DEPARTMENT OF TRANSPORTATION

City Speed Limit Evaluation Report 2024

March 2025

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DEPARTMENT OF TRANSPORTATION

April 29, 2025

The Honorable Scott Dibble, Chair
Senate Transportation Committee
3107 Minnesota Senate Building
Saint Paul, Minnesota 55155

The Honorable John Jasinski, Ranking Minority Member
Senate Transportation Finance & Policy Committee
2227 Minnesota Senate Building
Saint Paul, Minnesota 55155

The Honorable Jon Koznick, Co-Chair
House Transportation Finance & Policy Committee
2nd Floor Centennial Office Building
Saint Paul, Minnesota 55155

The Honorable Erin Koegel, Co-Chair
House Transportation Finance & Policy Committee
5th Floor Centennial Office Building
Saint Paul, Minnesota 55155

RE: 2024 City Speed Limit Evaluation Report

Dear Legislators:

The Minnesota Department of Transportation (MnDOT) is pleased to present this 2024 City Speed Limit Evaluation Report to the Legislature. As required by 2024 Laws of Minnesota, Chapter 104, Article 1, Section 106, the report summarizes a 2024 evaluation project to help determine the impact of 2019 legislation that allowed cities who met certain criteria to change speed limits within their jurisdiction without a MnDOT speed study or MnDOT approval.

Transportation safety remains both a challenge and a high priority for the state. Speeding is a significant contributing factor to fatalities and serious injury crashes, and transportation officials at all levels of government continue to look for strategies that help reduce crash numbers. This report helps identify the cities that implemented speed limit changes since 2019 and presents the results of a before-and-after comparison of speeds and crashes in cities that were included in the study. Summaries of other local, national, and international studies offer additional perspective.

I hope you find this report helpful, and I appreciate your commitment to making Minnesota roadways safer for all. Your partnership plays a vital role in improving traffic safety throughout the state.

Please let me know if you have questions.

Sincerely,

Jean Wallace, P.E.
Deputy Commissioner and Chief Engineer

Legislative Request

This report is issued to comply with 2024 Laws of Minn., Chap. 104, Art. 1, Sec. 106.

Sec. 106. REPORT; CITY SPEED LIMIT ANALYSIS STUDY REQUIRED.

(a) The commissioner of transportation must conduct a comprehensive study to assess speed limits in cities that adopted speed limits on city streets under the provisions provided in Minnesota Statutes, section 169.14, subdivision 5h, since the provision's enactment. The commissioner must conduct the assessment on all cities that have instituted speed limit changes to determine whether the cities are setting the appropriate speed limit for the roadway based on engineering principles, safety considerations, and traffic flow.

(b) The study required under this section must include:

(1) an evaluation of roadway design and characteristics;

(2) an analysis of traffic volume and patterns;

(3) an examination of crash data and safety records

(4) a review of existing speed studies and safety records

(5) any discrepancies between established speed limits and engineering recommendations; and

(6) recommendations for upward adjustments to city speed limits necessary to align with engineering principles and enhance roadway safety and design.

(c) By March 15, 2025, the commissioner of transportation must submit the results of the comprehensive study to the chairs and ranking minority members of the legislative committees with jurisdiction over transportation policy and finance. The report must identify affected cities and recommend upward adjustments based on observations in the report.

The cost of preparing the report elements required is approximately $79,500.

Introduction

Report Purpose

This report is submitted to the Minnesota Legislature to satisfy 2024 Laws of Minnesota, Chap. 104, Art. 1, Sec. 106. It directs the commissioner of the Department of Transportation to conduct a comprehensive study to assess speed limits in cities that adopted speed limits on city streets under the provisions provided in Minn. Stat.169.14, subd. 5h, since the provision's enactment. The commissioner must conduct the assessment on all cities that have instituted speed limit changes to determine whether the cities are setting the appropriate speed limit for the roadway based on engineering principles, safety considerations, and traffic flow.

Background

The Minnesota Strategic Highway Safety Plan (SHSP) offers a comprehensive framework to analyze data and engage stakeholders with the aim of reducing the number of crash-related deaths and serious injuries in the state. According to the SHSP, speeding continues to rank as a significant contributing factor to fatal and serious injury crashes.

Recognizing the need, communities are pursuing strategies that focus on ways to reduce speeding. To help improve pedestrian safety, the city of Minneapolis wanted the ability to modify speeds on local roads. The city asked the Legislature to make the necessary statute change.

On August 1, 2019, the Minnesota Legislature amended Minnesota Statute Section 169.14, subd. 2. The change gave cities the authority to establish speed limits for streets under their jurisdiction without having MnDOT conduct a speed study, and without approval by the Commissioner of Transportation provided that:

- Speed limits are implemented in a consistent and understandable manner.
- The city erects appropriate signs to display the speed limit.
- The city develops procedures to set speed limits based on the city's safety, engineering, and traffic analysis considering national urban speed limit guidance and studies, local traffic crashes, and methods to effectively communicate the change to the public.

The Minnesota Legislature also required an evaluation of the effectiveness of speed limit changes for the cities that adopted new speed limits.

Overview

This study includes a literature review that highlights research on the impact of city speed limit reductions in cities within Minnesota and throughout the United States as well as other parts of the world. It also involves identifying Minnesota cities that changed city street speed limits between 2020 and 2022. This study excluded cities where speed limits changed in 2023 or later because crash and speed data for 2024 was not yet available at the time of the analysis. Due to the timing of the study's completion, this evaluation is limited to cities that implemented citywide speed limit changes and does not consider corridor-specific changes.

The study also includes a simple observational study (before-and-after evaluation), which examines the effectiveness of a safety intervention by directly comparing data before intervention implementation with data after intervention implementation. The study applied a simple before-and-after evaluation comparing speed data and crash data in city corridors from 2019 and 2023, before and after the citywide speed limit change respectively. The term 'simple' refers to the fact that this approach does not account for potential confounding factors that might have led to the observed changes.

While often used in speed studies and safety evaluations, a simple before-and-after analysis comes with its limitations, which can affect its findings. The simple before-and-after evaluation does not consider other variables that can impact speed and crash numbers. Those variables may include differences or changes in roadway design, other efforts to improve safety, education and enforcement efforts, driver behavior, and changes in crash reporting.

Literature Review

To learn more about the effectiveness of citywide speed limit changes, MnDOT requested a literature review, which included looking at studies within Minnesota, throughout the United States, and for other countries, as well as the rationale that cities applied to make speed limit reductions.

The review involved searching databases from the following sources for references:

- Transport Research International Documentation (TRID), the largest resource on published and ongoing transportation research
- Transportation Research Board's Research in Progress (RIP), which contains information on current or recently completed transportation research projects
- Transport, MnDOT Library
- Google Scholar

Overall Findings

The relevant studies offered insights into several areas related to lowering city speed limits, including different approaches to evaluation, study results, the importance of public education and enforcement as part of the implementation strategy, and guides for cities that want to implement lower speeds.

Evaluation approaches

Many studies in the literature review measured speeds at locations before and after the speed limit change or compared speed measurements at new speed limit locations to other similar locations with no speed limit changes.

Several of those studies only compared before-and-after crash data. Others included both speed measurements and crash data in their before-and-after analyses or focused only on changes in fatalities and serious injury crashes or on changes in bicyclist and pedestrian injuries. A few also attempted to assess any speed reduction spillover effects in adjacent areas.

Overview of study results

The literature review reveals a mixed bag of results, with some studies reporting success in reducing speeds and crashes and others that result in no noticeable difference in speed.

A 2023 Minnesota Local Road Research Board (LRRB) report, *Guidelines for Determining Speed Limits on Municipal Roadways*, summarized the findings of studies throughout the United States and Canada:

"Nationally, FHWA [Federal Highway Administration] has examined over 100 sites in 22 states and found no change in vehicle speeds due to a change in the speed limit. Similar studies conducted by various cities in the U.S. and Canada as well as studies by the Insurance Institute for Highway Safety have also found that changing the speed limit alone had no effect."

The LRRB report did find examples of successful reductions of speeds when the change accompanies other

mitigation strategies, and studies in this literature review also reported lowered speeds and crash rates.

Important considerations

Why do some evaluations show no impact, while others show success in speed reduction and crash rates? The answer may lie in variables that are not included in most evaluations and that, by their nature, are difficult to isolate or measure. Those variables can include:

- **Differences in roadway design at locations.** A study of the local streets in Woodbury, Minnesota, found that roadway width does affect travel speeds.
- **Other mitigation efforts.** If not considered, other efforts to improve safety, either at intersections or throughout the area, also can impact evaluation results. For example, Seattle reported a small reduction in both the 50th and 85th percentile speed ranges with an increased frequency of speed limit signs – from one every one-and-a-half miles to one every quarter mile.
- **Effective communication and awareness building.** Informing residents and those who travel through the city about the speed limit change plays an important role in compliance.
- **Enforcement.** The city of Edmonton, Canada, invested 1,400 hours of enforcement at locations with speed limit reductions, and an analysis revealed that 77 percent of drivers complied with the new speed limit. The study also found that enforcement continues to result in a high level of compliance.
- **Changes in crash reporting.** If changes occurred in crash reporting, they may impact the results of a before-and-after study because the numbers may no longer be reasonably comparable.

The LRRB report concluded that success in lowering vehicle speeds depends on a combination of physical, operational, and regulatory measures, as well as added enforcement and changes to the road environment.

Select Study Highlights

Several case studies of local, national, and international evaluation projects demonstrated diversity in approaches and the challenges in determining what made speed limit reductions more impactful in some areas than others. Appendix B includes a broader description of the studies and links to the full reports.

St. Louis Park: The MnDOT report, *Impact of Speed Limit Changes on Urban Streets*, selected St. Louis Park for a before-and-after study. The city set a default speed limit of 20 mph, with selected roads marked for limits ranging from 25 to 35 mph. Recorders collected speed data both before the change in summer 2021 and after the change in summer 2022. The results showed considerable variability at individual locations, with before-and-after differences ranging from a decrease in speed of 7 mph to an increase of 2.4. Overall, mean speeds declined by one to two percent after speed limit decreases on both streets where the speed limit was lowered and on streets where the speed limit was unchanged. According to the report, St. Louis Park's modest reductions in mean speeds following a reduction in speed limits represents a consistent pattern with other cities' experiences in North America and Great Britain.

Boston, Massachusetts: Boston reduced its speed limit from 30 mph to 25 mph in 2017. This study compared vehicle speeds on Boston streets with the lower speed limit to those at control sites in Providence, Rhode Island. The study noted a statistically significant speed reduction.

