Literature search: Evaluation of Driver Speeds After Implementation of Speed Limit Reduction on Urban Streets

Need statement number: 748

Date: 3/1/2024 **Prepared by:** Qin Tang

Resources searched: Transport, TRID, Catalog, Web

Summary

Results are compiled from the databases named above. Links are provided for full text, if applicable, or to the full record citation. I completed my searches using the following terminology: speed reduction, driver behavior, urban speed limit, traffic monitoring, speed monitoring. The results are divided into most relevant and less relevant.

Most relevant results

Title: Impact of Speed Limit Changes on Urban Streets

Impact of Speed Limit Changes on Urban Streets (state.mn.us)

Title: Impact of Urban Speed Limit Changes on Driving Speeds

Impact of Urban Speed Limit Changes on Driving Speeds | Crossroads (mntransportationresearch.org)

Title: Guidelines for determining speed limits on municipal roadways

Guidelines for Determining Speed Limits on Municipal Roadways (state.mn.us)

Title: Reevaluating City Speed Limits with Public Safety In Mind

Reevaluating City Speed Limits with Public Safety in Mind | Crossroads (mntransportationresearch.org)

Title: Speed limit change (55 mph to 60 mph) safety re-evaluation

Speed Limit Change (55 mph to 60 mph) Safety Re-Evaluation (state.mn.us) HE5620.S6 S76 2023

Title: Speed safety cameras (SSC)

TRS: Speed Safety Cameras (state.mn.us)

Title: Guide to understanding effects of raising speed limits

https://www.trb.org/Main/Blurbs/182830.aspx

NCHRP 1006

Title: Posted speed limit setting procedure and tool: user guide

https://www.trb.org/Main/Blurbs/182038.aspx

NCHRP 966

Title: Assessing driver behavior in work zones: A discretized duration approach to predict speeding.

Accident Analysis & Prevention, Volume 196, Issue 0, 2024, 107427

https://trid.trb.org/view/2315950

Abstract: Higher speeds in work zones have been linked to an increased likelihood of crashes and more severe crash outcomes. To enhance safety, speed limits are often reduced in work zones, aiming to create a steady flow of traffic and safer traffic operations such as merging and flagging. However, this speed reduction can also lead to abrupt speed changes, resulting from sudden braking or acceleration, increasing the risk of crashes. This disruption in speed and flow results increases the likelihood of rear-end crashes. Ensuring driver compliance with the reduced speed limits and traffic flow operations is challenging as work zones may cause frustration and lead to more instances of speeding. Therefore, proactively predicting speeding events in work zones can be crucial for the safety of both workers and road users, as it enables the implementation of speed enforcement measures to maintain and improve driver compliance in advance. In this study, the authors employ the duration-based prediction framework to forecast speeding occurrences in work zones. The model is used to identify significant predictors of speeding including visibility, number of lanes, posted speed limit, segment length, coefficient of variation in speed, and travel time index. Among these variables, the number of lanes, posted speed limit, and coefficient of variation of speed are positively associated with speeding. On the other hand, visibility, segment length, and travel time index are negatively associated with speeding. Results show the model's predictive accuracy is higher for speeding events with shorter durations between consecutive occurrences. The model predicted speeding within 61% of the actual epoch when speeding events within 5 h of one another were considered for validation. This indicates that the model is more effective for road segments and work zones where speeding occurs more frequently. The prediction framework can be a great asset for agencies to improve work zone safety in real-time by enabling them to proactively implement effective work zone enforcement measures to control speeding and to stay prepared, preventing potential hazards.

Title: Impact of Speed Limit Enforcement Cameras on Speed Behavior: Naturalistic Evidence from Brazil.

