

Vision Zero Action Plan (2023-2030)

Strategies and Actions to Reduce Traffic Deaths and Serious Injuries to Zero

December 2023









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VEST ORANGE TOWNSHIP

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Special thanks to the West Orange Vision Zero Task Force for their time and on-going commitment to making roads safer for all users in West Orange Township.

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A LETTER FROM THE MAYOR

Hello West Orange,

As your Mayor, I am writing to explain my support for implementing the Vision Zero Action Plan for the Township.

My primary reason is the call-to-action for safety and the quality of life for every resident and visitor to our town. Vision Zero is a comprehensive approach to road safety that aims to eliminate traffic fatalities and severe injuries; while promoting safe, healthy, and equitable mobility for all.

Vision Zero is a safety Action Plan that lays out actionable, measurable strategies, emphasizing design and policy solutions and promoting a transportation system that prioritizes the well-being of all individuals. As your Mayor, my primary concern is the safety and quality of life for every resident of our town. Therefore, I am committed to the implementation of Vision Zero principles to ensure that our streets are as safe as they can possibly be.

Our Township is the 5th largest municipality in Essex County with an area of approximately 12 square miles and a population of approximately 49,000 residents. More than 20% of our population are children under the age of eighteen, while 18% are adults 65 years of age and over. Since the Township is both culturally and economically diverse, this leads to the population relying on various modes of transportation.

Over the years West Orange has grown with enhanced economic investments, residential development bringing with it transportation needs and responsibilities. As such, it is imperative the Township provides proper walking, biking corridors and vehicular patterns to ensure the safety of our residents.

The Vision Zero Action Plan will enable the Township to implement policies and regulations that protect motorists, cyclists, and pedestrians and allow our municipal government to act as a liaison between various entities to ensure safety initiatives are successfully put into place. The Township intends to collaborate Vision Zero planning efforts with the West Orange Police Department, Downtown West Orange Alliance, West Orange Board of Education, the Pleasant Valley Civic Association, West Orange Pedestrian Safety Advisory Board, the West Orange Youth Advisory Board, West Orange Council of PTA's, NJ Bike/Walk Coalition, EZ Ride TMA, NBF and you.





Administration, Schools, Police/ Safety, Fire, Senior Services, Health, Engineering, Planning, Environmental



West Orange Pedestrian Safety Advisory Board (WOPSAB)



nikhil badlani foundation













To achieve the Vision Zero Action Plan goals, the Township will initiate the following key components:

- For Safer Streets: The Township will invest in engineering measures that improve the safety of our roadways. This includes the redesign of intersections, the installation of better signage and lighting, and the creation of pedestrian-friendly walkways and dedicated bike lanes.
- Education: The Township is committed to increasing awareness and understanding of road safety. We will
 work closely with schools, community organizations, and the local media to promote safe behavior for all
 road users.
- Enforcement: Our law enforcement agencies will play a crucial role in ensuring that traffic laws are obeyed. We will support their efforts to make our streets safer by addressing speeding, reckless driving, and impaired driving.
- Data Collection: The Township will gather and analyze data on traffic crashes and their causes to make informed decisions about improving road safety.
- Community Engagement: The Township values constructive input and participation. We will hold community
 meetings, workshops, and surveys to understand the community's concerns and preferences regarding road
 safety measures.
- Inclusivity: Vision Zero is about creating safer streets for all members of our community, regardless of
 age, ability, or mode of transportation. We are dedicated to making our Township accessible and safe for
 everyone.

I urge you to get involved and volunteer if you can in this important effort. Your support and active engagement will be instrumental in making our streets safer for all. Please look for announcements about community meetings and initiatives related to Vision Zero, to make your voice heard.

Together, we can work towards a goal where our children can play on our streets without fear, pedestrians and bicyclists can travel without anxiety, and where traffic crashes are a thing of the past. The Vision Zero initiative is not just a program: it's both a commitment and an investment in our future toward the safety and well-being of our community.

Respectfully,

Mayor Susan McCartney

Susan Mc Cartney



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GLOSSARY OF TERMS

Vision Zero

Vision Zero is a strategy to eliminate fatalities and serious injuries in the road system. This was first implemented in Sweden in the 1990s, has become standard and successful across Europe, and has begun to spread across the world. Vision Zero reframes traffic safety, from severe car crashes being inevitable accidents that are part of modern living to being preventable crashes to be prevented in as many ways as possible to save lives. Vision Zero acknowledges human error, systems over individual responsibility, and that saving lives is not expensive.

Safe System Approach

The Safe System Approach is a framework to address roadway safety that has been adopted by the US Department of Transportation. It builds multiple layers of protection for road users to both prevent crashes and mitigate the harm caused in crashes.

KSI Crash

KSI Crashes are crashes where a victim is killed (K) or severely injured (SI).

Proven Safety Countermeasures

The Federal Highway Administration (FHWA) has identified 28 countermeasures and strategies with proven effectiveness in reducing crash rates and/or crash severity. These are context- and user-specific but can make significant improvements to the safety of a road system when applied broadly.

Complete Streets

Complete Streets are streets designed to safely support all road users. This applies to both all modes of travel and also all abilities of the road users, including people with disabilities, children and seniors, and more. Complete Streets require varying degrees of intervention depending on the context, both in terms of land use and in terms of traffic volumes and speeds.

Environmental Justice

Environmental Justice is, as defined by the EPA, "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."

High-Injury Network

Vision Zero Action Plans idenfity a High-Injury Network (HIN), the roadways in a municipality or city's road system with the highest prevalence of crashes or greatest crash severity. Actions to address these issues are concentrated on the HIN.

Vulnerable Road Users

Certain Users of the road system are those not protected inside a vehicle when using the road system. This includes pedestrians, cyclists, skateboarders, rollerskaters and more.





VISION ZERO GOAL

West Orange Township will eliminate traffic deaths and life-altering injuries by the year 2030.

WHY VISION ZERO? BY THE NUMBERS*

More than

2

initial
people have lost their lives in a crash every year

28 G
Number of severe injury crashes

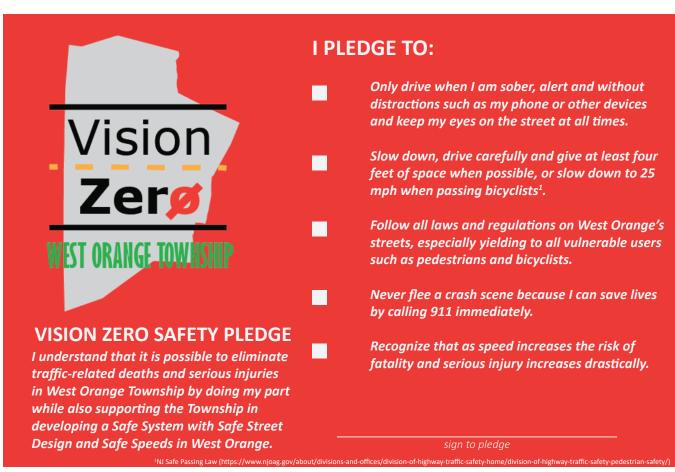
Pedestrian Fatalities Bicyclist and Pedestrian Severe Injury Crashes

^{*} Source: Safety Voyager crash data (2015-2021). Crashes on Route 280 are included.



VISION ZERO SAFETY PLEDGE

Our vision for zero deaths and serious injuries can only be achieved if all community members support and do their part to reach the goal of zero. A traffic safety pledge (in English and Spanish) was developed with the Vision Zero Task Force and was available for the community to sign online and in-person at the public workshops. The Vision Zero Pledge for West Orange will continue to be an important part of engaging and sharing responsibility with the community, well beyond the year 2030.



TRAFFIC-RELATED DEATHS AND SERIOUS INJURIES IN WEST ORANGE TOWNSHIP BY 2030!







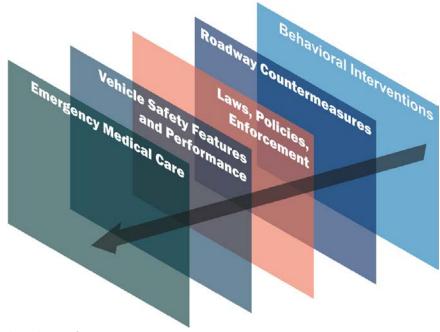
USDOT ROADWAY SAFETY STRATEGY

The USDOT National Roadway Safety Strategy (NRSS), published January 2022, recognizes that the United States is at a critical juncture in terms of roadway safety¹. The rate of fatalities on US roadways decreased consistently from 1980 to 2010, but stagnated after 2010 and spiked nationwide in 2020 (which also occurred in West Orange). An estimated 38,680 people died in motor vehicle crashes in 2020, of which an estimated 6,236 were pedestrians. In 2021, this increased by an additional 10.5 percent to 42,915 fatalities including 7,342 pedestrian fatalities. These alarming statistics presented a call to action to make the US roadway system safer for all users, which is why the NRSS sets a vision and goal for the safety of US roadways: zero roadway fatalities.

As stated in the NRSS document, "zero is the only acceptable number of deaths on our highways, roads and streets." In order to achieve this, this strategy promotes the adoption of the Safe System Approach, which has seen success in its early adopters such as Sweden, the Netherlands, and more. The Safe System Approach involves anticipating human error by designing the roadway system to keep the risk/impact of the human error low. It takes into account human vulnerability and consists of six principles and five elements.

Additionally, roadway safety is an important foundation to achieving success in addressing two other major priorities: equity and climate. By implementing ways to encourage safe multi-modal travel, lower dependency on single-occupancy vehicles and through sustainable and environmentally-friendly street design, this plan will help address climate change. In addition, equity is a defining factor of the West Orange Vision Zero Action Plan.

All layers of a Safe System Approach are critical.



Source: USDOT National Roadway Safety Strategy

¹ https://www.transportation.gov/nrss/usdot-national-roadway-safety-strategy





ROADMAP TO VISION ZERO

HOW WILL WEST ORANGE ACHIEVE VISION ZERO?

This Vision Zero Action Plan provides a roadmap to achieve Vision Zero in West Orange. It outlines key strategies and actions based on the Safe System Approach that are developed through a robust data-driven process and community input, with direction from a multidisciplinary and engaged Vision Zero Task Force.





SAFE SYSTEM APPROACH

By adopting a Safe System Approach, West Orange Township will steadily progress towards Vision Zero. A Safe System Approach, at its core, focuses on the two main factors in roadway safety - Roadway Speed and Design. It also emphasizes that safety is a shared responsibility.

A Safe System Approach incorporates the following six principles:

1. DEATH AND SERIOUS INJURIES ARE UNACCEPTABLE. While no crashes are desirable, the Safe System Approach prioritizes the elimination of crashes that result in death and serious injuries since no one should experience either when using the transportation system.

2. HUMANS MAKE MISTAKES.

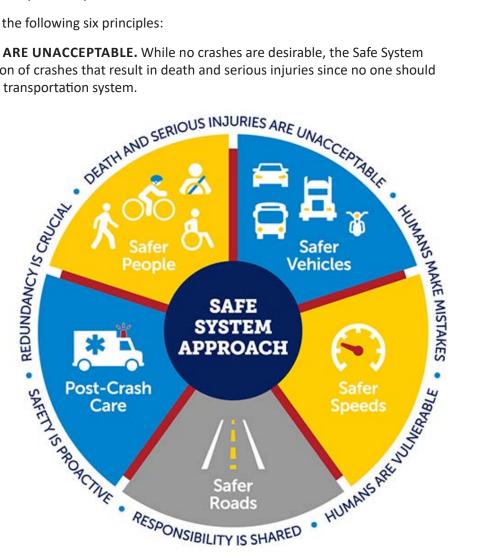
People will inevitably make mistakes and decisions that can lead or contribute to crashes, but the transportation system can be designed and operated to accommodate certain types and levels of human mistakes, and avoid death and serious injuries when a crash occurs.

3. HUMANS ARE VULNERABLE.

People have physical limits for tolerating crash forces before death or serious injury occurs; therefore, it is critical to design and operate a transportation system that is human-centric and accommodates physical human vulnerabilities.

4. RESPONSIBILITY IS SHARED.

All stakeholders – including government at all levels, industry, non-profit/advocacy, researchers, and the public - are vital to preventing fatalities and serious injuries on our roadways.



Source: USDOT FHWA

- 5. SAFETY IS PROACTIVE. Proactive tools should be used to identify and address safety issues in the transportation system, rather than waiting for crashes to occur and reacting afterwards.
- 6. **REDUNDANCY IS CRUCIAL.** Reducing risks requires that all parts of the transportation system be strengthened, so that if one part fails, the other parts still protect people.



The Safe System Approach is based on the following five elements:



SAFER ROADS

Design roadway environments to mitigate human mistakes and account for injury tolerances, to encourage safer behaviors, and to facilitate safe travel by the most vulnerable users.



SAFER SPEEDS

Promote safer speeds in all roadway environments through a combination of thoughtful, equitable, context-appropriate roadway design, appropriate speed-limit setting, targeted education, outreach campaigns, and enforcement.



SAFER PEOPLE

Encourage safe, responsible driving and behavior by people who use our roads and create conditions that prioritize their ability to reach their destination unharmed.



SAFER VEHICLES

Expand the availability of vehicle systems and features that help to prevent crashes and minimize the impact of crashes on both occupants and non-occupants.



POST-CRASH CARE

Enhance the survivability of crashes through expedient access to emergency medical care, while creating a safe working environment for vital first responders and preventing secondary crashes through robust traffic incident management practices.

Through improvements in these five areas, the goal of zero fatalities and life-altering injuries from car crashes can be achieved. The Safe System Approach guiding principles and elements are reflected in the West Orange Vision Zero Action Plan.



STRONG COLLABORATION WITH ESSEX COUNTY

West Orange Township will achieve its Vision Zero goal through its partnership with Essex County since County roadways account for the majority of the high-injury network (HIN) in West Orange. Essex County has been a valuable member of the West Orange Vision Zero Task Force and will soon be developing a countywide Vision Zero Action Plan funded through the federal Safe Streets and Roads for All (SS4A) Grant Program. West Orange Township must continue to collaborate with Essex County through the implementation of the actions in this plan and inform and support the development of the Essex County Vision Zero Action Plan.



