

Vision Zero

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What is Vision Zero?

Vision Zero is a transportation safety philosophy based on the principle that loss of life is not an acceptable price to pay for mobility. Among those concerned with traffic safety, Vision Zero has become a useful framework to eliminate traffic deaths and severe injuries in the transportation system with a proactive and preventative approach. Vision Zero recognizes that human behavior is imperfect. Therefore, the transportation system should be designed to minimize the consequences of human error.

Why the WAMPO Region needs Vision Zero

The Wichita Area Metropolitan Planning Organization (WAMPO) region comprises 22 cities and 3 counties. The cities and counties of the region work together to ensure the WAMPO region remains a great place to live, work, and play. WAMPO is required to set targets for MAP-21 Act mandated safety-related measures, with an overarching goal of increasing safety in the area, and reports these targets annually to the Kansas Department of Transportation (KDOT). The five-year rolling averages of fatalities and serious injuries from 2014 through 2018, as reported in WAMPO's 2020 Metropolitan Transportation Plan, are as follows:

Table 1. Fatalities and Serious Injuries

Performance Measure	2014-2018 Average
Number of Fatalities	58.6
Rate of Fatalities per 100 million VMT	1.22
Number of Serious Injuries	146.8
Rate of Serious Injuries per 100 million VMT	3.07
Number of Non-motorized Fatalities and Non-motorized Serious Injuries	28.2

The United States Department of Transportation (USDOT) defines a suspected serious injury as any injury other than fatal that results in one or more of the following:

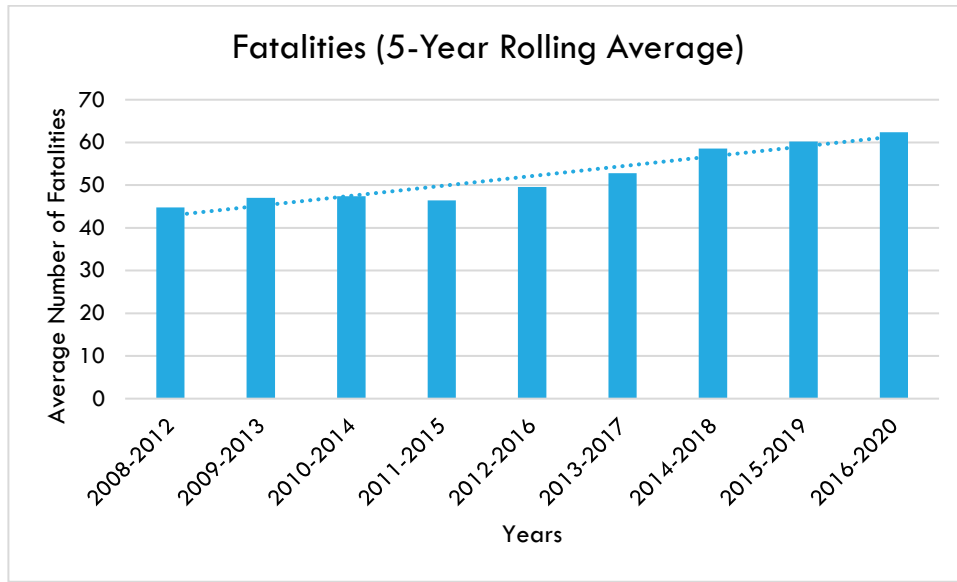
- Severe laceration resulting in exposure of underlying tissues/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Crush injuries
- Suspected skull, chest, or abdominal injury other than bruises or minor lacerations
- Significant burns (second or third-degree burns over 10% or more of the body)
- Unconsciousness when taken from the crash scene
- Paralysis

Just the Numbers

The loss of life caused by motor vehicle crashes on WAMPO streets is a preventable public health crisis. Historically, transportation systems have not been managed with a goal of zero fatalities. In the WAMPO region in 2020, there were more deaths from motor vehicle crashes than from homicides

(Stavola, 2021). As of 2020, fatalities in the WAMPO region have been on the incline with 4% increase from 2019.