New York City, New York: New York City passed a law to change its speed limit from 30 mph to 25 mph in 2014. A 2020 study analyzed crash data statistics for city streets from July 2012 through March 2019 and showed a statistically significant and meaningful decline in injuries and crashes.

Seattle, Washington: A 2024 study examined the impact of speed limit reductions on crashes. This change was combined with a large-scale signing effort to alert drivers of the new speed limits. Fatal and severe crashes decreased by 19 percent after the initial speed limit lowering in 2016 and further decreased by 3 percent after the second speed limit lowering. In addition, pedestrian-involved crashes declined by 25 percent.

Belfast, Northern Ireland: A 2023 study looked at the effect of a 20-mph speed limit on crashes, casualties, speed, and volume at year one and year three post-implementation and concluded that the 20-mph speed limit intervention had little impact on long-term outcomes.

Bristol, United Kingdom: Bristol set a 20-mph speed limit in urban areas and conducted a study to see if the limit made a difference in reducing speeds. Speeds of more than 36 million single vehicles were recorded before and after the 20-mph speed limit, with an adjusted speed reduction of 2.66 mph over two to three years. The study encouraged policymakers to carefully monitor the effects of 20-mph speed limit interventions.

European cities: A 2024 study of 40 different cities across Europe examined the effectiveness of citywide 30 km/h (18.6 mph) speed limits. The study concluded that speed limit reductions decreased the likelihood of crash risk and severity of crashes that do occur. On average the 30 km/h resulted in a 23 percent, 37 percent, and 38 percent reduction in road crashes, fatalities, and injuries respectively.

IN THE NEWS

On Feb. 2, 2025, the *Minnesota Star Tribune* published a story about lowering speed limits in cities. "Finding what limits the speed of drivers," by Greta Kaul, leads with Richfield's recent five-mph speed limit reduction, citing banners on the Richfield streetlights that remind drivers there's a new speed limit with the slogan: "Slower is scenic. Richfield Drives 25."

The article also includes the St. Louis Park study and other evaluations, including one to be completed by Minneapolis in 2026. It also looks at other factors that influence speed.

Summary Analysis

The following highlights key results from the literature review.

Table 1: Literature review summary (Did the speed limit change result in speed or crash reductions?)

City	Mean Speed	85th Percentile Speed	High End Speeds	Total Crashes	Fatal Crashes	Injury Crashes	Pedestrian Crashes
Saint Louis Park, MN	Local Roads Yes for 30 to 20* No for 25 to 20* Collectors Yes*						
Boston	Yes						
Springfield, Columbus, MO	Yes *						
New York City				Yes	Yes	Varies	No
Portland, OR	No *	No	Yes*				
Seattle				Yes	Yes	Yes	Yes*
Yarra, Melbourne, AUS	No		Yes*				
Edmonton, Canada	Yes (with speed enforcement)	Yes (with speed enforcement)		Yes	Yes	Yes	
Toronto, Canada					Yes	Yes	Yes
Korea (Multiple Cities)				Yes	Yes	Yes	No
Belfast, UK	Yes*			Yes*	Yes*		
Edinburgh, UK	Yes	Yes*	Yes*				
Bristol, UK	Yes				Yes		Yes

*Indicates not significantly significant.

Community Surveys

One of the first steps to evaluate the impact of city speed limit changes involved identifying the Minnesota cities that adopted new speed limits on city streets under the provisions provided in in Minn. Stat. 169.14, subd. 5h, since the provision's enactment.

Cities throughout Minnesota received an initial survey with the following three questions:

- City name
- Have you made speed limit changes to city streets under the authority granted in 2019?
- Was it a blanket policy or individual streets within your jurisdiction?

The survey yielded 147 responses, which included three invalid surveys and 40 duplicate entries. In total, 121 cities participated in the survey, with a total of 33 yes responses from 28 unique cities. A follow-up survey was sent to these 28 cities with the following questions:

- Did you enact a citywide speed limit policy (e.g., lowered speed limits to 20 mph unless otherwise posted)? If Yes, [provide details such as speed limit, when it was enacted, type of roads, signing practices, etc.]
- Did you lower or raise the posted speed limit for a specific corridor? If Yes, [provide details such as speed limit, when it was enacted, type of roads, signing practices, etc.]
- What methodology did you follow in determining where to modify speed limits as well as determining the appropriate speed limit?
- What data (i.e., roadway design characteristics, volume, vehicle speeds) was used to help select the new speed limit?
- Do you have other data you can share for this study? If so, describe the data?

Based on the responses, 16 cities enacted a citywide network change, and the remaining 12 cities enacted a speed limit change on specific corridors. Due to time constraints and resource limitations, this study only focuses on cities that performed citywide speed limit changes.

Six cites enacted citywide speed limit changes on or after January 1, 2023. Because at the time of data collection a full year of crash data was not available for these cities, they were removed from the study. After further examination of the cities that met the study criteria, the following 10 cities were selected for the study: Columbus, Excelsior, Falcon Heights, Mahtomedi, Minneapolis, New Brighton, Rochester, Saint Anthony Village, Saint Louis Park, and Saint Paul.

Selection and implementation of the speed limit changes varied by city. In general, most cities reported following engineering judgement and Vision Zero guidance to lower speed limits, especially on roads with low volumes and residential context, such as streets functionally classified as local.

The following chart offers additional details about the speed limit change for each of the 10 cities in the study.

Table 2: Minnesota cities that enacted a citywide speed limit change before January 1, 2023

Study Cities	Date Enacted	Speed Limit Change
Columbus	2022	Reduced speed limits from 55 mph to 30 mph on gravel roads and from 55 mph to 40-45 mph on corridor roads
Excelsior	June 2021	Blanket speed of 25 mph throughout the city unless otherwise posted
Falcon Heights	October 2021	Blanket speed limit of 20 mph (previously 30 mph) throughout the city unless otherwise noted
Mahtomedi	May 2021	Reduced speed limits to 20 mph on local roads and to 25 mph on collectors
Minneapolis	March 2020	Blanket speed limit of 20 mph throughout the city unless otherwise posted. Assigned individual streets within a framework based on the type of street, area context, and other factors
New Brighton	2022	Blanket speed limit of 25 mph throughout the city unless otherwise posted
Rochester	December 2020	Phased approach based on policy; first phase changed all local streets and downtown to 25 mph; continued evaluation of higher classification corridors for possible lower speeds
Saint Anthony Village	June 2020	Blanket speed limit of 25 mph throughout the city unless otherwise posted
Saint Louis Park	December 2021	Blanket speed limit of 20 mph throughout the city unless otherwise posted
Saint Paul	2020	Comprehensive citywide review with reductions to citywide speed limits based on category (now 20 mph for local streets and 25 mph for arterials and collectors) and with a handful of exceptions that did not change

The following lists all the cities that responded yes to changing speed limits on city roadways.

- Arden Hills
- Bayport
- Bloomington
- Brooklyn Park
- Columbus
- Excelsior
- Falcon Heights
- Greenfield
- Hermantown
- Mahtomedi
- Maple Grove
- Minneapolis
- New Brighton
- Oak Park Heights
- Otsego
- Plymouth
- Richfield
- Rochester
- Rochester Township
- Rosemount
- Saint Anthony Village
- Saint Joseph
- Saint Louis Park
- Saint Paul
- Saint Stephen
- Stewartville
- White Bear Lake
- Wyoming

Research Approach

Like many of the studies in the literature review, this study applied what researchers term a naïve before-and-after evaluation.

Simple Before-and-After Evaluation

A simple before-and-after evaluation examines the effectiveness of a safety intervention by directly comparing crash data before intervention implementation with crash data after intervention implementation, without accounting for potential confounding factors. This analysis method was selected, in part, due to its simplicity and ability to meet the study timeline requirements.

The simple before-and-after evaluation examined changes in both speed and five severities of crashes:

- Fatal Crashes (K)
- Fatalities and serious injury crashes (KA)
- Fatalities, serious injury, and minor injury crashes (KAB)
- Fatalities, serious injury, minor injury, and possible injury crashes (KABC)
- Fatalities, serious injury, minor injury, possible injury, and property damage only crashes (KABCO)

Data Collection

The first step of the data collection and analysis process involved extracting roadway data from MnDOT's Linear Referencing System (LRS), filtering roadways to include only Municipal State-Aid Street (MSAS) and Municipal Street (M) segments. For each of the 10 cities, this step identified streets under the city's jurisdiction.

The roadway data also included attributes – such as functional class, median type, parking type (right), parking type (left), number of lanes, and travel width – by year. Roadways where attributes changed from 2019 to 2023 were eliminated from the study to provide some control for confounding factors.

MnDOT's statewide crash database provided crash records from 2019 and 2023. Crashes were linked to roadways by spatially joining each crash to the nearest roadway (within 250 feet).

The Streetlight Insight (https://www.streetlightdata.com/our-data/) platform provided historical speed data for two 14-day periods in 2019 and two 14-day periods in 2023. This included a spring sample period (April) and a fall sample period (October), periods that typically reflect the average conditions. Each 14-day period began on the first Monday of the month.

Streetlight provides speed metrics on segments of the OpenStreetMap roadway network, and for this study, the metrics included average speed, free flow speed, daily volume, and four specific percentiles in the distributions of observed speeds (5^{th}, 15^{th}, 85^{th}, and 95^{th}). This study used an automated data merging process to transfer these metrics with the roadway database.

Data Analysis

The analysis examined both speed data for city corridors and crash data.

Speed findings

Speed data was gathered for the different functional street classifications in the study's 10 cities. The Federal Highway Administration classifies roadways by roadway function based on the type of service the roadway provides to the public and ties design standards to each classification. Designations are most often used in planning and data collection. The study collected speed data on local, minor collector, major collector, minor arterial, and principal arterial classifications, as defined below:

- **Local**: Local streets offer access to homes and businesses, primarily for short distances and typically connect motorist to a higher functional class.
- **Major and minor collectors**: Collector streets provide access from neighborhoods to arterial streets and to businesses and homes. A smaller, more localized road, a minor collector primarily focuses on neighborhood access. With higher traffic volumes and mobility, a major collector usually connects multiple neighborhoods to major arterials with fewer direct access points.
- **Minor arterial:** These streets connect cities, towns, and other major traffic generators, supplementing the capacity of principal arterials.
- **Principal arterial:** Designed for high-speed travel over long distances with limited access, they carry a large portion of long-distance travel.

