



Pedestrian and Bicycle Information Center

Global Benchmarking Webinar Series:
Improving Pedestrian Safety on Urban Arterials (Part 4)

Speed Management Policies and Practices

Mark Cole Virginia Department of Transportation
Anna Bray Sharpin Waka Kotahi New Zealand Transport Agency
Lee Austin City of Austin
Anyesha Mookherjee Federal Highway Administration

Housekeeping

- ⇒ **Submit your questions**
- ⇒ **Webinar archive: www.pedbikeinfo.org/webinars**
- ⇒ **Certificates and professional development hours**
- ⇒ **Follow-up email later today**
- ⇒ **Review previous episodes and sign up for upcoming sessions**

Improving Pedestrian Safety on Urban Arterials

Part 1 Sept 25, 2023
**Introduction and Overview
of Study Findings**

Part 2 Oct 2, 2023
**The Movement and Place
Framework**

Part 3 Oct 23, 2023
**Safe System Approach to
Road Safety Audits**

Part 4 Nov 7, 2023
**Speed Management
Policies and Practices**

Improving Pedestrian Safety on Urban Arterials: Learning from Australasia

U.S. DOT Federal Highway Administration
Office of International Programs
October 2023



Source: USDOT/Getty



Study Team Overview



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Special Guest... from tomorrow morning!



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in coordination with:



Te Kāwanatanga o Aotearoa
New Zealand Government



U.S. Department of Transportation
Federal Highway Administration
Office of International Programs

Special Guest... from FHWA Office of Safety



Anyesha Mookherjee

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U.S. Department of Transportation
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Available Reports



Global Benchmarking Program:

Reducing Pedestrian Fatalities and Serious Injuries on Urban Signalized Arterials



