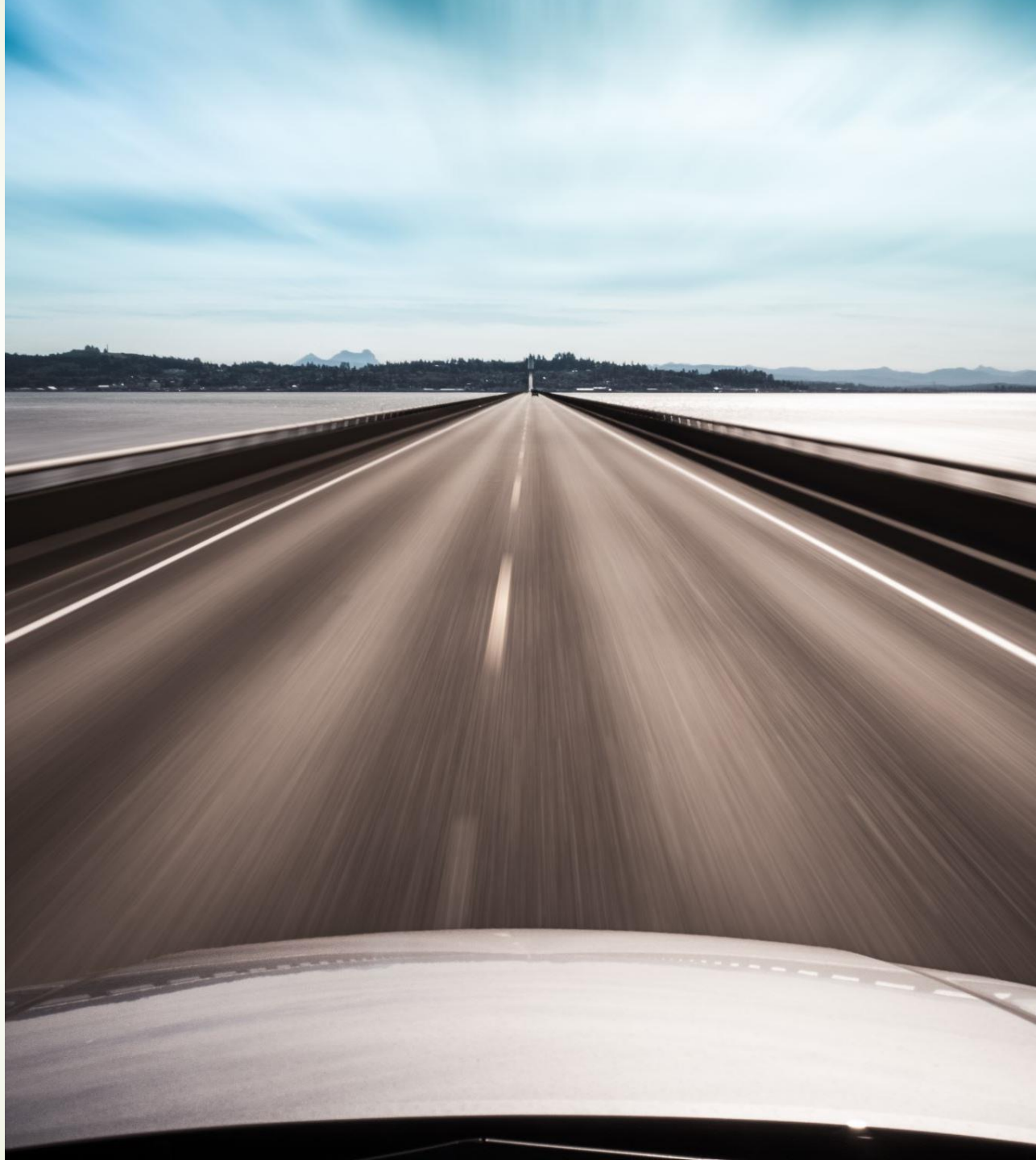
Reducing Speeding-Related Crashes in Michigan

Speeding is one of the main causes of car accidents in Michigan and leads to many injuries. All types of drivers are involved in speeding crashes and the most Inexperienced drivers are often involved in these crashes because they're overconfident, impatient, and don't fully understand road safety.



Michigan data

- The straight-ahead crashes are the highest number crashes compare to others which is linked to the highest injuries with 6,004 out of 9,851 crashes resulting in injuries.

