



ERIE-NIAGARA HIGH-INJURY NETWORK

GObike Buffalo
March 2022

This report has been developed by GObike Buffalo. Our organization envisions a happy, healthy, and connected region where every person is able to safely and easily get where they need and want to go—no matter how they choose to get there. GObike advocates for a built environment that encourages rather than deters physical activity, resulting in a healthier and happier community. Further, we believe that everyone has the right to feel comfortable and safe from traffic violence in their neighborhoods.

Our Vision

All WNY residents enjoy equal access to **safe, connected, and sustainable communities** through a variety of mobility options free from stigma, fear and prohibitive expense.

Our Mission

GObike builds active mobility networks and culture through trails, greenways, and Complete Streets in Western New York. We **connect and empower communities** through advocacy, education, planning, and engagement.

Acknowledgements

This report draws heavily from resources or data provided by the NYS Department of Health (NYSDOH) and Department of Transportation (NYSDOT), Greater Buffalo Niagara Regional Transportation Council (GBNRTC), Smart Growth America's National Complete Streets Coalition, and National Association of City Transportation Officials (NACTO).

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INTRODUCTION

Between 2017 and 2021, New York State Department of Transportation recorded 121,807 reported automobile-involved¹ crashes or an average of **67 crashes per day** in Erie and Niagara counties. The New York State Department of Health recognizes traffic deaths and injuries as a major preventable public health problem. In fact, crashes are the leading cause of injury-related death, second leading cause of injury-related hospitalizations and third leading cause for injury-related emergency department visits in New York State.² Further, crashes and the resulting care needed present a significant public cost, with combined hospitalization and emergency department charges averaging \$1.1 billion, annually. Between 2017 and 2021 in Erie and Niagara Counties, on average, 64 people died each year in crashes. Of the 121,807 reported crashes, 3,472 involved people walking or bicycling. According to the NYS DOH, annually, traffic crashes resulted in an average of \$18.6 Million in hospitalization charges in Erie County.³

Data collected by the NYS DOT records information about crashes, including the location, date and time of the event, severity of damage and injuries reported, number of vehicles, bicyclists or pedestrians involved, apparent factors, weather, lighting, and roadway surface conditions, among other inputs. The data utilized in this report was obtained by FOIL request.

The purpose of this report is to utilize available data to estimate which roadways have the highest rates of crashes and resulting injuries in Erie and Niagara Counties. In the methodology and limitations sections, this report includes the formula used to calculate crash and injury rates as well as discussion of the limitations of the data and its analysis. The results section maps the resultant crash and injury rates for the City of Buffalo, highlighting corridors with the highest rates. Lastly, this report provides recommendations to WNY leaders to improve the safety of our streets so every person is able to safely and easily get where they need and want to go—no matter how they choose to get there.

1 Reported crashes include crashes involving one or more automobiles, automobiles and pedestrians, and automobiles and bicyclists.

2 NYS Department of Health "Motor Vehicle Traffic Injuries by County of Crash and County of Residence." Retrieved from: https://www.health.ny.gov/statistics/prevention/injury_prevention/traffic/

3 NYS Department of Health "Motor Vehicle Traffic Injuries Erie County Residents 2012-2014." Retrieved from: https://www.health.ny.gov/statistics/prevention/injury_prevention/traffic/county/erie/2014/erie_co_res_fs.pdf

DEFINITIONS

A number of definitions and policies are referenced in this report, including:

In this report, the term **vulnerable road users** includes members of our community who are children and/or too young to drive (16 & under), seniors (ages 65 & over), living with a disability, and/or living in a household without access to a car. This definition allows us to estimate the resident population in need of safe and Complete Streets that prioritize the needs of pedestrians, transit-users, bicyclists, ridesharing, and carpooling.

This report utilizes Smart Growth America's definition of **complete streets**: Complete Streets are streets for everyone. Complete Streets are designed and operated to prioritize safety, comfort, and access to destinations for all people who use the street, especially people who have experienced systemic underinvestment or whose needs have not been met through a traditional car-centric transportation approach, including older adults, people living with disabilities, people who cannot afford or do not have access to a car, and Black, Native, and Hispanic or Latino/a/x communities. According to the 2020 GBNRTC Bike Buffalo Niagara regional bike master plan, nine (9) municipalities in Erie and Niagara Counties have adopted Complete Streets policies and three (3) cities have prepared bicycle master plans.

