

Vulnerable Road User Safety Assessment Summary

A vulnerable road user (VRU) for the purpose of this analysis is defined as bicyclists, pedestrians (which includes micro-mobility devices such as scooters and wheelchair users). ITD initiated a research project to provide a detailed analysis and report. The full technical report can be viewed on ITD's Research Program page [here](#)). To have a larger dataset to analyze, this research effort collected 4,948 crash records pertaining to crashes involving motor vehicles and VRUs over a 10 year period (2012-2021), and on all roads in Idaho.

Results indicate that bicycle crashes of all types have declined over the ten-year period. While pedestrian crashes overall have held steady, fatalities have increased, and several crash types exhibit increasing trends: those occurring around parking lots, alleys, and driveways; and those involving motorists failing to signal at intersections, making improper left turns, speeding near turns and hills, and fleeing the scene.

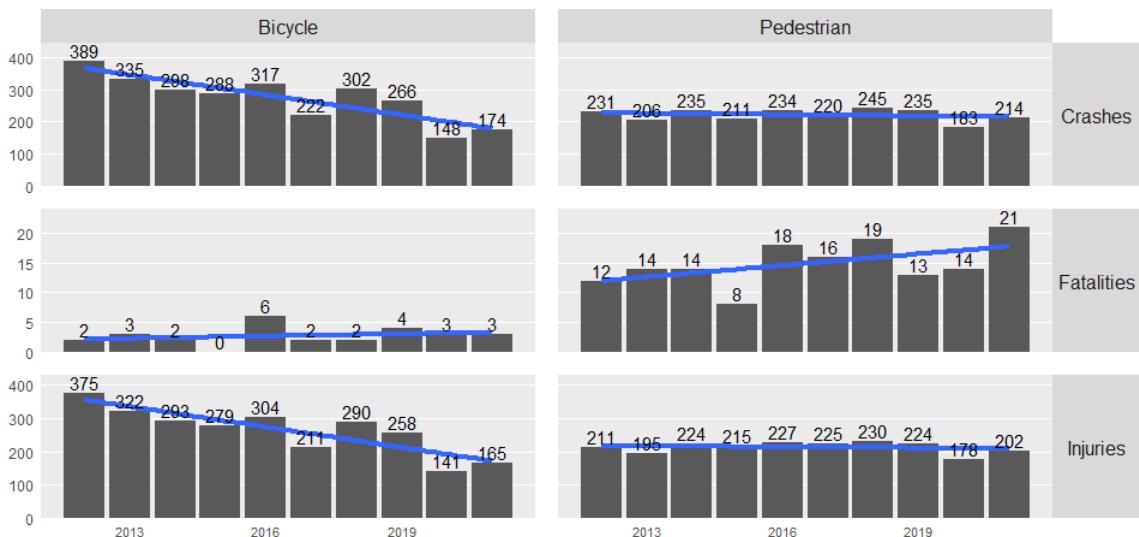


Figure 1. Annual bicycle and pedestrian crashes, fatalities, and injuries (2012-2021)

The research team then used a combination of two crash typing methodologies, PBCAT2 (the current standard in crash typing) and clustering using a large language model. Combining these techniques can leverage a wealth of information to evaluate contributing factors and identify trends. A full description of the methodology is detailed in the [technical report](#).

Factors examined included the roadway characteristics, human behavioral factors, vehicle type, demographics of the locations, land use (such as near schools), lighting, helmet use, and rural or urban settings. Below are the key takeaways from the analysis of bicycle and pedestrian involved crashes.

Bicycle Crash Types

Figure 2 shows annual bicycle crash types identified via clustering; all these crash types exhibit a visible downward trend. The crash type clusters are geocoded and displayed in an interactive web map (Map1 example below displays a screenshot), allowing state and local staff to identify prevalent crash type clusters on corridors and implement countermeasures to reduce risks of injuries or fatalities.