The study team compiled information on average speed and free flow speed – defined as the average hourly 95th percentile speed – for each corridor. Key findings include the following:

- The average free flow speed decreased by 2.2 mph or by about 7 percent on local (functional classification) streets in 2023 compared to 2019, a statistically significant decrease.
- All other changes in speed metrics (increases or decreases) were not statistically significant.

Table 3: Average speed change from 2019 to 2023 by roadway classification

Classification	Average Speed 2019	Average Speed 2023	Percent Change
Local Streets	19.1 mph	19.4 mph	1.5%
Major Collector	24.4 mph	25.2 mph	3.3%
Minor Arterial	27.3 mph	27.9 mph	2.4%
Minor Collector	24.8 mph	26.1 mph	5.5%
Principal Arterial	49 mph	49 mph	0%
All Classifications	23.9 mph	24.3 mph	1.8%

Table 4: Average free flow speed change by roadway classification

Classification	Average Free Flow Speed 2019	Average Free Flow Speed 2023	Percent Change
Local Streets	29.5 mph	27.3 mph	-7.4%**
Major Collector	29.6 mph	29.8 mph	0.5%
Minor Arterial	27.3 mph	27.9 mph	0.3%
Minor Collector	32.3 mph	32.5 mph	0.6%
Principal Arterial	50.1 mph	50.8 mph	1.4%
All Classifications	30.7 mph	29.9 mph	-2.4%**

** Indicates the results are statistically significant.

Crash findings

According to the before-and-after crash data analysis:

- The data shows there was a statistically significant decrease in total crashes of all severities on roadways with a functional class of local, minor collector, major collector, and minor arterial, as well as a significant decrease in total crashes on all roads combined. However, this reduction in crashes can be attributed to other factors in addition to the speed limit changes, such as the 2021 legislative change for crash reporting requirements that resulted in fewer reported crashes.

- There was no significant change in fatal or injury crashes.

Table 5: Local roadway fatal and serious injury comparison

Crash Severity	2019	2023
Fatal Crashes (K)	0	0
Fatal & Serious Injury Crashes (KA)	5	3

Table 6: Local roadway fatal, serious injury, moderate, minor, and no injury crash comparison

Crash Severity	2019	2023
KAB (fatal + serious injury + minor injury)	19	20
KABC (fatal + serious injury + minor injury + possible injury)	51	39
KABCO (fatal + serious injury + minor injury + possible injury + no injury)	287	154

To further explore the relationship between the decrease in total crashes on roadways in the study and citywide speed limit reductions, the study team also examined crash data for county roads, non-interstate state roads, and interstate roads during the same period in the same 10 cities. Because citywide speed limit changes did not apply to these roads, citywide speed limit changes should not account for crash data changes on those roadways.

From 2019 to 2023, KABCO crashes on county roadways declined by 33.3 percent, by 15 percent on non-interstate state roadways, and by 29.3 percent on interstate roadways. This indicates that a majority of the decrease in total

crashes on city streets for the 10 cities in the evaluation could be due to other confounding factors and not necessarily a result of the citywide speed limit change. The most likely explanation for the significant difference in total crashes can be traced to 2021 legislation that eliminated the requirement to report vehicle accidents if there were no injuries and if estimated property damage would not exceed $1,000. Other influencing factors include changes in law enforcement priorities and staffing, and traffic reductions associated with COVID-19.

Appendix A contains a full technical report on speed and crash analyses.

Conclusion

This study examined speed and crash data to determine whether the reduction of city speed limits impacted traffic safety, as well as conducted a literature review to learn more about the experiences of other cities and the evaluation approaches of other studies.

Main Findings

Did city speed limit reductions lead to reduced speeds in the 10 study cities?

According to the data analysis, most speed measurements increased from 2019 to 2023. However, free flow speed – defined as the average hourly 95th percentile speed – decreased by 7 percent on local streets in 2023 compared to 2019. Local streets are the most likely to be impacted by citywide speed limit reductions.

Did city speed limit reductions lead to less crashes?

Fatal and serious injury crashes remained relatively the same in 2019 and 2023. The most significant change occurred when combining all five crash types: fatalities, serious injuries, moderate injuries, minor injuries, and no injuries (KABCO). Total crashes for all five crash types on local roadways decreased from 287 in 2019 to 154 in 2023 (46 percent reduction). Total crashes on all five functional classes of roadways, including local roadways, decreased from 496 in 2019 to 300 in 2023 (40 percent reduction).

A change in reporting might account for the significant difference in total crashes. In 2021, the Minnesota Legislature eliminated the requirement to report vehicle accidents if there were no injuries and if estimated property damage would not exceed $1,000. As a result, it is likely fewer no-injury crashes were reported in 2023.

To help determine if the reporting change contributed to the decline in total KABCO crashes, the study compared the total KABCO on roadways not impacted by the citywide speed limit reductions enacted by the 10 cities in this evaluation. From 2019 to 2023, KABCO crashes on county roadways declined by 33.3 percent, by 15 percent on non-interstate state roadways, and by 29.3 percent on interstate roadways. This indicates that a majority of the decrease in total crashes on city streets for the 10 cities in the evaluation could be due to other confounding factors and not necessarily a result of the citywide speed limit change.

Since simple before-and-after studies do not account for potential confounding factors that can occur over time, other variables can impact results as well. These include traffic patterns, road user behavior, and other non-related safety measures, among others.

The crash reporting change – and other potential confounding factors – make it difficult to make any definitive conclusions about the impact on safety due to the reduction in citywide speed limits enacted between 2020 and 2022.

Is this conclusion consistent with the experience of others?

Yes, evaluations in the literature review varied in their findings. Some studies reported success in reducing speeds and crashes, and others reported no noticeable difference in speeds. Several of those studies compared before-and-after crash data and others took different approaches. The studies also identified practices that help maximize the safety impact of city speed limit reductions and showed the challenges in controlling variables that are often hard to isolate or measure.

Legislative Requirements Recap

The Legislature included six requirements for the study. This recap looks at the ways the study was able to either fulfill these requirements or the reasons that fully fulfilling one or more of them was not feasible.

An evaluation of roadway design and characteristics: The study evaluated roadway characteristics based on functional class and checked that the road designs didn't change before or after on evaluated roadways. The limits of time and funding and the challenges of blanket adoption of speed limit changes prohibited a more detailed analysis.

An analysis of traffic volume and patterns: Volume changes between 2019 and 2023 were reviewed for the cities in the study. Appendix A supplies more detail. The functional class of "local" can be considered lower volume. The study did not evaluate the effect of speed limit changes on volumes.

An examination of crash data and safety records: The study evaluated before-and-after crash data for the different functional street classifications in the study's 10 cities (see Research Approach).

A review of existing speed studies and safety records: The study included a literature review of state, national, and international speed limit change evaluations (see Appendix B), but did not evaluate those studies. Only one Minnesota city, St. Louis Park, had completed a formal study. No prior records existed except as the blanket conditions used for this study.

Any discrepancies between established speed limits and engineering recommendations. The nature of the study makes it difficult to reasonably assess discrepancies. Engineering practice calls for direct observation of the roadways and collection of specific data before and after the change. MnDOT currently does not have the authority to study city-owned roads for a review of speed limits without permission of the city or agency that owns the roadway. Without the time, resources, or permission to do direct observation, this study used aggregate data for evaluation.

Recommendations for upward adjustments to city speed limits necessary to align with engineering principles and enhance roadway safety and design: Based on the study results, there are no definitive conclusions about the impact on safety of the reduction in citywide speed limits enacted between 2020 and 2022 and, therefore, there is no basis to recommend upward adjustments. MnDOT also currently has no authority to set speed limits on city-owned roads.

Appendix A: Technical Report

Memorandum

To: HDR

From: UNC HSRC

Subject: Effect of changes in speed limit

Date: January 22, 2025 (revised)

This document provides a summary of results from the evaluation of the impacts of changes in speed limits in the following cities in Minnesota:

- Columbus
- Excelsior
- Falcon Heights
- Mahtomedi
- Minneapolis
- New Brighton
- Rochester
- Saint Anthony
- Saint Louis Park
- Saint Paul

These cities had reduced their speed limits sometime between 2020 and 2022. Cities where the speed limits were changed in 2023 or later were excluded.

Overview of Evaluation Method

A simple before-after evaluation was used in this analysis. Crashes by severity were compiled for 2019 (before year) and for 2023 (after year) at the corridor level in all the cities. Speed data were also compiled for one week in April and one week in October in 2019 and 2023. Only those corridors where speed data were available in 2019 and 2023 were included in this evaluation.

It is important to note that the simple before-after evaluation has many limitations including the following (Hauer, 1997):

- Traffic patterns, weather, road user behavior, vehicle fleet change with time. The safety effect of these changes is not addressed in a simple before-after evaluation
- Some, or all cities may have implemented other measures (apart from the change in speed limit) that could have had safety implications
- Crash reporting practices have changed with time, as some law enforcement agencies have changed their crash reporting practices for PDO crashes due to a 2022 change in the MNCrash reporting system. This change reflected 2021 legislation that removes a $1,000 in damages minimum for reporting property damage only crashes. In fact, in Minnesota, statistics for the last few years have shown significant reductions in reported PDO crashes.
- Sometimes locations are selected for treatment because they experienced a large number of crashes. If this selection bias is not accounted for, then the results are subject to bias due to regression-to-the-mean (RTM). However, the cities included in this evaluation did not seem to target specific corridors or sites for changing the speed limit. Hence any bias to RTM is unlikely to have affected the results of this evaluation.

Analysis of Exposure and Speed

Information on average speed, free flow speed[1], and range of speed were compiled for each corridor. Range of speed was defined in two ways: (1) difference between 85th percentile and 15th percentile, and (2) difference between 95th percentile and 5th percentile. The reason for including the range of speed was that at least one previous study had some correlation between range of speed and safety (Dixon et al., in press). The exposure for each corridor (defined as the product of volume and length) was used as the weight to combine the speed measures to determine the average values by functional class.

Table 1 provides the exposure (the product of vehicular volume and segment length) in 2019 and 2023 by functional class and the change from 2023 to 2019. Essentially, exposure decreased in all functional classes except for Minor Collectors. In the corridors that were investigated, most of the exposure was in Local, Major Collectors, and Minor Arterials.

Table 1. Exposure by functional class

Functional Class	Volume*Length in 2019	Volume*Length in 2023	% Change in Volume*Length
Local	447352	438022	-2.1%
Major Collector	402605	368243	-9.3%
Minor Arterial	528266	474295	-11.4%
Minor Collector	8619	14494	40.5%
Principal Arterial	9224	5482	-68.3%
Overall	1396066	1300536	-7.3%

Table 2 shows the average speed, free flow speed, and range of speed by functional class in 2019 and 2023. Looking at the last set of columns regarding the change in speed, the free flow speed decreased about 7% on local roads in 2023 compared to 2019 contributing to a 2.4% decrease in free flow speed overall. In addition, range of speed (85th percentile minus 15th percentile) decreased by 0.2% on Minor Arterials. All other speed measures increased in 2023.