Complete Streets design has a significant impact on safety for street users, in some situations necessitating the installation of beacons, bollards or delineators, bicycle lanes, crosswalks, signage, speed humps, etc. Where streets and roadways are up for redesign, Complete Streets policies have significantly influenced infrastructure investments, ensuring all road users are considered. However, where projects are up for routine maintenance, Complete Streets policies have not always been followed, allowing projects prioritizing motor vehicles and creating unsafe conditions for vulnerable road users to be reinstalled.

The term **traffic violence** begins to unpack the significant and negative impacts that both traffic and crashes bear on communities. Traffic violence encompasses the disproportionate impact of reduced air quality on households living near highways and other heavily traveled urban arterials, as well as the violent impact of crashes themselves, which extends from property damage to injury or death.

This report specifically refers to traffic collisions, whether they involve multiple road users or objects, as **crashes, not accidents**. Referring to traffic collisions as accidents suggests that the collisions are unexpected or unintentional, distancing these events from the policies and decision-making that produce unsafe street design and conditions. By referring to these collisions as crashes, we recognize the violence and impact that these collisions impose on neighborhoods and communities.



METHODOLOGY

To calculate crash and injury rates for roadways in Erie and Niagara Counties, GObike Buffalo modified a formula used by the City of Portland¹ to identify high crash network streets and intersections. The formula used to calculate the crash rate per million vehicles is:

Crash Rate = (Count of Crashes/5 years) X (1 year/365 days) X (1/AADT²) X (Roadway Segment Length/ 1-mi) X 1,000,000.

Similarly, the injury rate was calculated as: Injury Rate = (Count of Injuries/5 years) X (1 year/365 days) X (1/AADT*) X (Roadway Segment Length/ 1-mi) X 1,000,000.

Both formulas normalize by the estimated number of vehicles utilizing the roadway daily as well as the length of the roadway segment.

To conduct this analysis, GObike Buffalo requested crash data maintained by NYSDOT, including crashes reported from 2017-2021, along with NYS roadways data. A buffer of 0.01-mi was added around the roadways to ensure that location point-data in the crash file would be captured intersecting the roadway buffer. Using ArcGIS Pro statistical analysis tool Summarize Within, GObike quantified the count of crashes and injuries involving vehicles, bicycles, and pedestrians within each roadway segment buffer. These counts were then used to calculate the crash and injury rate for each segment.

Roadway segments were used as-is from the NYSDOT line data. No minimum length was established for segments calculated. Point data at intersections where buffers overlapped were counted for both roadway segments. Crashes of all severities were included in the crash rate calculation.

1 City of Portland. "High Crash Network Streets and Intersections." Retrieved from: <https://www.portland.gov/transportation/vision-zero/high-crash-network>

2 AADT, annualized average daily traffic, is the number of vehicles entering the corridor or intersection daily.

LIMITATIONS

Both the data and analysis in this report have limitations. To perform crash and injury rate calculations, GObike utilized crash data provided by NYSDOT. Important to note: this crash data, provided by NYSDOT, includes only reported crashes. Many crashes without injury or significant property damage may not be included. When considering the crash and injury rate for bicyclists and pedestrians, it is especially important to note that crashes involving bicyclists are underreported¹. The data may thus reflect biases in any communities that are more or less likely to report a collision.

For future crash and injury rate mapping, it's recommended that additional data be requested to supplement the existing crash data. Supplemental data may include emergency room or urgent care admissions data that could be cross-referenced to the crash rate data to help identify collisions with injuries that were not reported.

Additionally, the crash and injury rate calculation is normalized by the annual average daily traffic (AADT) for vehicles. Reliable data on bicyclist and pedestrian volume is not collected for most of our roadways, though GObike manages a volunteer bicycle and pedestrian count program to provide data supporting improvements. Normalizing by AADT meant that many neighborhood roadways without an estimated AADT were excluded from this analysis.

1 Robartes, E., & Chen, T. D. (2018). Crash histories, safety perceptions, and attitudes among Virginia bicyclists. *Journal of safety research*, 67, 189-196.

RESULTS

SUMMARY

Through the five-year period, 2017-2022, covered by this report, there were a total of 121,807 crashes reported to the NYSDOT within Erie and Niagara counties. Of these crashes, 1,344 (1.1%) involved bicyclists, 2,128 (1.7%) involved pedestrians, and 118,335 (97.1%) involved only motor vehicles.