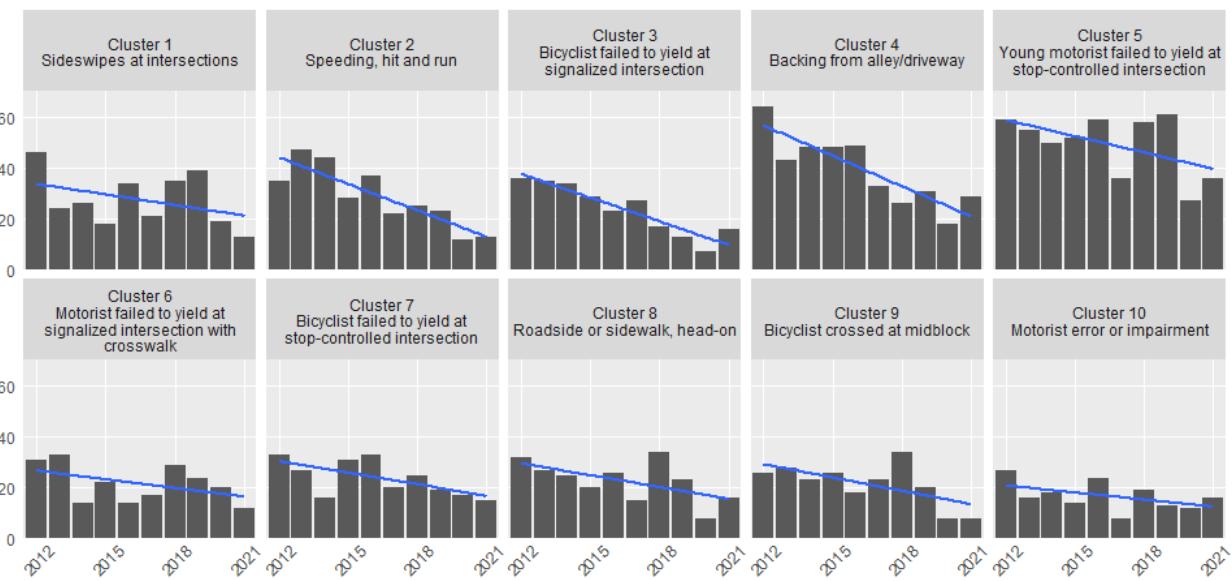


Figure 2 Annual bicycle crashes by clustering crash type.

Boise, Coeur d'Alene, Nampa, Meridian, Idaho Falls, and Pocatello reported at least 100 bicycle crashes during the 10-year period, representing 68% of all bicycle crashes during the same period. The maps can be used to identify locations and corridors with clusters of particular crash types. Table 1 lists identified cluster corridors for bicycle crashes in each location. Implementing appropriate countermeasures along these corridors could reduce safety hazards that contribute to a portion of bicycle crashes in Idaho.

Table 1 Identified Corridors for bicycle crashes.

Location	Corridors
Boise	West Fairview Avenue North Orchard Street South Vista Avenue West Overland Road South Broadway Road North 9th Street
Coeur d'Alene	West Appleway Avenue North Government Way
Nampa	12th Avenue Road* 12th Avenue South* Caldwell Boulevard*
Meridian	West Cherry Lane/Fairview Avenue North Eagle Road
Idaho Falls	West Broadway Street East Sunnyside Road

	East 17 th Street*
Pocatello	Pole Line Road
	Yellowstone Avenue*
	4 th Avenue*

*Also an identified corridor for pedestrian crashes

Pedestrian Crash Types

Figure 3 shows annual pedestrian crashes by clustering crash type. Five crash types exhibit increasing trends. Cluster 4 crashes (improper left turn) are the most numerous and exhibit a slight annual increase. Crashes in clusters 2 (parking lot, alley, driveway), 3 (failed to signal at intersection), and 8 (speeding near turns and hills) occur at similar rates, with those in cluster 2 increasing the fastest. Hit-and-run crashes (cluster 10) are the most rare but are also increasing. All other crash types show an overall decreasing trend over the ten-year period.