Table 2. Speed Measures

Functional Class	Speed Measures in 2019				Speed Measures in 2023				% Change in Speed Measures			
	Avg speed	Free flow speed	Range (95-5)	Range (85-15)	Avg speed	Free flow speed	Range (95-5)	Range (85-15)	Avg speed	Free flow speed	Range (95-5)	Range (85-15)
Local	19.1	29.5	20.8	12.5	19.4	27.3	21.7	12.9	1.5%	-7.4%*	4.0%	3.0%
Major Collector	24.4	29.6	23	14.1	25.2	29.8	23.8	14.5	3.3%	0.5%	3.3%	3.0%
Minor Arterial	27.3	32.1	25.2	15.6	27.9	32.1	25.6	15.6	2.4%	0.3%	1.4%	-0.2%
Minor Collector	24.8	32.3	21	12.6	26.1	32.5	23	13.6	5.5%	0.6%	9.3%	7.6%
Principal Arterial	49	50.1	23.5	12	49	50.8	28.4	15	0.0%	1.4%	21.0%	24.8%
Overall	23.9	30.7	23.1	14.1	24.3	29.9	23.7	14.4	1.7%	2.4%*	2.5%	1.5%

*Note: All speed measures are in mph. *Speed change is statistically significant at the 0.05 level.*

1 Based on information from Streetlight, free flow speed is defined as the average hourly 95th percentile speed.

Changes in Crashes

Table 3 shows the number of crashes by functional class and severity in 2019 and 2023. Table 4 shows the estimated safety effect (in the form of a crash modification factor) and standard error based on the procedures outline in Chapter 7 of Hauer (1997).

The CMFs for KABCO (i.e., all) crashes are statistically different from 1.0 (at the 5 percent significance level) and less than 1.0 for all functional classes except for Principal Arterial. However, as discussed earlier, the only meaningful reduction in speed was free flow speed on Local Roads. So, it is difficult to ascertain if the reduction in KABCO crashes can be attributed to the changes in speed limits.

Table 3. Crashes by Severity in 2019 and 2023

Functional Class	Crashes by severity in 2019					Crashes by severity in 2023				
	K	KA	KAB	KABC	KABCO	K	KA	KAB	KABC	KABCO
Local	0	5	19	51	287	0	3	20	39	154
Major Collector	0	1	13	29	106	0	2	9	30	72
Minor Arterial	1	1	8	26	100	1	4	9	25	72
Minor Collector	0	0	0	0	3	0	0	0	0	1
Principal Arterial	0	0	0	0	0	0	0	0	1	1
Overall	1	7	40	106	496	1	9	38	95	300

Table 4. Estimated Safety Effects

Functional Class	K		KA		KAB		KABC		KABCO	
	CMF	S.E.	CMF	S.E.	CMF	S.E.	CMF	S.E.	CMF	S.E.
Local	cd	cd	0.5	0.333	1	0.312	0.75	0.158	0.535*[1]	0.053
Major Collector	cd	cd	1	0.866	0.643	0.269	1	0.256	0.673*	0.102
Minor Arterial	0.5	0.5	2	1.581	1	0.458	0.926	0.255	0.713*	0.11
Minor Collector	cd	cd	cd	cd	cd	cd	cd	cd	0.250*	0.25
Principal Arterial	cd	cd	cd	cd	cd	cd	cd	cd	cd	cd
Overall	0.5	0.5	1.125	0.53	0.927	0.207	0.888	0.125	0.604*	0.044

*Note. cd implies cannot be determined. *CMF is statistically significant at the 0.05 level.*

Changes in Crash Reporting

Table 5 shows the number of crashes by severity on county roads, non-interstate state roads, and interstate roads in 2019 and 2023. These roads were not affected by the reduction in city speed limits. Hence, any change in crashes on these crashes cannot be attributed to the reduction in speed limit. However, KABCO crashes on non-interstate, interstate, and county roads, decreased between 15% to 30% between 2019 and 2023.

Table 5. Crashes on State Roads (Non-Interstate), Interstate, and County Roads

Functional Class	Crashes in 2019					Crashes in 2023					% Change in Crashes				
	K	KA	KAB	KABC	KABCO	K	KA	KAB	KABC	KABCO	K	KA	KAB	KABC	KABCO
State Roads (Non-interstate)	1	10	62	153	523	4	19	69	147	442	300.0%	90.0%	11.3%	-3.9%	-15.5%
Interstate	3	8	92	376	1950	2	12	67	238	1378	-33.3%	50.0%	27.2%	-36.7%	-29.3%
County Roads	7	58	321	731	2561	11	75	296	623	1707	57.1%	29.3%	-7.8%	-14.8%	-33.3%

Conclusions and Future Research

Analysis of the speed data revealed a 7.4 percent reduction (statistically significant) in free flow speed from 2019 to 2023 only for roads streets with a "local" functional classification, and these are the streets likely most affected by the speed limit change. All the other speed measures increased. The CMFs for KABCO (i.e., all) crashes are statistically different from 1.0 (at the 5 percent significance level) and less than 1.0 for all functional classes except for Principal Arterial. At the same time, the number of KABCO crashes on non-interstate, interstate, and county roads (that were not affected by the reduction in speed limit), decreased between 15% and 33% from 2019 and 2023. The decrease in crashes could be due to many factors including the change in the law regarding the reporting of PDO crashes that went into effect in 2022, and potentially other confounding factors. Based on this information, it is not possible to make any definitive conclusions regarding the safety effect of the reduction in speed limit that was implemented in the Minnesota cities in 2022 and 2023.

As mentioned in the beginning of this document, this was a naïve before-after evaluation with many limitations. One way to conduct a more robust evaluation is to use a before-after comparison group method. Using a comparison group would reduce or eliminate the possible bias that can occur if changes that happen over a period of time are not accounted for in the evaluation (e.g., changes in traffic patterns, weather, road user behavior, vehicle fleet change, crash reporting).

To use the before-after comparison group method, it is important to identify a comparison group of facilities where speed limits were not changed. In addition, the trends in crashes in the comparison group should be similar to the trends in crashes in the treated group (i.e., the group where the speed limits were changed) before the change in speed limits were implemented. Hauer (1997) has procedures to determine if the trends in crashes in these two groups were similar before the change in speed limits were implemented. After an appropriate comparison group is identified, the before-after evaluation can be conducted using procedures suggested by Hauer (1997).

References

Dixon, K et al. (in press), NCHRP Project 17-92: *Developing Safety Performance Functions for Rural Two-Lane Highways that Incorporate Speed Measures*, Draft Final Report, Submitted to NCHRP.

Hauer, E. (1997), Observational Before-After Studies in Road Safety, Elsevier Science.

Appendix B: Literature Review

Literature Search

What is the effectiveness of city-wide speed limit changes?

September 13, 2024

Prepared by: Marilee Tuite, tuite003@umn.edu

Request description: MnDOT has recently been tasked by the legislature to deliver a report on cities in Minnesota that have set their own speed limits. As part of this study, a literature review of studies that have reviewed the effectiveness of city-wide speed limit changes was conducted.

Resources searched: TRID/RiP, Transport; MnDOT Library catalog; Google Scholar

Keywords used: City-wide speed limits, citywide speed limits, municipal speed limits, lowering speed limits in cities, reducing speed limits in cities, reducing posted speed limits in cities, residential speed limits, speed limit impacts in cities, impact of lower speed limits, speed reduction in cities, urban speed limits, posted urban speed limits

Summary: Relevant results are organized geographically. The first section is U.S. results starting with Minnesota (including recent evaluations from a few metro cities). The second section is non-U.S. results.

U.S. Results

MINNESOTA

1) Title: Speed Limit Evaluation – City of Richfield

Source: City of Richfield (April 2024)

Summary: In 2021, the **Richfield** City Council directed staff to explore a speed limit reduction in the city... Staff reviewed national guidance, existing traffic patterns in the city, and historical crash data to develop procedures to set speed limits in accordance with the state statute. Staff provided Council updates and received feedback on these processes over the course of three work sessions in October 2022, May 2023, and October 2023. The final staff recommendation is to set the speed limit for most city streets to 25 mph, with West 76th Street signed at 30 mph west of Penn Avenue and 35 mph from Penn Avenue to 77th Street, and 77th Street signed at 35 mph from east of 76th Street to MN Highway 77. The speed limit in alleys would remain 10 mph per state statute, and the speed limits on MnDOT and County highways are not controlled by the city. Implementation of proposed speed limit changes was approved by City Council in December 2023, with a public education campaign and sign replacement conducted in Spring 2024. The changeover date is Summer 2024.

Full text here. See also City of Richfield website.

2) Title: Larger Roads – Speed Limits

Source: City of Bloomington (January 2024)

Summary: In September 2023, **Bloomington** City Council approved a 25 mph speed limit for all local streets. This presentation is about proposed speed limits on larger city roadways and an implementation plan including timeline and awareness strategies.

Full text here. See also Let's Talk Bloomington webpage about speed limits.

3) Title: Impact of Speed Limit Changes on Urban Streets

Source: MnDOT, report 2023-22 (June 2023)

Abstract: In 2019 the Minnesota Legislature amended that state's statutes to allow cities to set speed limits on city-owned streets. In February 2021 we surveyed 33 cities within the Twin Cities metro area and identified the city of **St. Louis Park** as planning to implement a city-wide change in speed limits, with a default speed limit of 20 mph but with selected roads being signed for limits ranging from 25 mph to 35 mph. Speed data was collected using road tube traffic recorders in the summer of 2021, 2-4 months before the speed limit change, and in the summer of 2022, 6-8 months after the change. There was considerable variability regarding what was seen at individual locations, with before/after differences in mean speed ranging from a decrease of 7 mph to an increase of 2.4 mph. On average, mean speeds were slightly lower (1-2 mph) in the after period, both on streets where the speed limit was lowered and on streets where the limit was unchanged. This pattern, modest reductions in mean speeds following a reduction in speed limit, with possible spillover, was consistent with what has been seen in other cities in North America and Great Britain.

Full text here.