DRIVER ACTION PRIOR TO CRASH	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Drivers	% of Total	Number of Drivers	% of Total	Number of Drivers	% of Total
Going Straight Ahead	28,667	59.2	103	78.0	6,004	60.9
Turning Left	4,735	9.8	10	7.6	1,374	13.9
Turning Right	1,677	3.5	0	0.0	225	2.3
Stopped on Roadway	2,563	5.3	0	0.0	481	4.9
Involved in Prior Crash at Same Location	25	0.1	0	0.0	10	0.1
Changing Lanes	1,887	3.9	0	0.0	201	2.0
Backing	703	1.5	0	0.0	26	0.3
Slowing/Stopping on Roadway	4,280	8.8	1	0.8	724	7.3
Slowing/Stopping Other Area	47	0.1	0	0.0	6	0.1
Starting Up on Roadway	886	1.8	0	0.0	177	1.8
Starting Up in Other Area	6	0.0	0	0.0	3	0.0
Entering Parking	18	0.0	0	0.0	1	0.0
Leaving Parking	107	0.2	0	0.0	15	0.2
Entering Roadway	723	1.5	2	1.5	158	1.6
Leaving Roadway	41	0.1	1	0.8	8	0.1
Making U-Turn	113	0.2	1	0.8	29	0.3
Overtaking or Passing	323	0.7	5	3.8	69	0.7
Avoiding Object	63	0.1	0	0.0	19	0.2
Avoiding Pedestrian	7	0.0	0	0.0	4	0.0
Avoiding Vehicle (front/back)	314	0.6	0	0.0	60	0.6
Avoiding Vehicle (angle)	119	0.2	0	0.0	22	0.2
Driverless Moving	2	0.0	0	0.0	1	0.0
Parked	163	0.3	1	0.8	17	0.2
Crossing at Intersection	17	0.0	0	0.0	5	0.1
Crossing Not at Intersection	1	0.0	0	0.0	0	0.0
Getting On/Off Vehicle	0	0.0	0	0.0	0	0.0
In Roadway With Traffic	1	0.0	0	0.0	0	0.0
In Roadway Against Traffic	0	0.0	0	0.0	0	0.0
Standing/Lying in Roadway	0	0.0	0	0.0	0	0.0
Pushing/Working on Vehicle	0	0.0	0	0.0	0	0.0
Other Work in Roadway	1	0.0	0	0.0	0	0.0
Playing in Roadway	0	0.0	0	0.0	0	0.0
In Roadway Other Reason	1	0.0	0	0.0	1	0.0
Not in Roadway	3	0.0	0	0.0	1	0.0
Other	31	0.1	0	0.0	7	0.1
Unknown	55	0.1	1	0.8	16	0.2
Avoiding Animal	125	0.3	0	0.0	29	0.3
Negotiating a Curve	711	1.5	7	5.3	158	1.6
Uncoded & Errors	0	0.0	0	0.0	0	0.0
TOTAL	48,415	100.0	132	100.0	9,851	100.0

Strategies can be used to reduce speeding related crashes

- New drivers must be committee to follow driving courses such as:

- Drivers' education (DE) that gives new drivers the basic skills they need to drive and helps them understand the risks of speeding and encourages them to follow speed limits.

- National Safety Council (NSC) that teaches new drivers how to stay safe on the road by thinking ahead and being aware of potential dangers.

- DMV training programs provide all the information new drivers need to know, as they are required by the state, ensuring that drivers gain the full knowledge and skills necessary for safe driving. "It should be acknowledged that increasing the number of variables in HMR analyses increases the amount of variance explained" (Scott-Parker et al., 2009b).

New drivers & Drivers & DUI drivers must drive cars with new technology such as

- Speed Limiter is a system that prevents a vehicle from exceeding a set speed, helping new drivers stay within legal speed limits and avoid unintentional speeding. "Once the vehicle reached the selected speed limit, the accelerator pedal became stiffer, but this hard point could be overridden if necessary" (Ehrlich, 2007).

- Lane Departure Warning is a safety warn that alerts the driver if the vehicle begins to drift out of its lane without signaling.

- Forward Collision Warning is a system that detects frontal vehicles as to warns the drivers, giving them time to react and prevent crashes.

