mexico City, under the banner of Vision Zero for Youth, connecting this education program to the citywide Vision Zero initiative. By framing changes to the street environment around saving the lives of children, everyday citizens can better understand the reason for such changes, reducing public resistance. To move Vision Zero for Youth forward on a public level, ITDP joined the #YoMeMuevo (#MyMobility) campaign, which asked mayoral candidates running in the 2018 election to publicly commit to protecting the health and safety of the five million children in Mexico City. The #YoMeMuevo campaign set a precedent for the continued improvement of school zones in Mexico City, along with policy commitments to support active mobility and transport-orient-

ed development, among others. Even before they were elected, the six mayoral candidates and most of the politicians running for the city's 16 boroughs committed to prioritizing people-centered street design and saving lives through Vision Zero policies.

Among those politicians was newly elected Mayor Claudia Sheinbaum Pardo. While she committed to keeping road safety on the agenda, Vision Zero for Youth will hold the administration accountable to her commitments.

Vision Zero for Youth demonstrated that the energy and enthusiasm of school communities for road safety measures can speak louder than any government official. As ITDP works with more schools to create road interventions across the city—including a citywide Walk to School Day—we hope that peer-to-peer and school-to-school conversations will grow, and the fervor for protecting some of the most vulnerable citizens of Mexico City will become more common than the opposition.

While it remains to be seen what will become of the youth-led Vision Zero movement in Mexico City, the lessons learned at Secundaria 4 Moisés Sáenz, and schools like it, are those of the power of education and participation and the effectiveness of a ground-up approach to traffic safety. As Vision Zero spreads outside the high-income zones of Europe and North America, this approach of letting the youth lead will be a successful lesson plan.

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SCHOOL SCHOOL SCH

POLLY TROTTENBERG

The New York City Model for Vision Zero Progress

Traffic fatalities in New York City have been in decline during a nationwide rise in automobile-related deaths. Polly Trottenberg, the Commissioner of New York City's Department of Transportation, delivers a blueprint for progress modeled on the Big Apple's success.

CITY
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ENFORCED



When it comes to roadway safety, New York City is bucking national trends. Since 2014, the United States has seen traffic fatalities rise by over 15 percent. Meanwhile, New York City experienced a 26 percent decline in these deaths during the same period—including a 42 percent drop in pedestrian fatalities—and is on pace to see fatalities drop again in 2018.

New York City's encouraging numbers have directly correlated with our role as the first American city to undertake an ambitious Vision Zero safety program, begun with the strong leadership of Mayor Bill de Blasio, the first U.S. mayor to so aggressively embrace the Swedish traffic safety philosophy. Of course, for us, these are not just numbers. They are our families, friends, coworkers, neighbors, and fellow New Yorkers. I wish I could say New York City's success was as simple as bringing together the brightest minds in engineering, enforcement, and education, locking them in a room, and tasking them with solving a problem that city officials worldwide struggle with. But it has taken much more than that.

As many people are keen to remind me, New York City—with its bustling style and sometimes aggressive personality—is not Copenhagen or Amsterdam. Every day, we move millions of commuters, tourists, and tons of freight through the densest urban environment in the nation. To make Vision Zero work in the city that never sleeps, we have taken the best practices from around the globe and combined them with our own ingenuity to create a program that has saved lives and reduced serious injuries in every part of the city and across most demographic groups. Our efforts can serve as a model for other cities to reverse the trend of rising traffic fatalities.

In New York City, Mayor de Blasio's determination was supported by a strong and effective advocacy community, including Transportation Alternatives and Families for Safe Streets, as well as the New York City Council and many other elected officials.

Our first step was to pull together a Vision Zero Task Force, with committed participation from across city government, including the Mayor's Office, my agency, the New York City Police Department, the Taxi and Limousine Commission, and other city and state agencies.

To ensure our plans for Vision Zero were as comprehensive as possible and equitable for all New Yorkers, we used a data-driven approach—looking at the number of people killed or seriously injured per mile of road—to create a series of reports called *Pedestrian Safety Action Plans*, which became our road maps. These plans not only introduced the aims of Vision Zero, but also designated specific priority areas, corridors, and intersections based on the traffic crashes that were most deadly and injurious.

But there's more to creating an action plan than identifying streets and intersections. Those neighborhoods are not just lines on maps; they are communities of people who know their streets better than anybody else. Parents know the intersections where they are worried about their children crossing the street to get to school. Cyclists know where it is frightening to mix with car traffic. Seniors



ABOUT

Commissioner **Polly Trottenberg** leads the New York City Department of Transportation, the nation's largest municipal transportation agency. As Commissioner, Trottenberg directs the agency's mission—focusing on mobility, safety, equity, sustainability and economic growth in DOT's oversight of roads, bridges, bicycle and pedestrian infrastructure, and the Staten Island Ferry. She has led Mayor de Blasio's Vision Zero initiative to eliminate roadway fatalities. New York City has redesigned hundreds of streets and achieved legislative victories in lowering the City's speed limit to 25 mph. Under her leadership, the City has seen its fewest-ever traffic fatalities. With more than 25 years of career public service, Commissioner Trottenberg most recently served as U.S. DOT's Under Secretary of Transportation for Policy in the Obama Administration.

know where a small decrease in vehicle speeds would make a big difference to their sense of security. Through community meetings and online portals, we engaged directly with New Yorkers about their neighborhood knowledge to create our blueprint for safer streets.

Vision Zero's first wave of street safety improvements focused on priority locations. These locations became the proving grounds for active intervention: retiming traffic signals to our new, city-wide 25 mph speed limit; the installation of leading pedestrian intervals that give people walking across the street a head start before turning vehicles; and the installation of landscape changes, like curb extensions, pedestrian islands, and public plazas. Thanks to these interventions, at those priority locations, pedestrian deaths and serious injuries have declined 45 percent. Understanding that Vision Zero gave us the opportunity to be bold in tackling persistent challenges, we designated four major arterial roads in the outer boroughs "Vision Zero Great Streets" and began to intensively redesign them. Among these is the daunting Queens Boulevard, a wide street that for decades bore the moniker "Boulevard of

Death" and saw 18 pedestrians killed there in 1997 alone, and is now home to miles of buffered bike lane, among other improvements. Since reconstruction began in 2015, no pedestrians have been killed on Queens Boulevard, and the number of cyclists has skyrocketed. This was crucial: If Queens Boulevard could be transformed from deadly divider into thriving neighborhood connector, then nothing was impossible. Public outreach and education make sure New Yorkers know what Vision Zero demands of them. We are constantly engaging, through community board meetings and town halls, whenever we plan a project. We may not always get our plans right the first time, but we are committed to integrating public feedback into our designs and policies. We also employed hard-hitting public advertising campaigns reminding drivers that their choices behind the wheel matter, and that while driving is hard, "saving a life is easy" by complying with traffic laws. We used other innovations as well: when data showed pedestrian deaths spiking during autumn and winter evenings, we joined with the New York Police Department and the Taxi and Limousine Commission to create

"To ensure our plans for Vision Zero were as comprehensive as possible and equitable for all New Yorkers, we used a data-driven approach—looking at the number of people killed or seriously injured per mile of road."