Transportation Research Record: Journal of the Transportation Research Board, 2024

https://trid.trb.org/view/2344632

Abstract: Speeding is widely recognized as a key contributor to the occurrence and severity of road crashes, making studies on speed reduction devices particularly relevant given poor road safety outcomes worldwide. This study investigates the impact of fixed speed cameras on driver behavior and speed reduction in urban arterials using a naturalistic driving study methodology. Data from 13 drivers and 116 trips in Curitiba, Brazil, were analyzed, with a focus on speed cameras placed on arterial roads. Speed data were grouped and analyzed by various categories, including topographic profile, day and week periods, and rain conditions. Mean comparisons were used to compare data sets, revealing an overall speed reduction effect of 0.69 km/h (−1.33%) around the speed camera. The study identified a pattern of punctual speed reduction, known as a kangaroo jump, a speed reduction followed by an increase in speed, referred to as the compensation effect, and a new pattern characterized by a non-significant speed reduction at the speed camera site followed by an increase in speed, referred to as the cobra strike effect because of its curve pattern. The largest speed reductions were observed for flat topographic profiles (−2.98%), daytime travel (−1.58%), and travel on working days (−1.75%) with rain (−1.80%). Conversely, the speed camera had little impact on vehicle speed for uphill topographic profiles, no rain conditions, and travels during weekend.

Title: Modelling speed reduction behaviour on variable speed limit-controlled highways considering surrounding traffic pressure: A random parameters duration modelling approach.

Analytic Methods in Accident Research, Volume 40, Issue 0, 2023, 100290

https://trid.trb.org/view/2209788

Abstract: Variable speed limits are frequently used to improve traffic safety and harmonise traffic flow. This study investigates how, and to what extent, drivers reduce their speed upon passing a variable speed limit sign. The authors specifically consider the impact on braking behaviour due to the systematic inclusion of different social pressures exerted by surrounding traffic. This social pressure is the natural result of having two vehicle cohorts created by a change in the variable speed limit (the new speed limit being higher than the original). The cohort with the higher speed limit overtakes vehicles with the lower speed limit, instigating a specific passing rate on drivers in the lower speed cohort. A driving simulator study is employed to obtain individual driver data whilst being able to systematically change the social pressure applied. A sample comprising sixty-seven participants conducted multiple randomised drives, with varying passing rates from as low as 90 veh/h to as high as 360 veh/h. The speed reduction behaviour of the participants is modelled using a random parameter duration modelling approach. Both the panel nature of the data and unobserved heterogeneity are captured through a correlated grouped random parameter with heterogeneity-in-the-mean model. The random parameters are predicated on the different passing rate scenarios, allowing drivers to take shorter or longer to reduce their speeds compared to the reference passing rate. It is shown that the extent of social pressure impacts braking behaviour and therefore affects safety measures, which is a function of the magnitude of the speed limit change. In addition, an extensive decision tree analysis is conducted to understand differential braking behaviour. Results reveal that, on average, female drivers take a shorter time to reduce their speed under a high passing rate but longer in a low passing rate scenario compared to males. Similarly, young drivers are found to take longer to reduce their speeds in a high passing rate scenario compared to other age groups. The authors main findings indicate that the within-cohort safety is lowest under low passing rates due to comparatively larger speed differences between drivers. Yet, under a high passing rate, the authors observe an increase in violation of the speed limit by the lower speed limit vehicles (but less within cohort speed differences). Whilst normally this would be an undesired effect across cohorts, this violation is argued to lead to increased safety due to the smaller discrepancy in speed.

Title: Operational and safety impacts of integrated variable speed limit with dynamic hard shoulder running.

Journal of Intelligent Transportation Systems, Volume 27, Issue 6, 2023, pp 769-798

https://trid.trb.org/view/2266636

Abstract: The combination of various Intelligent Transportation System (ITS) strategies generally has manifold effects, much greater than when strategies are implemented individually. This research introduces a novel dynamic control strategy, which includes the dynamic use of a Model Predictive Control (MPC) based Variable Speed Limit (VSL) integrated with the dynamic use of Hard Shoulder Running (HSR). Both VSL and HSR are proactively triggered to allow for necessary control measures to be taken to delay and possibly avoid the formation of a bottleneck. For traffic prediction, a modified METANET model is developed which takes into consideration the complex nature of driver's behavior along with driver's compliance, capacity drop and posted speed limits. The modified METANET model is shown to be more efficient than conventional macroscopic prediction models in detecting traffic congestions. This MPC based strategy was tested on a section of Deerfoot Trail, Calgary, Alberta using an exclusively developed integrated VISSIM-COM-MATLAB interface. The results from this study suggested that the integrated VSL and HSR control strategy results in a 21.09% increase in average speed and 33.44%. in vehicle-throughput. Furthermore, there was a noticeable reduction in the average travel time

by 39.98% and in the total number of stops, by 32.43%. Importantly, the safety analysis performed using Surrogate Safety Assessment Model (SSAM) revealed a notable reduction in collisions, by 29.73%.