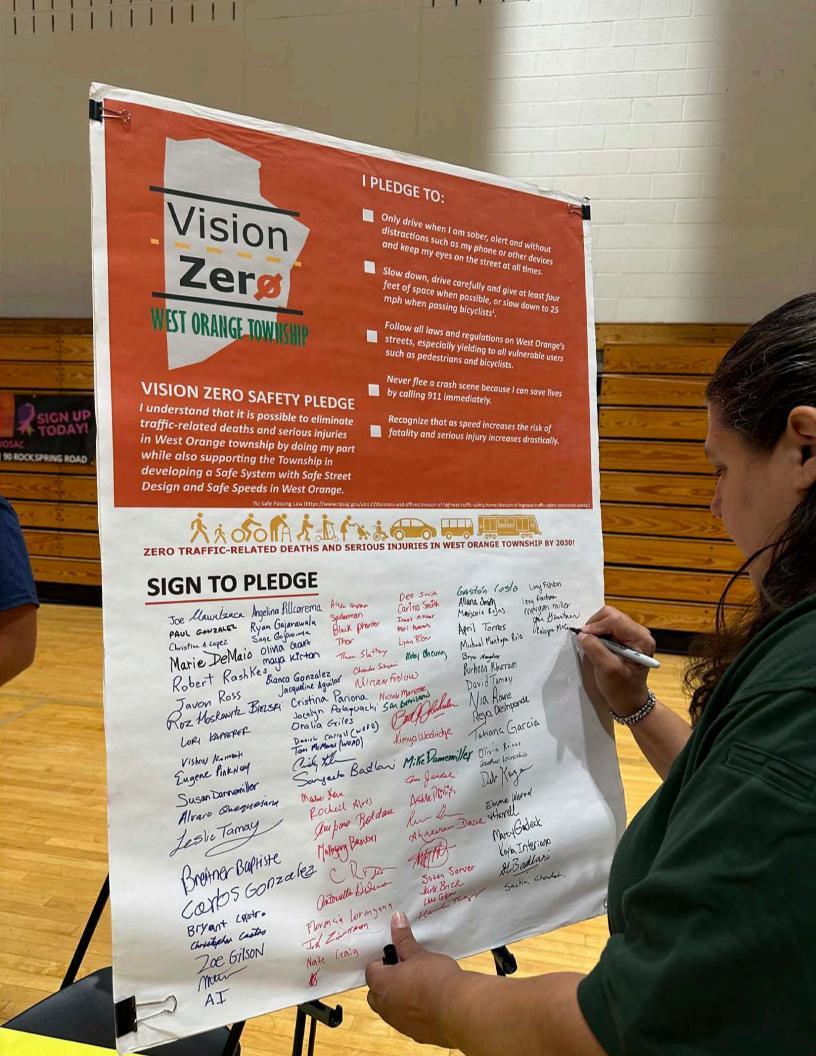
IMPLEMENTATION/FUNDING

West Orange Township will achieve its Vision Zero goal by building on national momentum for Vision Zero and pursuing funding for the action plan. At the top of the list of funding sources is the Safe Streets and Roads for All implementation grant. Additionally, West Orange should ensure that the Safe System Approach is central to all roadway infrastructural decision-making in the Township. Appendix C includes a list of funding sources for implementation.

MONITORING AND EVALUATION

This plan is intended to be a living document and should be updated annually, tracked, and evaluated on a regular basis. As actions are implemented, West Orange Township should monitor progress utilizing performance measures developed in this plan. The results of the progress tracking will help inform future projects related to roadway safety in the Township and ensure that the West Orange is steadily moving towards the goal of zero deaths and serious injuries.

"WE **ALL** HAVE A RESPONSIBILITY TO MAKE OUR ROADWAYS SAFER FOR **EVERYONE**" - USDOT







TRAFFIC SAFETY TRENDS

CRASH DATA ANALYSIS OVERVIEW

Vision Zero is data-driven, with fatal and severe injury (KSI)¹ crashes as the focus of the analysis.

The process began with an understanding of where and why fatal and injury crashes occurred in West Orange, revealing the factors that contributed to the crashes and suggesting the appropriate countermeasures to address them.

In November 2022, the project team obtained crash data from NJDOT's Safety Voyager crash tool, and from NJDHTS's Numetric Tool. Seven (7) years of crash data were downloaded (2015 through 2021) for analysis. A technical memorandum of the detailed crash data analysis was submitted and is on file with West Orange Township and NJDOT. Key findings are highlighted in the following pages.

According to Safety Voyager data, a total of 8,548 crashes occurred within West Orange Township from 2015-2021. This is equivalent to over three crashes occurring every single day in West Orange. During the same time period, there occurred 17 fatal crashes and 28 severe injury crashes, averaging over two fatal crashes and four severe injury crashes per year. While



acknowledging that West Orange Township will only have direct control over crashes occurring on local streets, this analysis includes all crashes within the Township including county roads and state highways such as I-280 and Route 10. Overall, the total number of fatal crashes has stayed the same over the 7-year period; however, severe injury crashes have steadily increased. ²

¹ Crashes where victims are Killed or Seriously Injured

² In 2019, New Jersey updated the police crash report to be consistent with the federally required injury classifications that may have resulted in the jump in severe injuries in 2019. The HIN development takes into account fatal, severe and minor injury crashes to account for this change.



Figure 1. All Crashes Map (2015-2021)

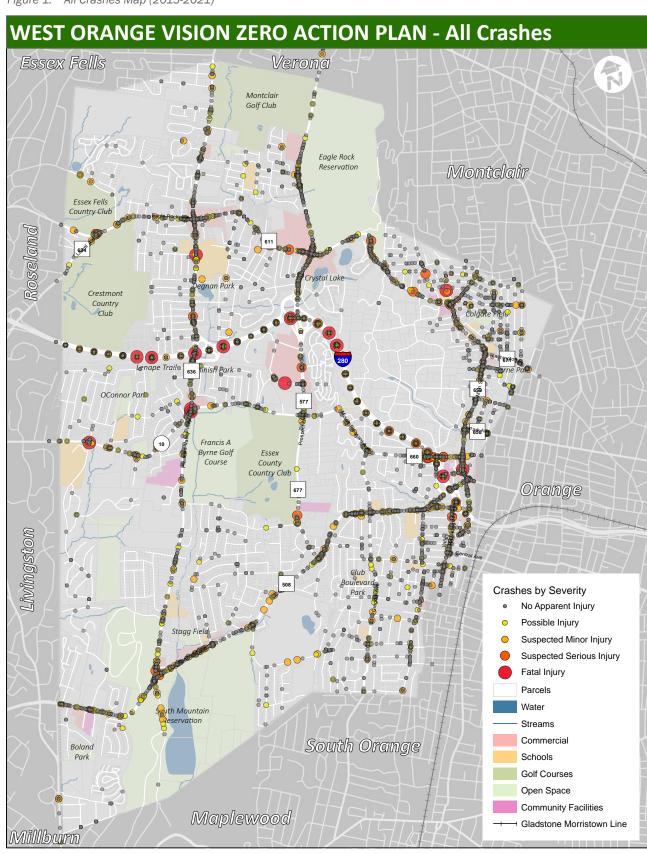
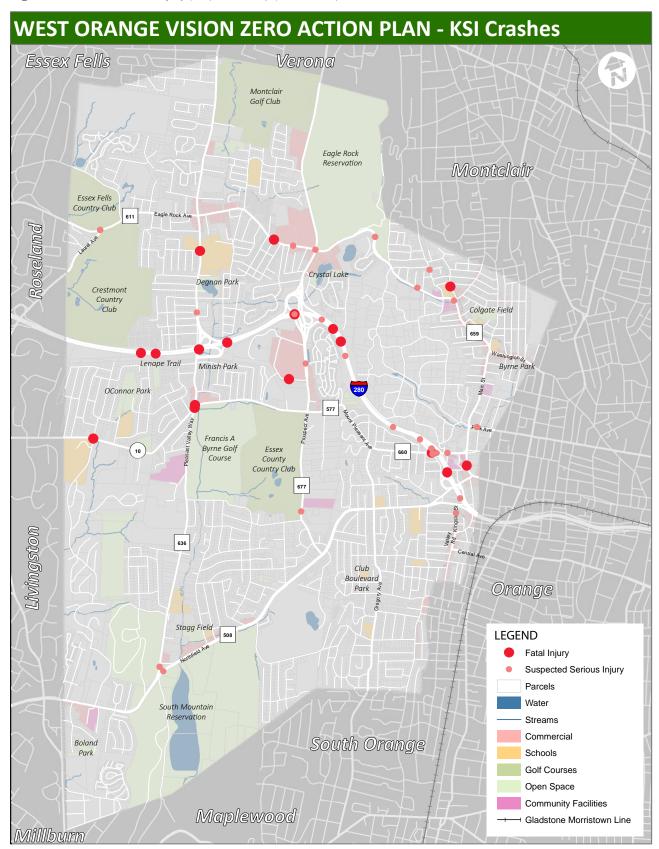
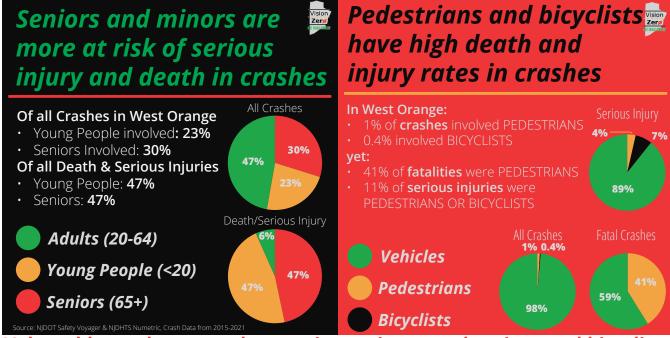




Figure 2. Severe and Fatal Injury (KSI) Crash Map (2015-2021)







Vulnerable road users such as seniors, minors, pedestrians and bicyclists are most at risk of a fatal or severe injury.

During the study period, children (19 and under) were involved in 23% of all crashes, but 47% of KSI crashes. Similarly, seniors (65+ years) were involved in 30% of all crashes but 47% of KSI crashes. Pedestrian and bicyclist crashes accounted for 1.4% of all crashes from 2015-2021 in West Orange Township, but 41 % of the fatalities involved pedestrians and 11 % of KSI crashes involved bicyclists or pedestrians.

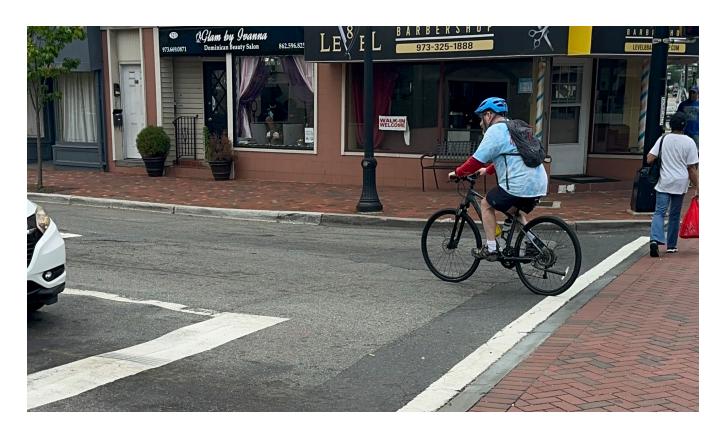
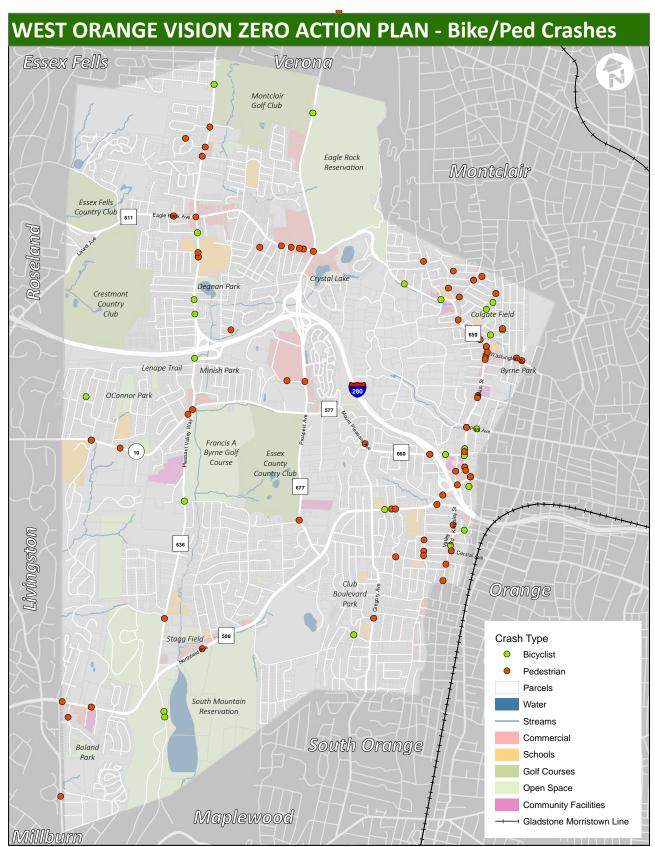




Figure 3. Bicyclist and Pedestrian Crash Map (2015-2021)



Source: NJDOT Safety Voyager data, 2015-2021



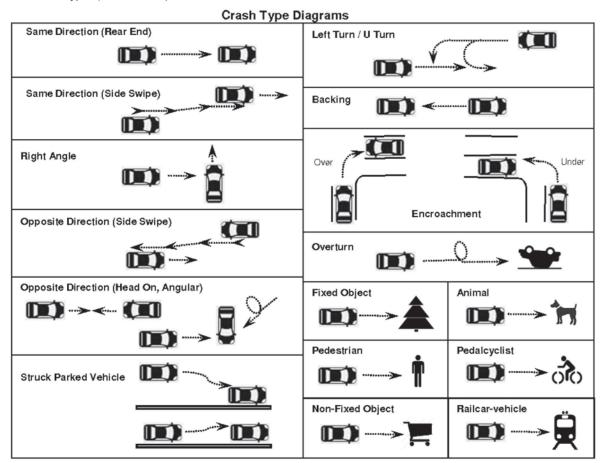
Pedestrian, rear-end, and certain other types of crashes are particularly dangerous.