"This was crucial: If Queens Boulevard could be transformed from deadly divider into thriving neighborhood connector, then nothing was impossible."

"Dusk and Darkness," an intensive enforcement and education campaign reminding drivers to slow down for pedestrians who are less visible as the sun sets during evening rush hour. We developed and adopted a new pedestrian safety curriculum in New York City public schools, and our team of traffic safety educators conducts training programs at more than 600 schools a year, as well as at dozens of senior citizen centers.

Enforcement, in itself, can be a form of education. About two-thirds of all summonses are now for the "Vision Zero offenses" that cause the most harm—speeding, failure to yield the right of way to pedestrians, failure to stop at a signal, improperly turning, using a mobile phone, and disobeying signs.

Transformational change does not come cheap. Progress on Vision Zero was reinforced by the Mayor's support of major new allocations in Department of Transportation's budget. Through 2021, New York City has committed \$1.6 billion to Vision Zero initiatives.

My agency has honored this commitment with a comprehensive street redesign program: in 2017 alone, the New York City Department of Transportation installed nearly 25 miles of protected bicycle lanes, implemented left turn traffic-calming interventions at 110 intersections, activated 832

pedestrian head starts, and completed 114 distinct safety improvement projects.

With this combination of leadership, policy, and investment, New York City hopes and expects that we will not only continue to buck national trends, but that our improvements will contribute to a long-term culture shift, where safer streets are no longer an exception. As a former U.S. Department of Transportation official, I believe that much of our experience is replicable in cities willing to dedicate their time and resources to street safety.

In a city of 8.6 million highly opinionated people, finding universal consensus on any topic is a challenge. But the public support for Vision Zero is enormously high and grows every year: drivers increasingly understand that traffic crashes—along with fatalities and serious injuries—are no longer inevitable. We've created a New York model for Vision Zero, proudly and unapologetically committed to safety, and our results are proof positive that we have drawn a blueprint with potential for cities across the U.S.

THE **WORST HOURS** TO BE A KID
ARE **PICKUP AND DROPOFF TIMES**

7-8 AM AND **3-4 PM**



ON AVERAGE, **CITY SCHOOL ROADS** ARE

4X MORE DANGEROUS

THAN **RURAL SCHOOL ROADS**



DRIVER BEHAVIOR IN
CITIES AND SUBURBS SAW
THE WORST DECLINE
FROM **2017-2018**



DRIVER BEHAVIOR
FAILED TO IMPROVE
AROUND **90% OF SCHOOLS**



NOAH BUDNICK & DAVID
BRAUNSTEIN

Data Is the New Seatbelt

Tactical safety devices like seatbelts and airbags helped stanch the rise of traffic fatalities in the 20th century, but in the 21st, these innovations have failed to deliver sizable reductions in fatality rates. To reach Vision Zero, Noah Budnick, of Zendrive, and David Braunstein, of Together for Safer Roads, argue that embracing data can light the path to lifesaving change.

To date, road safety technology improvements have maintained a status quo—massive carnage on our roads each year, yet an amount that Americans are willing to tolerate. Since mandating seatbelts in 1968, stricter drinking laws in 1984, and airbags in 1998, the number of traffic deaths in the U.S. has hovered between 40,000-50,000 a year, with an all-time high of 54,589 in 1972. A recent dip in annual fatalities to the mid-30,000 level has been eclipsed in the past two years, with deaths again rising above 40,000 a year. Nonetheless, the traffic safety developments that brought us to this point are truly important, and without them, and as more and more Americans take to the road, annual traffic deaths could easily be 50 percent higher than they are today. While this is a tremendous figure, the sad reality is that these advances are just helping America tread water, not make significant advances towards Vision Zero. In fact, to get to zero in the coming decades, we will need to continuously reduce roads deaths and serious injuries by the thousands every single year, year after year.

A critical factor in preventing crashes is changing people's behavior by changing the environment around them. To develop high-impact measures to stop risky mobility, we must measure everything from the effects of a new speed limit to the way drivers travel on a wide highway. Today we have the technology to collect more data than ever before. It's time to embrace it. Analytics based on data—both predictive and descriptive—is the 21st century's game-changing technology that will help communities save even more lives.

For example, traffic crashes are the number one cause of injuries and deaths for school-aged kids in the U.S. In their annual report on school safety, the road safety analytics company Zendrive found that traffic around schools is the most dangerous during morning drop-off and afternoon pick-up, from 7:00 to 8:00 a.m. and 3:00 to 6:00 p.m. Zendrive's data show that driver phone use, and hard braking, are the most frequent risky

behaviors around schools at these times. Under these conditions, it is no surprise that children are killed at such a high rate. Notably, after speed enforcement cameras and other Vision Zero improvements were installed near New York City schools, Zendrive found an improvement in driver behavior. In 2017, Manhattan, Brooklyn, Queens, and the Bronx were among the ten most dangerous counties in the country. In 2018, none of them appear in the ten worst list. In 2017, three school locations in Manhattan were among the ten most dangerous schools in the country. This year, there are no schools from New York City on that list.

Another example is in Atlanta. The city's North Avenue, a multi-modal high activity corridor with increasing development and a mixture of uses, suffered from heavy congestion and a crash rate over 200 percent worse than the statewide average for similar corridors. To determine how best to reduce the North Avenue crash rate, and ultimately save lives, Atlanta analyzed hyper-local root causes of collision risk and created analytical indices to estimate risk levels. The analysis was based on curating and aggregating data sources from the City of Atlanta's publicly available data and private sector data, which uncovered increased collision risk when there was congestion around events, rainy conditions during early morning hours, sus-



ABOUT

Noah Budnick is the Data Practice & Policy Director for Zendrive. He leads the company's work to bring driver behavior data to

preventing traffic deaths and injuries. At Zendrive, Budnick wrote some of the largest driver behavior studies ever done in the U.S., including the *2018 School Safety Snapshot* and the *2018 Distracted Driving Snapshot*. **David Braunstein** is President of Together for Safer Roads. As president, Braunstein's leadership helps to scale and sustain the global coalition's efforts to improve road safety and save lives. He is responsible for overseeing the organization's strategic direction, implementing local demonstration projects, and building key partnerships.