Title: Driver Behavior and Performance in High to Low Speed Transitions. [Project].

North Carolina Department of Transportation. Start date: 1 Aug. 2019.

https://trid.trb.org/view/1672446

Description: As high-speed roads approach urban areas, transition zones are usually provided to encourage drivers to reduce their speed to one that is appropriate for the urban road that they are entering. Managing speed with high-speed to low-speed locations is an important consideration for state and local agencies. Two recent reports, National Cooperative Highway Research Program (NCHRP) Report 737 (Design Guidance for High-Speed to Low- Speed Transition Zones for Rural Highways) and NCHRP Synthesis 412 (Speed Reduction Techniques for Rural High-to-Low Speed Transitions) provide some insight into the effectiveness of specific treatments in safely reducing the speed of vehicles in the transition area. Despite these and other studies, NCHRP Report 737 concludes that in the United States, design guidance for high- to low- speed transition zones for rural highways is in its infancy". The proposed project is intended to study how driver performance (e.g., average speed, speed variance, and lane position) may be affected by different characteristics of transition zones, especially, with and without specific treatments. It will also examine whether driver performance may vary time of day, traffic conditions, and familiarity with the route. This study will also try to determine at what point in the high to low speed transition area does a driver's speed change, and what factors (e.g., speed limit signs, denser roadside development) are associated with a change. The study locations will be identified through North Carolina Department of Transportation's (NCDOT's) Geographic Information System (GIS) layer with speed limit data. For these study locations, multiple sources of data will be compiled. One important source could be the SHRP2 naturalistic driving study (NDS) data. NDS provides speed and other driver performance data for every 0.1 second for vehicles that were equipped with the onboard technology. In addition, other sources of speed data including data compiled by NCDOT and vehicle probe data from INRIX, HERE, and NPMRDS, will be utilized. For some locations, speed data will be compiled from the field. Finally, crash data will be compiled to assess the safety impacts of these improvements. A final report will be prepared to document the complete research effort including the results of the literature review, selecting of study sites, acquisition of NDS and other data, analysis and evaluation results, and findings.

Title: Safety Effectiveness of Speed Reductions: A Queensland Experience.

Australasian Road Safety Conference, 2017, Perth, Western Australia, Australia, 2017, 3p

https://trid.trb.org/view/1503510

Abstract: Previous Queensland Department of Transport and Main Roads (TMR) studies on the effect of speed reductions on crashes have demonstrated promising results for both high and low speed road environments. Recent analysis in Queensland by TMR has shown that a 10km/h reduction in posted speed limit can reduce casualty crashes by up to 39% in high speed environments and 26% in lower speed environments. Road authorities should use these findings to improve stakeholder communications on the safety benefits of speed reduction strategies. This paper shares the learning of Queensland speed reduction initiatives, provides a brief review of the available guide for speed reductions, and suggestions to improve the existing guidelines.

Title: Traffic safety versus accessibility: Investigating resistance against speed limit reductions.

Transportation Research Part A: Policy and Practice. 2024.179(0) p103920 (2 Figs., 65 Refs., 5 Tabs.)