Of the 8,548 crashes from 2015-2021, the most common type was a rear-end crash, with 2,332 (27%), and the other most common types were same-direction sideswipes (1,556, 18%), fixed object crashes (1,114, 13%), crashes with parked vehicles (1,059, 12%) and right angle ("T-bone") crashes (787, 9%).

As mentioned earlier, crashes involving pedestrians and bicyclists tended to be more severe than other crash types. In addition, more than 53% of the collisions were either fixed object, rear-end/ sideswipe or vehicles striking parked car crashes.

Some crash types can be more severe than others While the most common kinds of crash in West Orange involve cars hitting cars (Rear-End 27%, Same-Direction Sideswipe 18%), the most common kinds of crash with serious injury or death involve cars hitting other things (Fixed Object 20% [13% of all crashes], Pedestrian 18% [1% of all crashes]). CRASH TYPES ■ KSI Crashes ■ All Crashes 30% 25% 20% 15% 10% 5% Source: NJDOT Safety Voyager & NJDHTS Numetric, Crash Data from 2015-202

Figure 4. Crash Types (NJTR-1 Form)





At intersections, right-angle, rear-end, and sideswipe crashes are the most common types of crashes, with pedestrian, bicyclist and left-turn/u-turn making up the majority of the KSI crashes.

Of 2,044 intersection crashes from 2015-2021 in West Orange, there were three primary crash types: right angle (499, 24.75%), rear-end (495, 24.55%), and same direction - sideswipe (365, 18.11%). Two additional types were common: left turn / u-turn (195, 9.67%) and fixed object (156, 7.74%).

Twelve KSI crashes occurred at intersections. The most common type was pedestrian crashes (5, 41.67%), and the others with more than one death or serious injury were left turn / u-turn and bicyclist (2 of each, or 16.67%).

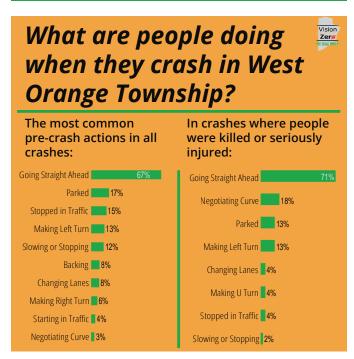
Distracted driving and unsafe speed were the top driver-contributing factors in all crashes and KSI crashes.

Distracted driving accounted for nearly 56% of the KSI crashes and 56% of all crashes in West Orange from 2015 to 2021. Unsafe speed was a factor in almost 13% of the KSI crashes and 8% of all crashes. Of the other KSI crash causes, alcohol involvement contributed to 2% of all crashes but 9% of KSI crashes, drowsy/fatigued driving contributed to 1% of all crashes, drugged driving contributed to 2% of all crashes but 4% of KSI crashes, and cell phone use contributed to 0.6% of all crashes but 2% of KSI crashes.

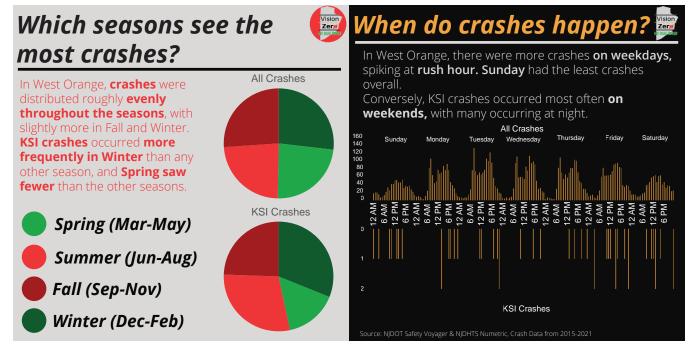
Driving straight ahead, negotiating curves and being parked are the top pre-crash actions for KSI crashes.

From 2015 to 2021, driving straight ahead was the most common pre-crash action in both KSI crashes (71%) and crashes at large (67%) in West Orange Township. Being parked is the second most common pre-crash action in all crashes (17%) and third most common pre-crash action in KSI crashes (13%). However, while being stopped in traffic is the third most common pre-crash action in all crashes (15%), it is not common in KSI crashes (4%). Conversely, the second most common pre-crash action in KSI crashes is negotiating a curve (18%), a behavior which is present in 3% of all crashes.

What are the leading causes of crashes? In West Orange: Distracted Driving - most common cause of crashes (57%); 56% of crashes in which victims were killed or seriously injured (KSI) Unsafe Speed - 8% of all crashes; 13% of KSI Alcohol-related - 2% of all crashes; 9% of KSI All Crashes Distracted Driving 56% Unsafe Speed 8% Unsafe Speed 8% Unsafe Speed 13% Alcohol Related 2% Drowsy Fatigued Driving 14% Cell Phone In Use 0.6% Drugged Driving 0.3% Cell Phone In Use 2%





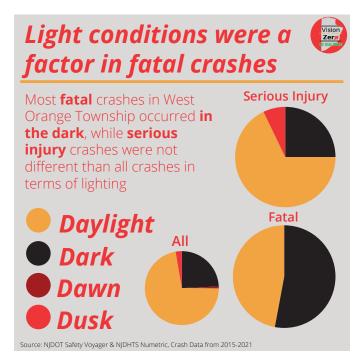


More fatal crashes occurred in the winter months (December-February) and more severe injury crashes occurred in the summer months (June-August).

Of the 8,548 total crashes from 2015-2021, October and January had the highest crashes (845 and 830 respectively). In terms of day of the week, Tuesday accounted for the highest percentage (approximately 17%) of crashes with the remainder of weekday crashes distributed relatively evenly over the other four days. By comparison, there were fewer crashes on the weekend than weekdays. Weekdays saw a consistent trend of crashes during rush hours, with the largest spikes coming during the morning rush hour.

More than half of the fatal crashes and a quarter of the severe injury crashes occurred in the dark.

From 2015-2021, nine of the 17 fatal crashes (53%) occurred in the dark in West Orange, with seven of those fatalities occurring in locations with streetlights. While a majority of all crashes (71%) and KSI crashes (60%) occurred during daylight conditions, about 20% of all collisions and 27% of KSI collisions occurred in the dark in locations with street lights on, suggesting a need for further lighting analysis. About 4% of all crashes and 9% of KSI crashes occurred in the dark at locations with no street lights or street lights off. Majority of all crashes (76%) and KSI crashes (87%) took place during dry and clear roadway conditions



Source: NJDOT Safety Voyager data, 2015-2021



Almost half of KSI crashes occurred on County roads, and a third occurred on I-280.

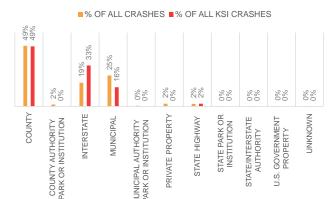
Almost half of all crashes in West Orange from 2015-2021 took place on County roadways, which also saw 49% of KSI crashes. Municipal roadways accounted for 25% of all crashes and 16% of KSI crashes. State roads only saw 2% of crashes and 2% of KSI crashes, and I-280 (the only Interstate in West Orange) saw 19% of crashes and 33% of KSI crashes.

Significant numbers of crashes (34%) and KSI crashes (27%) took place on roads with a posted speed limit of 25 MPH, including 59% of all crashes involving bicyclists or pedestrians.

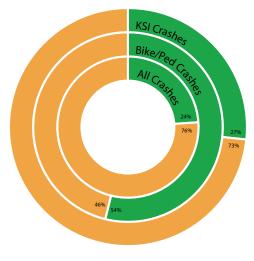
Majority of the bicyclist and pedestrian crashes occurred at intersections, while majority of KSI crashes occurred in locations away from intersections.

Approximately 24% of all crashes and 27% of KSI crashes in West Orange from 2015-2021 occurred at intersections. Of the KSI crashes, 29% of fatal crashes and 25% of serious injury crashes occurred at intersections. Over half (54%) of all crashes involving bicycles or pedestrians occurred at intersections, and seven of the ten total KSI crashes involving pedestrians or bicyclists occurred at intersections.

CRASHES BY ROAD SYSTEM



Crashes at Intersections





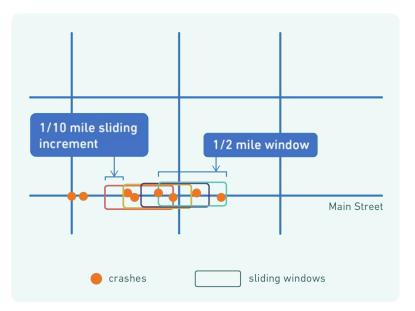
HIGH-INJURY NETWORK

A High-Injury Network (HIN) identifies focus areas and strategies for the Vision Zero Action Plan. A HIN is typically a network of streets with a high incidence of fatal and severe injury crashes. The HIN network also incorporates additional factors such as environmental justice data, roadway characteristics, and local context.

Methodology

HINs are typically developed by analyzing only fatal and severe (KSI) crashes. However, in certain places where the fatal and severe crash counts are lower, this may result in sparse or patchy results. Therefore, moderate injury crash data was used along with fatal and severe crashes. In addition, for vulnerable users such as pedestrians and bicyclists, the difference in circumstances that result in a minor injury opposed to severe injury crash is minimal and a minor injury crash can become a severe injury for a vulnerable user if the speed or angle of crash is only slightly higher. For the purposes of this HIN development, the fatal (K), severe (A), and moderate injury (B) crashes were analyzed for the study period (2015-2021)³.

Figure 5. Sliding Window Analysis Methodology



The project team developed the HIN using the Safer Streets Priority tool by Toole Design Group that utilizes a sliding window analysis to develop high-injury corridors for pedestrians, bicyclists and vehicles (or other crashes). The sliding window analysis uses a 1/2 mile window and 1/10 mile increment across all corridors to identify high-injury crash concentration for each segment of roads in West Orange (see Figure 5).

³New Jersey utilizes the KABCO Injury Classification scale to evaluate the severity of a car crash. The scale is setup as:

K: Killed (Victim is deceased),

A: Incapacitated (Victim has a non-fatal injury. Cannot walk, drive or normally continue the activities that they could perform before the motor vehicle crash),

B: Moderate Injury (An evident injury, other than fatal and incapacitating. Injury is visible, such as a lump on head, abrasion, bleeding or lacerations.)

C: Complaint of Pain (A reported or claims of injury that is not fatal, incapacitating or moderate. Injury is not visible to the investigating officer.)

O: Property Damage Only (No injury)



The HIN score assigns a higher weight to the most severe crashes. The HIN score is calculated by multiplying the number of Fatal (K) and Incapacitating Injury (A) crashes by 3, and multiplying the number of Non-Incapacitating Injury (B) crashes by 1. Once the weights are established and applied to the crashes, the total number of crashes are aggregated along a corridor while incorporating the crash severity weighting. Possible Injury (C) crashes and Property Damage Only (O) crashes are not reflected.

Separate weighted HINs were developed for each mode (pedestrian, bicycle and motor vehicle) based on different thresholds. The Pedestrian HIN includes all segments with a score of 1 or greater and covers ~17 miles or 10% of West Orange roads. The Bicyclist HIN includes all segments with a score of 1 of greater and covers ~8 miles or 5% of West Orange roads. The Vehicular HIN includes all segments with a score of 5 or greater and covers ~22 miles or 13% of West Orange roads. The combined HIN included all three of the individual-mode HINs and covers about ~34 miles or 20% of all West Orange roads.

HIN Intersections

Intersections were rated using the same criteria the project team developed to create the High-Injury Network. The top two, Eagle Rock Avenue (Route 611) and Laurel Avenue (Route 634) and Mt Pleasant Avenue (Route 660) and Laird Drive, were also the only intersections with multiple KSI crashes. The next three, with ratings of 5, were also intersections with a KSI crash.