"To develop high-impact measures to stop risky mobility, we must measure everything from the effects of a new speed limit to the way drivers travel on a wide highway."

ceptibility to water-logging around high traffic segments, and driver behavior of failing to yield and changing lanes improperly.

With these insights, the City of Atlanta incorporated multiple technology components designed to facilitate and promote safety for pedestrian and bicycle traffic, including the use of the latest adaptive traffic signals for a safer, more efficient flow of bus and vehicular traffic in real-time conditions, and prioritizing fire engines and ambulances traveling along the corridor on emergency response calls. Since then, there has been a 26 percent reduction in the number of crashes along the route. Particularly, head-on collisions and opposite-direction sideswipes have fallen by 100 percent, and rear-end and same-direction sideswipes have been reduced by 24 percent and 34 percent, respectively.

In Chicago, which experiences nearly 3,000 road crashes a year between vehicles and pedestrians, about 800 of which involve children, artificial intelligence data helped reduce crash numbers and save lives.

Geotab—a fleet tracking and management company—used artificial intelligence to predict hazardous driving areas in Chicago. By looking at areas where vehicles tend

to harsh brake or experience crash-level events, Geotab uncovered a school in the north end that had a particularly hazardous area located near where children park their bicycles. In this specific area, the crosswalk and school zone signage were very far from the bike racks and there was a lack of a stop sign from an oncoming alley that connects to the street.

With this analysis, Geotab was able to provide Chicago with a data-driven decision-making approach to determine if, and how, they could move the bike rack area, provide more signage, or place a stop sign in the alleyway approaching the street.

These examples are just a few of the many that showcase how—by “digitizing Vision Zero” and incorporating new insights into our intervention plans—we can accelerate outcomes and get closer to a world where no one is at risk of being killed on the roads. More than ever, communities need to embrace innovative, evidence-based transportation safety solutions based on big data and analytics to save lives.



LEFT TURN
ON
ONLY



Street Closures
Due to Construction

BICYCLE

REBECCA SANDERS & LIBBY
THOMAS

How Systemic Safety Can Predict Crashes

Traffic crashes can be predicted beyond crash-prone locations if municipalities seek out the characteristics of crash-prone locations wherever they occur. Dr. Rebecca Sanders and Libby Thomas, who helped the city of Seattle embark on a citywide systemic safety analysis of bicycle and pedestrian crashes, lay out how crash prediction can save lives before the worst occurs.

North American cities are increasingly adopting the Vision Zero goal of eliminating traffic deaths and serious injuries, often with a focus on improving pedestrian and bicyclist safety. This focus is well-deserved—nationally, pedestrians and bicyclists are killed in disproportionate numbers compared to overall crashes, and the number of pedestrian and bicyclist fatalities has increased over the last few years after reaching significantly low numbers in 2009 (pedestrians) and 2010 (bicyclists). While this emphasis on traffic safety is not new for transportation agencies, the introduction of Vision Zero and the clarity of its overall goal have given traffic safety a new urgency in many places, and sparked the introduction of an innovative, proactive way of looking at road design: systemic safety analysis. Systemic safety analysis is a way of examining crashes by focusing on the common risk factors throughout a network, rather than just prior crash locations. In so doing, patterns or problematic combinations can be detected and identified across a jurisdiction in a more proactive way. This technique is not new, having been developed to try to understand risk factors associated with rural crashes that occur in low numbers over a large area, but its application to urban areas and to pedestrian and bicyclist safety is more recent—a byproduct of the introduction of Vision Zero—and promising.

How Systemic Safety Analysis Works

Traditional traffic safety efforts have tended to focus on identifying patterns within datasets, such as who is injured, what they were doing at the time of the crash, and the type of crash that resulted, and then identifying and treating “hot spots” where crashes occur in large numbers. These types of analyses, known as crash trend and hot spot analyses, can be used to identify and address problematic behaviors and locations, particularly if they involve high numbers of more severe crashes. However, these methods are primarily reactive, in that they focus on areas where crashes have already occurred. Furthermore, comprehensive, site-specific

treatments can quickly consume resources, becoming less cost-effective as the number of expected crashes at any one site decreases, a common issue with pedestrian and bicyclist crashes. Thus, while it makes sense to invest resources to address a particularly high-crash location, a large number of lower-crash locations may be more difficult and costly overall to address as isolated locations. These crash-based approaches also tend to target only a small portion of the total expected pedestrian and cyclist injuries across a network, which often occur in low numbers at many different locations, and shift location over time. These conditions make the reactive approach less helpful in addressing longer term safety.

In contrast, a systemic approach aims to treat many locations that have similar safety issues and conditions, with lower-cost but still effective treatments that target the crash-type patterns (e.g., motorists striking pedestrians crossing at uncontrolled locations) and other factors (e.g., design that encourages higher speed, insufficient lighting) present. Treatments are applied in a systemic way—not at every location, but at priority locations system-wide—to reduce the likelihood of severe crashes. Additionally, by examining the presence or magnitude of risk factors such as the average annual daily traffic for motor vehicles, number of traffic lanes, traffic speed, and signalization, practitioners can develop an understanding of—and a plan to address—if and how those factors are associated with various crash severity levels or crash types.



ABOUT

Dr. Rebecca Sanders is the Research Practice and Vision Zero Lead at Toole Design.

Libby Thomas is a Senior Research Associate at the

University of North Carolina, Chapel Hill's Highway Safety Research Center. Sanders and Thomas worked together, along with colleagues from Toole and UNC HSRC, on the Seattle Bicycle & Pedestrian Safety Analysis.

Case Study: Seattle, Washington

The bicycle and pedestrian safety analysis, which I helped conduct for Seattle, Washington, provides a real-world example of systemic safety analysis. This project included a crash trend analysis and a systemic safety analysis of the 3,726 pedestrian-motor vehicle collisions and 3,120 bicycle-motor vehicle collisions that occurred in the city from 2007-2014.