For traffic safety reasons, Sweden has lowered speed limits on major roads that lack directional separation of traffic. For some of these roads, regional authorities, municipalities, and other local stakeholders have sent appeals to the government opposing the implemented speed limit reductions. The appeals have mainly referred to negative effects on regional development and have suggested that the speed limit reductions be abandoned. This paper identifies the characteristics of roads where appeals against speed limit reductions have been filed and where local stakeholders claim that speed limit reductions are a threat to accessibility and regional development. The results of logistic regression modelling show that appeals are more likely for speed limit reductions on long road sections, on European roads, and in areas with a state university, and less likely in areas with high population density and areas defined as vulnerable by the Swedish Agency for Economic and Regional Growth. The authors investigated these policy conflicts using frame theory. In this paper, the authors identify two policy frames: speed limits for traffic safety and speed limits for regional development. These two policy frames are related to different views on how to best strive towards regional accessibility and safety goals in remote areas. The different views are likely not easily aligned by more information or facts since they concern deeper questions, such as what constitutes basic accessibility of good quality and how large risks are acceptable on the road network. This study thus uncovers not only a policy disagreement but a policy controversy in the Swedish context.

Link to the Ovid Full Text or citation: Click here for full text options

Title: Effects of lowering speed limits on crash severity in Seattle.

Journal of Safety Research. 2023. (32 Refs.)

Effective November 2016, the default speed limit in Seattle was lowered from 25 to 20 mph on nonarterial streets and from 30 to 25 mph on arterial streets, unless otherwise posted. In the downtown area, signs indicating the new speed limit were installed on arterials when the lower default limit took effect. Outside the downtown, new speed limit signs were installed on some arterials starting in 2018. The study evaluated effects of the speed limit reduction on crash severity in Seattle. Police-reported crashes in Seattle and three control cities in Washington before and after the speed limit change were examined. Logistic regression analyses evaluated effects of the speed limit reduction on odds that a crash involved a fatal (K), disabling (A), or evident (B) injury inside and outside Seattle's downtown. Separate analyses were performed for all crashes (except those occurring on interstates and freeways), for crashes on arterials, and for crashes on nonarterial roads. The speed limit reduction was associated with a significant 17.2 % reduction in odds of a crash involving KAB injury among all crashes and a 19.9% reduction for crashes on arterials in downtown Seattle. There were smaller reductions outside the downtown (7.4 % for all crashes and 10.7 % for crashes on arterials), but they were not significant. Communities should consider lowering speed limits to improve safety for all road users. When doing so, they should not wait too long to modify speed limit signs to remind drivers of the new speed limits to maximize the safety benefits.

Link to the Ovid Full Text or citation: Click here for full text options

Title: Implications of Resistance to Automated Speed Enforcement and Red-Light Camera Implementation.

International Conference on Transportation and Development 2023. American Society of Civil Engineers. p1-9 (Refs.)

Automated speed cameras (ASE) and red-light cameras are highly effective tools for reducing overall car crashes. ASE and red-light cameras help reduce most crashes, such as fatal crashes, injury crashes, and property damage crashes worldwide. Millions of people die yearly because of car crashes, and many more are severely injured. Due to the high number of fatal and injury crashes, to reduce deaths, many countries across different continents in the world started enforcing ASE and red-light cameras to mitigate the number of crashes. ASE and red-light cameras are enormously effective measures to reduce the totality of crashes. Unfortunately, despite the proven efficacy, many states in the United States and worldwide prohibit using ASE. Some prohibit red-light and speed cameras, such as New Hampshire, South Carolina, Maine, West Virginia, and Texas. Certain states only prohibit red-light cameras, including Montana and South Dakota, and some states do not allow speed cameras, counting Wisconsin and New Jersey. This paper will examine the reasons behind prohibiting automated speed enforcement technology. Additionally, the study will collect and analyze data from the United States, Canada, and Saudi Arabia regarding the amount each country levies for penalties and fines for ASE violations. Some of the public believe that automated speed enforcement techniques are a method for the government to generate revenue. Others argue that the profits are used to educate the public about traffic safety rules and use it to improve the public infrastructure. This study aims to establish whether the funds from automated speed enforcement fines are used to educate the public and improve infrastructure.

Link to the Ovid Full Text or citation: Click here for full text options

Title: Simulation-based policy analysis: The case of urban speed limits.

Transportation Research Part A: Policy and Practice. 2023.175(0) p103754 (Figs., 56 Refs.)