4) Title: Guidelines for Determining Speed Limits on Municipal Roadways

Source: Minnesota Local Road Research Board, report 2023RIC07

Abstract: The issue of reducing speed limits to increase public safety is an emotional, political, and controversial topic that has been debated by safety advocates, engineers, politicians, transportation officials, and the public for many years. A recent statutory change has put a spotlight on the topic, necessitating a deeper look into how speed limits are established and the effectiveness that lowering speed limits has on reducing vehicle traveling speeds, as well as the impacts on pedestrian and bicycle traffic. This document examines the history of speed limits, the recent statutory change, and the consequence of the change to communities. In addition, it examines the effectiveness of speed limit changes and outlines a process for agencies to follow when deciding to make a change and offers alternative strategies for pedestrian and bicycle safety.

Full text here.

5) Title: Citywide Speed Limit Reduction

Source: City of Edina (August 2021)

Summary: This report is a summary of the analysis undertaken to inform the City of **Edina**'s approach to setting speed limits on local streets in accordance with City policies and recent State legislative authority. A key recommendation was reducing speed limits on most local streets to 25 miles per hour.

Full text here. See other documents at City of Edina webpage about local speed limit evaluation.

MASSACHUSETTS (BOSTON)

6) Title: Lowering the speed limit from 30 mph to 25 mph in Boston: effects on vehicle speeds

Source: Injury Prevention (Jan. 2019)

Abstract: Effective January 9, 2017, the default speed limit on **Boston** streets was reduced from 30 mph to 25 mph. This study evaluated the effects of the speed limit reduction on speeds in Boston. Vehicle speeds were collected at sites in Boston where the speed limit was lowered, and at control sites in Providence, Rhode Island, where the speed limit remained unchanged, before and after the speed limit change in Boston. A log-linear regression model estimated the change in vehicle speeds associated with the speed limit reduction. Separate logistic regression models estimated changes in the odds of vehicles exceeding 25 mph, 30 mph and 35 mph associated with the lower speed limit. The speed limit reduction was associated with a 0.3 % reduction in mean speeds (p=0.065), and reductions of 2.9%, 8.5% and 29.3 % in the odds of vehicles exceeding 25 mph, 30 mph and 35 mph, respectively. All these reductions were statistically significant. Local communities should consider

lowering speed limits to reduce speeds and improve safety for all road users. The current practice of setting speed limits according to the 85th percentile free-flow speeds, without consideration of other characteristics of the roadway, can be a hurdle for local communities looking to lower speed limits. Updated state laws that allow municipalities to set lower speed limits on urban streets without requiring costly engineering studies can provide flexibility to municipalities to set speed limits that are safe for all road users.

DOI: 10.1136/injuryprev-2018-043025

Full text here.

MISSOURI (SPRINGFIELD AND COLUMBIA)

7) Title: Residential Speed Limit Reduction Case Studies

Source: Open Transportation Journal (2012)

Abstract: Speeding on residential/neighborhood streets is a common citizen complaint, but previous research on the effects of lowering speed limits has been limited mostly to high-volume, high-speed roads. On such facilities, studies indicated that a reduction in speed was not commonly attained by reducing the posted speed limits alone. This paper describes residential studies in the United States in **Springfield and Columbia** (MO) that found speed limit reductions from 30 mph (48 km/h) to 25 mph (40 km/h) did produce statistically significant speed decreases. In addition to the speed limit reduction, other issues investigated were the use of specialized speed limit signs containing a yellow border and an additional safety message, pace car stickers and neighborhood educational campaigns. The engineering studies were used by each City to guide their decisions to lower residential speed limits citywide.

DOI: 10.2174/1874447801206010039

Full text here.

NEW YORK (NYC)

8) Title: Assessing the safety effectiveness of citywide speed limit reduction: A causal inference approach integrating propensity score matching and spatial difference-in-differences

Source: Transportation Research Part A: Policy and Practice (vol. 157; March 2022)

Abstract: **New York City (NYC)** initiated a new default speed limit law on November 7th, 2014, where speed limits on all road segments without a posted speed limit were reduced from 30 mph to 25 mph. The safety effectiveness of citywide speed limit reduction in an urban setting like NYC has been understudied in the literature. The high-density road network of NYC could lead to a significant spatial spillover effect of speed limit reduction on its neighboring sites. In addition, citywide speed limit reduction exerts much more treatment sites than control sites, which makes it challenging to identify sufficient control sites with similar covariates as the treated ones and thus may lead to confounding bias. Furthermore, there could also exist a time trend in crash observations caused by unobserved factors (e.g., enforcement, driving behaviors). To jointly account for spatial spillover effect, confounding bias, and time trend, this study proposes a novel causal inference approach integrating propensity score matching (PSM) and spatial difference-in-differences (SDID) to estimate the safety effectiveness of citywide speed limit reduction in NYC. The PSM utilizes a logistic generalized additive model (GAM) to capture the nonlinear relationship between covariates and the treatment indicator to reduce bias due to confounding variables. Moreover, the matched data are used to develop the SDID model that simultaneously captures spatial spillover effect and time trend via the extended difference-in-differences (DID) structure. The proposed causal approach suggests that the speed limit reduction would result in a 62.09% decrease in fatal crashes, with the spatial spillover effect found to be statistically significant. However, it does not indicate a significant change in injury and property-damage-only crashes as a result of the speed limit reduction.

DOI: 10.1016/j.tra.2022.01.004

Full text available upon request.

9) Title: Vision Zero: Speed Limit Reduction and Traffic Injury Prevention in New York City

Source: Eastern Economic Journal (2020)

Abstract: We examine the effect on the incidence of casualties and crashes of a city-wide vehicle speed limit reduction in New York City (NYC) streets. The law change, part of Mayor Bill de Blasio's Vision Zero Action Plan to improve traffic safety, cuts the default speed limit for streets with no speed limit signs from 30 to 25 mph beginning November 7, 2014. We use a monthly panel dataset with crash statistics for the entire population of NYC streets, from July 2012 through March 2019. Several difference-in-differences regressions show a statistically significant and meaningful decline in injuries and crashes.

DOI: 10.1057/s41302-019-00160-5

Full text available upon request

OREGON (PORTLAND)

10) Title: Evaluation of Posted Speed Limits Reductions on Urban Roads with a High Percentage of Cyclists

Source: Transportation Research Record (June 2022)

Abstract: This paper presents a before and after analysis of the impact of posted speed limit (PSL) changes on passenger car (FHWA class 2 vehicle) speeds in **Portland, Oregon**. The study focuses on urban roads, comparing sites that underwent a PSL 5-mph reduction (treatment sites) and sites where the PSL did not change (control sites). Sites with a high percentage of and priority for cyclists (neighborhood greenways) and sites with a more standard traffic composition were compared. Differences in speed characteristics such as mean and 85th percentile speeds, the speed variance, and the proportion of vehicles exceeding a speed threshold (relative to the PSL) were evaluated on aggregate and individual scales. A series of statistical hypothesis tests were employed to assess changes in the speed characteristics among individual data set pairs. The results suggest distinct differences between the treatment and control groups and neighborhood greenway and non-greenway sites. Although there is a high degree of variability, the treatment group experienced more decreases in the speed characteristics, and by a greater amount than the control group, on average. Within the treatment group, sites with a priority for cyclists were even more likely to experience a larger reduction in operating speeds. These results could be interpreted as link-level data providing indirect yet supporting evidence for the safety in numbers hypothesis and changes in motorists' behavior on neighborhood greenways.

DOI: 10.1177/03611981221076115

Full text here.

11) Title: Effect of Residential Street Speed Limit Reduction on Driving Speeds in Portland, Oregon

Source: Findings (2022)

Abstract: This study analyzed the impacts on motor vehicle observed speeds following a residential speed limit reduction from 40.23 km/hr. (25 mi/hr.) to 32.19 km/hr. (20 mi/hr.) in Portland, OR that was accompanied by a public awareness and signage campaign. The study used before and after observations of vehicle speeds collected by pneumatic tube traffic counters. Overall, the analysis suggests that the reduction of posted speed limits to 32.19 km/hr. (20 mi/hr.) has resulted in lower observed vehicle speeds and fewer vehicles traveling at higher speeds. The reduction in the percentage of vehicles traveling above 48.28 km/hr. (30 mi/hr.) (-1.7%) and 56.33 km/hr. (35 mi/hr.) (-0.5%) are larger in magnitude than other speed metrics.

DOI: 10.32866/001c.31956

Full text here.

Note: A version of this research was later published in the result above.

12) Title: Effect of Residential Street Speed Limit Reduction from 25 to 20 mi/hr. on Driving Speeds in Portland, Oregon

Source: Portland Bureau of Transportation (October 2020)

Abstract: In 2015, the City of Portland adopted Vision Zero's objective of eliminating transportation-related fatalities and serious injuries. The Portland City Council approved an ordinance reducing the speed limit on all residential streets to 20 mi/hr. in January 2018. A residential street is a street that is in a residence district according to ORS 801.430 and has a statutory speed limit. Federally classified collectors and arterials are excluded. The 20 mi/hr. speed limit went into effect on April 1, 2018. The city installed new speed limit signs and updated existing signs to over the period of February 2018 to May 2019. The final 20 mph sign installation increased the number of residential speed limit signs from fewer than 1,000 signs to more than 2,000. An educational and awareness campaign "20 Is Plenty" was also conducted. As part of the effort, nearly 7,000 yard signs were distributed to residents. The objective of this study is to determine if there was a change in observed speeds of vehicles following the residential speed limit reduction from 25 to 20 mi/hr. The data used for this analysis was before and after observations of vehicle speeds collected by pneumatic tube traffic counters before and after the speed limits were changed. It was found that the change likely reduced driving speeds by small but significant amounts.

Full text here.

WASHINGTON (SEATTLE)

13) Title: Comprehensive investigation of crashes associated with citywide speed limit reduction in Seattle, Washington

Source: Case Studies on Transport Policy (vol. 17, September 2024)

Abstract: Seattle, Washington has been lowering its citywide default speed limits on municipal roads since 2016, among several cities in the US. This research paper presents a comprehensive investigation of the impact of these speed limit reductions on various safety indicators, such as the crash frequency, crash severity, crash characteristics, crash type, crash location, contributing factors, and overall traffic safety performance. The study employs a comprehensive dataset encompassing several years before and after the implementation of lower speed limits. Data analyses indicate varying changes in crash severity distribution between before and after periods in Seattle. Fatal and incapacitating crashes in Seattle decreased by 19% after the initial speed limit lowering in 2016 and further decreased by 3% after the second speed limit lowering in 2018. Pedestrian-involved crashes experienced a 26% significant decrease while speeding-related had a 16% decrease after the city implemented lowering speed limits. There was also a statistically significant 4% decrease in property damage only collisions and a 7% decrease in parked car crashes. Distracted driving / inattention-related crashes also decreased by 4%. The Mid-Block (but intersection related) crashes saw a significant decrease by 6%, and Driveway Junction related crashes decreased by 1%. The findings provide insights into the effectiveness of speed limit reductions in enhancing road safety in urban environments.