Table 1. High-Injury Crash Intersections

High-Injury Crash Intersections		
Crash Location	Cross Street	Rating
Eagle Rock Avenue (CR 611)	Laurel Avenue (CR 634)	10
Mt Pleasant Avenue (CR 660)	Laird Drive	9
Pleasant Valley Way (CR 636)	Mt Pleasant Avenue (NJ 10)	5
Mt Pleasant Avenue (CR 660)	Brennan Drive	5
Park Avenue (CR 658)	Main Street (CR 659)	4
Main Street (CR 659)	Northfield Avenue (CR 508 Spur)	4
Harrison Avenue	Mississippi Avenue	4
Northfield Avenue (CR 508)	Cherry Lane / Pleasant Valley Way (CR 636)	3
Cobane Terrace	Northfield Avenue (CR 508)	3
Eagle Rock Avenue (CR 611)	Pleasant Valley Way (CR 636)	3
Eagle Rock Avenue (CR 611)	Valley Way	3
Pleasant Valley Way (CR 636)	Hoover Avenue	3
Kingsley Street	Valley Road	3
Main Street (CR 659)	Lindsley Avenue	3
Mt Pleasant Avenue (NJ 10)	Kelly Drive / Merklin Avenue	3
Northfield Avenue (CR 508)	Giraffe Way	3
Northfield Avenue (CR 508)	Walker Road	3
Prospect Avenue (CR 577)	Guerino Drive	3



Figure 6. High-Injury Network Map

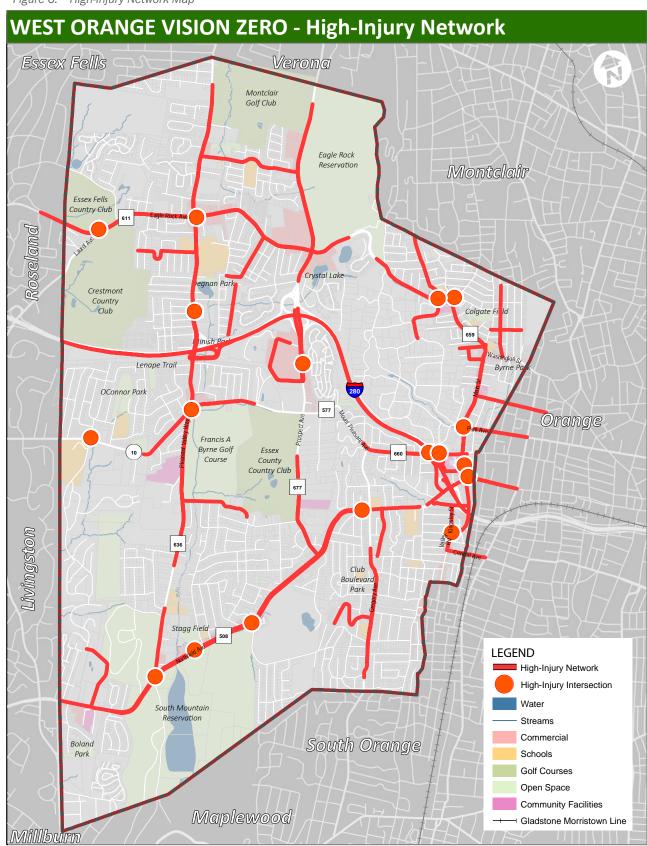
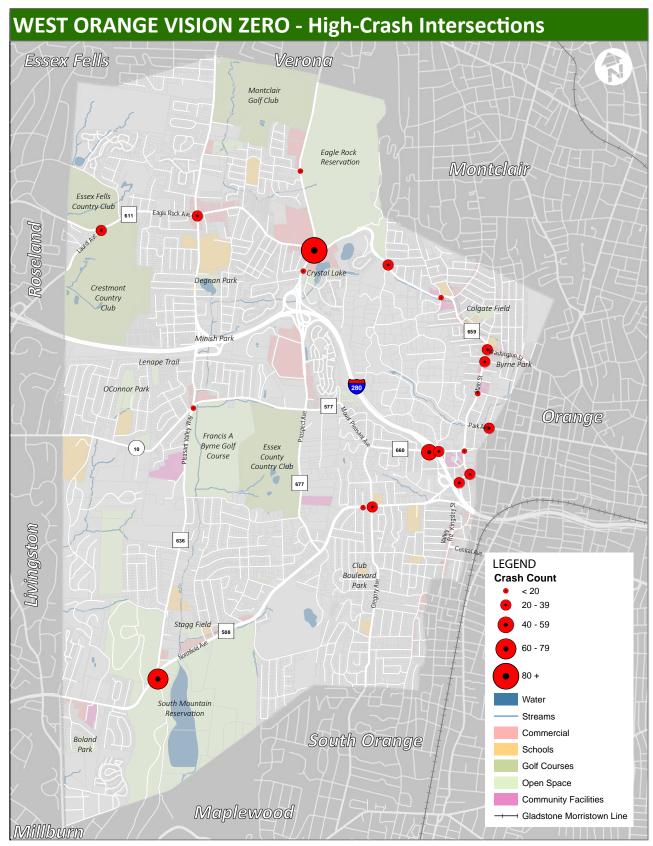




Figure 7. High Crash Intersections Map (2015-2021)



Source: NJDOT Safety Voyager data, 2015-2021



In the context of Vision Zero, it is important to acknowledge that many groups face different barriers to safe travel on the road network. Because the needs of certain groups vary, identifying the locations of various vulnerable groups is important for the prioritization of improvements across West Orange.

Equity Factors

The North Jersey Transportation Planning Authority's Equity Analysis Tool assesses census tracts based on the status of populations included in US Executive Order 12898 on Environmental Justice and in Title VI of the US Civil Rights Act. There are 11 factors through which populations are assessed in this tool based on their respective share of each: Minority, Low Income, Limited English Proficiency, Disability, Age (<5 years old, 5-17 years old, 65+ years old), Foreign-Born, Female Population, Zero-Vehicle Households, and Educational Attainment (less than high school degree).

For this demographic analysis, the team analyzed the following nine factors, as identified by the Vision Zero Task Force, per NJTPA's Equity Analysis Tool:

- Minority The minority factor identifies populations described in Title VI of the Civil Rights Act, FHWA and FTA's Title VI guidelines and Executive Order 12898, all of which prohibit discrimination based on race. Data collected for this factor include all persons who are not single-race White and Non-Hispanic or Latino.
- Low Income Households The low income factor addresses one of the population groups defined in Executive Order 12898 on Environmental Justice (EJ) as well as the Federal Highway Administration and Federal Transit Administration's quidance on EJ policy. These policies seek to identify impacts of transportation investments, programs and projects on low-income people. Data collected for the factor represents a percentage of a specific geographic area's population in households where the household income is less than or equal to twice the federal poverty level.
- Limited English Proficiency This factor addresses Title VI and Executive Order 13166, as well as FTA's Title VI quidance that requires recipients of federal funding to "take reasonable steps to ensure meaningful access to their programs and activities by LEP persons." Data collected for the factor represents all people in the region who speak a language other than English, and those who speak English less than very well.
- Disability Title VI requires agencies receiving federal funding to adhere to Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990. These acts protect people with disabilities against discrimination. Data collected for this factor represents any person who indicated having one or more physical or mental disabilities.
- Age: FHWA's EJ recommendation and Additional Nondiscrimination Requirement suggests including children and elderly populations in discussions regarding traditionally underserved populations. Three factors were created to represent distinct age cohorts: youth, adolescents and elderly populations. Data collected for the factors represents individuals under 5 years of age, individuals between 5 and 17, and individuals 65 years old and older.



- Foreign-Born The foreign-born factor represents populations included in Title VI of the Civil Rights Act and FHWA's and FTA's Title VI requirements and guidelines, all of which prohibit discrimination of persons in the United States based on national origin. Data collected for the factor represents all people who have indicated that they were not born in the United States.
- Zero-Vehicle Households The zero-vehicle households factor should be interpreted in concert with other measures. For example, a community well served by various mass transit modes may have a larger share of zero vehicle households, because a personal vehicle is not considered a necessity. For some, not owning a car is a lifestyle choice and not an indicator of an economically disadvantaged population. Looking at this measure alone may not provide an accurate picture of communities most in need. Data collected for the factor represent all households who have indicated that they do not have a car.

The percentage of the population falling into these categories is statistically assessed relative to regional averages, with a following scale of:

0 = Very Below Average

1= Below Average

2 = Average

3 = Above Average

4 = Very Above Average

These numeric ratings are based on the standard deviation from the NJTPA regional averages for each factor, with 0 and 1 being beyond two and one standard deviations below the average respectively, and 3 and 4 being beyond one and two standard deviations above the average respectively.

Overall Equity Analysis

There are nine census tracts in West Orange as shown in Figure 9. These maps show the location of census tracts in West Orange that fall into the "Above Average" rating for each equity factor. It is worth noting that West Orange does not have any tracts with a rating of Very Above Average for any of these categories. The following table shows the overall West Orange Township equity data compared to Essex County data.

Table 2. Equity Factors in West Orange and Essex County

Equity Factor	West Orange	Essex County
Minority	55.5%	70.9%
Low Income Households	10.5%	31.8%
Limited English Proficiency	10.5%	15.6%
Disability	9%	11.5%
Children (Under 5 Years old)	5.1%	6.5%
Youth (5-17 Years old)	15.1%	17.4%
Seniors (65+ Years old)	19.3%	13.6%
Foreign Born	29.5%	28.7%
Zero-Vehicle Households	7.7%	22%

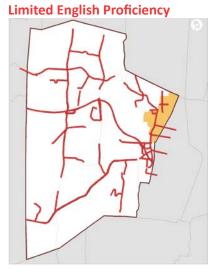


Figure 8. Equity Factors by Census Tract

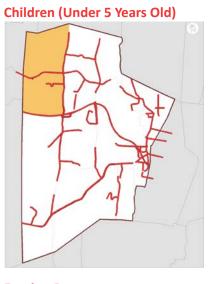
Census Tracts with an "Above Average" RatingHigh-Injury Network

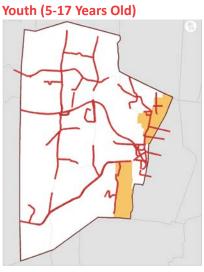
Minority

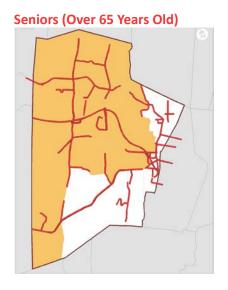
Low Income

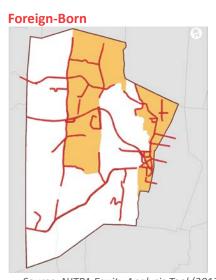


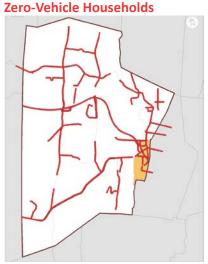
Disability











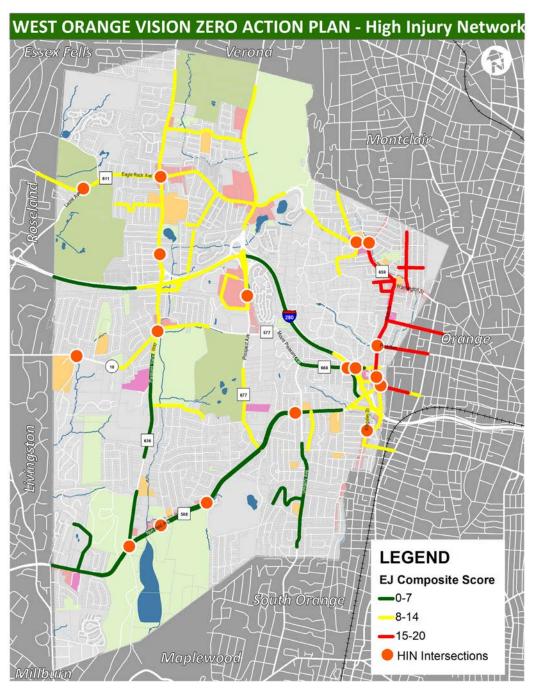
Source: NJTPA Equity Analysis Tool (2017-2021) and NJDOT Safety Voyager (2015-2021)



Environmental Justice Composite Score

The team then assigned an environmental justice score to each network segment using these factors to identify which network segments should be prioritized based on equity factors. All HIN network segments were given a composite score based on the highest average score for each factor. The figure below shows the HIN with priority segments based on the composite EJ score. The scores for each segment ranges from 0-20 with Main Street receiving the highest composite EJ score of 20.

Figure 9. High-Injury Network Environmental Justice Composite Score



Note: HIN corridors are all 0.5 miles, so some extend beyond West Orange borders

Source: NJDOT Safety Voyager data, 2015-2021



PRIORITIZED HIGH-INJURY NETWORK

Prioritized HIN

The project team developed the final recommended HIN by combining the EJ composite score and the HIN crash score. This HIN represents the high-injury (fatal, severe and moderate injury) crash corridors and intersections prioritized based on the equity analysis. While the entire HIN should be given consideration for safety enhancements, these highest-scored corridors are the highest priority based on this analysis. As noted in the earlier section, nine factors were analyzed to develop the composite EJ score. The individual and composite EJ scores for the corridors with a combined score above 20, shown in red in Figure 10, are given in Table 1. The scores for the rest of the segments are provided in Appendix D.

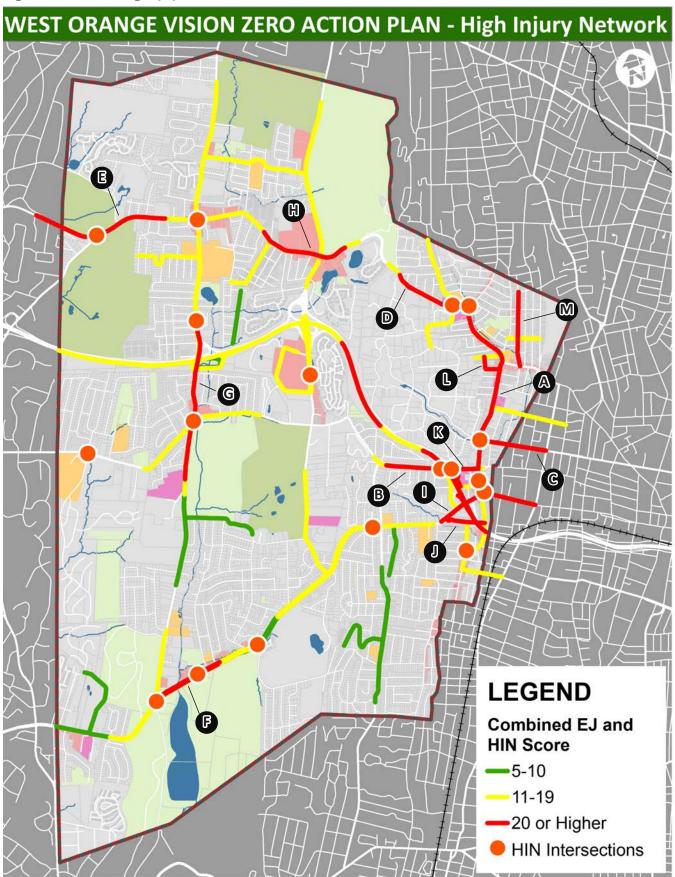
Table 3. Prioritized HIN Corridors - Road Details

HIN SEGMENT NO.	HIN Corridor	CROSS STREET 1	CROSS STREET 2	ROAD CLASSIFICATION	JURISDICTION	SPEED LIMIT	NO. OF LANES	COMPOSITE EJ / HIN SCORE
А	Main Street	Harrison Avenue	Township Border	Major Arterial	County	25	4	44
В	Mount Pleasant Avenue	Gregory Avenue	Main Street	Major Arterial	County	40	2 to 4	39
С	Park Avenue	Main Street	Township Border	Major Arterial	County	35	4	28
D	Eagle Rock Avenue	Harrison Avenue	Fairmont Terrace	Major Arterial	County	35	3 to 4	26
E	Eagle Rock Avenue	Township Border	Sherwood Place	Major Arterial	County	35	4	24
F	Northfield Avenue	Pleasant Valley Way	Sheridan Avenue	Major Arterial	County	40	4	23
G	Pleasant Valley Way	Old Indian Road	Mellon Avenue	Major Arterial	County	50	2 to 4	23
Н	Eagle Rock Avenue	Phyllis Road	Smith Manor Boulevard	Major Arterial	County	35	4	22
I	Northfield Avenue	Whittingham Place	Main Street	Major Arterial	County	35	3 to 4	21
J	Whittingham Place	Northfield Avenue	Valley Road	Major Arterial	County	25	2 to 3	21
К	Gaston Street	Mount Pleasant	Lindsley Avenue	Local Road	Municipal	25	2	20
L	Sayres Place	Llewellyn Avenue	Main Street	Local Road	Municipal	25	1	20
М	Whittlesey Avenue	Samuel Street	Washington Street	Local Road	Municipal	25	2	20

Source: NJTPA Equity Analysis Tool (2017-2021) and NJDOT Safety Voyager (2015-2021)



Figure 10. Prioritized High-Injury Network







ENGAGEMENT OVERVIEW

The project team developed a multi-pronged approach to involve the community in developing the Vision Zero Action Plan. This included assembling a Vision Zero Task Force consisting of representatives from the various organizations in town.