Speed limit policies are commonly adopted to manage and control traffic in urban areas due to their effectiveness and ease of implementation. Comprehending the complete effect of a speed limit policy is complicated and requires modeling and quantified investigations. In this paper, the authors propose a comprehensive simulation-based framework to assess the potential implications of different speed limit policies in urban residential areas. The framework models the policy impacts related to road safety (risk exposure for pedestrians and driving safety), traffic efficiency (travel time) and the environment (fuel consumption, exhaust emissions and noise exposure), using microscopic traffic simulation. The evaluations are conducted at various spatial granularity levels, i.e., link level, route level, origin-destination (OD) level and network level, and can be further utilized to develop relationship models between the key performance indicators (KPIs) and simulation inputs. The framework is implemented in an urban area located in the city center of Munich, Germany, and multiple speed limit scenarios are designed and compared. The results show that speed limit reduction can significantly improve road safety and environmental externalities within the modeled network/area with a relatively small cost to traffic efficiency. Such a framework can be used as an economical evidence collection method for an evidence-based policymaking approach to speed limit policies. The proposed simulation-based framework can also be further extended to adapt the assessment of other traffic-related policies.

Link to the Ovid Full Text or citation: Click here for full text options

Title: A methodology for setting credible speed limits based on numerical analyses and driving simulator experiments.

Transportation Research Part F: Traffic Psychology and Behaviour. 2024.100(0) p289-307 (89 Refs.)

Speed management is an integral part of the Safe System approach and tackling unsafe speeds is the first action to fix a transport system that fails to protect people. There is a consensus that where traffic speeds are a safety issue, lowering the speed limit is considered "reasonable and safe" for conditions. Nevertheless, not only should a speed limit be reasonable and safe, but it should also be credible. Otherwise, that posted speed limit is likely to be ignored. In many instances, speed limits are not

credible and highway agencies still need guidance on appropriate procedures to set credible speed limits. The main objective of this study is to propose and test a novel methodology to set credible speed limits, based on the integration of the results achieved by numerical analyses and driving simulator experiments. The proposed methodology is innovative since it takes into consideration both the design characteristics of the road infrastructure according to a specific procedure as well as the drivers' operating speeds, which are evaluated using the results of both speed prediction models and driving simulator experiments. The methodology was tested to set new speed limits on the A16 Naples-Canosa motorway, section Baiano-Candela, in southern Italy, where a posted speed limit of 80 km/h is installed in both travel directions and a new speed limit of 100 km/h is proposed, based on the results of the experiments developed within the methodology. Since the speed limit selection is associated with the expected crash frequency, the final selection of the speed limit should take into account also a safety impact assessment, considering both the expected change in the speed distribution as well as the effects of the safety countermeasures implemented in association to the speed limit change. In this study, the proposed safety countermeasures are the activation of four sections with point-to-point speed control and targeted measures at 45 curves, consisting of (1) high friction surface treatments, (2) correction of superelevation deficiencies, (3) installation of curve warning signs, chevrons, and sequential flashing beacons, and (4) shoulder rumble strips. The safety impact assessment shows that the increase in the speed limit combined with the implementation of the proposed safety countermeasures allows a crash reduction of 23%. The estimated benefit/cost ratio of the safety countermeasures is 4.66.

Link to the Ovid Full Text or citation: Click here for full text options

Title: Assessing the effectiveness of speed limit reduction in Edmonton: A case study analysis.

Accident Analysis & Prevention. 2024.195(0) p107379 (28 Refs.)