Figure 1. Fatalities over Time in the WAMPO Region



Crashes involving a pedestrian or bicyclist are ten times more likely to involve a fatality compared to a motorist-only crash. Only around 2% of workers in the WAMPO region walk or bike to work every year, but 14% of pedestrians and bicyclists make up fatalities. On top of that, the WAMPO region continues to see growth in recreational bicyclists and pedestrians (via the WAMPO annual Bicycle and Pedestrian Count).

Figure 2. Commute Method

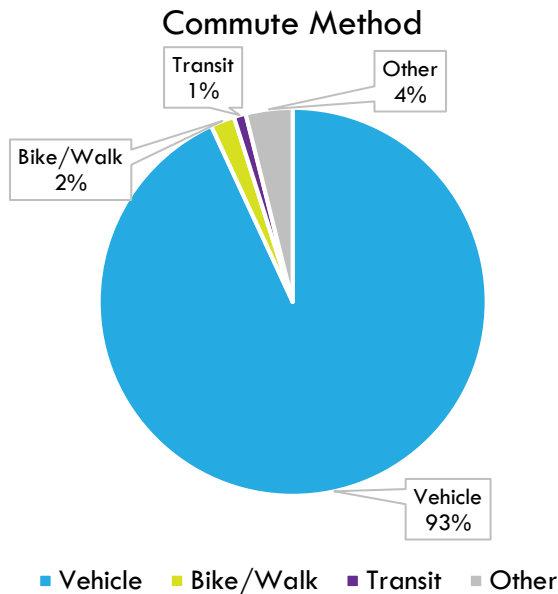
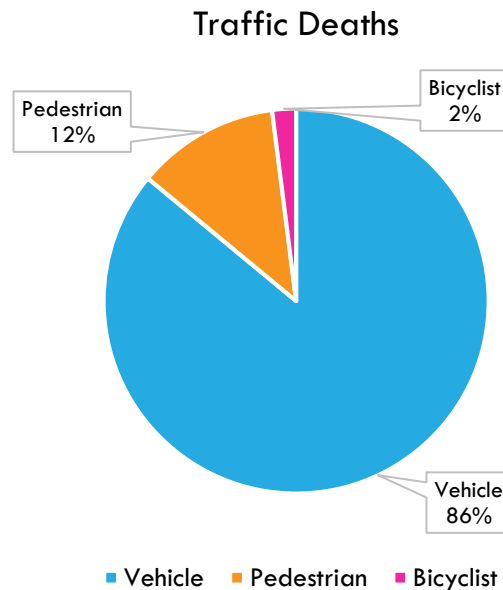


Figure 3. Traffic Deaths



While creating a safe roadway system is a priority for Vision Zero, we must also address the human behind the wheel. The top three contributors to fatalities in the WAMPO region are excessive speeding, distracted driving, and reckless driving, with each contributing around 21%, 17% and 14% respectively. Other common contributors to fatalities are the involvement of alcohol, or if a teen driver was behind the wheel at about 13% and 12% respectively, with alcohol involvement on the decline.

Note:

Vehicle crashes do not apply to:

- Licensed motor vehicles designed to operate primarily on public roads
- Cooperative vehicles which are owned or leased

Vehicle crashes do not apply to:

- Unlicensed equipment or off-road vehicles
- Personal vehicles used on cooperative business (occasional use agreements—mileage reimbursement)

Vehicle crashes may not be counted when no bodily injury occurs or results from incidents other than collision.