To engage the public, the project team developed project flyers and outreach tools/materials that were presented and used at multiple public workshops and also posted on the Township's webpage.

The following engagement tools were created and engagement activites were conducted:

- 1. Vision Zero Website
- 2. Vision Zero Video Series
- 3. Vision Zero Safety Map
- 4. Vizion Zero Safety Survey
- 5. Vision Zero Public Workshops



Pictured (from left): Brian Stankus, Lt. Pat Matullo, Sangeeta Badlani, Mayor Susan McCartney, Rachana Sheth, William Riviere, Ricardo Valderrama, Paul Grygiel, Jerry Guarino



VISION ZERO TASK FORCE

Vision Zero Task Force Members

The following organizations made up the West Orange Vision Zero Task Force:

- New Jersey Department of Transportation
 - Bureau of Safety, Bicycle, and Pedestrian Programs
- West Orange Township
 - Administration
 - Schools
 - Police/Safety
 - Fire
 - Senior Services
 - Health
 - Engineering
 - Planning
 - Environmental

- Essex County
 - Engineering
 - Planning
- West Orange Pedestrian Safety Advisory Board
- Families for Safe Streets New Jersey
- Nikhil Badlani Foundation
- Thomas Edison National Historical Park
- Downtown West Orange
- EZ Ride

The Vision Zero Task Force assisted with organizing outreach, providing valuable context and knowledge, and evaluation of the findings of this project. Meetings were held monthly to discuss these findings and to guide the continued efforts involved in creating the Vision Zero Action Plan. In these monthly meetings, the progress of the project was discussed along with new findings, and the Task Force's input was taken into consideration for future actions by the project team.







ADMINISTRATION, SCHOOLS, POLICE/ SAFETY, FIRE, SENIOR SERVICES, HEALTH, ENGINEERING, PLANNING, ENVIRONMENTAL

WEST ORANGE PEDESTRIAN SAFETY ADVISORY BOARD (WOPSAB)













OUTREACH TOOLS AND SUMMARY OF RESULTS

Project Website

An ArcGIS Hub website was created for this project as a central source for information regarding the Vision Zero Action Plan. This website contained links to surveys and mapping tools, relevant statistics and contact information for members and organizations involved in the project. The website included an interactive data dashboard where website visitors could view the locations of severe and fatal crashes as well as the top ten pedestrian, bicycle and vehicular crash corridors in West Orange.

Safety Pledge

A safety pledge was developed for West Orange residents to sign, encouraging safe and responsible behavior on roadways. This pledge was distributed as a handout and made available on a large board with room for signatures at the two public workshops. The safety pledge ultimately accumulated over 70 signatures.

Vision Zero Community Safety Survey

To support the West Orange Vision Zero Action Plan, the project team created a survey that incorporated questions regarding the community's travel behaviors, knowledge of Vision Zero, interest in and prioritization of the various concepts and intents of Vision Zero, perceptions of safety across travel modes and perception of the community's present day needs. The survey was available in both English and Spanish, and was open from March to July 2023. A total of 454 surveys were completed. The team also created paper surveys with a mapping exercise to be shared with the Seniors and Older Adults Advisory Board. A detailed technical memorandum of the outreach summary was submitted and is on file with West Orange Township and NJDOT. Key findings are highlighted in the following pages, and all survey results are located in Appendix F.











Vision Zero and Safe System Approach

Respondents were asked about their awareness of Vision Zero and the Safe System Approach. 241 respondents (53%) were not aware of Vision Zero or the Safe System Approach. Of those who were, 96 (21%) were aware of both, 101 (22%) only knew about Vision Zero, and just 5 were only familiar with the Safe System Approach.

One question asked how important they felt a "policy and plan in West Orange Township that aims to eliminate deaths and serious injuries from traffic crashes" was to adopt in West Orange. Respondents overwhelmingly felt it was important: 379 respondents (83.5%) answered with "Very Important" with an additional 42 (9.3%) selecting "Important." Of those choosing a lower option, 14 (3%) selected "Moderately Important" and 2 (0.4%) selected "Of Little Importance."

Travel Modes and Concerns

Survey respondents were asked how often they typically travel using a variety of modes. In terms of walking, 312 respondents (69%) indicated "sometimes," with 107 (24%) selecting "most often" and 23 (5%) selecting "never". Bicycling was less common among these respondents, with 272 (60%) selecting "never," 120 (26%) selecting "sometimes" and just 15 (3%) selecting "most often."

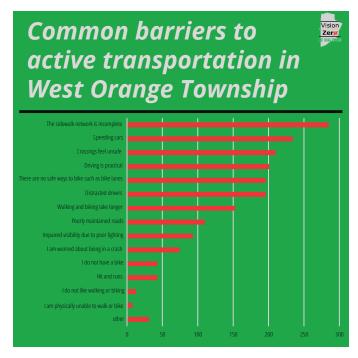
When asked how safe they perceive walking to be, respondents were mixed, with "somewhat safe" the most common response (34%) but "very unsafe" (13%) more common than "very safe" (9%). Because bicycling was so uncommon, most chose the "not applicable" option (48%), but those that do bicycle largely perceive it as an unsafe activity in West Orange, with "very unsafe" (17%) the most common response and "somewhat unsafe" (14%) the second most common response; only 8% of respondents selected "somewhat safe" and just 1.5% selected "very safe."

Survey respondents were asked about the barriers to non-motorized forms of travel, with the ability to select all they felt applied. The most commonly selected barrier was that "the sidewalk network is incomplete/in need of repair" (63%); "speeding cars" (52%), "crossings feel unsafe" (46%), "distracted drivers" (44%), "there are no safe ways to bike such as bike lanes" (43%) and "driving is practical" (42%) were all selected by over 40% of respondents.

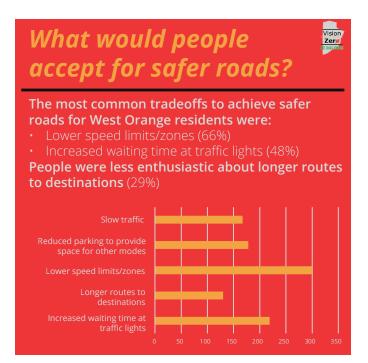
Equity and Safety Trade-Offs

Realistically, any safety improvements to the transportation network will require trade-offs in other areas; making the public aware of these helps them give informed opinions on these safety

West Orange residents don't find walking or biking as safe as driving Active Transportation Modes • Walking Safety - 9% "Very" & 35% "Somewhat" • Bicycling Safety - 3% "Very" & 16% "Somewhat" Motorized Transportation Modes • Driving Safety - 22% "Very" & 48% "Somewhat" • Ridesharing Safety - 20% "Very" & 40% "Somewhat" 250 200 Driving Walking Bicycling Ride-Sharing Other Wheelchair **EVery Safe **Somewhat Safe **Neutral **Somewhat Unsafe **Very Unsafe**

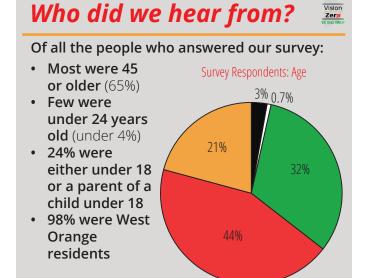






improvements. When asked about a selection of trade-offs in terms of their willingness to accept them, there were none with universal approval but also none that were broadly rejected. Lower speed limits/zones (66%) was the only option with over 50% acceptance; the remaining options were increased waiting time at traffic lights (48%), reduced parking to provide space for other modes (39%), slow traffic (36%) and longer routes to destinations (29%).

Respondents were asked about equity concerns in the implementation of traffic safety improvements for West Orange. Of the options presented, the most common selection (with multiple selections allowed) was "ensuring investment is equitably distributed" with 201 selections (44%), while "targeted enforcement in communities of color" received 120 selections (26%) and "cost of ticketing for limited income households" received 100 selections (22%).



■ Under 18 □ 18-24 ■ 25-44 ■ 45-64 ■ 65 or over

Demographics

Vulnerable road users are a priority in Vision Zero analysis, and in the case of this survey the most represented groups of vulnerable users were: 136 Seniors (55+), 109 children or parents of children, and 65 non-motorists. 83 respondents skipped this question, and there were only 23 transit riders, 21 community members that reported experiencing racial, ethnic or socioeconomic disparities, and 17 people with disabilities.

Over 97% of survey respondents reported living in West Orange, while just over 6% reported working in the Township and just over 3% were local business owners.

Respondents were also asked where in town they lived. Using a word cloud tool to summarize responses, the project team found that some of the most common roads included the major arterials of

West Orange including Gregory Avenue, Pleasant Valley Way, Mt. Pleasant Avenue, Eagle Rock Avenue and Main Street.

Nearly all responses came from working-age adults or older, with 25-44 year olds comprising over 30% of respondents and 45-64 year olds the most common age group with over 41% of responses. Nearly 20% of respondents were seniors. Just 12 responses (2.64%) came from people under 18 years old and just 3 responses from people aged 18-24.



Open-Ended Responses





Word Cloud: Open-Ended Ideas & Thoughts



Additional Ideas

Respondents were asked about additional ideas they may have for improving roadway safety in West Orange. 149 responses included an additional comment, with 79 of them identifying locations and 73 of these related to a specific location. Because of this, these responses were added to the WikiMapping tool either as new features or as comments on existing ones.

Comments were placed into categories, with a secondary category assigned to some comments that included multiple topics. Of all the comments, four stood out as the most common concerns: 52 included a comment supportive of pedestrian mobility or safety improvements, 35 included a request for stricter enforcement of traffic laws in some capacity, 30 were general comments regarding changes to traffic management (including lane

management, traffic volumes, and more), and 27 comments were regarding traffic calming. 25 of the comments regarding traffic calming were positive and supportive, but two expressed a concern toward, or outright rejection of, traffic calming measures.

Other moderately common comments included: 14 regarding bicycle mobility or safety improvement (including two opposed to bicycle lanes based on observations of Bicyclist behavior) and nine regarding speed limits (eight in favor of lowering speed limits, one opposed). The remaining comments covered access to transit, ADA accessibility, education, lighting, maintenance, parking, traffic lights and visibility. Of these, the only comment including an expression of opposition to such measures was one rejecting adding traffic lights.

Safety Map

An interactive mapping tool was also provided using WikiMapping. Respondents were asked to identify points and corridors that concerned them, and they were able to categorize and elaborate on their markings with a caption on their entry. In all, 214 points were placed and 63 polylines were drawn; this does not necessarily indicate the total number of individuals participating in the safety map, as many people submitted several entries. A large paper map for marking up was provided at public workshops, and these markings were added to this online map. Additionally, 73 location-specific entries from the survey were added to the online map, with 12 added as new points or lines and the remaining 61 added as comments to previously-added features. Points and lines could identify: sidewalk/pedestrian network issues, bicycle network issues, locations of concentrated unsafe driver behavior, lighting issues, parking concerns and barriers to transit. Additionally, respondents could leave positive remarks in places with adequate safety conditions.

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WEST ORANGE TOWNISHIP

Figure 11. Wikimapping input: points and lines

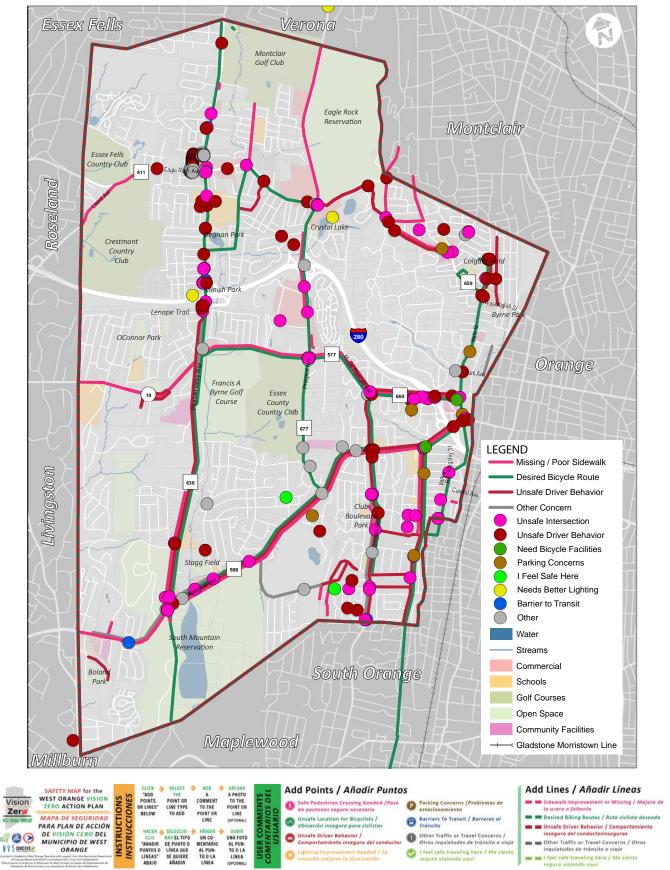








Table 4. Categories of WikiMapping Entries

Lines (representing issues along a corridor)	63
Desired Biking Route	22
Other Traffic / Travel Concern	6
Sidewalk Improvement/Missing	27
Unsafe Driver Behavior	28
Points (represnting issues in individual locations)	260
Barrier to Transit	3
Bicycle Facilities Needed	2
I Feel Safe Here	3
Needs Better Lighting	3
Other Travel Concerns	74
Parking Concerns	7
Unsafe Driver Behavior	98
Unsafe Intersection	70
Grand Total	343



Many points and lines included comments which were translated into a word cloud as shown. It can be seen that common concerns include speeding, texting, disregard of other road users, and dangerous behavior. The comments were then grouped by category to identify recurring issues and recommendations.