Table 1. Erie & Niagara County Crash Counts by Type

CRASH TYPE	2017	2018	2019	2020	2021	5-Year Total
Involving person(s) bicycling	306	278	274	241	245	1,344
Involving person(s) walking	485	460	432	369	382	2,128
Involving person(s) in a motor vehicle	22,924	26,812	26,755	19,730	22,114	118,335
Total Crashes	23,715	27,550	27,461	20,340	22,741	121,807

In the same five-year period, these crashes resulted in 296 fatalities. Of the individuals lost to traffic violence, 15 were bicycling (5.1%), 61 (20.6%) were walking, and 220 (74.3%) were driving at the time of the life-ending collision. Despite being involved in a far smaller proportion of total crashes (2.9%), one in four fatal crashes resulted in the death of a person walking or bicycling (25.7%).

Table 2. Erie & Niagara Crash Fatalities by Year

FATAL CRASHES	2017	2018	2019	2020	2021	5-Year Total
Person bicycling	3	2	1	2	7	15
Person walking	16	7	12	11	15	61
Person in a motor vehicle	30	44	39	52	55	220
Total Fatalities	49	53	52	65	77	296

Among the crashes involving bicyclists and pedestrians, 30.3% involved vulnerable road users either over 65 years of age or under 16 years of age. Those walking or bicycling who were reported to have been injured in a crash ranged in age from 1 year old to 96 years old. Of those walking or bicycling who lost their lives to traffic violence, individuals ranged in age from 8 years old to 86 years old.

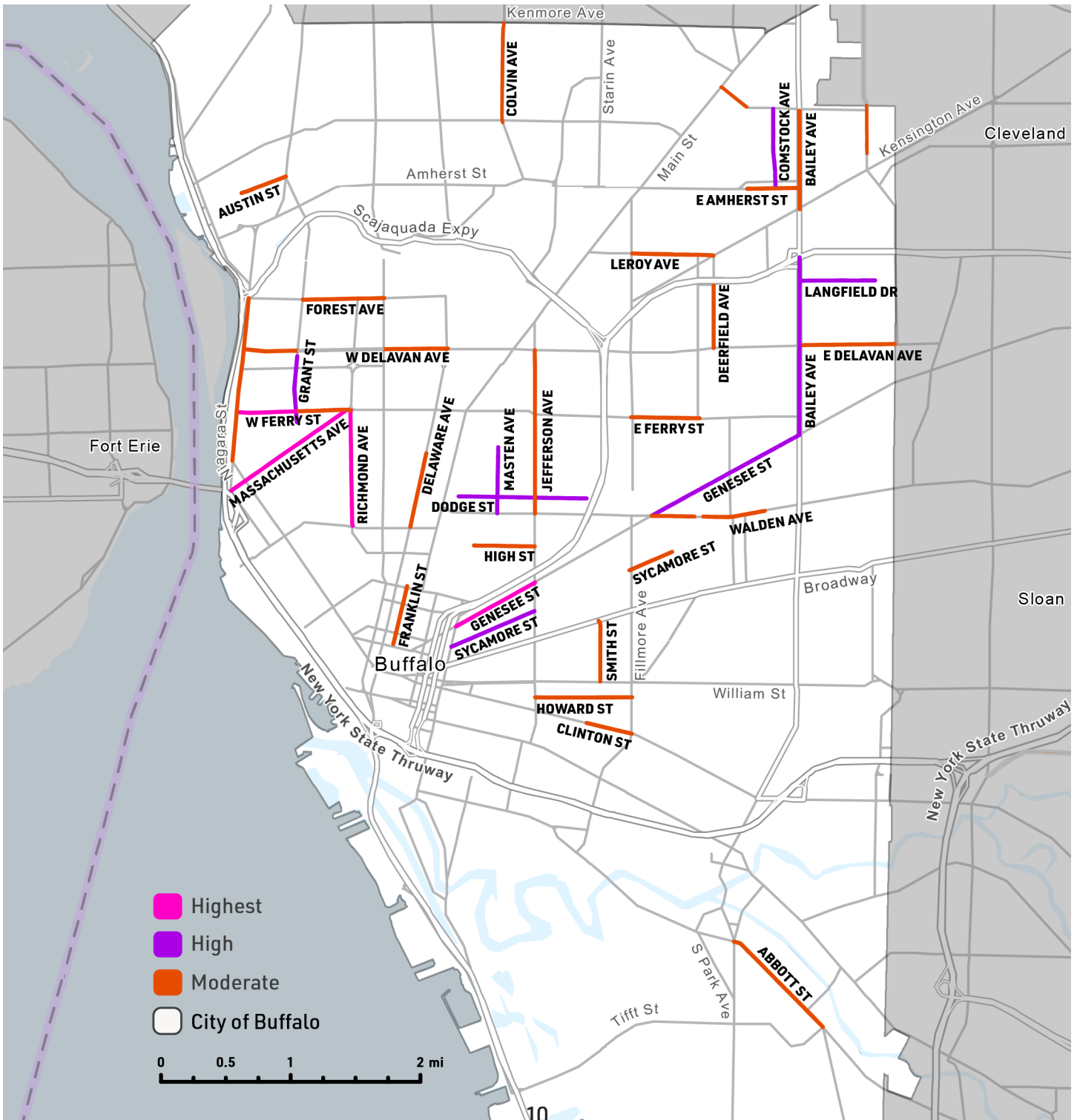
Table 3. Erie & Niagara County Crash Severity and Vulnerable Users