Figure 4. Bicycle Involved Crashes in 2020

Figure 5. Pedestrian Involved Crashes in 2020

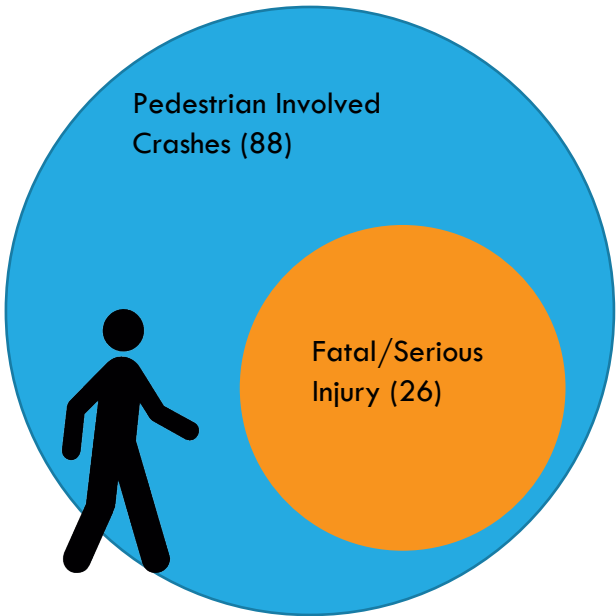
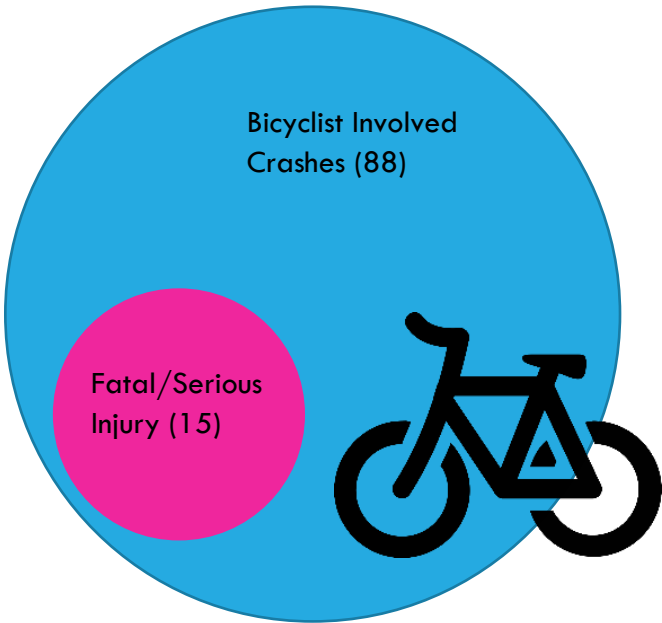


Table 2. Crash Fatality Frequency from 2012-2020 (AM)

2012-2020	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM
Monday	0.0%	0.3%	0.2%	0.0%	0.3%	0.0%	0.8%	0.3%	0.7%	0.5%	0.8%	0.2%
Tuesday	0.8%	0.2%	0.5%	0.7%	0.2%	0.3%	0.2%	0.5%	0.2%	0.2%	0.5%	0.3%
Wednesday	0.8%	0.3%	0.0%	0.0%	0.5%	0.5%	0.3%	0.5%	0.5%	0.5%	0.3%	0.5%
Thursday	0.7%	0.7%	0.7%	0.2%	0.2%	0.2%	0.3%	0.3%	0.2%	0.2%	0.5%	0.2%
Friday	0.5%	0.2%	0.5%	0.7%	0.5%	0.2%	0.3%	0.8%	0.3%	0.3%	0.7%	0.7%
Saturday	1.0%	1.3%	1.3%	0.3%	0.2%	0.2%	0.0%	0.3%	0.3%	0.2%	0.3%	1.0%
Sunday	0.8%	0.5%	2.0%	0.7%	0.3%	0.5%	0.7%	0.2%	0.0%	0.3%	0.2%	1.5%

Table 3. Crash Fatality Frequency from 2012-2020 (PM)

