This Case Study is part of the Safe System Approach for Speed Management Report: **Click here to read the full report here**.

Case Study A.7. Seattle Systemic Speed Limit Reduction—Seattle, Washington, USA

Key Successes

The Seattle Department of Transportation (SDOT) implemented a systemic speed limit reduction program by modifying existing speed limit signs and by increasing speed limit sign density (**Figure 14**). Overall, the impacts of speed limit reductions on speed and safety in Seattle include the following:

- A 22 percent reduction in all crashes and an 18 percent reduction in injury crashes
- A 10 percent reduction in 50th percentile speeds and a 7 percent reduction in 85th percentile speeds
- A 54 percent reduction in the number of vehicles traveling at 40 mph or faster

Source: City of Seattle (2020). 35th Avenue SW Road Safety Corridor Project.

Figure 14. New speed limit sign on Greenwood/Phinney Avenue North.

The Safe System Approach Highlights

- **Death/serious injury is unacceptable:** The city adopted a Vision Zero Plan in 2015 to eliminate deaths and serious injuries by 2030.
- **Humans make mistakes/humans are vulnerable:** Reduction of speeds lower the impact forces during a crash, which lowers the crash severity.
- **Responsibility is shared:** The speed limit reduction program involves the city and external agency partners.

- **Safety is proactive:** The implementation of the speed limit program is systemic, including all arterial streets in the city.
- **Redundancy is crucial:** Prior to the systemic reduction on speed limits, the city implemented engineering (street redesign, signal timing changes) and enforcement speed reduction measures.

Background

One of the key elements of the City of Seattle's Vision Zero program is reducing vehicular travel speeds to lower the risk of a fatal or serious injury crash.[1] Prior to setting target speeds citywide, the city implemented pilot projects. The Safe System Approach in Seattle emphasizes engineering measures to support the lower speed limits. The chronological development of Seattle's efforts to reduce vehicular speeds is summarized below:

- **Street design:** In 2015, the city redesigned several streets by converting them from four-lane to three-lane roads. Examples included Rainier Avenue South and 35th Avenue SW.[2, 3] Rainier Avenue South was one of the first corridors where the city piloted the USLIMITS2 speed limit setting approach to set the speed limit to 25 mph.[4]
- **Signal timing:** In 2016, the city retimed the downtown traffic signals and set the speed limit to 25 mph.
- **City Municipal Code:** In 2016, Seattle went through the process of revising the Seattle Municipal Code to lower the default arterial and non-arterial speed limits to 25 mph and 20 mph, respectively (from 30 mph and 25 mph).[5]
- **Urban Villages:** In 2018 and 2019, the city shifted its focus to urban villages, where 80 percent of crashes involved pedestrians.[6] A 25 mph speed limit was established for streets within the urban villages, and a speed limit sign-spacing standard was developed. The 25 mph speed limit was based on operating speeds (to prioritize buses and people walking or biking; buses operate at 25 mph) and the USLIMITS2 (50th percentile speed). After completing efforts for several urban villages and collecting data, a justification for target speeds was formed.
- **Speed limit policy:** From 2020 to 2021, the city developed a new speed limit policy and placed speed limit signs on every arterial street. Approximately 90 percent of Seattle's arterial network has a posted speed limit of 25 mph.

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1 City of Seattle. (2015). *Vision Zero: Seattle's Plan to end Traffic Deaths and Serious Injuries by 2030*. Retrieved from http://www.seattle.gov/documents/Departments/beSuperSafe/VisionZeroPlan.pdf.

2 City of Seattle (2022). "Rainier Improvements." Retrieved from https://www.seattle.gov/visionzero/projects/rainier-ave-s.

3 City of Seattle. (2020). "35th Avenue SW Road Safety Corridor Project." Retrieved from http://www.seattle.gov/ visionzero/projects/35th-ave-sw.

4 Federal Highway Administration. (2020). *USLIMITS2: Tool to Aid Practitioners in Determining Appropriate Speed Limit Recommendations*. Retrieved from https://safety.fhwa.dot.gov/uslimits/.

5 City of Seattle. (2016). *Seattle Municipal Code*. Retrieved from https://library.municode.com/wa/seattle/codes/municipal_code.