<i>Crash Severity</i>	<i>Crash Count</i>	<i>Age 65 & Age 16 & Over</i>	<i>Under</i>	<i>% Over 65</i>	<i>% Under 16</i>	<i>% Vulnerable Users</i>
Fatal	76	17	6	22%	8%	30%
Injury	2,344	230	418	10%	18%	28%
Non-reportable	211	20	56	10%	27%	36%
Property Damage	59	2	9	3%	15%	19%
Property Damage and Injury	773	55	105	7%	14%	21%
Total	3,472	324	594	9%	17%	26%

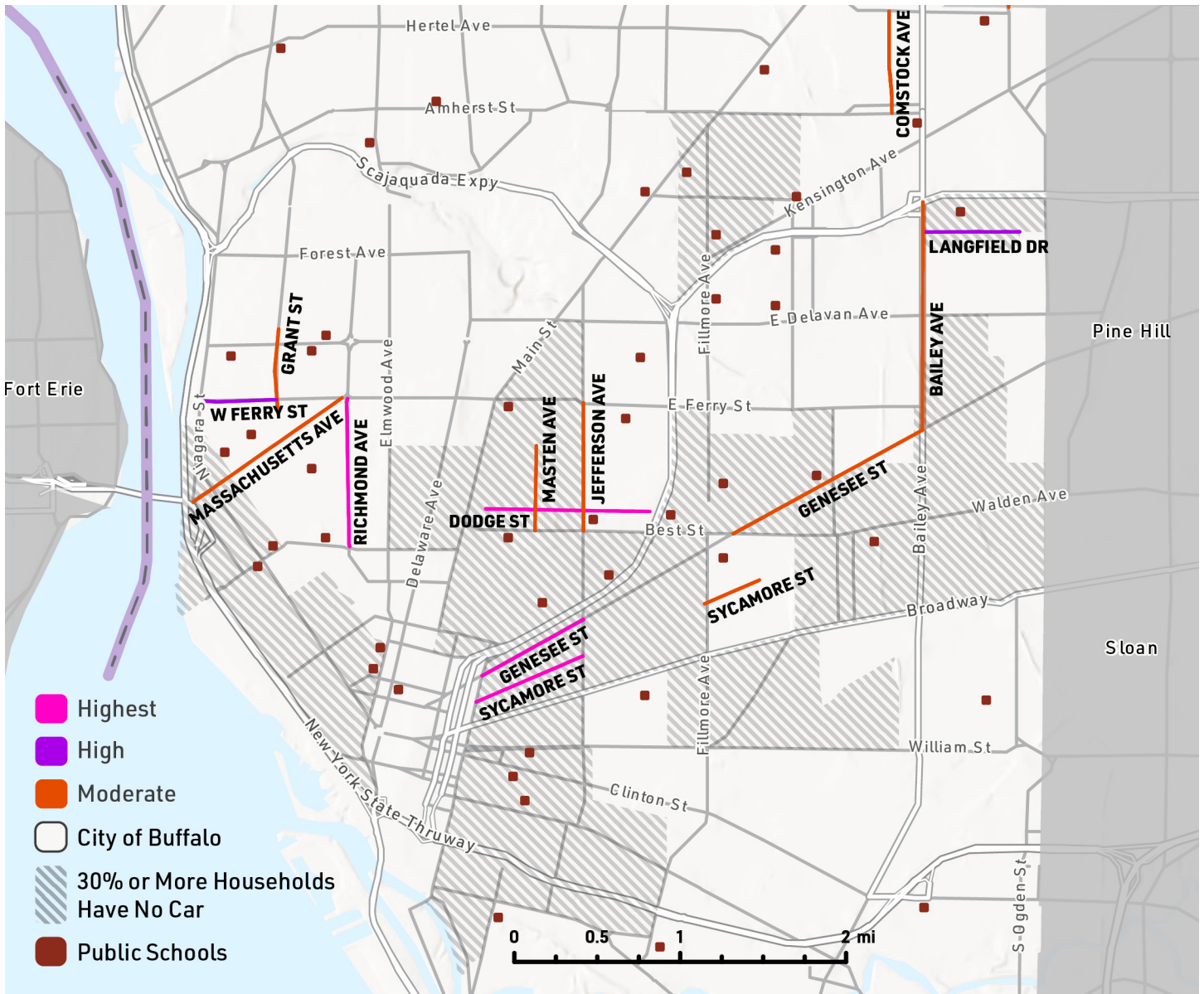
MAPS

For this report, mapped results are focused on the City of Buffalo. Maps and data can be available for any municipality in Erie and Niagara counties, by request. Roadways with the highest crash rates include: Genesee St, Richmond Ave, Massachusetts Ave, and W Ferry St.

Map 1. City of Buffalo High-Crash Corridors



Map 2. City of Buffalo High-Injury Corridors



RECOMMENDATIONS

To take tangible steps forward, GObike recommends the following actions to municipalities:

1. Prioritize safety, equity, and sustainability impacts in municipal decision-making and evaluation processes for transportation infrastructure investments:

Safety:

- Set annual safety goals to reduce fatalities and serious injuries, especially among people walking or biking in communities disproportionately impacted by traffic violence.