2012-2020	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM
Monday	0.5%	1.2%	0.5%	0.7%	1.3%	0.5%	1.0%	0.3%	0.7%	1.7%	0.2%	0.5%
Tuesday	0.3%	0.8%	1.3%	0.3%	0.7%	0.3%	0.8%	0.5%	0.8%	0.8%	0.2%	0.2%
Wednesday	1.5%	1.0%	0.5%	1.3%	0.5%	0.7%	0.3%	0.0%	1.3%	0.7%	0.2%	0.7%
Thursday	1.2%	1.2%	0.8%	0.3%	0.2%	1.0%	0.8%	0.7%	0.2%	0.8%	0.2%	0.8%
Friday	0.7%	0.8%	0.5%	1.5%	1.3%	0.8%	0.7%	0.5%	1.8%	0.7%	1.7%	0.7%
Saturday	0.5%	0.2%	0.7%	1.3%	0.3%	0.3%	0.8%	1.3%	0.8%	1.3%	0.5%	1.2%
Sunday	0.8%	1.0%	0.5%	0.5%	0.7%	0.5%	0.8%	0.7%	1.0%	0.3%	0.7%	1.0%

Table 4. Crashes 5-Year Rolling Average 2016-2020 (AM)

<i>5 yr ave</i>	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM
Monday	0	0.4	0	0	0.4	0	0.2	0.4	0	0.6	0.6	0.2
Tuesday	0.4	0.2	0.4	0.4	0	0.4	0.2	0.2	0	0.2	0.4	0
Wednesday	0.2	0.2	0	0	0.4	0.2	0.2	0.2	0.2	0.4	0	0.2
Thursday	0.6	0.6	0.4	0.2	0.2	0	0.2	0.2	0	0.2	0.4	0.2
Friday	0.6	0.2	0	0	0.2	0.2	0.2	0.2	0.2	0.2	0	0
Saturday	0.4	1.2	0.8	0.2	0	0.2	0	0	0.2	0	0	0.6
Sunday	0.2	0.4	0	0.6	0.2	0.6	0	0.2	0	0.2	0	0.8

Table 5. Crashes 5-Year Rolling Average 2016-2020 (PM)

<i>5 yr ave</i>	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM
Monday	0.6	0.8	0.4	0.4	0.4	0.2	0.8	0.4	0.4	0.8	0.2	0.2
Tuesday	0.4	0.8	1.6	0.2	0.6	0.4	0.4	0.4	0.2	0.2	0.2	0.2
Wednesday	1	1	0.4	0.4	0.6	0.2	0.4	0	1.4	0.4	0.2	0.4
Thursday	0.8	1	0.4	0.2	0.2	0.6	1	0.8	0	0.4	0	0.4
Friday	0.2	0.4	0	0.6	1	0.6	0.6	0.2	1.2	0.2	0.6	0.6
Saturday	0.4	0.2	0.4	0.8	0	0.4	1	0.2	0.8	1	0.4	0.8
Sunday	0.6	0.4	0	0.4	0.6	0.4	0.6	0.4	1	0.2	0.4	0.4

How to Adopt a Vision Zero Toolkit

Local governments may use this plan as a toolkit of resources that can be endorsed as-is or customized on a case-by-case basis to encourage the adoption of the Vision Zero philosophy and develop a local safety action plan.

Step 1: Develop a Regional High-Injury Network

Local governments can develop their own High-Injury Network (HIN) through the use of detailed localized crash data, modify the regional HIN, or adopt the regional HIN within their own communities. A High-Injury Network maps local corridors where high numbers of people have been killed or seriously injured. The network serves as a tool to assess patterns across the city and identify particularly dangerous intersections. Some municipalities may choose to develop separate High-Injury Networks for cyclist and vehicle crashes. The HIN can then be used to help prioritize street safety improvements.