The project team first examined the common crash types, injury severities, and contributing factors for the collisions, identifying several crash types deserving additional focus. We then combined crash data with data on a host of roadway and environmental features, as well as “ballpark” annual pedestrian and bicycle volumes we had estimated for the network. These ballpark volumes helped to estimate Safety Performance Functions (or SPFs, which estimate the relative influence of various risk factors) and to account for the role of exposure (i.e., the extent to which bicyclists and pedestrians were “exposed” to traffic) in crashes for the most prevalent and injurious crash types in the city. By applying the SPFs network-wide, we were able to evaluate how the predicted risk factor combinations matched with where crashes had occurred, and the Seattle Department of Transportation’s own understanding of higher-risk locations.

Through the development of the SPFs, we identified combinations of roadway features more likely to be associated with various crash types. Most of these features represented complexity of some sort, e.g. whether the crash occurred at the intersection of an arterial, whether there was a signal, the number of lanes, the number of legs, the presence of transit stops, and the density of commercial development, among others. When the Seattle Department of Transportation applied

the results of the analysis to the network, some locations with problematic features but no crash history in the past eight years rose to near the top of the list. City staff was not surprised, as many of the locations had been reported as unsafe by citizens. On a site visit, we watched a harrowing near-miss between a young bicyclist who had the right-of-way and a speeding, turning driver—an illustration of the analysis that the location seemed to be “waiting” for a crash to happen. Seattle officials are using the analysis and model-derived predictions, weighted by prior crash histories, to help rank locations for further assessment and potential systemic treatments relevant for each modeled crash type. For example, because turning conflicts were identified as a major issue at many signalized locations, Seattle has begun implementation of a multi-year program to install leading pedestrian intervals, among other programs and treatments. The results also inform planning and design decisions by the Seattle Department of Transportation across departments, with staff reviewing the site rankings whenever a location is considered for any type of project.

Conclusion

Systemic safety analysis is a promising tool for agencies pursuing Vision Zero. By using data to look for locations where combinations of features already associated with crashes occur network-wide, systemic safety analysis provides a rigorous complement to more traditional hot spot analysis. In this way, practitioners can begin to proactively target locations with higher than expected numbers of crashes—even before crashes occur—and more adequately plan and design safe conditions throughout the transportation network.

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LARS STRÖMGREN & HANS STOOPS

Sweden Asks What Is Beyond Vision Zero

After 20 years of Vision Zero focused on motorists, Sweden asks whether cyclists have been left behind, and makes a shift toward active mobility. Lars Strömgren and Hans Stoops of Cykelfrämjandet, the national Swedish cycling advocacy organization, make the case for a Vision Zero that leads with people on bikes.

During the 1960s, Sweden, like other postwar European economies, experienced explosive growth coupled with improved standards of living, including increased mobility due to widespread access to automobiles. But there were unintended consequences behind this shiny totem of progress: death tolls on public roads rose in parallel with the increased use of private motor vehicles. “Vision Zero” emerged as a strategy to navigate the conflicting demands of valuing individuals’ lives and the desire to improve accessibility to car traffic, and the traffic safety campaign was launched by the Swedish government in 1997 with the novel goal of reducing the number of road deaths to zero. In Sweden, the campaign has been very successful in achieving its narrowly defined goals, and in its first 20 years, the number of people killed in traffic mishaps each year halved from 541 in 1997 to last year’s 270.

However, Sweden’s Vision Zero approach, and the implemented interventions, have been disproportionately car-centric. Improvements in traffic safety made during the Vision Zero era have almost exclusively benefited motorists: cars equipped with better active and passive safety measures allow motor vehicle occupants to escape even fairly serious crashes unscathed while vulnerable road users—the elderly, children, cyclists—continue, to a large extent, to die or get in collisions with motor vehicles at the same rate as before.

In particular, in the past two decades, traffic safety for occupants of motor vehicles has improved at cyclists’ expense. New cable road dividers—wire ropes attached to weak posts used to divide highways—are a case in point. The use of wire cables to divide roads has contributed to a reduction in collisions for motorists, but at the same time, has made it impossible for cyclists to fully utilize the Swedish road network. This has had the direct effect of decreasing cycling in rural areas of Sweden, and guaranteeing that no motorists in rural areas switch from driving to cycling. Similar results are found nationwide

where the number of children who walk or cycle to school has been cut in half, from 94 percent in the beginning of the 1980s to 30 percent in 2007.

In 2016, the Swedish Transport Administration published a 20-year review of Vision Zero, describing many successful strategies for preventing mishaps for motorists. For cyclists, however, traffic incidents are considered “inevitable.” Recommendations for the alleviation of injuries and minimization of damage to cyclists are considered the responsibility of the cyclists themselves, who are encouraged to slow down and wear fluorescent clothing and protective equipment. The requirement that cyclists should protect themselves from dangerous roads and drivers risks discouraging people from choosing to ride bikes and leading to decreased cycling in general.

In actuality, there are a multitude of measures that can be made on a systematic level to decrease the incidence of serious mishaps for cyclists. The Swedish Transport Agency’s own calculations show that safer cycling infrastructure would lead to 78 fewer seriously injured cyclists per year. Decreased traffic speeds in urban areas and better winter road maintenance for cyclists would lead to 48 and 38 fewer serious injuries, respectively, per year.

Vision Zero’s main principle is preserving



ABOUT

Lars Strömgren was elected as President of Cykelfrämjandet in 2014, and is the youngest-ever Vice President of the European Cyclists’

Federation, serving as acting president during the beginning of 2018. He has been recognized with the Clarence Morberg Prize for Urban Planning 2015, and Communicator of the Year in 2016 by the Swedish Communication Association. **Hans Stoops** is a Project Manager at Cykelfrämjandet, working to improve conditions for cyclists in cities, wilderness, and everywhere in between. Born in the United States on the same day as the mountain bike, he now resides in Sweden.

life without the negative consequences, both social and economic, of decreased mobility. Subsequent to the launch of Vision Zero, increasingly sedentary lifestyles and new research about the positive health benefits of physical activity have made it all the more clear that improvements in traffic safety must not be made at the expense of active mobility, either.

Every person who chooses to ride a bike instead of taking a car saves lives. The health, economic, and social benefits of increased walking and cycling exponentially exceed any associated risks. Europe's Physical Activity Through Sustainable Transport Approaches (PASTA) project recently published results of a study concluding that cycling was the mode of transportation with the greatest health benefits: cyclists exhibited better general health as well as better mental health and lower levels of stress than people who traveled primarily by car or public transport. The PASTA project postulates that as many as 10,000 deaths per year may be prevented by improving Europe's cycling infrastructure.