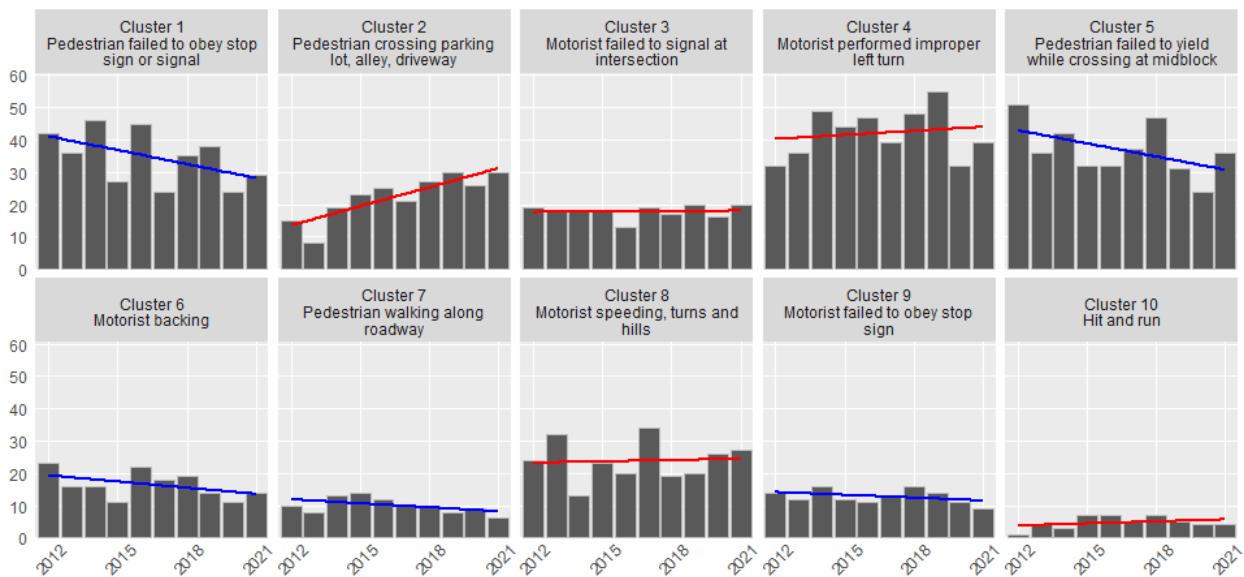


Figure 3 Annual pedestrian crashes by clustering crash type.

Boise, Nampa, Pocatello, Idaho Falls, Coeur d'Alene, Twin Falls, and Meridian reported at least 100 pedestrian crashes during the 10-year period, representing 62% of all pedestrian crashes during the same period. The table below identify locations and corridors with clusters of particular crash types.

Table 2 Identified corridors for pedestrian crashes.

Location	Corridors
Boise	West Fairview Avenue North Cole Road West State Street West Main Street 9 th Street

Nampa	12 th Avenue Road* 12 th Avenue South* Caldwell Boulevard*
Pocatello	North Arthur Avenue Yellowstone Avenue* 4 th Avenue* 5 th Avenue
Idaho Falls	East 17 th Street* South Woodruff Avenue
Coeur d'Alene	Sherman Avenue
Twin Falls	Blue Lakes Boulevard North Addison Avenue Washington Street
Meridian	Meridian Road

*Also a priority corridor for bicycle crashes

Equity

ITD Office of Highway Safety examined the georeferenced crashes with the Center for Disease Control's Social Vulnerability Index (SVI). The SVI uses U.S. Census data to determine the social vulnerability of every county and tract, based on 15 social factors, including poverty, lack of vehicle access, and crowded housing. A ranking of 1 indicates the most vulnerable, while a ranking of 0 indicates the least vulnerable.

The analysis found that almost all of the priority corridors with overall SVI ≥ 0.8 , meaning those locations are more vulnerable than 80% of census tracts in the state or nation.