- Avoid the bias against lower speed limits in performance measures, such as level-of-service, particularly in contexts where low speeds are necessary for the protection of those traveling outside of motor vehicles.

Equitable Access:

- Ensure projects' success is evaluated by whether it connects people safely to jobs, services, and schools.
- Prioritize projects that invest in and connect marginalized communities including immigrants, predominantly Black neighborhoods, low-income communities, people living with disabilities, women, transit-reliant individuals, and those without a personal vehicle.
- Set tangible goals to implement bicycle and pedestrian facilities prioritized in municipal and regional planning efforts. For example, the City of Buffalo set a goal to add 10-mi of facilities per year after adopting of its Bicycle Master Plan in 2016.

Sustainability:

- Evaluate the quality of transit through metrics such as person throughput and frequency, rather than ridership alone.
- Set goals to connect every citizen to frequent, high-quality public transit and reduce vehicle miles traveled.

Reduce speed limits.

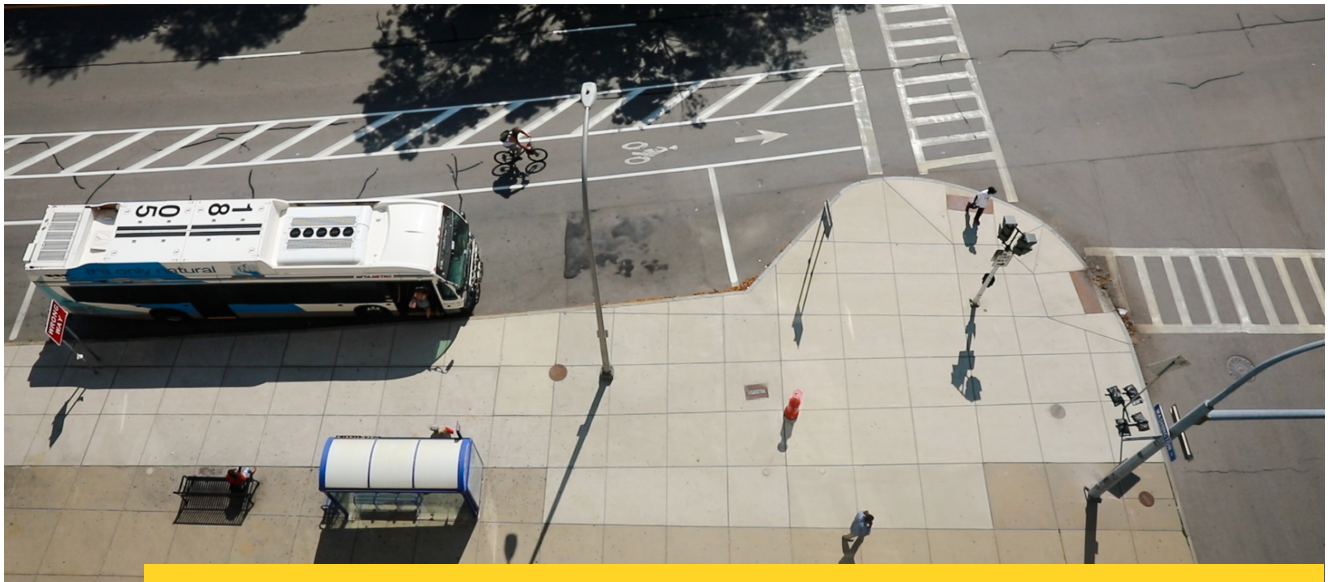
Current New York State law does not allow municipalities outside of New York City to set speed limits below 30 MPH despite recommendations that maximum speed limits from 10-25 MPH are appropriate for most city streets.¹