U.S. Department of Transportation
Federal Highway Administration

Office of International Programs
FHWA-PL-22-020

September 2022



Improving Pedestrian Safety on Urban Arterials: Learning from Australasia

FINAL REPORT
June, 2023

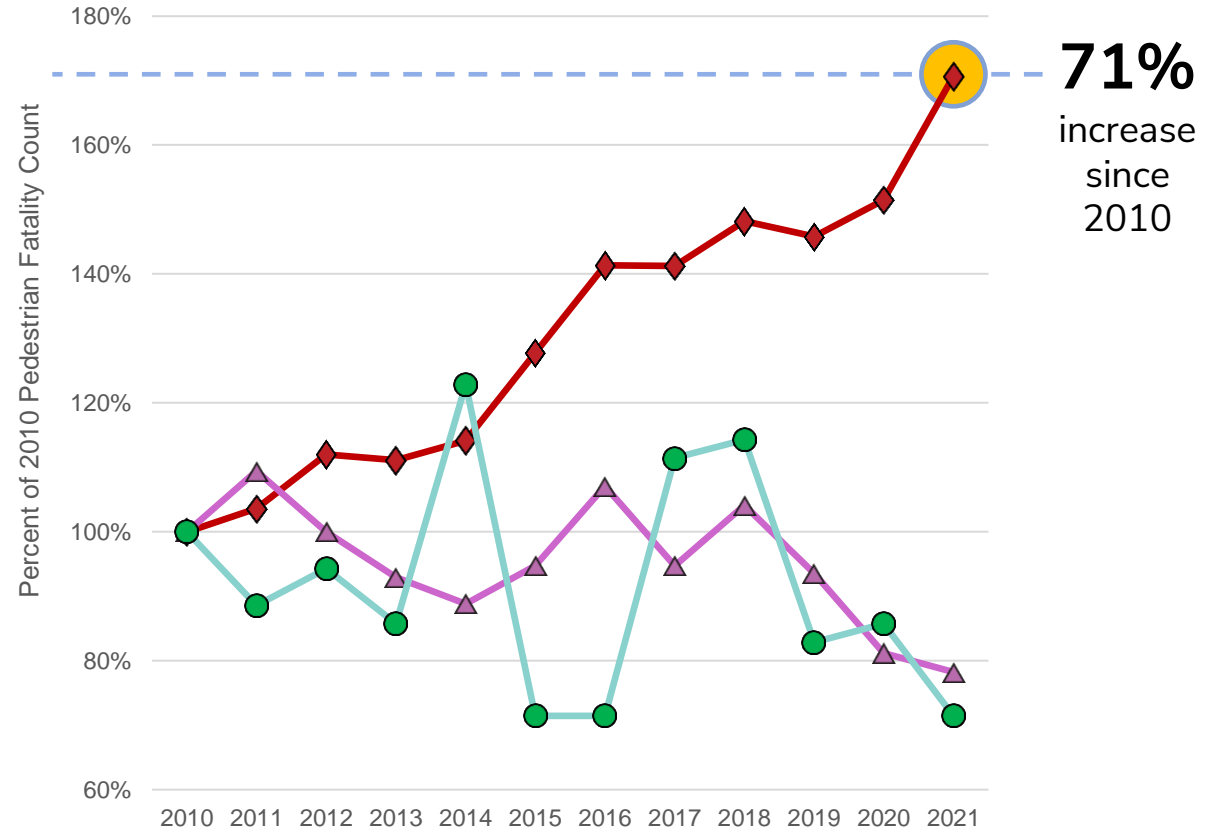
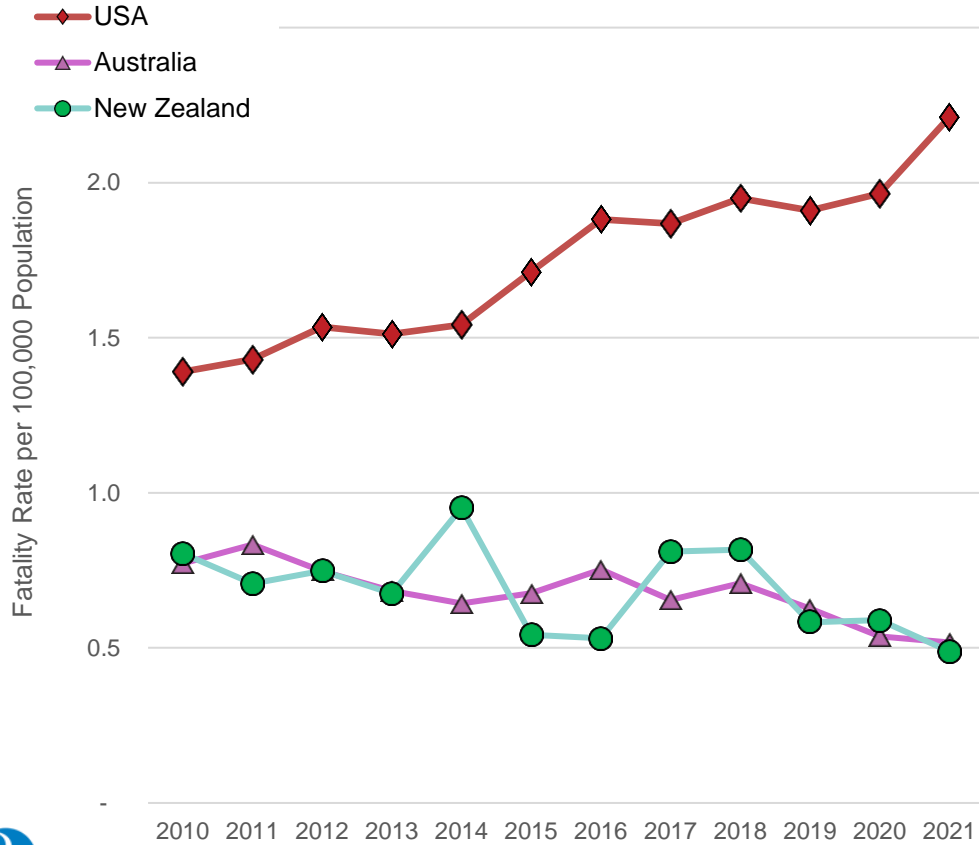