This study evaluates the impact of reducing the default speed limit from 50 km/h to 40 km/h on traffic safety and drivers' behavior in Edmonton, Canada. The research comprehensively examines collision and speed data to assess the outcomes of the new speed limit. Collision data was analyzed across three distinct periods: pre-COVID (2017-2019), the COVID period (2019-2021), and the after-implementation period (August 2021 to July 2022). Speed surveys were conducted on 219 road segments before and after the implementation of the speed limit change. The study utilized a before-and-after with a comparison group approach to evaluate the impact on collisions, using 50 km/h roads that maintained their speed limit throughout as the comparison group. The impact of the reduced speed limit on road safety was assessed by analyzing collision data for two periods, pre-COVID (2017-2019) and COVID (2019-2021), compared to the period after setting the new speed limit (2021-2022). Two-sample t-tests were employed to examine the change in speeds. The analysis revealed statistically significant reductions in the overall number of collisions and injuries and fatalities resulting from collisions, by 25% and 31%, respectively. The study also categorized neighborhoods and roads to demonstrate the areas that experienced the greatest benefits. Speed data showed statistically significant reductions in the average and 85th percentile speeds, with drivers lowering their speeds at 115 locations, accounting for 53% of the surveyed locations. Moreover, higher speed reductions were observed on local roads compared to collector roads, and narrower roads compared to wider roads. Overall, the study demonstrates that reducing the speed limit can lead to lower speeds and fewer collisions on the roads, creating a safer road environment for drivers, pedestrians, and cyclists. Additionally, it provides a detailed framework for municipalities to evaluate the effectiveness of their speed limit reduction programs.

Link to the Ovid Full Text or citation: Click here for full text options

Title: Assessing the Economic Impact of Speed Limit Changes on Safety and Mobility in California.

University of California, Davis, Institute of Transportation Studies, 2023

This project estimates the safety and mobility impact of changing speed limits on California highways. The safety impact is estimated using statistical models to predict the change in the frequency of all crashes and fatal-or-severe crashes that would result by varying the design speed (85th percentile speed). Statewide crash and traffic data (from the Statewide Integrated Traffic Records System, the Highway Safety Information System, and the Performance Measurement System) were combined to develop a balanced and sampled dataset for the statistical models. Three different increases in differential speed limits (DSLs; whereby trucks and cars have different speed limits) lead to increases in the frequency of all crashes, including fatal and severe crashes, for all of the classified segments (urban, rural, and different design speed segments). The operational condition (speed, travel time, delay) is tested using seven simulation segments with urban-rural classification. Four different DSL scenarios and four uniform speed limit (USL) scenarios are tested for each of the simulation segments. The results show a decrease of travel time but an increase of fuel consumption as the speed limits get higher. The safety cost of crashes and operational costs were also estimated based on the simulation models. In general, as the speed limits are increased, the safety costs increase with the predicted increases in crashes, particularly severe and fatal crashes. The operational costs, on the other hand, generally decrease as the speed limits are increased. However, the amount of operational cost decreases are subject to greater uncertainty than the safety cost estimates are, due to uncertainties in sampling and demand estimation and in negligence of construction costs of roadway and signage changes to accommodate the new speed limits. From the economic perspective in this study, raising speed limits on rural California highways could reduce monetary costs, as savings in operational costs would exceed losses from more crashes.

Link to the Ovid Full Text or citation: Click here for full text options

Title: Quantifying The Environmental Effects of Speed Limit Policy-A Case Study From Michigan.

ITE Journal. 2023. 93(8) p41-46 (Figs., Refs., Tabs.)

This article presents the results of a case study that estimated the change in vehicle operating speeds, fuel consumption, and vehicular tailpipe emissions due to the speed limit increase on selected freeways and non-freeways in Michigan. Overall, this study contributes to the scientific knowledge by presenting a methodological framework to quantify the change in fuel consumption and vehicular emissions due to the increase in speed limits in Michigan, while considering other factors remaining unchanged. The findings from this study provide quantitative evidence that decision makers can use when considering an increase in speed limits and the resulting health and safety impacts.

Link to the Ovid Full Text or citation: Click here for full text options

Title: Modelling speed reduction behaviour on variable speed limit-controlled highways considering surrounding traffic pressure: A random parameters duration modelling approach.

Analytic Methods in Accident Research. 2023.40(0) p100290 (10 Figs., 72 Refs., 5 Tabs.)