The options for line drawing were to identify: desired routes for a bicycle network, sidewalk gaps/deteriorated sidewalks, corridors of unsafe driving, and any other concerns.

Table 5. Roads of Concern by Category

Category of Concern	Roads Identified (Bold indicates the entire distance of the road)
Missing / Poor Sidewalk	Northfield Avenue, Laurel Avenue, Mt. Pleasant Avenue, Forest Avenue, Pleasant Valley Way, Prospect Avenue, Mountain Avenue/ Undercliff Road, Fairmount Terrace, Valley Way, Rollinson Street, Undercliff Terrace, Burnett Terrace
Desired Bicycle Route	Pleasant Valley Way, Northfield Avenue, Prospect Avenue, Mt. Pleasant Avenue, Main Street, Eagle Rock Avenue, Hooper Avenue/ Conforti Avenue, Valley Road, Rollinson Street, Gregory Avenue, Franklin Avenue
Unsafe Driver Behavior	Mt. Pleasant Avenue, Pleasant Valley Way, Northfield Avenue, Gregory Avenue, Rollinson Street, Eagle Rock Avenue, Franklin Avenue, Whittlesey Avenue, Walker Road, Lawrence Avenue, Forest Hill Road, Burnett Terrace, Dogwood Drive, Phyllis Road
Other	Pleasant Valley Way, Northfield Avenue, Gregory Avenue, Walker Road, Standish Avenue

The lines categorized as "other" included complaints about road striping on Northfield Avenue near Pleasant Valley Way, dissatisfaction with speed humps on Walker Road, poor road quality on Standish Avenue, and the width of Pleasant Valley Way.

The options for point placement were to identify: unsafe intersections, unsafe driver behavior, need for bicycle facilities, parking concerns, need for lighting improvement, barriers to transit, and other concerns as well as places people feel safe. Points identified across West Orange were well-mixed, with concentrations of points identifying the various topics scattered across the municipality. Below is a list of some common themes for each.

- Unsafe Intersections
 - Many intersections were marked as unsafe across West Orange. Common areas include:
 - Eagle Rock Avenue and Pleasant Valley
 Way and the intersections nearby
 - Pleasant Valley Way and the Interstate 280 ramps, Eagle Rock Avenue and Prospect Avenue

- Northfield Avenue and Pleasant Valley Way and the nearby intersections on Northfield Avenue
- Mt. Pleasant Avenue and Prospect
 Avenue
- Mt. Pleasant Avenue and Gregory Avenue
- Junctions surrounding the Essex Green Mall
- Main Street and both Mt. Pleasant Avenue and Northfield Avenue
- Eagle Rock Avenue and both Harrison Avenue and Mountain Avenue
- Northfield Avenue and the Interstate 280 ramps
- Several intersections along Gregory
 Avenue and Rollinson Street in the southeastern portion of the municipality



Unsafe Driver Behavior

 Unsafe Driver Behavior was identified across the municipality, including concentrated areas of reporting along Pleasant Valley Way, Eagle Rock Avenue, Northfield Avenue, Main Street and Gregory Avenue.

Other areas include:

- neighborhoods off of the eastern portion of Eagle Rock Avenue
- neighborhoods surrounding Gregory Avenue
- the area surrounding the intersection of Eagle Rock Avenue and Pleasant Valley Way

Need Bicycle Facilities

 While this concern was primarily addressed through line-based submissions, the WikiMap contained points where bicycle facilities are needed, identified at the intersection of Main Street and Mt. Pleasant Avenue and at the intersection of Northfield Avenue and Rollinson Street.

Parking Concerns

- Parking Concerns were centered around the areas closer to Downtown West Orange, with points placed along Rollinson Street, Main Street, Northfield Avenue, Mt. Pleasant Avenue and Eagle Rock Avenue, all of which were located in the eastern portion of the municipality.
- Comments about this issue were largely related to illegal parking or parking in ways that block visibility, but others were concerned about parking availability for those without personal driveways and equitable parking enforcement.

• Need Lighting Improvement

 Of the two points placed within the West Orange boundary, one was related to lighting along the path at Crystal Lake Park and the other requests better lighting near the intersection of Pleasant Valley Way and Interstate 280 due to reports of criminal activity in the area.

• Barrier to Transit

Multiple comments involved buses. People noted difficulty reaching buses at both the intersection of Interstate 280 and Pleasant Valley Way and at the intersection of Woods End Road and Northfield Avenue, both of which were due to a lack of sidewalk access to the bus stop. Another difficulty was reaching the school bus along Gregory Avenue.

• I feel safe here

 Three points were placed where people felt safe: the intersection of Mountain Way and Sylvan Place, the intersection of Benvenue Avenue and Ridgeway Avenue, and the intersection of Valley Road and Freeman Street.



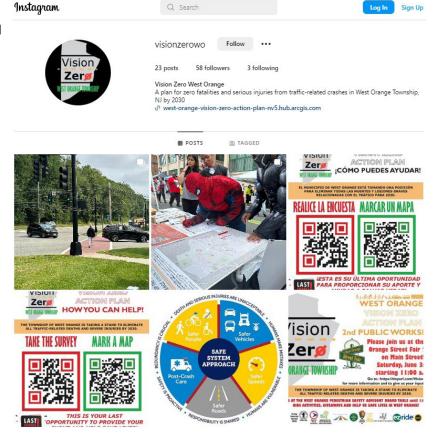
Safety Videos

Two promotional videos to educate the community were included as part of this project. Civic Eye Collaborative worked with NV5 and the Task Force to develop the videos to help inform the West Orange community about the Vision Zero Action Plan. The first is a project overview, providing meaningful statistics, an overview of Vision Zero, and a general summary of the project goals. The second video (currently in development) will be an update on the project, providing elements of the Action Plan and the proven safety countermeasures that may be used to improve roadway safety in West Orange.



Social Media/Newsletter

The project team created and maintained a project Instagram account with regular updates regarding the project status, workshop annoucements and outreach tool links. West Orange also developed a Vision Zero page with links to the project website, outreach tools, workshop and project overview flyers (English/Spanish). The Township regularly posted updates on the its Facebook page and in the monthly newsletter.





PUBLIC WORKSHOPS

Public Workshop 1, April 22, 2023

On April 22, 2023, the first West Orange Vision Zero Public Workshop was held at Washington School. Members of the community were invited to learn about current road safety conditions in West Orange, and were given tools to add their own input including a community survey and an interactive map where they could identify areas of interest. Additionally, a pledge to be a safe driver was provided (both physically and online). All materials were presented in English and Spanish versions. EZ Ride TMA, the West Orange Pedestrian Safety Advisory Board and the Nikhil Badlani Foundation also had booths where community members could engage and discuss road safety awareness, and there were activities for kids including face painting and coloring pages.







Public Workshop 2, June 3, 2023

The West Orange Street Fair on June 3, 2023 hosted food vendors, craftspeople and many other booths and attracted a robust turnout. One booth at the street fair was home to the West Orange Vision Zero Action Plan team, including representatives of both the New Jersey Department of Transportation and NV5. Members of the public were invited to take the survey on their personal devices or on a tablet, as well as to add locations to the online interactive map or the physical map where there were safety concerns or desired improvements. Common themes community members mentioned included elements such as sidewalk gaps, speeding hotspots, illegal parking, safe routes to school and more. Survey responses and map markups from both workshops are summarized in the description of outreach tools earlier in this report.









ON ZERO A

West Orange Township is committed to using a Safe System approach to achieve Vision Zero. The strategies and actions to achieve zero traffic fatalities or serious injuries by the year 2030 were identified by the project team based on the data analysis and outreach findings with input from the Vision Zero Task Force and are organized into the five elements of the Safe System Approach.

As noted earlier, the Plan follows the six principles of the Safe System Approach:

- 1. DEATH AND SERIOUS INJURIES ARE UNACCEPTABLE. While no crashes are desirable, the Safe System
 - Approach prioritizes the elimination of crashes that result in death and serious injuries since no one should experience either when using the transportation system.
- 2. HUMANS MAKE MISTAKES. People will inevitably make mistakes and decisions that can lead or contribute to crashes, but the transportation system can be designed and operated to accommodate certain types and levels of human mistakes, and avoid death and serious injuries when a crash occurs.
- 3. HUMANS ARE VULNERABLE. People have physical limits for tolerating crash forces before death or serious injury occurs; therefore, it is critical to design and operate a transportation system that is human-centric and accommodates physical human vulnerabilities.

SAFE SYSTEM

APPROACH

Zero is our goal. A Safe System is how we get there.

Source: USDOT FHWA

- 4. RESPONSIBILITY IS SHARED. All stakeholders including government at all levels, industry, non-profit/ advocacy, researchers, and the public – are vital to preventing fatalities and serious injuries on our roadways.
- 5. SAFETY IS PROACTIVE. Proactive tools should be used to identify and address safety issues in the transportation system, rather than waiting for crashes to occur and reacting afterwards.
- 6. REDUNDANCY IS CRUCIAL. Reducing risks requires that all parts of the transportation system be strengthened, so that if one part fails, the other parts still protect people



SAFE SYSTEM APPROACH ELEMENTS

The goal is zero deaths and serious injuries and adopting the five elements of the Safe System Approach will help West Orange Township achieve its goal by 2030. FHWA's Proven Safety Countermeasures were utilized in identifying specific improvements to address the various crash types along the High-Injury Network.

The Safe System Approach can improve safety for all users, including children and seniors. West Orange is an *Age-Friendly community*¹ and one where residents can age in place, and the Vision Zero Action Plan will influence the quality of life of older adults. It will support senior residents by giving them a safe transportation system to remain physically, socially, and mentally engaged and help to make West Orange a great place to live.

The five elements of the Safe System Approach are:



SAFER ROADS

Design roadway environments to mitigate human mistakes and account for injury tolerances, to encourage safer behaviors, and to facilitate safe travel by the most vulnerable users.



SAFER SPEEDS

Promote safer speeds in all roadway environments through a combination of thoughtful, equitable, context-appropriate roadway design, appropriate speed-limit setting, targeted education, outreach campaigns, and enforcement.



SAFER PEOPLE

Encourage safe, responsible driving and behavior by people who use our roads and create conditions that prioritize their ability to reach their destination unharmed.



SAFER VEHICLES

Expand the availability of vehicle systems and features that help to prevent crashes and minimize the impact of crashes on both occupants and non-occupants.



POST-CRASH CARE

Enhance the survivability of crashes through expedient access to emergency medical care, while creating a safe working environment for vital first responders and preventing secondary crashes through robust traffic incident management practices.

In addition to the action plan table in the following pages, specific recommendations and countermeasures were developed for the top Prioritized HIN corridors in Appendix A: Priority HIN Projects: Fact Sheets.

¹ https://www.westorange.org/DocumentCenter/View/6813/Age-Friendly-Designation-







SAFER SPEEDS

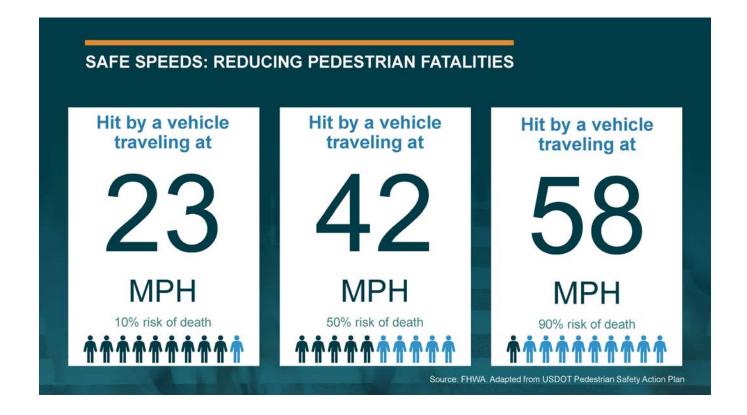
Supporting Safer Speeds is a priority in the Safe System Approach and is integral to Vision Zero. As speed increases, the chance of survivability decreases. This is especially true for vulnerable users such as bicyclists and pedestrians. Per the Safe System Approach by the FHWA, "humans are unlikely to survive high-speed crashes. Reducing speeds can accommodate human injury tolerances in three ways: reducing impact forces, providing additional time for drivers to stop, and improving visibility."

While safer roads and safer people also play a big role in managing speeds, the actions for this element primarily focus on speed limit policy changes, programs to slow vehicles, and education.

Per the crash data analysis, unsafe speed was a factor in 18% of KSI crashes, and 7.6% of all crashes in West Orange Township. Speeding was observed on several HIN corridors with a speed limit of 35 - 40 mph by the project team and was also noted in community surveys and on the interactive safety map.

Lowering the speed limit is a safety trade-off as slowing cars can impact traffic time. In West Orange, survey responses indicate that the West Orange community supports lowering speed limits and having neighborhood slow zones to help improve traffic safety.