U.S. Department of Transportation
Federal Highway Administration

FHWA Global Benchmarking Program
RPT No. FHWA-PL-23-006



Pedestrian Fatality Trends 2010 – 2021



The Problem with Stroads



52%

of all fatal crashes

60%

of fatal pedestrian crashes

occurred on

**principal & minor
arterials**

in 2021



U.S. Department of Transportation

Federal Highway Administration

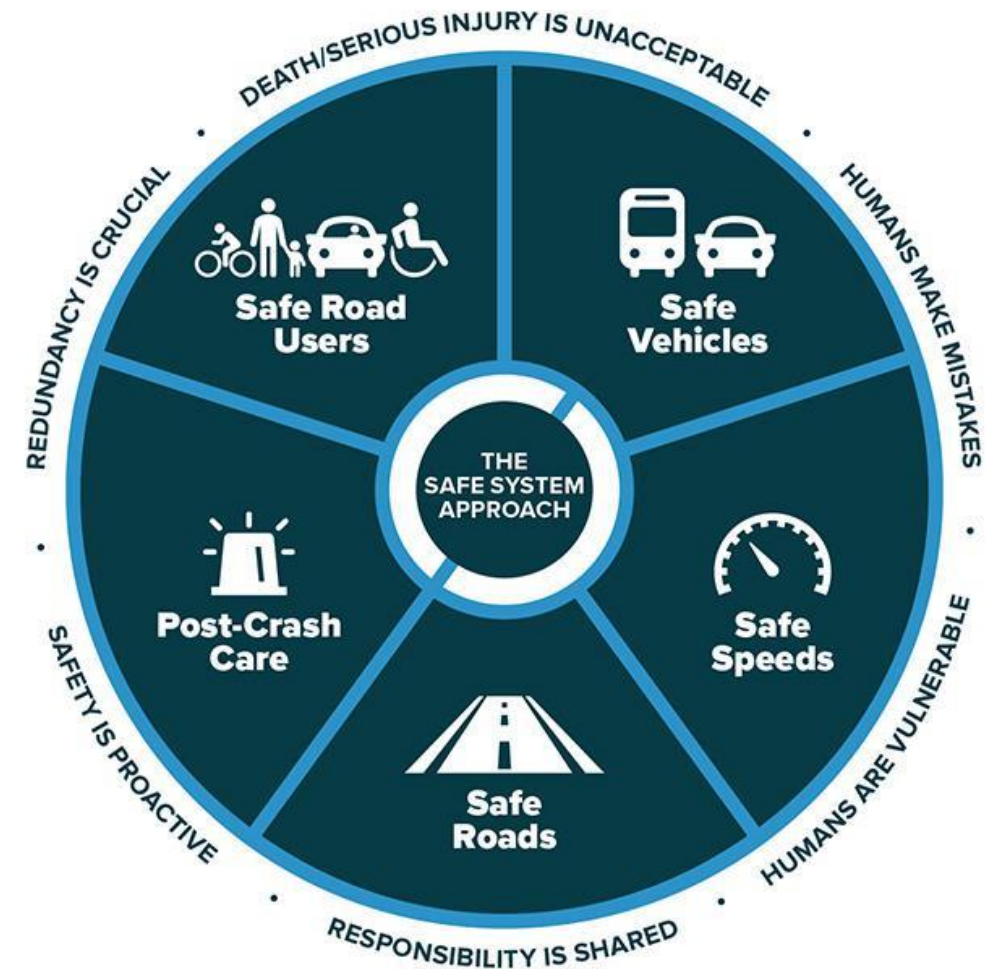
Office of International Programs

Source: FHWA

The WHAT: Core Factors to Improve Safety



- **Reduce vehicle speed to mitigate kinetic energy**
using geometric design and operational strategies, including emerging technologies like camera enforcement
- **Separate vulnerable road users from motorized vehicles in time and space**
when vehicle speeds exceed survivable levels
- **Design roads and streets to suit their desired context**
considering future land use, as well as economic, climate, public health, and equity goals



Takeaways



1. **Pedestrian Safety is Foundational for Wellbeing and Livability**
2. **Holistic Policy Goals** — climate change, inclusivity, resilience, public health, as well as safety, freight, economic growth and access to opportunity, and travel options.
3. **Planning, Programming, and Designing for Context** — Movement and Place are an Interconnected System
4. **Interdisciplinary Integration** — Road Safety Audit as a Process and Systemic Speed Management