Step 2: Develop Crash Profiles, Behavior Profiles and Countermeasures

Table 6. Countermeasures

Countermeasure	Description
Traffic Calming	Traffic calming refers to a full range of horizontal and vertical design elements intended to slow the movement of cars through a corridor. Examples include horizontal curvature, chicanes, narrow travel lanes, traffic circles, fewer lanes, bulb-outs, medians, signals coordinated for slower speeds, and speed humps.
Road Diet	Road diets reassign space in the roadway from vehicle travel lanes to room for bicycle facilities, wider sidewalks, or center turn lanes. Road diets optimize street space to benefit all users by improving the safety and comfort of people walking and biking by reducing travel speeds and the potential for rear-end crashes.
Protected/Separated Bikeway	Designated bicycle lanes separated from vehicle traffic by a physical barrier (such as bollards, landscaping or parked cars) can increase safety for everyone by decreasing opportunities for encroachment on the bike lane by people driving. Protected and separated bikeways also reduce the risk of dooring.
Prohibited Left Turn	Consider banning left turns at locations where a turning vehicle may conflict with people walking in the crosswalk, where opposing traffic volume is high, or from a side street onto a busy two-way arterial street. Prohibiting drivers from turning left reduces pedestrian interaction with vehicles when crossing.
Pedestrian Refuge Median	Pedestrian refuge medians provide a protected area for people walking at the center of the roadway. They reduce the exposure time for people walking and simplify crossings by allowing people walking to focus on one traffic direction at a time.
Targeted Enforcement	Targeted enforcement is used to reduce the most dangerous behaviors (such as speeding, distracted driving, aggressive driving, impaired driving, red-light and stop sign running), particularly at locations with a history of such behaviors. People driving are less likely to take part in dangerous behaviors when they know there is a higher likelihood they will be caught.

Crash profiles defined by area type provide information to local governments on the types of crashes that most frequently contribute to serious injury and/or fatal crashes in their jurisdictions. The crash profiles and corresponding countermeasure glossary suggest potential actions that local governments and their partners can use to reduce these types of crashes. To apply these crash profiles, a local government can identify the area types relevant in its jurisdiction and target reduction of key crash profiles by implementing recommended countermeasures in high-priority locations (such as on the regional High-Injury Network).

Step 3: Community Engagement

The Vision Zero Network published Equity Strategies for Practitioners to assist communities in implementing Vision Zero with a focus on equity. Key strategies from the guide are:

- Community engagement
 - Programs and associated staff should build sustaining relationships with the community and partners.
 - Hosting engagement meetings in locations people can attend conveniently.
 - Reduce barriers to participation.

Step 4: Traffic Calming


Excessive speed is a major contributing factor to fatal and serious injury crashes across all area types. Safe travel speed is a key Vision Zero principle, given the documented relationship between speed and crash severity. A variety of proven techniques can reduce travel speed:

- Realigning skewed intersections
 - Broad, wide-radius turns can be made at high speeds.
 - Tighter turns with a small radius can be made at lower speeds.
- Reducing travel lane widths
 - Narrower travel lanes encourage lower vehicle speeds.
- Roundabouts
 - Roundabouts act as horizontal deflection onto otherwise straight roadways.
 - Can reduce operating speeds compared to standard intersections.

Figure 6. Speeding Myths via City of Wichita Public Works

Speeding Myths

- All motorists exceed the posted speed limit by 5 to 10 mph and the only way to reduce speeding is to reduce the speed limit. FALSE! In reality, 85% of motorists drive within properly-posted speed limits.
- Excessive speeding is the major cause of accidents. FALSE! In reality, the problem is more variations of speeds in the traffic stream.
- Low speed limits are the best. FALSE! In reality, unreasonably low speed limits result in a greater number of violations and a disrespect of other posted speed limits that are reasonable.
- Lower speed limits save gas. FALSE! Research has shown that the 55-mph National Maximum Speed Limit, which was enacted specifically to save gas, had practically no impact on fuel consumption. Most fuel is used to accelerate to a given speed. Speed limits based on actual travel speeds promote better traffic flow and reduce the amount of braking and accelerating on our roads.



References

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- Caltrans Local Roadway Safety Manual
- Denver Regional Council of Governments. (2020, June). *Taking Action on Regional Vision Zero*.
- Federal Highway Administration Office of Safety
- Federal Highway Administration Crash Modification Factors Clearinghouse
- Federal Highway Administration Bicycle Safety Guide and Countermeasure Selection System
- Federal Highway Administration Pedestrian Safety Guide and Countermeasure Selection System
- National Association of City Transportation Officials Urban Bikeway Design Guide
- Stavola, M. (2021, January 10). *2020 sets Wichita's record for homicides. Here's an overview of what happened*. The Wichita Eagle.
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