Speeding's Impact on Global Road Fatalities: Linking to Speed Limits and Enforcement

Literature Review

Studies on the dynamics of speeding its effects on traffic safety and the function of enforcement tactics have revealed important information for reducing traffic fatalities. When Alonso Plá et al. (2013) investigate the causes of drivers going over the speed limit, they find things like hurry and ignorance of the limitations. According to their findings even though drivers may be aware that they are speeding, their beliefs about how likely they are to be caught and how fair the punishments are actually have a big impact on how they drive.

Soole, D. W., Watson, B. C., & Fleiter, J. J. (2013) conducted a thorough analysis of the effects of average speed enforcement (ASE) on collisions and speed compliance. Their study, which looked at both published and unpublished papers with an international focus, found that ASE significantly reduces average and 85th percentile speeds as well as vehicle speed variability. It also dramatically boosts adherence to speed limitations. Furthermore, ASE has demonstrated exceptional efficacy in reducing excessive speeding behaviors and has been connected to a decrease in crash rates, particularly those involving fatal and catastrophic injuries.

Høye (2020) looks on the factors that lead to speeding and driving while intoxicated in collisions that result in fatalities. In order to successfully address these risk factors this study highlights the need for focused intervention efforts by identifying specific demographic and behavioral tendencies among offenders.

Ameratunga (2009) frames the current debate about speeding and road safety by using Ralph Nader's primary critique as he investigates the usefulness of traffic speed zones in minimizing accidents caused by vehicles. The research emphasizes the value of low-speed zones in safeguarding susceptible users of the road as data indicates a notable decline in fatalities in these areas.

The crucial problem of speed management in developing nations is addressed by Afukaar (2003) who shows how physical controls like speed bumps and rumble strips can successfully lower vehicle speeds and in turn lower the number of accidents resulting from traffic accidents. In situations where enforcing speed restrictions may be difficult our research supports a multimodal strategy to speed reduction.

In his thorough analysis of the effects of speed limit enforcement on public health outcomes Elvik (2012) highlights the necessity of enforcing speed limits as a key tactic for lowering traffic-related injuries and improving public health. According to the research reducing the severity of traffic accidents through improved speed limit compliance may have a significant positive impact on public health.

Ellison and Greaves (2015) challenge the perception that driving faster saves time by analyzing the real-time savings versus the risks involved. Their study reveals that the actual time saved by speeding is minimal, yet the consequences are severe, suggesting that adhering to speed limits could substantially reduce road accidents with negligible impact on travel time.

Rezapour and Mashhadi, M. M., Saha, P., and Ksaibati, K. (2017) emphasize how well focused law enforcement initiatives can improve traffic safety. Their study on two hazardous routes in Wyoming demonstrates that enforcing seatbelt and speeding laws considerably reduces crash rates highlighting the significance of particular traffic ticket kinds in lowering the frequency of motor vehicle collisions.

DeAngelo and Hansen's (2014) analysis of the major layoff of Oregon State Police personnel offers a clear picture of how less law enforcement affects traffic safety Their results show a significant rise in both fatalities and injuries proving that more police presence on highways significantly reduces the risk of traffic related fatalities and injuries.

In order to change driver behavior and improve road safety worldwide, traffic law enforcement plays a critical role, as discussed by Bates, Soole, and Watson (2012). They describe the two roles that traffic law enforcement plays, namely apprehension and deterrent, and they look at how well different tactics work to cut down on high-risk illegal driving behaviors.

Retting, R. A., and Teoh, E. R. (2008) evaluate the impact of the national maximum speed limit (NMSL) repeal on traffic speeds over the long run. According to their study, speed limits may be efficiently adjusted to regulate traffic speeds. It also emphasizes the necessity for more stringent enforcement methods to combat speeding and prevent catastrophic accidents.

Wu, Z., Sharma, A., Mannering, F. L., & Wang, S. (2013) investigated how installing speed control and signal-warning flashers at high-speed signalized junctions affected safety. They found that in order to have a significant influence on incident frequency and severity large speed limit reductions (at least 10 mi/h) are required after analyzing crash data spanning ten years at 28 crossings in Nebraska.

The effectiveness of speed cameras put on Barcelona's beltway in lowering traffic collisions injuries and the number of affected vehicles was evaluated by Pérez, K., Marí-Dell'Olmo, M., Tobias, A., & Borrell, C. (2007). The results showed that once speed cameras were installed there was a noticeable decrease in traffic accidents especially on weekends. According to this analysis the intervention avoided 364 collisions, showed the value of speed cameras in urban areas by resulting in 789 fewer cars involved in crashes and 507 fewer injuries over a two-year period.

The effects of raising the speed limit on rural restricted access roadways in Michigan from 55 mph to 65 mph were investigated by Wagenaar, A. C., Streff, F. M., and Schultz, R. H. (1990). Their research showed notable increases in traffic deaths on highways with higher speed limits: a 19.2% jump in fatalities a 39.8% increase in serious injuries and a 25.4% increase in moderate injuries. These findings highlighted the consequences of increased speed limits to public health.

Balkin, S. and J. K. Ord (2001). This study examined how speed limit hikes affect deadly interstate collisions on US rural and urban interstates. Their detailed investigation showed that there is a complicated relationship between increased speed limits and fatalities with some states seeing increases in fatal accidents on rural interstates after speed limit elevations and others not. Moreover the 1995 speed limit hikes resulted in minor to no increases in fatalities on urban interstates and generally lesser increases on rural interstates.

Elvik, R., Amundsen, A.H., and Christensen, P. (2004). examined the connection between speed and traffic safety using the "Power Model," which suggests that even small variations in speed can have a big impact on the frequency and seriousness of traffic accidents. This model supports the idea that modest speed reductions can result in significant improvements in road safety outcomes by providing a mathematical basis for understanding how speed affects safety on the road.

Aarts, L., and Van Schagen, I. (2006) investigate the crucial role that speed plays in road safety highlighting how it affects both the likelihood and severity of crashes. The association between speed and crash rates is highlighted in the study through a thorough examination of empirical studies with a special emphasis on more recent findings. Studies show a continuous relationship between crash rates and speed using an exponential function for single vehicles and a power function for portions of the road.

In order to investigate the relationship between driving speeds and the incidence of traffic accidents, Taylor, M.C., Lynam, D.A., and Baruya, A. (2000) carried out an extensive study. Their study offers a strong body of data showing that, in certain traffic and road conditions, there is a direct relationship between traffic speed and the frequency of accidents.

In their investigation of the intricate connection between speed and traffic accidents, Imprialou, M.I.M., Quddus, M., Pitfield, D.E., and Lord, D. (2016) question accepted crash modeling techniques. They suggest a novel crash data aggregation technique known as the "condition-based approach" which is based on how comparable pre-crash traffic and geometry circumstances are. With this technique, we hope to give a more realistic picture of the state of the roads right before accidents happen.

Nilsson, G. (2004) discusses the vital necessity for a variety of techniques and instruments in traffic safety work, with the goal of efficiently choosing and assessing traffic safety measures. He presents a technique that provides a multifaceted view of traffic safety, enabling the display and assessment of multiple dimensions—such as exposure, risk, and consequence—at the same time.

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