While speed-camera programs are an important component of Vision Zero, in New Jersey they are currently not permitted. However, efforts to reduce speed should look beyond enforcement and focus on infrastructure changes to ensure that the posted speed limits are followed.





"SPEED IS AT THE HEART OF A
FORGIVING ROAD TRANSPORT
SYSTEM. IT TRANSCENDS ALL
ASPECTS OF SAFETY: WITHOUT
SPEED THERE CAN BE NO MOVEMENT,
BUT WITH SPEED COMES KINETIC
ENERGY AND WITH KINETIC ENERGY
AND HUMAN ERROR COME CRASHES,
INJURIES, AND EVEN DEATHS."

ORGANIZATION FOR ECONOMIC COOPERATION
AND DEVELOPMENT





SAFER SPEEDS

Promote safer speeds in all roadway environments through a combination of thoughtful, equitable, context-appropriate roadway design, appropriate speed-limit setting, targeted education, outreach campaigns, and enforcement.

#	Action Description	Partners	Time Frame Short/ Medium/ Long	Cost (High- Medium- Low)	
SS1	Advocate for setting appropriate speed limits (including using the USDOT USLIMITS2 tool), traffic calming and safety countermeasures on County roads along the HIN network. Ensure that measures to improve safety along County roads align with the future Essex County Vision Zero Action Plan.	Essex County	Medium	Low	
SS2	Implement roadway design to achieve appropriate speed limits on the municipal HIN roads based on land use context.	West Orange Township	Medium	Medium	
SS3	Create a neighborhood slow zone program, utilizing traffic calming features.	Community Members	Medium	Medium	
SS4	Create a traffic calming toolkit for West Orange to empower the community to assist the Township in addressing traffic safety needs.	West Orange Township	Short	Low	
SS5	Advocate to legalize camera-based ticketing for speeding and red light running.	State of New Jersey, Essex County	Medium	Medium	



TIMEFRAME:

- Short Under 2 years
- Medium 2-5 years
- Long 5+ years

ESTIMATED COST:

- Low < \$100,000
- Medium \$100,000 \$1 Million
- Long \$1 Million +

Performance Measures	Equity Priority (Yes/No)	Impact on Safety (High / Medium /Low)
Speed limit re-evaluation undertaken and recommendations implemented on applicable roads	Yes	High
Speed monitoring showing target speeds are being consistently followed	Yes	High
Neighborhood slow zones identified and and miles of roadways with traffic calming measures in neighborhood slow zones	Yes	High
Traffic calming toolkit created and provided to relevant organizations; number of locations where traffic calming is recommended by community members	Yes	Medium
Camera-based ticketing legalized and implemented at all high-crash intersections and corridors	Yes	High



SAFER ROADS

Designing roads that encourage safe travel behavior, encourage compliance with safe speeds, enhance visibility, and reduce distractions is key to a Safe System Approach. The Vision Zero Action Plan identifes safety improvements along the entire HIN based on FHWA's Proven Safety Countermeasures.

The actions identified in this plan support and enhance the work already being done by the Township to support safety. From implementing a road diet on Main Street to adopting a Complete Streets Policy, the Township of West Orange has been working towards improving safety.

The HIN identifes corridors and intersections that, when improved, will have a direct impact on safety in West Orange and help achieve the Vision Zero goal.

The Township will prioritize improvements on the HIN starting with the corridors identified as Priority HIN Corridors based on a combination of the crash and equity analysis. In addition, the Township will monitor locations that were identified through community input but did not meet the threshold for inclusion based on crash and equity analysis.

Key findings of the data analysis include:

- » County roads make up the majority of the HIN (59.5%)
- » I-280 and Route 10 account for 35.5% of KSI crashes

- » Municpal roads account for 24.5% of the HIN
- » HIN corridors account for 75% of all crashes and 89% of KSI crashes between 2015-2021
- » Prioritized HIN Corridors account for almost 50% of all fatal crashes, 50% of all severe injury crashes, and 40% of all crashes between 2015-2021
- » HIN Intersections accout for 21.4% of all intersection crashes
- » Vulnerable users such as seniors, minors, pedestrians and bicyclists are most at risk of a fatal or severe injury
- » Pedestrian and rear-end crashes are particularly dangerous
- » At intersections, right-angle, rear-end and sideswipe crashes are the most common types of crashes with pedestrian, bicyclist and left-turn/u-turn making up the majority of KSI crashes
- » Distracted driving and unsafe speed were the top driver contributing factors in all crashes and KSI crashes
- » Driving straight ahead, negotiating curves and striking a parked car are the top precrash actions for KSI crashes
- » More fatal crashes occured in the winter





- months (December February) and more severe injury crashes occurred in the summer months (June-August)
- » Street lighting was a factor in more than half of the fatal crashes and a quarter of the severe injury crashes
- » Majority of the bicyclist and pedestrian crashes occurred at intersections, while majority of KSI crashes occurred in locations away from intersections
- » Almost half of KSI crashes occurred on County roads, and a third occurred on I-280

The safety improvements identified are based on the data analysis findings and engineering judgement. The key Proven Safety Countermeasures that will help address safety in West Orange include but are not limited to the 10 listed below:

Appendix A includes factsheets about each of the countermeasures and their impact on safety.

Safer Roads actions aim to implement features appropriate for the intended road use and environment and reduce the likelihood of error and the consequence of error. This is achieved by separating users in space (such as bike lanes, sidewalks etc.), separating users in time (such as lead pedestrian interval timing, traffic signal operations, etc.) and increasing awareness and reducing distractions (increased signage, daylighting intersections, backplates with retroreflective borders, RRFBs, etc.). Managing the angle of crash reduces impact of a crash; for example, installing a roundabout could change a potential head on collision to a less deadly side swipe collision.

Road Diets/ Roadway Configuration		Roundabouts
Leading Pedestrian Interval	(A)	Rectangular Rapid Flashing Beacons (RRFB)
Walkways / Sidewalks	t significant to the significant	Bike Lanes
Dedicated Left & Right Turn		Backplates with Retroreflective Borders
Crosswalk Visibility Enhancements	SPEED LIMIT ?	Appropriate Speed Limits





SAFER ROADS

Design roadway environments to mitigate human mistakes and account for injury tolerances, to encourage safer behaviors, and to facilitate safe travel by the most vulnerable users.

#	Action Description	Partners	Time Frame Short/ Medium/ Long	Cost (High- Medium- Low)	
SR1	Implement short-term street safety improvements (Proven Safety Countermeasures) along the HIN systematically, starting with the Prioritized HIN segments (Appendix A).	Essex County, NJDOT, West Orange	Short	Medium	
SR2	Implement roundabouts/traffic circles.	Essex County, West Orange	Long	High	
SR3	Implement traffic signal phasing improvements such as protected left turns and lead pedestrian interval timing.	Essex County, West Orange	Short	Low	
SR4	Implement street lighting improvements.	Essex County, West Orange, PSE&G	Medium	Medium	
SR5	Implement road diets and create center turning lanes on same roads.	Essex County, West Orange	Long	Low	
SR6	Implement pedestrian visibility improvements.	Essex County, West Orange	Short	Medium	
SR7	Create pedestrian malls and other pedestrian- friendly places.	Essex County, Local Business Owners	Medium	High	
SR8	Assess existing sidewalks for ADA-compliance and assess segments in need of maintenance or repair.	Essex County, West Orange	Medium	Medium	
SR9	Identify streets that would benefit from proactive safety improvements but did not meet the threshold for inclusion in the HIN.	Essex County, NJDOT, West Orange	Medium	Medium	



TIMEFRAME:

- Short Under 2 years
- Medium 2-5 years
- Long 5+ years

ESTIMATED COST:

- Low < \$100,000Medium \$100,000 \$1 Million
- Long \$I Million +

Performance Measures	Equity Priority (Yes/No)	Impact on Safety (High / Medium /Low)
Proven Safety Countermeasures implemented Township-wide along the HIN	No	High
Number of roundabouts installed with additional studies and analysis	No	High
Protected left turns and lead pedestrian intervals implemented Township-wide as applicable	No	Medium
Street lighting improvements implemented as indicated in future study of lighting conditions	No	Medium
Road diets and center turning lanes implemented on relevant roads	No	Medium
Pedestrian visibility improvements implemented Township-wide	Yes	Medium
Pedestrian malls implemented on commercial corridors, including creation of "streateries" (on-road restaurant seating)	Yes	Medium
Study of sidewalk gaps undertaken and all applicable gaps filled	Yes	High
List of streets for potential improvements that are not on the HIN	Yes	Low





SAFER ROADS (CONTD.)

Design roadway environments to mitigate human mistakes and account for injury tolerances, to encourage safer behaviors, and to facilitate safe travel by the most vulnerable users.

#	Action Description	Partners	Time Frame Short/ Medium/ Long	Cost (High- Medium- Low)	
SR10	Develop a quick-build program to implement safety treatments with maximum impact throughout the Township.	Essex County, West Orange	Short	Medium	
SR12	Expand the Township's biking and walking network to key destinations and encourage multi-modal travel.	Essex County, West Orange	Long	High	
SR13	Support the continuation of the jitney and additional improvements to improve access to and comfort of transit shelters.	Essex County, NJT RANSIT, West Orange	Short	Low	
SR14	Evaluate street safety improvements on a regular basis to assess the impact on safety.	West Orange	Medium	Medium	
SR15	Support and assist in advancing regional efforts for Vision Zero and active transportation such as the future Essex County Vision Zero Action Plan, NJTPA's Active Transportation Plan.	Essex County, NJTPA, West Orange	Long	Low	
SR16	Support and engage local community organizations to build consensus on traffic safety investments.	West Orange	Short	Medium	
SR17	Develop a Vision Zero checklist for development review to include safety countermeasures.	West Orange	Short	Low	



TIMEFRAME:

- Short Under 2 yearsMedium 2-5 years
- Long 5+ years

ESTIMATED COST:

- Low < \$100,000
- Medium \$100,000 \$1 Million
- Long \$I Million +

Performance Measures	Equity Priority (Yes/No)	Impact on Safety (High / Medium /Low)
Development of a quick-build program	Yes	Medium
Miles of bicycle facilities and sidewalks installed and bicycle and pedestrian network developed	Yes	High
Number of bus shelters installed and jitney route assessed annually	No	Medium
Before and after studies of implemented safety improvements	No	Medium
Appoint Township staff on steering committees or similar committees of regional plans	No	Medium
Township staff to contact local organizations prior to quick-build and safety improvements	Yes	Medium
Development and inclusion of safety countermeasures as a checklist for site plan review	Yes	Medium



SAFER PEOPLE

Promote a culture of safety by frequent and ongoing public communication and providing ample opportunity prioritizing traffic safety in the community. This includes all members of the community from residents to Township staff. Education campaigns supported by fair and equitable enforcement can help improve traffic safety. Continued community engagement on Vision Zero efforts will enhance knowledge about safe travel behaviors and Vision Zero progress.

Automated traffic enforcement is proven to improve safety; however, it is currently illegal in New Jersey to use speed safety cameras. The Township must support legislation to allow speed safety cameras. As of September 2023, over 200 communities have

implemented red light safety camera programs in 20 states and Washington D.C.

The top crash factors in West Orange included:

- » distracted driving
- » unsafe speed
- » unsafe turning movements
- » negotiating curves

The Township should formally establish a Vision Zero Committee in charge of implementation and monitoring progress.











SAFER PEOPLE

Encourage safe, responsible driving and behavior by people who use our roads and create conditions that prioritize their ability to reach their destination unharmed.

#	Action Description	Partners	Time Frame Short/ Medium/ Long	Cost (High- Medium- Low)	
SP1	Establish a culture of safety and institutionalize Vision Zero concepts in local government .	West Orange	Medium	Low	
SP2	Shift road improvement priorities from vehicle speed and capacity to vulnerable road user safety.	Essex County	Short	Low	
SP3	Communicate openly and actively with local businesses, transportation/logistics companies, and taxi/ride-hailing companies.	Local Businesses, Transportation/ Logistics and Taxi/Ride-Hailing Companies	Medium	Low	
SP4	Conduct regular outreach to schools, older adults, and senior citizens.	West Orange schools, Senior Services, Older Adults Advisory Board, EZ Ride TMA	Medium	Low	
SR5	Implement high-visibility and automated enforcement along the HIN.	West Orange Police Department, Essex County	Long	Low	
SR6	Develop Vision Zero toolkits for community ambassadors and knowledge building.	West Orange	Short	Low	
SR7	Regularly maintain and update Vision Zero online tools such as the website, crash data dashboard and social media accounts.	West Orange	Short	Low	



TIMEFRAME:

- Short Under 2 yearsMedium 2-5 years
- Long 5+ years

ESTIMATED COST:

- Low < \$100,000
- Medium \$100,000 \$1 Million
- Long \$1 Million +

Performance Measures	Equity Priority (Yes/No)	Impact on Safety (High / Medium /Low)
Local policies reviewed for inclusion of Vision Zero language and concepts, and changes made as applicable. Institute an internal Vision Zero committee for implementation and tracking progress	No	Low
Change in street improvement policy/checklist to include pedestrian and bicyclist infrastructure and Vision Zero action items	Yes	High
Regular correspondence with local businesses, transportation/logistics companies, and taxi/ride-hailing companies	No	Low
Number of outreach programs/sessions undertaken in schools and with senior citizens	Yes	Medium
Police vehicles or speed cameras located in high-speed and/or high- crash corridors	No	High
Completed toolkits for community ambassadors	No	Low
Regular maintenance and updates to online Vision Zero tools	No	Low



SAFER VEHICLES

Safer Vehicles involve supporting "active" safety measures, to help prevent crashes from occurring, such as lane departure warning, autonomous emergency braking, and "passive" safety measures such as seatbelts and airbags. Understanding that West Orange may not have the capacity to lobby

vehicle manufacturers, the Township can provide support for such improvements where possible. The Township can lead by example by ensuring the Township fleet has the latest safety features and encourage "right-sizing" vehicles and moving to smaller vehicles when feasible.