DOI: 10.1016/j.cstp.2024.101222

Full text available upon request.

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

Source: Journal of Safety Research (vol. 88; February 2024)

Abstract: Introduction: 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. Method: 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. Results: 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. Conclusions: 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.

DOI: 10.1016/j.jsr.2023.11.004

Full text here.

OTHER

15) Title: City Limits: Setting Safe Speed Limits on Urban Streets

Source: National Association of City Transportation Officials (2020)

Abstract: This document is intended to provide city practitioners with guidance on how to strategically set speed limits on urban streets, using a Safe Systems approach, to reduce traffic fatalities and injuries. Recognizing that city authority to set speed limits varies by jurisdiction, this document offers three tools for setting speed limits on urban streets: (1) setting default speed limits on many streets at once; (2) designating slow zones in sensitive areas; and (3) setting corridor speed limits on high priority major streets using a Safe Speed Study.

Full text here. See also NACTO webpage Case Studies in Lowering Speed Limits.

16) Title: The impact of urban speed reduction programmes on health system cost and utilities

Source: Injury Prevention (August 2018)

Abstract: This article looks at the public health and economic impacts of reductions in traffic speeds. Traffic speed and probability of collisions, pedestrian injury, and pedestrian death are analyzed along with crash-related health system costs. Findings suggest that even small investments in reducing traffic speed lower death rates and result in gains in quality-adjusted life years. However, a before and after sensitivity analysis shows that speed reductions may not impact injury probability which could lead to an increase in costs from severe injuries especially in areas of higher vehicle speeds.

DOI: 10.1136/injuryprev-2017-042340

Full text available upon request.

Non-U.S. Results

AUSTRALIA

17) Title: Evaluation of the 30km/h speed limit trial in the City of Yarra, Melbourne, Australia

Source: Traffic Injury Prevention (2020)

Abstract: The City of Yarra in Melbourne, Australia has a 40 km/h default speed limit across their municipality, but wished to reduce the speed limit in local residential streets to 30 km/h. The Monash University Accident Research Center provided Council with a design for a demonstration trial and agreed to evaluate its safety benefits over 12 months. The trial was expected to show significant reductions in speed and increased community support. A before and after design was employed with a control (untreated) area to evaluate the safety outcomes of the trial. Speed limits were reduced to 30 km/h in the trial area for 12 months but kept at kept at the current 40 km/h (25 mph) limit in the control region. Vehicle speeds were measured at around 100 selected sites in the trial and control areas, and resident surveys were undertaken in both regions before and after the trial. The findings showed a small but modest reduction of 1.1% in average speed in the trial region but a surprising 2.7% in the control region. On further examination, significant reductions were observed in the percent of vehicles exceeding 40 km/h (25 mph) and 50 km/h (31 mph) in both the treated and control regions, but not at 30 km/h (19 mph). A regression analysis further showed a significant treatment effect of 11% at 40 km/h and 25% at 50 km/h when adjusting for differences between treated and controls. Among other findings, the survey results found increased support for the lower speed limit of 17% with little adverse consequences. The findings give support for the likely safety benefits of the 30 km/h trial with increased support from the residents. Speed reductions in the control region suggested a carry-over of the effects of the trial but also added support by local residents for reduced speed limits in the region. Potential injury savings were estimated at a 4% reduction in the risk of a pedestrian injury from the observed treatment effect in the trial region.

DOI: 10.1080/15389588.2021.1895990

Full text here

CANADA

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

Source: Accident Analysis & Prevention (February 2024)

Abstract: 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.

DOI: 10.1016/j.aap.2023.107379

Full text here.

19) Title: Edmonton Speed Limit Reduction Project

Source: Transportation Association of Canada (2022)

Abstract: In August 2021, Edmonton implemented a reduction in the default speed limit from 50 km/h to 40 km/h, with a focus on residential streets, the downtown core, and high pedestrian areas. A milestone achievement for Edmonton, the key principles behind the speed limit reduction are: 1. Safety takes priority over convenience. No matter how we travel, everyone, regardless of age, ability or income deserves to do so safely. 2. Consistency matters. Reducing driver confusion through consistent expectations must be prioritized to increase understanding and support the adoption of reduced speed limits. Outcomes Reducing speed limits gives people more time to react to the unexpected and not only reduces crashes and crash severity, but also makes streets calmer, quieter, and safer for all modes of travel. Lower speeds mean greater protection for our most vulnerable road users including pedestrians, cyclists, users of micro mobility, seniors and children. While the default speed limit was implemented on August 6, drivers were granted a grace period until August 31. During that time the City completed more than 1,400 hours of enforcement at locations where the speed limit had been reduced to 40 km/h. The results revealed that 77% of drivers were complying with the new speed limit. Moreover, on-going enforcement continues to result in high levels of compliance. Lower speeds translate into fewer crashes, injuries and fatalities on our streets. A preliminary analysis suggests the reduced speed limit could result in 20% fewer fatal crashes, a 10% reduction in injury crashes and a 7% drop in property damage crashes per year, along with a $2 - 12 million savings in related social and economic impacts.

Full text here.

20) Title: Effect of reducing the posted speed limit to 30 km per hour on pedestrian motor vehicle collisions in Toronto, Canada - a quasi experimental, pre-post study

Source: BMC Public Health (2020)

Abstract: The objective of this study was to examine the effect of lowering speed limits from 40 km/h to 30 km/h on PMVC (pedestrian motor vehicle collisions) on local roads in Toronto, Canada. Speed limit reductions from 40 km/h to 30 km/h were associated with a 28% decrease in the PMVC incidence rate in the City of Toronto (IRR = 0.72, 95% CI: 0.58–0.89). A non-significant 7% decrease in PMVC incidence rates were observed on comparator streets that remained at 40 km/h speed limits (IRR = 0.93, 95% CI: 0.70–1.25). Speed limit reduction also influenced injury severity, with a significant 67% decrease in major and fatal injuries in the post intervention period on streets with speed limit reductions (IRR = 0.33, 95% CI: 0.13–0.85) compared with a 31% not statistically significant decrease in major and fatal injuries on comparator streets (IRR = 0.69, 95% CI: 0.37–1.31). The interaction term for group and pre-post comparisons was not statistically significant (p = 0.14) indicating that there was no evidence to suggest a pre-post difference in IRRs between the intervention and comparator streets.

DOI: 10.1186/s12889-019-8139-5

Full text here.

21) Title: The Impact of Lowered Residential Speed Limits on Vehicle Speed Behavior

Source: Safety Science, vol. 62 (Feb. 2014)

Abstract: In 2010, the City of **Edmonton** reduced the posted speed limit (PSL) in six residential communities from 50 to 40 km/h. This study investigates the impact of the reduced PSL on vehicle speeds using a before-and-after experimental design with a control group adjustment. Continuous speed and traffic flow data was collected at 65

locations over a period of 7 months, with the first month representing the before period and the following 6 months representing the after period. Speed evaluation was performed on several levels, ranging from individual speed survey locations to an overall aggregate analysis. Several performance indicators, such as mean free-flow speed, speed variance, level of compliance, and percentile speed profile, were considered. The results revealed a statistically significant reduction in mean free-flow speed and speed variances for all combinations of time-of-day and day-of-week classifications. Though absolute compliance to the reduced PSL was low, compliance to a 15 km/h threshold above the PSL was significantly high. Moreover, the analysis showed that the effectiveness of the reduced PSL improved with time.

DOI: 10.1016/j.ssci.2013.10.006

Full text available upon request.

KOREA

22) Title: Evaluation of Direct and Indirect Safety Effects of Speed-Limit Reduction on Urban Networks

Source: Journal of Transportation Engineering, Part A: Systems (October 2022)

Abstract: This study develops a set of crash modification factors (CMFs) to **evaluate the effects of lowering urban-road speed limits in Korea on vehicle and pedestrian safety**. Cross-sectional methods and observation before–after methods are used to develop CMFs. In general, a CMF estimates the expected change in the frequency of crashes after specific countermeasures are applied on the road. In this study, the safety improvement effect in the section adjacent to the applied section as well as the section for which the policy to lower the speed limit was applied were evaluated. The results indicate that lowering the speed limit is effective in reducing the number of crashes. In particular, the CMFs for crashes involving serious injury and death are 0.6656–0.7804 in the application sections and 0.7979–0.8273 in the adjacent sections. This means that lowering the speed limit can reduce not only the number of crashes but also the occurrence of serious crashes. This study can be used to promote safety by analyzing the effect of the policy to lower the speed limits in the future and can be applied to the evaluation of the effectiveness of various safety policies in cities.

DOI: 10.1061/JTEPBS.0000724

Full text here.

23) Title: Do Speed Limit Reductions Help Road Safety? Lessons from the Republic of Korea's Recent Move to Lower Speed Limit on Urban Roads

Source: The World Bank (2021)

Abstract: The main aim of this study is to present the findings from Korea's reduced speed limits on safety performance and to support establishment of suitable speed-management strategies based on a quantitative data-driven approach. The scope of the project was as follows: (1) evaluate the effectiveness of the reduced speed limits in terms of crash reduction through a before-after study; (2) examine if the speed limit change had different effects across different crash types, user types, and crash severities; (3) evaluate the impact of speed limit change on transit speed through a before-after assessment; and (4) develop appropriate and actionable recommendations for departments of transportation in developing countries.

Full text here.

NEW ZEALAND

24) Title: Approaches to managing speed in New Zealand's Capital

Source: Journal of Road Safety (vol. 34, no. 1; 2023)

Abstract: This study assessed nine speed management options using cost benefit analysis. **Citywide permanent speed reduction was most effective for reducing road crash-related injuries, but benefits were outweighed by**

travel time disbenefits. The option with 30 km/h speed limit for local streets and 40 km/h for arterial streets had the highest crash reduction benefits of over NZD $250 million discounted over 40 years, followed by the option of 30 km/h default citywide, albeit with the high construction costs and relatively high vehicle travel time disbenefits. Incremental cost benefit calculations indicated that the most efficient options were permanent speed reductions near schools. Implementing variable speed limits around schools provided the lowest benefits and very low value for money compared to citywide speed management approaches or permanently reduced speed around schools.

DOI: 10.33492/JRS-D-22-00047

Full text here.