PASTA's findings are supported by the research of Professor Peter Schantz from the Swedish School of Sport and Health Sciences in Stockholm. Dr. Schantz has calculated that if one-third of Stockholm's car commuters switched to cycling, the resulting improvements in air quality would save 60 lives a year and improve living conditions for individuals with respiratory problems. In addition, 20 cases of early deaths would be prevented by the increased activity of the cycling commuters themselves.

On average, three cyclists die in Stockholm each year in traffic. Policies that lead to less dangerous emissions and congestion in our cities at the same time improve the quality of life of people with respiratory distress,

while contributing to reversing the global climate changes affecting everyone's health. In Sweden, 1,500 people die every year due to the effects of air pollution and road dust from traffic, and several thousand people die prematurely as a result of physically inactive lifestyles. Thanks to the growing trend of e-bike use, the potential for active mobility to gain modal share from motorized transport is greater than ever.

To celebrate the twentieth anniversary of the launch of Vision Zero, a new and updated version dubbed *Moving Beyond Zero* was presented by the Swedish Traffic Safety Council for Active and Sustainable Mobility. The goal of *Moving Beyond Zero* is to realize a transport system that promotes active mobility in the form of cycling and walking to improve quality of life and public health in addition to saving lives and reducing traffic fatalities and injuries. Vision Zero has been successful in many ways, and the objective of reducing traffic injuries and fatalities to zero should continue. At the same time, it is crucial for the further development of Sweden's road safety and the international adoption of the Vision Zero approach to allow the campaign to evolve. Promoting active mobility can reduce the number of road deaths while simultaneously improving quality of life and health.

To organizations just now endeavoring to implement Vision Zero strategies, we offer this advice: measures to improve traffic safety must not be made at the expense of cyclists and pedestrians. Striving to achieve zero traffic fatalities is a noble and progressive goal, but this endeavor must be balanced with reflective evaluations to ensure that implemented traffic safety measures do not negatively impact the potential for active mobility.

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ERIC RICHARDSON

Fleet Safety Is Traffic Safety

The transition of municipal fleets—with technology, training, and management—has massive potential to advance Vision Zero in urban centers. Eric Richardson, Deputy Chief Fleet Management Officer of the New York City Department of Citywide Administrative Services, explains how fleet management became a tenet of Vision Zero in New York City, and what it took to transform the largest municipal fleet in the nation.



While Vision Zero in other locations is focused on road design and enforcement, in New York City, the design and operation of the municipal vehicle fleet plays a leading role.

This is in part because of the insistence of the chief officer of New York City's municipal fleet, Department of Citywide Administrative Services Deputy Commissioner Keith Kerman, who argued, in the early days of Vision Zero, that the size and ubiquity of New York City's municipal fleet meant Vision Zero could not succeed without it. With the City of New York in possession of over 31,000 vehicles—including sanitation trucks, fire apparatus, ambulances, paving trucks, sewer trucks, and police vehicles—the municipal fleet is a critical part of the street and transportation system, and its vehicles are ubiquitous in the five boroughs. New York's is the largest municipal fleet in the country, and the largest vehicle fleet of any type in the nation.

But the leading role of fleet safety in New York City's Vision Zero is also due to the disproportionate danger that large vehicles pose on city streets. Trucks make up just 3.6 percent of vehicles on New York City streets, but are involved in 12.3 percent of pedestrian fatalities and 32 percent of bicyclist deaths. While many of the cars and trucks involved in these incidents are not part of the municipal fleet, the City of New York saw a chance to affect these statistics by leading the way with the vehicles in their direct control.

Mass Installation of Side Guards

As part of New York City's *Vision Zero Action Plan*, the Department of Citywide Administrative Services, which oversees the municipal fleet, was tasked with recommending safety related devices for city-owned vehicles and other vehicles under city regulation.

Under the advisement of the federal Department of Transportation Volpe Center, truck side guards appeared as the common-sense safety technology at the top of the list. Studies showed that in the United Kingdom,

widespread adoption of side guards reduced fatalities and severe injuries in side impacts with trucks by 61 percent for bicyclists and 20 percent for pedestrians.

Mayor Bill de Blasio agreed, and a pilot program to install side guards on the municipal fleet began in February 2015. By June, the mayor signed into law a requirement that all eligible city-owned trucks would have side guards installed, as well as any private sanitation vehicle regulated by the City of New York—an installation to be completed by 2024. Today, the New York City municipal fleet has over 2,500 vehicles with side guards installed, making it the single biggest side guard implementation in the United States.

Evaluating Other Technologies

The side guard initiative was a first step in a broader plan to enhance safety in the design of fleet units. While New York City operates over 160 different types of fleet units, almost all can be found in the retail and commercial equipment markets. In 2017, after a widespread two-year effort involving every city agency reliant on New York City's fleet, from the Parks Department to Sanitation to Corrections, the City of New York published its first-ever *Safe Fleet Transition Plan*—partly an evaluation of safety technologies through



ABOUT

Eric Richardson is the Deputy Chief Fleet Management Officer at the New York City Department of Citywide Administrative Services.

He serves as a liaison to Mayor Bill de Blasio's Vision Zero Task Force and works to implement Vision Zero goals for New York City's fleet, including the roll-out of a citywide telematics system, managing the city's defensive driving program, administering the safe fleet transition plan, and creating partnerships with other government fleets, non-profit organizations, and advocacy groups to encourage best practices for vehicle fleets. He worked with the National Guard in the wake of Superstorm Sandy, coordinating an emergency fueling operation as the city recovered from the largest liquid fuel crisis in over 30 years.

"Customers should not be forced to buy leather seats, sunroofs, and high-tech entertainment consoles to get access to automatic braking, driver alerts, safety cameras, or heated mirrors."

marketplace research, partly a review of crash trends in the city, as well as a survey of over 12,000 city vehicle operators. It is a comprehensive plan to ensure that specifications for new and replacement fleet vehicles incorporate the same safety standards across all agencies, so that the City is always procuring the safest possible vehicles that are operationally suitable and practically available for the needed vehicle application. Considering the infinite permutations of vehicles and safety specifications these standards could cover, the possible technologies were simplified into three categories: required technologies, and two categories of optional technologies—best practice, or “should” technologies, and exploratory, or “may” technologies.

Required technologies include truck sideguards, automatic braking, automatic headlights, backup cameras, and telematics for all fleet units, for monitoring, alerting, and preventing unsafe or risky behaviors by operators. Among best practice or exploratory technologies, the *Safe Fleet Transition Plan* suggests safety devices such as blind spot monitors, driver alert systems, surround cameras, turning alarms, lock boxes for cell phones, and enhanced seat belt reminders.