NYS legislators should amend NYS Assembly Bill 10144/Senate Bill 7892 to follow examples set by other states, such as Oregon's Senate Bill 558, which allows cities statewide to set speed limits as low as 20 MPH on non-arterial, residential streets.

¹ National Association of City Transportation Officials. (2020). "City Limits: Setting Safe Speed Limits on Urban Streets." 42-50. Retrieved from: <https://nacto.org/publication/city-limits/the-right-speed-limits/>

2. **Prioritize redesign of high-injury intersections and corridors within the next two years. GObike recommends that relevant municipal officials review planned construction and maintenance projects to determine overlap with high-crash or high-injury locations and set clear goals to improve the safety of these corridors immediately:**

- **Construction & Reconstruction projects:** Where projects are planned to reconstruct or maintain high-injury intersections or corridors, municipalities should ensure that design and engineering processes implement Complete Streets designs¹ with special attention to traffic-calming and safety measures, including bump-outs, speed humps, high-visibility crosswalks, etc.
- **Temporary & Quick-Build projects:** Where no reconstruction plans exist for high-injury locations, municipalities should consider low-cost, quick-build² options to address safety concerns, such as painted bump-outs with delineator posts, buffered and protected bike lanes utilizing jersey barriers, etc. Municipalities may consider increasing annual striping budgets or developing shared service agreements to ensure that needed resources are available for quick-build projects.



Pass the Crash Victims Rights and Safety Act.

The Crash Victim Rights & Safety Act is a package of bills that will redesign our streets with safety as a priority to protect all road users, address the speeding rampant on our streets, educate drivers on bicycling and pedestrian safety, while also providing critical support to those personally impacted by crashes. <https://www.transalt.org/cvrsa>

1 Smart Growth America. (2021.) "Complete Streets Implementation." Retrieved from: <https://smartgrowthamerica.org/program/national-complete-streets-coalition/publications/complete-streets-implementation/>

2 Quick-build projects are generally installed within a year, planned to accommodate changes after installation, and built using materials to facilitate changes.

Conclusion: Future Network

Our region's transportation network is composed of some of our greatest infrastructure investments. **Each bridge, highway, and roadway project is an investment into our future.** Investments into this network must take into account the future that we want for ourselves. Sprawling development patterns, well-documented through the One Region Forward planning process, have contributed to auto-dependency. The resultant prioritization of motor vehicles in our roadway network has contributed to dangerous conditions and a lack of flexibility to accommodate a variety of road users. These dangerous conditions bear considerable public and private costs.

As municipalities across the region adopt Complete Streets policies and develop more flexible and sustainable roadways serving all road users, there are ample resources to guide strategic investments into the existing network to quickly achieve a sustainable and safe network for today's vulnerable road users. The Bike Buffalo Niagara Regional Bicycle Master Plan report, completed in 2020, is a guiding document for the development of a comprehensive network of on-street and off-street pathways, bike lanes, greenway trails, and other facilities that safely connect neighborhoods to key destinations. This plan reinforces the direction established by GBNRTC's Moving Forward 2050, and together with other relevant transportation planning documents, such as the NFTA's Comprehensive Transit Oriented Development Plan. Together, we can promote **a future network that safely, reliably, and sustainably connects WNY residents to jobs, opportunities, and each other** through a variety of mobility options free from stigma, fear and prohibitive expense.

Learn more at www.gobikebuffalo.org.



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