Movement & Place

Linking land use and transportation through context classification

Road Safety Audit Process

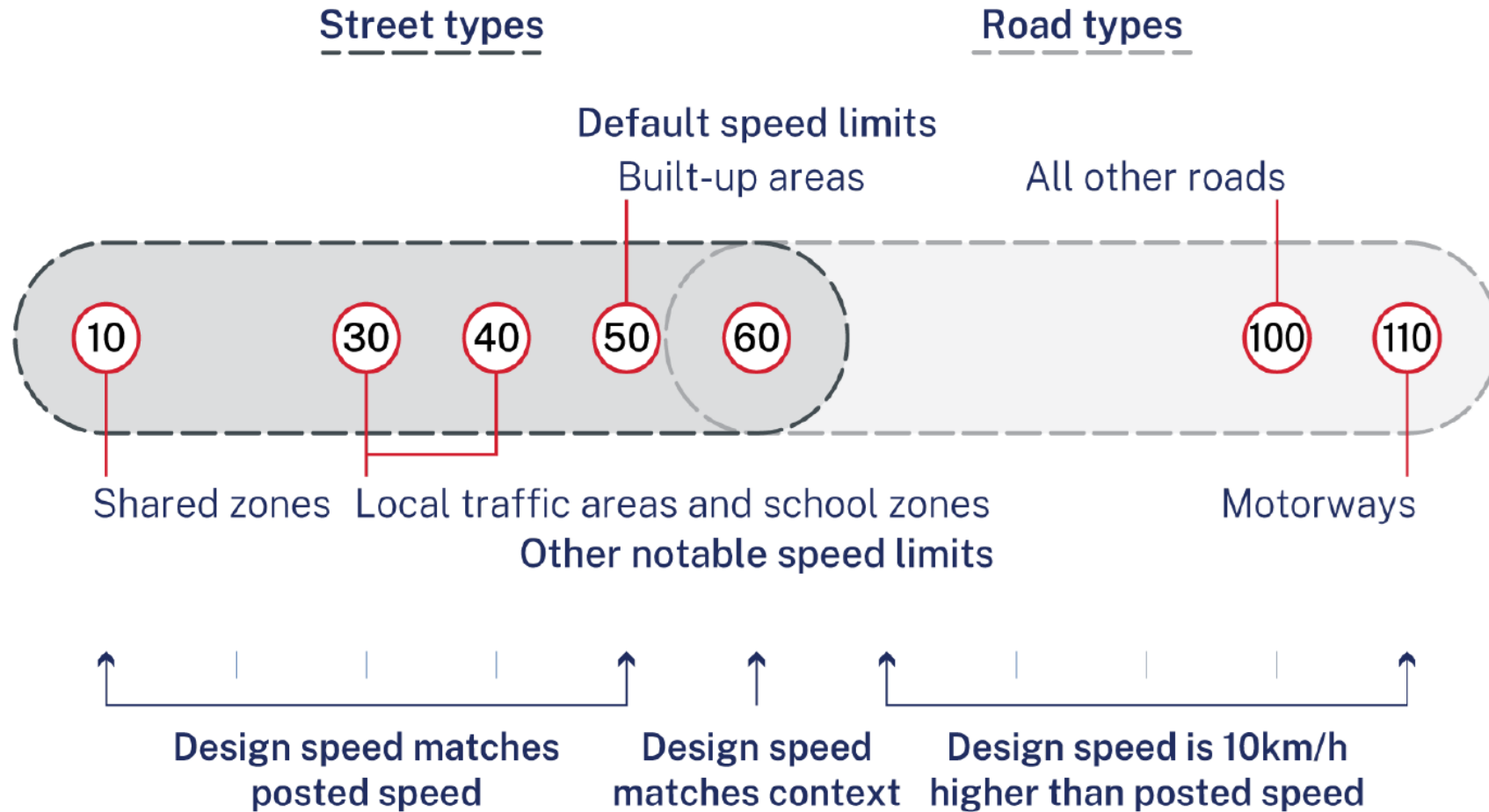
Integrating safety auditing into all stages of the transportation lifecycle

Speed Management

Policies and practices that achieve safe and appropriate vehicle speed limits and behavior