6 City of Seattle (2022). *Seattle Geo Data: Urban Centers, Villages, Manufacturing Industrial Centers*. Retrieved from https://data-seattlecitygis.opendata.arcgis.com/datasets/urban-centers-villages-manufacturing-industrial-centers/explore?location=47.620656%2C-122.335550%2C12.00.

- **Ongoing effort:** The city's speed limit reduction work is ongoing, and it continually evaluates all arterial streets and reduces speed limits where appropriate. This is a collaborative process that involves the city and external agency partners.

Implementation

As part of the city's efforts to reduce vehicular speeds in Seattle, SDOT implemented a speed limit reduction by modified signage. SDOT did not market the speed limit reduction changes through a communications campaign, did not increase enforcement, or make any other engineering adjustments to the street design, geometry, or signal timing (any changes were made prior to the speed limit signage modifications). By removing these variables, SDOT was able to review the safety and speed impacts of two specific changes: speed limit signs with a new reduced speed and increased speed limit sign density.

Before speed limit reduction implementation efforts, locations had 30 mph signs with sign spacing ranging from 1 to 1.5 miles in each direction or they were unsigned (with a default 25 mph speed limit). After implementation, all locations included new 25 mph signs spaced at 0.25 mile intervals in each direction. A before-after study was conducted at individual corridors and urban centers/villages in 2020 to evaluate the impact of reducing speed limits on speeds and safety, as summarized in **Table 9**.[7]

[7] Seattle Department of Transportation. (2020). *Speed Limit Case Studies*. Retrieved from http:// www.seattle.gov/documents/Departments/SDOT/VisionZero/SpeedLimit_CaseStudies_Report.pdf.

Table 9. Speed limit evaluation data collection in Seattle.

Street	Study Area Type	ADT (veh/ day)	Previous Speed Limit (mph)	Previous Speed Limit Sign Spacing (mi)	Implementation
Greenwood/ Phinney Ave N	1.3 mi corridor	13,000	30	1	Replaced existing 30 mph speed limit signs with 25 mph signs and installed new 25 mph signs at .25 mile spacing
NW/N 85th St	1.9 mi corridor	19,000	25	Unsigned	Installed new 25 mph signs at .25 mile spacing
N/NE 45th St	2.2 mi corridor	22,500	25	Unsigned	Installed new 25 mph signs at .25 mile spacing
Green Lake/ Roosevelt Urban Village	Urban Village	N/A	30 and 25	Segments with 30 mph speed: 1.5- mi; segments with 25 mph speed limit: unsigned	Installed new 25 mph signs at .25 mile spacing
U-District Urban Center	Urban Village	N/A	30 and 25	Segments with 30 mph speed: 1.5- mi; segments with 25 mph speed limit: unsigned	Installed new 25 mph signs at .25 mile spacing

Source: City of Seattle, Seattle Department of Transportation Speed Limit Case Studies. Retrieved from http://www.seattle.gov/documents/Departments/SDOT/VisionZero/SpeedLimit_CaseStudies_Report.pdf.

Outcomes

For each study area included in the before-after analysis, speed limit reduction in Seattle resulted in the speed and safety outcomes shown in **Table 10**:

Table 10. Outcomes of speed limit reductions in Seattle.

Street	All Crashes	Injury Crashes	50th Percentile Speed	85th Percentile Speed	Number of Vehicles Traveling at 40 mph or Greater
Greenwood/ Phinney Ave N	-35%	-21%	-7%	-7%	-64%
NW/N 85th St	-39%	-31%	-3%	-1%	-45%
N/NE 45th St	-14%	-11%	-25%	-12%	-66%
Green Lake/ Roosevelt Urban Village	-24%	-13%	-2%	-4%	-47%
U-District Urban Center	-18%	-18%	-15%	-9%	-66%
OVERALL	**-22%**	**-18%**	**-10%**	**-7%**	**-54%**

Source: City of Seattle, Seattle Department of Transportation Speed Limit Case Studies. Retrieved from http://www.seattle.gov/documents/Departments/SDOT/VisionZero/SpeedLimit_CaseStudies_Report.pdf.

Further, the city reported that target speeds set up the framework for all new projects to design to the new lower speed limit, influencing speeds before the projects go into construction.

Additional Information

The estimated cost to install speed limit signs in Seattle is $4,000 to $5,000 per mile and includes design, materials, and labor. For further information, contact James Le, SDOT Vision Zero/Proj- ect Development Division Senior Civil Engineer, at James.Le@seattle.gov.