Table 3 Bicycle Corridors with an Overall SVI ≥ 0.8

<i>Location</i>	<i>Corridors</i>	<i>SVI Group</i>
Boise	Fairview Avenue	0.8-0.9
	9th Street	0.8-0.9
	Broadway Avenue	0.8-0.9
Coeur d'Alene	Appleway Avenue/Best Avenue	0.8-0.9
	Government Way	0.8-0.9
	Ironwood Drive	0.8-0.9
Nampa	12th Ave Road	0.8-0.9
	12th Ave South	0.8-0.9
Meridian	Fairview Avenue/Cherry Lane	0.8-0.9
Idaho Falls	Broadway Street	0.9-1.0
	17th Street	0.8-0.9
	Sunnyside Road	0.8-0.9
Pocatello	4th Avenue	0.9-1.0

Table 4 Pedestrian Corridors with an Overall SVI ≥ 0.8

Location	Corridors	SVI Group
Boise	Fairview Avenue	0.8-0.9
	9th Street	0.8-0.9
Nampa	12th Ave Road	0.8-0.9
	12th Ave South	0.8-0.9
	Caldwell Boulevard	0.8-0.9
	Caldwell Boulevard	0.9-1.0
Pocatello	4th Avenue	0.9-1.0
Idaho Falls	17th Street	0.8-0.9
	Woodruff Avenue	0.8-0.9
Coeur d'Alene	Appleway Avenue/Best Avenue	0.9-1.0
	Appleway Avenue/Best Avenue	0.8-0.9
Twin Falls	Addison	0.8-0.9

Strategies to Address Safety for Vulnerable Road Users

Well-designed infrastructure can naturally guide users towards safer practices, enhancing the effectiveness of active enforcement and education. Traffic safety problems are often complex, with many contributing factors. Laws, engineering, and human behavior all contribute. No one single countermeasure that will address all the challenges. Each crash cluster presents its own set of challenges, and while broad-based measures can address overarching issues, it is clear that specialized solutions can potentially tackle unique problems. Together, broad and specific countermeasures form a comprehensive toolkit that has the potential, when applied judiciously, to improve road safety for all users.

A large number of crashes, including the identified cluster corridors, occur on local roads which are outside the jurisdiction of ITD. ITD will continue to focus on the state highway system, while supporting local jurisdictions in evaluating safety on local roads. The preliminary results of the research were presented in 2023 with stakeholders in the Boise area, with consultation in other areas of the state planned for 2024. As ITD implements strategies identified in this assessment, MPOs, cities and local highway districts will be consulted, and further development will be incorporated into the next update of the Strategic Highway Safety Plan.

The Safe Systems approach offers a framework for making roads safer by addressing 5 elements that affect the cause and/or outcome of traffic crashes. Those 5 elements are Safer People (human behavior), Safer Roads (roadway design), Safer Vehicles (minimize impact of crashes), Safer Speeds, and Post-crash Care. Considering the Safe Systems Approach, listed below are some of the programs and strategies that provide an agency opportunities to potentially reduce the risks for bicyclists and pedestrians in Idaho.

Promote safe behaviors of all transportation users (Safe People)

- **Target education and enforcement in high-risk locations using the identified crash cluster types.** Look for opportunities to partner with organizations that advocate for walkers and

bicyclists. Work with driver's education to expand efforts to teach new drivers how to operate around bicyclists and pedestrians. Continue to work with law enforcement to help educate and enforce traffic laws in the identified bicycle and pedestrian crash locations.

Enhance infrastructure for all transportation users (Safe Roads)

- **Develop a Statewide Complete Streets Policy** for ITD facilities to provide Guidance on how, when, and where to install crosswalks or bicycle facilities on state highways to promote consistency throughout the state. Local agencies will be consulted though the development of the guidance and technical resources will be made available to locals.
- **When developing projects, especially in the identified corridors , consider all users of the facility.** Implement countermeasures in the project when feasible.
- **Support Local Road User Safety Assessments Upon Request** -ITD has established funding through the Transportation Alternatives Program (TAP), allowing interested jurisdictions to apply for resources to conduct a VRU safety assessment. ITD and LHTAC will continue to provide technical guidance regarding bicyclist and pedestrian safety to high risk areas and to utilize the available trainings related to vulnerable road users.

Implement appropriate traffic operations (Safe Speeds)

- **Assess the identified corridors on the state system.**

Upon request, encourage local agencies to assess identified corridors on the local system Promote safe practices during and after incident response (Post Crash Care)

- **Support post-crash care responders.** Increase coordination with EMS services, encourage local agencies to attend relevant trainings related to vulnerable road users, and to leverage the available funding sources.