SPAIN

25) Title: Why is necessary to reduce the speed in urban areas to 30 Km/h?

Source: Transportation Research Procedia (2021)

Abstract: In Spain, on November 2020, a new law imposed that the generic speed limit on single carriageway two-lane roads is reduced from 50 km/h to 30 km/h. Pedestrian mobility is becoming more and more important every day but the number of pedestrians that died inside Spanish urban areas in road accidents is almost 50% of total urban areas road fatalities. In this sense, the mobility and road safety policies developed by local administrations have to focus on the objective of the reduction of accidents and their severity involving pedestrians and other vulnerable users in urban areas. This article collects studies and experiences in other countries that show the effects of reducing the speed of motor vehicles in urban areas in order to reduce accidents and/or their severity if they occur. It also analyzes other options that reinforce this measure and that could help reduce this problem.

DOI: 10.1016/j.trpro.2021.11.029

Full text here.

SWEDEN

26) Title: The Effect of Speed Limit Reductions in Urban Areas on Cyclists' Injuries in Collisions with Cars

Source: Traffic Injury Prevention (2019)

Abstract: To reduce injury severity (especially for vulnerable road users), **since 2008, Swedish municipalities have the authority to lower the speed limit to 30 or 40 km/h in urban areas as appropriate.** The aim of this study was to evaluate how this speed limit reduction has influenced the injury severity for cyclists in this type of collision. Data from 1,953 collisions between bicycles and passenger cars were collected using information from third-party-liability insurance claims from 2005 to 2017. The change of speed limit distribution, influenced by the reduction of speed limits in urban areas, where car-to-cyclist collisions occurred was studied. Following that, injury severity for cyclists was evaluated regarding collisions occurring in areas with different speed limits. The results show that, in collisions with cars, cyclists have a significantly lower risk of a moderate-to-fatal (MAIS 2+) injury when the speed limit is 30–40 km/h compared to 50–60 km/h. During the last decade, while the speed-limit has been lowered on many road-sections in urban areas from 50–60 km/h to 30–40 km/h the risk of a cyclist getting a MAIS 2+ injury decreased by 25%. In 2005 to 2011, 16% of the crashes happened on a road with a speed limit of 30–40 km/h; in 2016–2017, this percentage had increased to approximately 50%. Thus, in recent years more crashes occurred on roads with lower speed limits, and in these crashes, there was a lower risk of severe injuries to cyclists.

DOI: 10.1080/15389588.2019.1680836

Full text available upon request.

27) Title: Impact of Speed Limits and Road Characteristics on Free-Flow Speed in Urban Areas

Source: Journal of Transportation Engineering (February 2016)

Abstract: The paper documents studies of posted speed limit (PSL) changes on the free-flow speed on urban roads. Before and after field measurements were conducted, changing the existing PSL from 50 to 40 or 60 km/h. The analysis was conducted on the mean free-flow speed difference and speed variability. The data collected were also used for multiple regression analysis, including PSL changes and selected self-explaining road characteristics. The results showed that a decreased PSL caused a small (1.6 km/h) but significant reduction in the mean free-flow speed and speed variance, which might lead to a 10% reduction of severe injury accidents. Furthermore, the PSL reduction had a larger impact on faster drivers and higher road network classes. Conversely, an increased PSL resulted in a 2.6 km/h increase in the mean free-flow speed but no change on speed variability. The regression results indicated that the free-flow speed was heavily influenced by road characteristics, such as carriageway width, road environments, and the presence of on-street parking and sidewalks. Arterial roads presented the largest impact. The PSL had a relatively small impact.

DOI: 10.1061/(ASCE)TE.1943-5436.0000800

Full text here.

UNITED KINGDOM

28) Title: Investigating the impact of a 20 miles per hour speed limit intervention on road traffic collisions, casualties, speed and volume in Belfast, UK: 3 year follow-up outcomes of a natural experiment

Source: J Epidemiol Community Health (2023)

Abstract: We investigate the effect of a 20 mph speed limit intervention on road traffic collisions, casualties, speed and volume at 1 and 3 years post-implementation… Small reductions in road traffic collisions were observed at year 1 (3%; p=0.82) and year 3 post-implementation (15%; p=0.31) at the intervention site. Difference-in-differences analyses showed no statistically significant differences between the intervention and control sites over time for road traffic collisions. There were 16% (p=0.18) and 22% (p=0.06) reductions in casualty rates at years 1 and 3 post-implementation, respectively, at the intervention site. Results showed little change in mean traffic speed at year 1 (0.2 mph, 95% CI −0.3 to 2.4, p=0.14) and year 3 post-implementation (0.8, 95% CI −1.5 to 2.5, p=0.17). For traffic volume, a decrease in 57 vehicles per week was observed at year 1 (95% CI –162 to −14, p<0.00) and 71 vehicles at year 3 (95% CI −213 to 1, p=0.05) post-implementation. A 20 mph speed limit intervention implemented at city centre scale had little impact on long-term outcomes including road traffic collisions, casualties and speed, except for a reduction in traffic volume. Policymakers considering implementing 20 mph speed limit interventions should consider the fidelity, context and scale of implementation.

DOI: 10.1136/jech-2022-219729

Full text here

29) Title: Evaluating the citywide Edinburgh 20mph speed limit intervention effects on traffic speed and volume: A pre-post observational evaluation

Source: PLoS One (vol. 16, no. 12; December 2021)

Abstract: This study describes the changes in traffic speed and traffic volume in the City of Edinburgh, pre- and 12 months post-implementation of phased city-wide 20mph speed limits from 2016-2018. The City of Edinburgh Council collected speed and volume data across one full week (24 hours a day) pre- and post-20mph speed limits for 66 streets. The pre- and post-speed limit intervention data were compared using measures of central tendency, dispersion, and basic t-tests. The changes were assessed at different aggregations and evaluated for statistical significance (alpha = 0.05). A mixed effects model was used to model speed reduction, in the presence of key variables such as baseline traffic speed and time of day. City-wide, a statistically significant reduction in mean speed of 1.34mph (95% CI 0.95 to 1.72) was observed at 12 months post-implementation, representing a

5.7% reduction. Reductions in speed were observed throughout the day and across the week, and larger reductions in speed were observed on roads with higher initial speeds. Mean 7-day volume of traffic was found to be lower by 86 vehicles (95% CI: -112 to 286) representing a reduction of 2.4% across the city of Edinburgh (p = 0.39) but with the direction of effect uncertain. The implementation of the city-wide 20mph speed limit intervention was associated with meaningful reductions in traffic speeds but not volume.

DOI: 10.1371/journal.pone.0261383

Full text here.

30) Title: Use of natural experimental studies to evaluate 20mph speed limits in two major UK cities

Source: Journal of Transport & Health (September 2021)

Abstract: In 2016, implementation of 20mph (30kph) speed limit interventions began in Edinburgh (city-wide) and Belfast (city centre). The aims of this paper are to describe 1) the broad theoretical approach and design of two natural experimental studies to evaluate the 20mph speed limits in Edinburgh and Belfast and 2) how these studies allowed us to test and explore theoretical mechanisms of 20mph speed limit interventions. The evaluation identified many contextual factors influencing the likelihood of 20mph speed limits reaching the political agenda. There were substantial differences between the two sites in several aspects related to implementation. Reductions in speed resulted in significant reductions in collisions and casualties, particularly in Edinburgh, which had higher average speed at baseline.

DOI: 10.1016/j.jth.2021.101141

Full text here.

31) Title: Effects of city-wide 20 mph (30km/hour) speed limits on road injuries in Bristol, UK

Source: Injury Prevention (July 2019)

Abstract: Twenty miles per hour (32 km/hour) or 30 km/hour speed limits represent a potential strategy to reduce urban road injuries and are becoming increasingly widespread. However, no study has conducted a robust evaluation of the effects of city-wide 20 mph speed limits on road injuries. This study reports the effects of such an intervention, based on a natural experiment that took place in Bristol, UK. Based on a stepped-wedge design using count data, negative binomial regressions showed that between 2008 and 2016, the 20 mph speed limit intervention was associated with a city-level reduction of fatal injuries of around 63% (95% CI 2% to 86%), controlling for trends over time and areas. There was also a general trend of reduction of the total number of injuries at city level and in 20 mph roads. These findings highlight the potential benefits of city-wide 20 mph speed limits. We hypothesise that this city-wide approach may encourage a general behaviour change in drivers that, in turn, may contribute to reducing injuries across the city.

DOI: 10.1136/injuryprev-2019-043305

Full text here.

Same authors published the study above

32) Title: The effectiveness of a 20 mph speed limit intervention on vehicle speeds in Bristol, UK: A non-randomised stepped wedge design

Source: Journal of Transport & Health (December 2018)

Abstract: Twenty mph (32.2 km/h) speed limits across urban areas are becoming a widespread tool for public health and road danger reduction globally. Determining the effectiveness of these interventions on motorised vehicle speeds is a crucial first step in any logic model that seeks to associate 20 mph speed limits to improved health and wellbeing outcomes. However, little is known about how the introduction of 20 mph limits affects speeds. This paper presents the findings from a novel comprehensive academic evaluation of the adjusted effects

of a 20 mph sign-only city-wide intervention on vehicle speeds. This is based on a natural experiment that took place in Bristol, UK. Applying a quasi-stepped wedge design, speeds of 36,973,090 single vehicles, recorded by Automatic Traffic Counts before and after the 20 mph intervention, were analysed. Generalized linear mixed models were used to control for confounding variables. Results showed an unadjusted speed reduction of 4.7 mph (7.56 km/h) and an adjusted speed reduction of 2.66 mph (4.28 km/h) over two to three years. Some variability due to time variables was detected, with speed reductions being larger during night time, at weekends, and in summer months. The roads that did not receive the 20 mph intervention also saw a small reduction in speed (0.03 mph). The findings indicate that the sign-only 20 mph intervention was successful in lowering individual vehicle speeds. Policy makers are encouraged to implement a careful monitoring of the effects of 20 mph speed limit interventions on vehicle speeds in order to enable a meaningful evaluation of potential public health benefits.

DOI: 10.1016/j.jth.2018.09.009

Full text available upon request.