Influencing the Technology Creators

With the buying power of the nation’s largest municipal fleet, the City of New York is

pushing car manufacturers and vendors to further develop safety technology, both by meeting the requirements of our *Safe Fleet Transition Plan* in new models, and by going beyond. New York City aims to help push the marketplace to provide safer and more sustainable options for all fleet and retail customers.

As critical as technology development is how vehicles are packaged for sale. Too often, safety is bundled with entertainment packages and other discretionary or luxury items by car manufacturers and dealers. Safety is not a luxury or trim option. Customers should not be forced to buy leather seats, sunroofs, and high-tech entertainment consoles to get access to automatic braking, driver alerts, safety cameras, or heated mirrors. As part of Vision Zero, the City of New York has called for vehicle manufacturers to separate safety from luxury, and make the highest level of safety a baseline, available as part of all vehicle models.

Real Results in Fleet Safety

In addition to the *Safe Fleet Transition Plan*, New York has implemented other strategies to improve safety in the municipal fleet. Today, all operators are required to participate in day-long safety trainings, with over 40,000 already trained. The first-ever crash tracking system now watches the fleet citywide, using telematics in fleet units. All city drivers are

held to a higher standard, creating an authorized driver program, barring hands-free phone use, and recognizing the safest drivers at annual Vision Zero fleet safety forums. These initiatives are having an impact. In the first nine months of 2014, shortly after Mayor Bill de Blasio inaugurated Vision Zero in New York, there were eight fatalities involving the city fleet in non-emergency response traffic events. In the four years since, there have been five in total. Collisions per mile are down 17 percent since the first year of Vision Zero.

In the fall of 2018, the first update of the *Safe Fleet Transition Plan* will be published, based on additional discussions with fleet managers and drivers, meetings with car manufacturers and safety vendors, workshops and roundtable discussions with various public fleets on what is working for them, and conversations with road safety advocates to understand trends and concerns. It is important to recognize the enormous pace of innovation in the fleet industry, particularly around safety and telematics. Updates will look at the safety impacts of various types of cab-over designs, compared to conventional truck design; line of sight; and encouraging the development of automatic braking technologies for medium- and heavy-duty trucks to match progress for light-duty vehicles. A National Highway Traffic Safety Administration study found that over 800 pedestrian deaths nationwide could be avoided through a comprehensive implementation of various automatic braking systems. Each new iteration of the *Safe Fleet Transition Plan* will include evaluations of promising new technologies and information such as this. Over time, the required and optional safety requirements will be adjusted, alongside new product research.

Today, thanks to funding from the U.S. Department of Transportation, New York City's fleet is evaluating the safety functionality and effectiveness of some of that brand-new technology—the installation of vehicle-to-vehicle and vehicle-to-infrastructure telematics affecting as many as 3,000 units in the city fleet—in a select area of Manhattan and Brooklyn. This technology has the potential to alert drivers, through direct short-range communication, to take specific actions to avoid a collision or reduce collision severity if one occurs. Some of the applications of this technology being evaluated are traffic signal change warnings, blind spot and pedestrian alerts, road hazards, pedestrian-oriented phone apps, and the ability to alert drivers to road restrictions such as weight and height maximums. If the technology is worthwhile, you will see it on New York City streets, and can read about it in a future iteration of the *Safe Fleet Transition Plan*.

In operating the nation's largest municipal fleet, New York wields the power to shift the safety equation on city streets and in the national marketplace. However, Vision Zero is a sum of parts, and the stewards of New York City's fleet recognize the critical importance of street and traffic design, and the benefit of the City's investment in street upgrades, led by the New York City Department of Transportation and the enforcement efforts of the New York Police Department. It is not common for fleet management to play a role in Vision Zero, but by taking a new, critical, and holistic look at vehicle design, the City of New York is saving lives. Vehicle design can play an equally critical role in transforming transportation and achieving Vision Zero.

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BIKING PUBLIC PROJECT

A More Equitable Definition of Safety

Safety is often defined by traffic crash severity reduction, but Vision Zero in America cannot succeed without a broader definition that addresses the need for spaces safe from police profiling. The Biking Public Project, a group that works with people who have been traditionally left out of cycling discussions, such as women, people of color, immigrants, and working cyclists, addresses the inequity inherent in Vision Zero in the U.S., and proposes ways to solve it.

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The Biking Public Project was founded to amplify the voices of immigrant food delivery workers in New York City, but from time to time in this work, we are asked about Vision Zero. Since our work centers on representation, answering how to address crashes and fatalities through Vision Zero always makes us pause.

Why ask us? We are asked about Vision Zero because in New York, the city officials in charge of Vision Zero—namely Mayor Bill de Blasio and the New York Police Department—invoke the adopted-from-Sweden safety policy as a rationale for hyper-policing the immigrant delivery workers we work with. While most of these workers use electric bikes to complete their deliveries, and are themselves at risk from the unsafe streets and dangerous drivers who cause the majority of traffic crashes in New York City, and despite public safety data that shows that food delivery cyclists on e-bikes are not dangerous to New Yorkers, delivery workers are a main target of Vision Zero enforcement. This illustrates how Vision Zero fails to prioritize the rights of all New Yorkers to feel safe in public space.

What does feeling safe mean? Feeling safe should certainly encompass the current Vision Zero definition of not fearing that a car is going to run into you. But feeling safe might also include street harassment that women face walking outside, a parent feeling comfortable letting their kids play on the sidewalk or people with black and brown skin not having to fear for their lives every time law enforcement officers are nearby. Still, it is important, when we think and talk about helping people feel safe, that we pay attention to the present power relationships and inequalities. For example, if wealthy privileged people feel unsafe around people from marginalized groups, it does not mean that this feeling of danger should be taken at face-value without understanding the powerful ways in which systems of racism and classism manufacture safety and danger. When it comes to feeling safer on the street, communities of color, especially black and

brown communities, are disproportionately affected by a multitude of dangers, including police discrimination, gun violence, traffic violence, divestment, and displacement. All people are not treated the same in public spaces, nor are all people allowed to participate in the creation of public space in the same way. Where people of color and immigrants are “othered,” treated like they do not belong, or viewed as dangerous when using the street, white people are welcome and made to feel safe. At the same time, people of color and immigrants disproportionately bear the brunt of traffic-related violence. Until we recognize the intersectional nature of what people of color experience on city streets and in public spaces, we are only scratching the surface in terms of making streets safe for all people.