SAFER VEHICLES

Expand the availability of vehicle systems and features that help to prevent crashes and minimize the impact of crashes on both occupants and non-occupants.

#	Action Description	Partners	Time Frame Short/ Medium/ Long	Cost (High- Medium- Low)	
SV1	Outfit Township vehicles with the latest safety features, such as blind spot detection, pedestrian automatic emergency braking and new vehicle design to improve driver visibility of the immediate pedestrian/roadway visibility.	West Orange	Short	Medium	
SV2	Collaborate with private industry groups to incorporate safety-related technology into their vehicles.	Private Industry Groups, West Orange	Short	Low	
SV3	Ensure Township vehicles are the "right size" and take opportunities to transition to smaller vehicles.	West Orange	Medium	Medium	



TIMEFRAME:

- Short Under 2 years
- Medium 2-5 years
- Long 5+ years

ESTIMATED COST:

- Low < \$100,000
- Medium \$100,000 \$1 Million
- Long \$I Million +

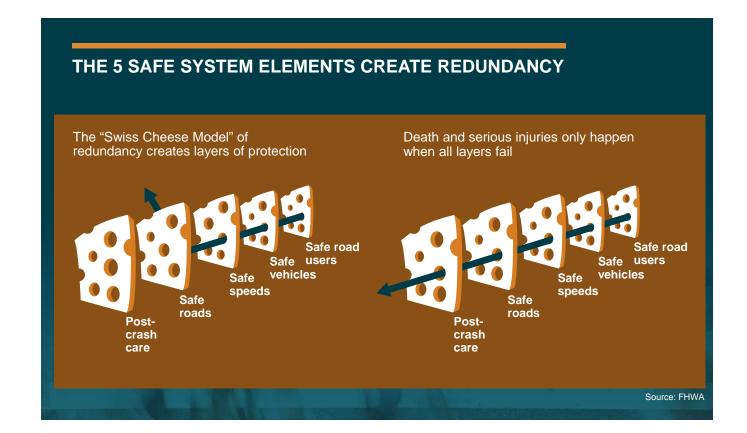
Performance Measures	Equity Priority (Yes/No)	Impact on Safety (High / Medium /Low)
Review of Township-owned vehicles for safety improvements, and implementation of these improvements	No	Medium
Distribution of list of safety features being implemented in Township buildings to private industry groups	No	Medium
Evaluation of Township vehicles for reduction of sizes, and procedural replacement of vehicles to "right sized" fleet	No	Medium



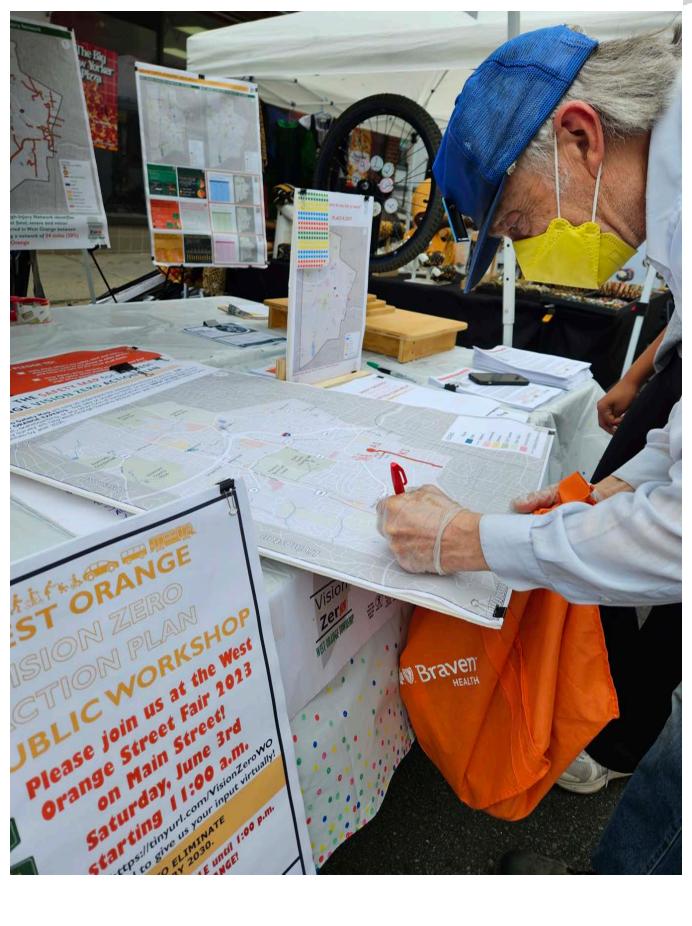
POST-CRASH CARE

Post-Crash Care actions are the final line of defense if all the other layers of the Safe System Approach fail. After a crash, it should be a priority to document and share all crash factors across the respective Township departments, as well as the County and/ or NJDOT as applicable. Effective media coverage of crashes and safety can assist in highlighting problem locations to the community, promoting public safety. The Township must also promote the use of the term "crash" and not "accident" in the media.

Investigation and feedback to the Township following a crash will help address road safety in planning, design and maintaining the roadways and the traffic system.











POST-CRASH CARE

Enhance the survivability of crashes through expedient access to emergency medical care, while creating a safe working environment for vital first responders and preventing secondary crashes through robust traffic incident management practices.

#	Action Description	Partners	Time Frame Short/ Medium/ Long	Cost (High- Medium- Low)	
PC1	Create a multidisciplinary Rapid Response Team to analyze every fatal crash for cause and prevention and coordinate with victims' families.	West Orange, Essex County	Medium	Medium	
PC2	Track deployment times of emergency and medical response vehicles.	Hospital Administration, 911 Dispatch Centers	Medium	Low	
PC3	Create a standard crash summary for police officers to determine street design-related factors.	West Orange	Short	Low	



TIMEFRAME:

- Short Under 2 years
- Medium 2-5 years
- Long 5+ years

ESTIMATED COST:

- Low < \$100,000
- Medium \$100,000 \$1 Million
- Long \$1 Million +

Performance Measures	Equity Priority (Yes/No)	Impact on Safety (High / Medium /Low)
Creation of Rapid Response Team, and regular collaboration between organizations involved to collaborate on post-crash safety recommendations	No	Low
Analysis of deployment times disclosed in annual report	No	High
Creation of standard crash summary, leading to creation of a crash database including these street design-related factors	No	Medium



PRIORITY HIN CORRIDOR PROJECTS

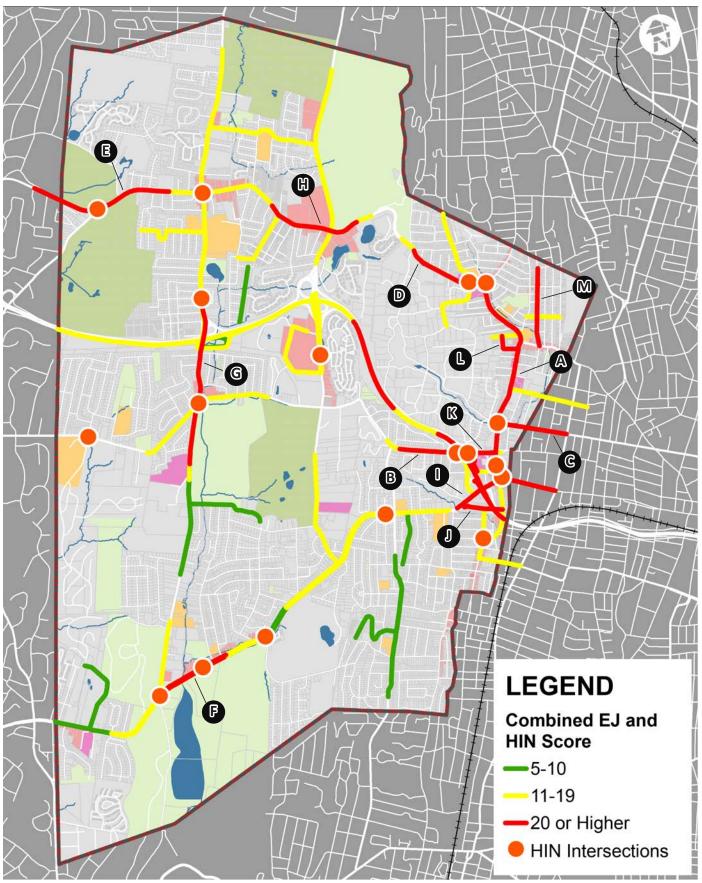
The project team developed the final recommended HIN by combining the EJ composite score and the HIN crash score. The Priority HIN represents the high-injury (fatal, severe and moderate injury) crash corridors and intersections prioritized based on the equity analysis. While the entire HIN should be given consideration for safety enhancements, these highest-scored corridors are the highest-priority based on the crash and equity analysis. The 13 corridors rated the highest using the composite score are labeled on the map on the next page, in descending order of score (A is the highest, B the second-highest etc.).

Table 11. HIN Corridor Lengths

Corridor	Road	Segment Length	% of HIN Miles
Α	Main Street (CR 659)	1.4 Miles	4%
В	Mt Pleasant Avenue (CR 660)	0.6 Miles	1.6%
С	Park Avenue (CR 658)	0.2 Miles	0.5%
D	Eagle Rock Avenue (CR 611)	0.6 Miles	1.8%
E	Eagle Rock Avenue (CR 611)	0.7 Miles	2%
F	Northfield Avenue (CR 508)	0.5 Miles	1.4%
G	Pleasant Valley Way (CR 636)	1 Mile	3%
H Eagle Rock Avenue (CR 611)		0.6 Miles	1.8%
ı	Northfield Avenue (CR 508 Spur)	0.3 Miles	0.9%
J	Whittingham Place (CR 508)	0.2 Miles	0.7%
К	Gaston Street	0.1 Miles	0.3%
L	L Sayers Street		0.5%
M	M Whittlesey Avenue		1.1%
	TOTAL	6.8 MILES	19.6%



Figure 12. Prioritized HIN Corridor Locations



Source: NJTPA Equity Analysis Tool (2017-2021) and NJDOT Safety Voyager



Table 12. Proven Safety Countermeasures, by Priority HIN Corridor

	A Proven Safety ntermeasures	Estimated Benefits and Cost
t sho	Bicycle Lanes	 Bicycle Lanes: 49% reduction in crashes on urban four-lane undivided collectors and local roads, 30% reduction in crashes on urban two-lane undivided collectors and local roads
	Crosswalk Visibility	High-visibility crosswalks: 40% reduction in pedestrian injury crashes
KI	Enhancements/ Lighting	• Intersection lighting: 42% reduction in pedestrian crashes
	Lighting	Advance yield or stop markings and signs: 25% reduction in pedestrian crashes
Ä	Leading Pedestrian Interval	• 13% reduction in pedestrian/vehicle crashes at intersections
	Rectangular	Reduction in pedestrian crashes by 47%
	Rapid Flashing Beacons (RRFB)	• Increase of motorist yielding rates up to 98% (depending on context)
	Road Diets/Roadway Configuration	• 4-lane to 3-lane road diet conversion: 19-47% reduction in total crashes
		 Sidewalks: 16-89% reduction in crashes involving pedestrians walking along roadways
*	Walkways/Sidewalks	 Paved Shoulders: 71% reduction in crashes involving pedestrians walking along roadways
SPEED LIMIT ?	Appropriate Speed Limits	 A driver traveling at 30 miles per hour who hits a pedestrian has a 45 percent chance of killing or seriously injuring them. At 20 miles per hour, that percentage drops to 5 percent.
	Backplates with	 15% reduction in total crashes
	Retroreflective Borders	Very low cost
		Added Left-Turn Lanes: 28-48% reduction in total crashes
	Dedicated Left	• Positive Offset Left-Turn Lanes: 36% reduction in fatal and injury crashes
00	and Right Turn	Right-Turn Lanes: 14-26% reduction in total crashes
		• Cost varies
	Roundabouts	 Two-Way Stop-Controlled Intersection converted to Roundabout: 82% reduction in fatal and injury crashes

Signalized Intersection to Roundabout: 78% reduction in fatal and injury crashes



A	Corridor B Mt Pleasant Avenue	С	Corridor D Eagle Rock Avenue	Corridor E Eagle Rock Avenue	Corridor F Northfield Avenue	Corridor G Pleasant Valley Way	Corridor H Eagle Rock Avenue	Corridor I Northfield Avenue	Corridor J Whittingham Place	K	L	Corridor M Whittlesey Avenue
i	i	(i)	i	i	i	<u>(*</u>	i	i	<u>(*)</u>	<u>*</u>	i	(i)
	SPEED LIMIT ?	SPEED LIMIT ?	SPEED LIMIT ?	SPEED LIMIT ?	SPEED LIMIT ?	SPEED LIMIT ?	SPEED LIMIT ?	SPEED LIMIT ?				SPEED LIMIT ?
		E	Feed .			1		1				























NEXT STEPS

West Orange should adopt the Vision Zero Action Plan and continue its efforts in implementing the actions identified in the plan. Key components for success will be monitoring progress on a regular basis and ensuring a multi-disciplinary Vision Zero Task Force is formally adopted by the Township. The Vision Zero website should be regularly edited with crash data and status updates. Regular reporting is essential to Vision Zero and will create accountability. Each of the strategies and actions in the action plan have associated performance metrics that should be tracked on an annual basis.

The most important metric is the number of fatal and severe injury crashes in the Township and that should be updated as soon as data is available. At the time of the development of this plan, crash data was available and complete until the year 2021. The crash data for 2022 would be available soon for analysis and the Township should analyze that data to inform the implementation of this plan.

As noted earlier, lists of specific improvements are identified for the priority HIN Corridors as an immediate first step for implementation. These lists of improvements are included in Appendix A with key data facts for each Priority HIN Corridor. As and when funding is secured, the Township must continue implementation of Proven Safety Countermeasures for all the corridors and intersections on the HIN.

A list of funding sources is included in Appendix C including, but not limited to, the Safe Streets For All and Road to Safety grants.