Similar to study above

33) Title: The Bristol Twenty Miles per Hour Limit Evaluation (BRITE) study

Source: University of the West of England (2018)

Abstract: This study aimed to **evaluate the impact of the roll-out of 20mph speed limits across the city of Bristol**. The research took a holistic, public health approach to evaluation, using a variety of data sources to examine changes in vehicle speeds, road traffic casualties, levels of walking and cycling, public perceptions and attitudes, and reported levels of health and wellbeing across the city. The study found statistically significant reductions in average traffic speeds of 2.7mph across the city of Bristol, following the introduction of 20mph speed limits. This is a larger reduction than seen in previous evaluations in other cities. The study employed a more sophisticated analysis than previous studies of 20mph limits, including using individual speed data from over 36 million vehicle observations and controlling for other factors that might affect changes in traffic speeds. There has been a reduction in the number of fatal, serious and slight injuries from road traffic collisions, equating to estimated cost savings of over £15 million per year. Although there is still majority support for 20mph speed limits in Bristol, there remains concern about compliance and behaviour of other drivers. Walking and cycling across Bristol has increased, both among children travelling to school and adults travelling to work. The introduction of 20mph speed limits in Bristol offers a model for other towns and cities across the UK, who are seeking to reduce traffic speeds, cut road traffic casualties, and promote community health and wellbeing through road danger reduction. In order to assess effectiveness of 20mph speed limits, it is vital that other towns and cities follow Bristol's example, and prioritise the ongoing collection and analysis of appropriate data on vehicle speeds, road traffic casualties and wider public health impacts.

Full text here.

EUROPEAN STUDY

34) Title: Review of City-Wide 30 km/h Speed Limit Benefits in Europe

Source: Sustainability (May 2024)

Abstract: To date, more and more European cities are systematically working to expand the proportion of their street network with a speed limit of 30 km/h. This paper endeavored to assess the effectiveness of city-wide 30 km/h speed limits in Europe. In an effort to condense research outputs, a quantitative approach along with qualitative assessments were implemented. This study described the changes in safety, environment, energy, traffic, livability, and health before and after the phased implementation of city-wide 30 km/h speed limits. The systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines. Results from 40 different cities across Europe, including Brussels, Paris, and Zurich, indicated that reductions in speed limits improved road safety by decreasing the likelihood of crash risk and the severity of crashes that do occur. On average, the implementation of 30 km/h speed limits in European cities

demonstrated a 23%, 37%, and 38% reduction in road crashes, fatalities, and injuries, respectively. Lower speed limits also yielded environmental benefits, with emissions decreasing on average by 18%, noise pollution levels by 2.5 dB, and fuel consumption by 7%, indicating enhanced fuel efficiency and reduced environmental impact. Encouraging citizens to embrace walking, cycling and utilizing public transit services can further contribute to a safer and environmentally sustainable urban environment.

DOI: 10.3390/su16114382

Full text here.

Appendix C: Follow Up Survey Results

Follow Up Survey Results

City	Citywide Speed Limit Change	Specific Corridor Speed Limit Change	Date Enacted	Types of Roads Impacted	Speeds Chosen	Signing Practice	City-led evaluation of speeds or crashes?	Methodology for determining speeds?
Arden Hills	✓		February 2023	All city jurisdiction streets	25 mph	Gateway signing placed at city borders. ("25 mph citywide unless otherwise posted")		Collector type streets were reviewed and suggested to remain the same speed or at least slightly higher than 25 MPH but ultimately the city council decided to make all city jurisdiction streets 25 MPH regardless of type. Roadway design characteristics and volume were used as data to select new speed limit.
Bloomington	✓	✓	August 2024	Local Streets	25 mph	Gateway signing placed at city borders. ("25 mph citywide unless otherwise posted")	Evaluated speeds before change	Process generally followed traffic engineering guidelines for setting and changing speed limits. Key factors were: 85th Percentile speed, presence of non-motorized users (pedestrian and bicyclists), Surrounding land use, roadway classification.
Brooklyn Park		✓	2021	Specific roads	Varies		High-level look at before and after speeds on affected roads	Followed out approved Speed Limit Setting Policy. Conducted speed studies of all city owned major collectors and arterials. 50th percentile speed was used as factor.
Columbus	✓		2022	Specific roads	30 mph for gravel and residential, 40-45 mph for corridor roads	All signed		Hired engineering firm to write policy, based on density criteria and if it's a corridor road. Discussions between professional staff and city council. Gravel road condition was used as factor.
Excelsior	✓		June 2021	All roads	25 mph	Gateway signing placed at city borders. ("25 mph citywide unless otherwise posted")		The City of Excelsior will address speed limit related concerns based upon guidelines from Minnesota Statutes, Minnesota Department of Transportation (MnDOT) policies, Minnesota Manual on Uniform Traffic Control Devices (MnMUTCD), and engineering judgement. Road design characteristics, volume, speeds, and existing limits used as factors.
Falcon Heights	✓	✓	October 2021	All city owned streets	20 mph unless otherwise posted	Posted speed limit at city borders	Evaluated speeds before change	Falcon Heights speed limits goals intend to create safe streets for all roadway users including, walkers, bikers, transit users and drivers. The City wished to duplicate efforts done by the City of St Paul to reduce speed limits on local streets to 20 mph. Since numerous local streets are shared by the two cities and some neighborhoods (University Grove, Northome) are directly connected, it made sense to have similar speed limit criteria for consistency within the area. Volume, speeds, functional class, and ownership were used as factors.
Greenfield	✓	✓	March 2023	Local streets	30 except collectors (40 to 45 MPT) and Urban residential (25 MPH)	Every location entering off a collector or county road	Factored in 85th percentile speed data and access/driveway spacing	Engineering guidelines based on volumes, pedestrians, street widths, functional classification, number of accesses per mile. Compiled into a matrix to match with existing and future streets
Hermantown		✓	2021	Specific roads	30 mph	Sign posted on both ends		Unofficial petition from nearby residents. City Council tasked police, PW director, and David to review. Vertical curves on corridor are very sharp.
Mahtomedi	✓		May 2021	Local and collector streets	20 mph on Local and 25 mph on Collectors	Signage on all street entrances into the city along with other signage throughout the city		Desire from constituents in addition safety benefits while maintaining vehicle circulation.

City	Citywide Speed Limit Change	Specific Corridor Speed Limit Change	Date Enacted	Types of Roads Impacted	Speeds Chosen	Signing Practice	City-led evaluation of speeds or crashes?	Methodology for determining speeds?
Maple Grove		✓	June 2021	Specific roads	30 mph	Sign posted on both ends		On non-residential city streets, the methodology was adapted from The Methods and Practices for Setting Speed Limits: An Informational Report published by the federal highway administration (April 2012). Prevailing speeds (85th percentile, upper limit of 10 mph pace, and average speed), crashes, access control, pedestrian activity, and parking were used as factors for selecting new speed limit.
Minneapolis	✓		November 2020	All streets under City jurisdiction	20 mph unless otherwise posted	Gateway Signing for entrances to City, speed limit signs for roadways over 20 MPH, signing on 20 MPH roadways at transition points.		Was guided by our Vision Zero plan, we based our approach on a safe systems approach focusing on promoting safety, especially for our most vulnerable road users. We did extensive research on technical analysis, emerging best safety practices, and emerging guidance, including guidance from NACTO. We also significantly focused our work to the context of the Minneapolis urban environment. Page 3 of the Evaluation report spells this out in more detail. Roadway classification was used as a factor.
New Brighton	✓		2022	All city roads	25 mph	All 30 mph signs changed to 25 mph, added 19 new signs that indicated 25 mph City Wide, unless otherwise posted		
Oak Park Heights	✓		2024	Residential	25 mph	In/out of the neighborhood and signs posted midblock		The City had the authority to change the speed limit in residential areas without a traffic study. Based on resident's request to lower the speed limit , the City Council opted to do so.
Ostego	✓	✓	April 2022	Local Street	25 mph	Every location entering off a collector or a county road	Factored in 85th percentile speed data and access/driveway spacing	Engineering guidelines based on volumes, pedestrians, street widths, function classification, # of access per mile. Compiled into a matrix to match with existing and future streets
Plymouth		✓	2023	Specific roads	Varies			Reconstruction with current design speed design standards.
Richfield	✓		August 2024	Local residential roads, collectors	25 mph	City boundary "gateway" signage on major roadways, roughly ½ mile spacing on all arterial and collector roads, signs placed on far side of all collector/arterial and collector/collector intersections, signs strategically placed on roads near schools.		Referenced various methodologies, including FHWA USLIMITS, NTSB studies, NACTO guidance, MN LRRB reports, and UofM studies. Detailed information can be found in the attached study. Crash history, existing speeds, number of lanes, presence of sidewalks and bike facilities, land use, and access density were used as factors.
Rochester	✓		December 2020	All streets	25 mph (20 mph on new streets)	Added gateway signage at strategic locations at city limits, coming off county road or state highway.		We used a Safe System Approach. Guidance from NTSB, MUTCD, NACTO, USLIMITS, and NCHRB was used.
St Anthony	✓		June 2020	All non-county Roads in the city. Primarily residential interiors	25 mph	New signs were placed in the same locations as previous signs and added as necessary. Also gateway signs add at all major entrances into the city.		Lower speed limits are in line with national trends toward lower urban speed limits to support safety. The new speed limit is more consistent with our neighboring city of Minneapolis.

City	Citywide Speed Limit Change	Specific Corridor Speed Limit Change	Date Enacted	Types of Roads Impacted	Speeds Chosen	Signing Practice	City-led evaluation of speeds or crashes?	Methodology for determining speeds?
St Joseph		✓	September 2020	Specific roads	30 mph	Posted speed limit on road		MN Statute 169 definitions for speed limit zones. Road design, land use, and pedestrian facilities used as factor in selecting new speed limit.
St Louis Park	✓		December 2021	All city owned roadways	20 mph	The city provided "gateway" signage that stated 20 MPH unless posted otherwise. Speed limit signs are posted on roads that are not 20 MPH	High level review of crash data, crashes dropped by 25% for treated roads and untreated roads. Completed LRRB study for before-and-after analysis for speeds	
St Paul	✓	✓	2020	Primarily applies to local residential streets	20 mph	Gateway signage for the citywide speed limit. Also, we regularly post speed limit signage for all roadways that have a speed limit different from the citywide speed limit.	Technical evaluation prior to making speed limit change. Have yet to complete after study.	Evaluation report developed. Vehicle speeds, land use, pedestrian and bicycle facilities, and crash data used as factors in selecting new speed limit.
White Bear Lake		✓	April 2021	Specific roads	25 mph	Revised speed limit was posted along the affected corridor at all intersections. Warning flags used for first few months to alert motorists of the change.	High-level look at before and after speeds on affected roads. No change in speeds.	Was done as part of an Automated Vehicle Pilot Program. NHTSA required no more than a 10mph difference between the top speed of the AV (15mph) and posted speed limit giving a 25mph speed limit.