Recognizing the problems with enforcement is key to making spaces truly safe for all people. While Vision Zero is not only about enforcement, the enforcement strategies that have been used in the name of Vision Zero since it began in the U.S. have negated any trust built between Vision Zero proponents and people of color. Issues with unfair policing of marginalized people in public spaces, such as the criminalization of the



ABOUT

Biking Public Project works with groups who have been traditionally left out of cycling discussions, such as women, people of color, immigrants, and working cyclists. It began as an initiative from the 2nd Annual Youth Bike Summit in 2012. Biking Public Project's work has included a project of portraiture and interviews with bicyclists in underserved neighborhoods, a zine about organizers' experiences as minority cyclists starting an organization, and the conducting of public workshops. Biking Public Project currently partners with immigrant food delivery cyclists and other community organizations for participatory action research and advocacy on issues like the unjust and racist hyper-policing of workers' electric bikes.

homeless, confiscation of immigrant delivery workers' e-bikes in New York City, and black people getting killed by police, have led people of color to feel fearful of simply being in a public space. All too often, Vision Zero becomes just another mechanism and excuse to enact zero tolerance—a form of disregard for people's complex humanity.

Calls for zero tolerance policing often ignore how laws are designed to exclude certain people from the boundaries of legality. For example, in New York City, a crackdown on e-bike use was justified by the idea that immigrant delivery workers were using “illegal” and “dangerous” bikes. This focus on legality ignores how New York City's motorized scooter law has been crafted and shaped to criminalize marginalized groups while maintaining the legal status for privileged people. For example, in 2004, New York City's motorized scooter laws targeted pocket bikes (or, motorized mini-bicycles), which were used by black and brown teenagers, but exempted low-speed e-bikes and Segways, which were used by wealthier, privileged riders. By 2013, after the rise of a more widespread app-based food delivery economy, and the immigrant e-bike workers who followed, the City Council amended this law, removing the exemption and making it easier for the NYPD to police immigrant delivery workers. In the last few months in 2018, Mayor de Blasio permitted the use of pedal-assist e-bikes, most commonly used by white-collar riders, but maintained the criminality of throttle e-bikes, which are regularly used by immigrant delivery workers. Throughout the history of New York City's motorized scooter law, legality has been determined by who is riding which kind of vehicle. This is just one example of how aggressive policing and unfair treatment leads to a compounding effect for people of color, where they do not feel safe in multiple ways, not just due to traffic violence.

Neither street safety laws, nor their enforcement, are made for every community equally. As advocates and government officials committed to Vision Zero, what can you do? How can you build a woke Vision Zero? It

starts with community organizing.

In order to bridge historical divides, build trust, and create actual safer streets for all people, we must listen to the local experts on the ground, step back, figure out fair ways to include all people in the Vision Zero movement, and let those people use their voices. This is not easy, but it is necessary in order to make Vision Zero a broad movement that all people can rally around.

The good news is that there is a process for doing this, and it's based on participatory community organizing principles—like trust, listening, and meeting people where they are—in order to pursue a common agenda. Right now, Vision Zero is prescriptive and data driven. But that data-driven approach is problematic if it is not coupled with the expertise of locals on the ground. The key to governments and advocates acting more like community organizers is a willingness to adjust the agenda depending on what you hear from the people affected. It is a process that takes time and trust-building.

For example, when the Biking Public Project first started working with delivery cyclists, we made our approach not as experts who knew what the solutions were, but as organizers trying to understand the issues of affected delivery cyclists. Vision Zero might tell us that the issues that delivery cyclists faced had to do with street design, but for delivery cyclists, that was far from a top concern, falling below issues of wage theft, unsafe working conditions due to the accelerated pace of the job, unfair policing, as well as confiscation and ticketing for e-bike use. Without knowing this information, we would have missed the mark of helping the affected community by spending our time in design meetings to create better street designs for delivery cyclists. Instead, we partnered with immigrant and workers' rights organizations to fight unjust and racist policies and enforcement.

Beyond listening, it is critical that you focus on the most marginalized people from any given room. This starts with understanding the barriers keeping them from participating. Public Vision Zero meetings—whether in

"When it comes to feeling safer on the street, communities of color, especially black and brown communities, are disproportionately affected by a multitude of dangers, including police discrimination, gun violence, traffic violence, divestment, and displacement."

advocacy or officialdom—should include providing food, childcare, interpreters, and translators. Organize meetings around schedules that are convenient for community members, not the traditional 9-5 schedules of advocates or government officials, understanding this could mean having meetings on weekends or during the day. Instead of just using their faces for marketing materials, support people of color leading movements by creating middle-income jobs for people of color, and providing funding for people of color-led advocacy.

Perhaps most importantly, in order to create truly safe streets, policing should be on the back burner as a solution, and trust-building, by including all affected people in creating safer streets, should be at the top of the agenda.

We must update our understanding of Vision Zero to require that all people feel free to bike and walk without fearing for their lives on all streets and in all public spaces—free from fear of traffic, police, harassment and discrimination, and regardless of race, class, or legal status. It is time to look past Vision Zero to think, imagine, and implement radical ways to restructure streets so as to undo these oppressive systems and begin to heal the historic and modern traumas they wrought.

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NAOMI DOERNER & JESSIE SINGER

Inside the Nation's First Transportation Equity Program

In 2017, the Seattle Department of Transportation launched a first-of-its-kind program to make its transportation network, and the process by which that network is planned, increasingly equitable. Naomi Doerner serves as Transportation Equity Program Manager at the Seattle Department of Transportation, and sat for an interview with Editor in Chief Jessie Singer to explain what it takes to build a new, fairer framework for transportation planning.

To start, can you explain what transportation equity means? When we launched the Transportation Equity Program at the Seattle Department of Transportation, we defined it with a picture goal: to provide safe, environmentally sustainable, accessible, and affordable transportation options to support communities of color, low-income communities, immigrant and refugee communities, people with disabilities, people experiencing homelessness or housing insecurity, LGBTQ people, women and girls, youth, and seniors. Transportation equity should allow all people to travel in and out of, and thrive in, vibrant and healthy communities, and eliminate, or at least mitigate, racial disparities and the effects of displacement.

What does equity have to do with Vision Zero?