DUI drivers

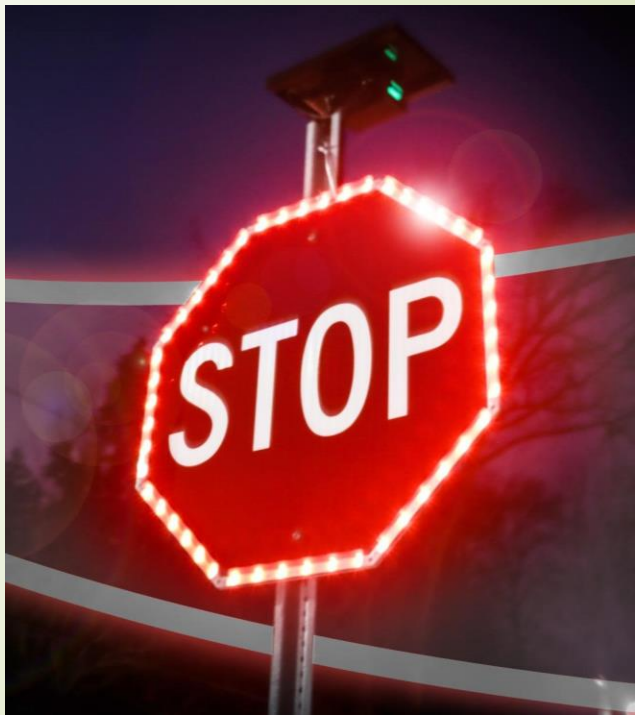
- Police must be presence at night in areas where drunk driving speeding.
- Ignition Interlock Devices must be installing in the car because is stops car from starting if driver drink over 0.02%. "Vehicle-to-pedestrian crashes resulted in less severe DUI alcohol-related driver injury, with a relative risk of 0.05%" (Kweon, 2002).
- Spread Awareness by educate people about the risks and consequences of drunk driving

Road modifications must be implemented to help prevent speeding-related crashes.

- Roads must be wide especially in areas where speeding accidents happen frequently.
- Roads must has crash signs on areas where accidents happen frequently and work to make them safer.
- Roads must be designee by IRAP method such as identifying dangerous spots and implementing better solutions to improve road safety. "The conclusion must be that IRAP so far, has not demonstrated any efficient speed reducing strategies" (Frame, 2009).

Continued

- Roads must have radar speed limit signs which is help improve road safety by providing real-time speed feedback to drivers.
- Roads must have light stop signs because, on nighttime, they alert drivers to upcoming stops, which they must reduce speed rather than making a sudden brake.
- Roads must have slippery road signs before sharp turns to warn drivers of potential dangerous that can occur if they exceed the speed limit.



Conclusion

- Speeding-related crashes that cause injuries are possible to be reduced through drivers to follow the instructions. Roads designee also will help to prevent speed crashes because by establishing signs and wide roads are given a driver time to react in sudden situations.

References

- Hydén, Christer. “Speed in a High-Speed Society.” International Journal of Injury Control and Safety Promotion 27, no. 1 (March 2020): 44–50. https://doi.org/10.1080/17457300.2019.1680566.
- Scott-Parker, Bridie, Melissa K. Hyde, Barry Watson, and Mark J. King. “Speeding by Young Novice Drivers: What Can Personal Characteristics and Psychosocial Theory Add to Our Understanding?” Accident; Analysis and Prevention 50 (January 2013): 242–50. https://doi.org/10.1016/j.aap.2012.04.010.
- Chen, Huiqin, Qiang Chen, Lei Chen, and Guanjun Zhang. “Analysis of Risk Factors Affecting Driver Injury and Crash Injury with Drivers under the Influence of Alcohol (DUI) and Non-DUI.” Traffic Injury Prevention 17, no. 8 (November 16, 2016): 796–802. https://doi.org/10.1080/15389588.2016.1168924.
- Haus, Samantha H., Pnina Gershon, Bruce Mehler, and Bryan Reimer. “Characterizing Driver Speeding Behavior When Using Partial-Automation in Real-World Driving.” Traffic Injury Prevention 23, no. sup1 (2022): S167–73. https://doi.org/10.1080/15389588.2022.2089664.
- Perez, Miguel A., Edie Sears, Jacob T. Valente, Wenyan Huang, and Jeremy Sudweeks. “Factors Modifying the Likelihood of Speeding Behaviors Based on Naturalistic Driving Data.” Accident; Analysis and Prevention 159 (September 2021): 106267. https://doi.org/10.1016/j.aap.2021.106267.