Variable speed limits are frequently used to improve traffic safety and harmonise traffic flow. This study investigates how, and to what extent, drivers reduce their speed upon passing a variable speed limit sign. The authors specifically consider the impact on braking behaviour due to the systematic inclusion of different social pressures exerted by surrounding traffic. This social pressure is the natural result of having two vehicle cohorts created by a change in the variable speed limit (the new speed limit being higher than the original). The cohort with the higher speed limit overtakes vehicles with the lower speed limit, instigating a specific passing rate on drivers in the lower speed cohort. A driving simulator study is

employed to obtain individual driver data whilst being able to systematically change the social pressure applied. A sample comprising sixty-seven participants conducted multiple randomised drives, with varying passing rates from as low as 90 veh/h to as high as 360 veh/h. The speed reduction behaviour of the participants is modelled using a random parameter duration modelling approach. Both the panel nature of the data and unobserved heterogeneity are captured through a correlated grouped random parameters with heterogeneity-in-the-mean model. The random parameters are predicated on the different passing rate scenarios, allowing drivers to take shorter or longer to reduce their speeds compared to the reference passing rate. It is shown that the extent of social pressure impacts braking behaviour and therefore affects safety measures, which is a function of the magnitude of the speed limit change. In addition, an extensive decision tree analysis is conducted to understand differential braking behaviour. Results reveal that, on average, female drivers take a shorter time to reduce their speed under a high passing rate but longer in a low passing rate scenario compared to males. Similarly, young drivers are found to take longer to reduce their speeds in a high passing rate scenario compared to other age groups. The authors main findings indicate that the within-cohort safety is lowest under low passing rates due to comparatively larger speed differences between drivers. Yet, under a high passing rate, the authors observe an increase in violation of the speed limit by the lower speed limit vehicles (but less within cohort speed differences). Whilst normally this would be an undesired effect across cohorts, this violation is argued to lead to increased safety due to the smaller discrepancy in speed.

Link to the Ovid Full Text or citation: Click here for full text options

Title: Effects of Lowering Speed Limits on Crash Severity in Seattle.

This study examines crash severity before and after a speed limit reduction in Seattle, Washington. In November 2016, the default speed limit was decreased to 25 mph (from 30 mph) on arterial streets and 20 mph (from 25 mph) on nonarterial streets. Regression analysis was used to evaluate the speed limit reduction and odds that a crash was fatal (K), disabling (A), or included evident injury (B) for all crashes, crashes on arterials, and crashes on nonarterials. Reducing the speed limit was associated with an overall reduction of 17.2% in KAB injury in downtown Seattle and 7.4% KAB reduction outside of downtown. For arterials, there was a 19.9% reduction in KAB odds downtown and 10.7% reduction outside of downtown. The study suggests that lowering speed limits, accompanied by modified speed limit signs, can increase traffic safety. Link to the Ovid Full Text or citation: Click here for full text options

Title: Assessing the Safety Implication of Alternative Speed Limits in California.

This project combined the statewide crash data (Statewide Integrated Traffic Records System [SWITRS]) and traffic data (Performance Measuring System [PeMS]) to develop statistical models to determine the safety impacts of alternative speed limits on California highways. The models examined whether various factors about crashes, including average traffic speed and truck-involvement, correlated with outcomes such as crash severity. The models were then used to test the impact of four alternative speed limit policies (B-E) on the predicted number of fatal crashes and unsafe-speed related crashes in urban and rural areas. The policies were: (A) Existing differential speed policy for cars (65 mph) and trucks (55 mph); (B) Raising the speed limit on interstates for trucks from 55 to 65 mph; (C) Raising the speed limit on interstates from 55 to 75 mph for trucks and 65 to 75 mph for cars; (D) Lowering the existing differential speed on interstates from 55 to 50 mph for trucks and 65 to 60 mph for cars; (E) Raising the existing differential speed on interstates from 55 to 70 mph for trucks and 65 to 80 mph for cars. The policy analysis shows a difference in the predicted number of crashes (fatal, unsafe speed) in and between urban and rural areas. The percentage increase/decrease in predicted fatal crashes in rural areas is lower than urban areas across all policy alternatives. Link to the Ovid Full Text or citation: Click here for full text options