First off, Seattle’s Vision Zero program is grounded in the belief that the most effective way to reach zero is through redesigning our streets, to prioritize safety over speed or throughput. To state it plainly, the goal is to enhance safety by changing street design, not relying on enforcement to change behavior. The Seattle Department of Transportation uses data to drive our investments in street design, which means we focus on the corridors with the most serious and fatal injury crashes. Like many other cities, Seattle’s most crash-prone streets intersect with our most diverse communities. Linking back to the data, we can justify our approach and prioritize our work based on need, rather than on the number of phone calls we receive from more connected communities. We’ve also made it a priority to engage more with communities who don’t often have a voice, or have historically been disenfranchised and not included. Our Transportation Equity Program and Vision Zero staff have teamed up to bring information, services, and resources to people at places like food banks and community festivals. In partnership with community liaisons from Seattle’s Department of Neighborhoods, we’re able

to bring culturally relevant, in-language materials to immigrants, refugees, and other historically underrepresented communities. We’ve also worked closely with those liaisons to engage residents and businesses along Seattle’s Rainier Avenue corridor—our highest-crash street, which also runs through our most diverse neighborhoods—where we’ve made significant and successful design changes and will continue to make changes.

How did the Transportation Equity Program in Seattle begin?

When we launched in 2017, the program was among the first of its kind in the country, but it was built upon a long tradition of racial equity and social justice work in the city. It’s an outgrowth of goals set in 2004, when the City of Seattle established an initiative to end institutional racism within city government. Since then, many departments have invested in and contributed to achieving the city’s equity and social justice goals—there is a racial equity lens within each department, which helps to inform how staff analyzes and does their core work, as well as institutionalizing racial equity in policies, practices, procedures, and programs. Seattle DOT’s core values are to create a

ABOUT



Naomi Doerner is the Transportation Equity Program Manager at the Seattle Department of Transportation. She has

12 years of professional experience leading inclusive advocacy, planning, and project teams and efforts. Doerner holds a Master of Urban Planning from New York University’s Robert F. Wagner Graduate School of Public Service, a BA in International Affairs, and a Certificate of GIS from Kennesaw State University, GA. She serves on the advisory boards of Playbuild and the Vision Zero Network, and is a co-founder and co-organizer of The Untokening, a multiracial collective that centers the lived experiences of marginalized communities to address mobility justice and equity. **Jessie Singer** is Editor in Chief of this journal.

safe, connected, vibrant, affordable and innovative city for all; the transportation equity program expands on those core values by committing to provide safe, environmentally sustainable, accessible, and affordable transportation options to Seattle's most vulnerable and disproportionately cost-burdened individuals and households. Investing in transit service and creating access to that service, especially for people with low incomes who are experiencing disproportionate cost burdens, is a key transportation equity strategy.

Support for our program comes from a 2014 voter-approved measure, the Seattle Transportation Benefits District, which increased the vehicle license registration fee by \$60 and the sales tax by \$0.01 to improve transit availability and access, annual free-floating car share permit fees, and a limited City Council-approved allocation of budget. In January 2018, the Seattle City Council unanimously adopted Resolution 31773, which codified the overarching goals of the transportation equity program.

This is all pretty new. What have you done so far?

We're just getting started, but we started off running. We've launched inclusive programming to enroll income-eligible Seattle residents for pre-paid transit cards, in partnership with Seattle's Department of Neighborhoods, King County Metro and Public Health Seattle-King County. We also have a special program in which high school students at Seattle Public Schools receive transit passes. All totaled, we've distributed over 12,000 transit cards. Most excitingly, perhaps, the ambassador program at the Seattle Department of Transportation has begun to engage community-based organizations and service providers that work with vulnerable, disproportionately cost-burdened individuals and families. We provide funding for staff capacity-building and training, specifically education about all the low-cost ways people can get around and how people can save money doing so, paired with opportunities to enroll in reduced-fare programs.

We're helping these organizations develop ways to embed information about low-cost mobility options and resources into their day-to-day programming. That programming is interpreted and translated into various languages at events throughout the city, often with the support of local community leaders who we pay to provide on-site interpretation and also to support translation for programming materials.

One organization took a brochure we provided them and created a transportation options Bingo card. They gamified the information and made it relevant in their context, making it fun and also informative. They play the game in various languages, including Spanish and Vietnamese. All it takes is for someone explaining what the option is, and then the people playing find the mode or option on their card. After finding five in a row, BINGO! To me, that is both creative and impactful. It's something we wouldn't have created, but with a little funding, they developed a useful educational tool for their community that they'll use again and again. This is important because so much of what we hear is that in addition to access to transportation, there's also just a need for more information delivered in the appropriate language and in a context-sensitive way. An advantage of the City of Seattle's dedication to equity is that our staff serve as subject matter experts, providing strategic advisement on various projects within Seattle DOT and citywide. We're about to embark upon a year-long engagement process with community members to better understand barriers to, and priorities for, transportation equity. At the end of the day, though, when we're at an event and someone walks away with information and gets enrolled into a reduced-fare program with value on their card that they can begin to use immediately, that is the ultimate success.

Any revelations in your first year?

We have found that there are a lot of people with various needs and desires. While we're starting with an affordability focus, given the needs we have identified to date, we believe

"Seattle's Vision Zero program is grounded in the belief that the most effective way to reach zero is through redesigning our streets, to prioritize safety over speed or throughput. To state it plainly, the goal is to enhance safety by changing street design, not relying on enforcement to change behavior."

there are still a lot of other barriers that remain to be addressed.

As transportation investments expand here in Seattle, and policy decisions are made that yield various transportation outcomes, it is critical to have a shared understanding of what our City's broader transportation equity vision and goals are—working in collaboration with stakeholders and communities, particularly populations that have historically not benefited from transportation and city planning processes, or are currently experiencing inequitable barriers to transportation. This is central to achieving and advancing equity and economic goals. Prioritizing the benefits of our investments around the needs of those who have historically not benefited, and who continue to experience the greatest barriers, requires us to hear and learn from those communities. This is how we create equitable solutions and projects with public resources. Engagement processes help us understand people's needs and priorities, and help the Seattle DOT create a transportation equity framework for decision making in all projects, programs, plans, and policies.

How can other cities replicate your work?

It's hard to say "do exactly what we're doing," because contexts are different from place to place. However, the most important thing is to start where there is an opportunity to start. Our start was to address an acute issue: affordability. But there are many entry points. We've leveraged the program resources we have to create our existing programming, including funding partners and resources for community members. As a result, we've been able to increase affordable access to the service we're investing in. Other cities should find out where their resources are, and carve some time out just to listen, and create community-vetted solutions—and find ways to pay people for their time and input. It's okay to try things. Listen to community and pilot ideas! That's the biggest thing.



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