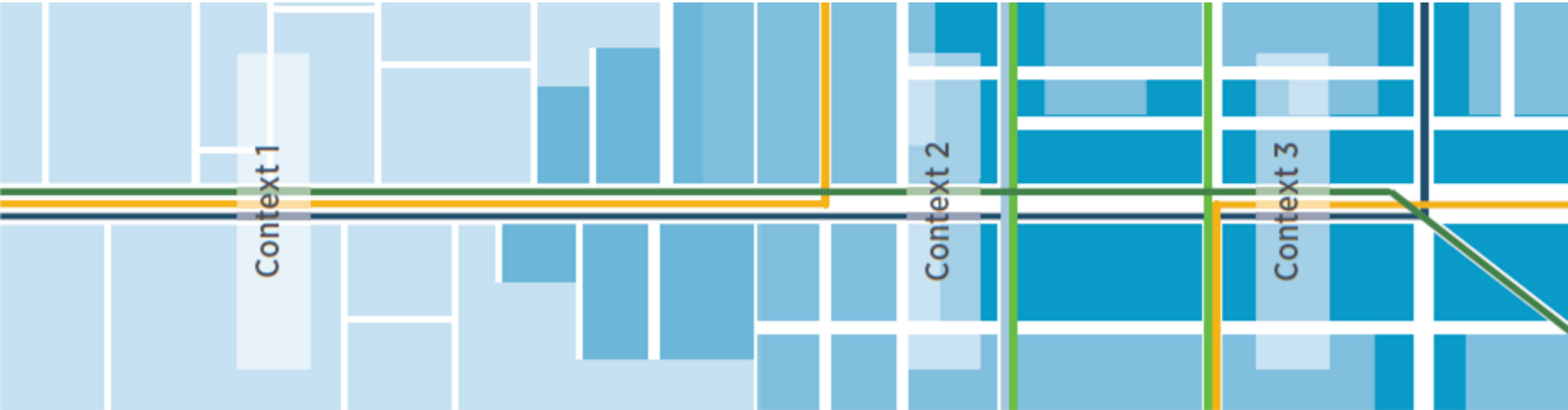
Matching Speed to Context



Speed Management Guide



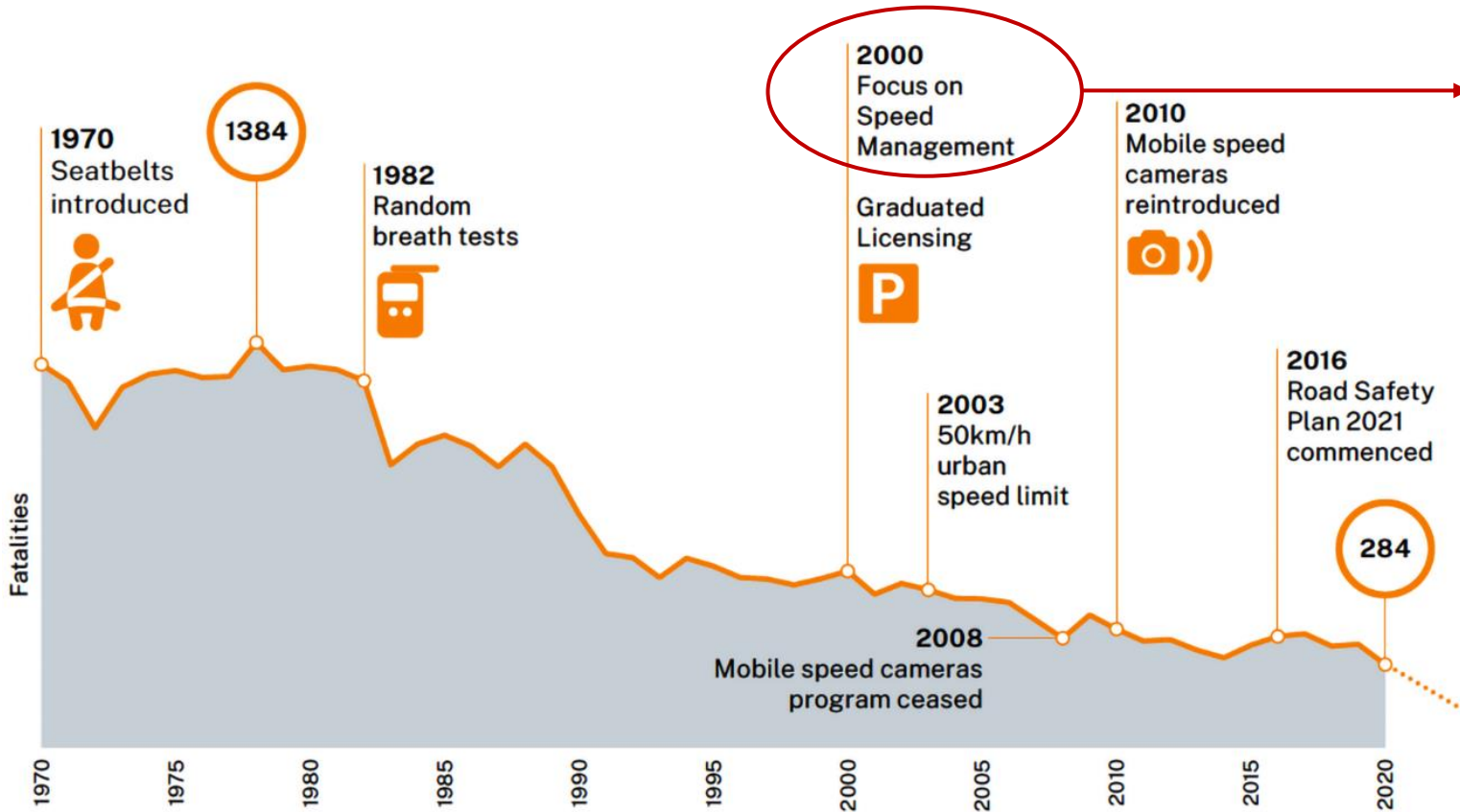
Each corridor may do many different jobs



“Understanding how corridors change along their length in response to context is fundamental to the practice of street design.”



Policy: Measure Actions by their Results



Speed Management – NSW key performance indicators:

- Share of urban roads with safe speed limits of 40 km/h (25 mph) or less
- Share of at-grade urban intersections designed at no more than 50 km/h (31 mph)
- Share of vehicles compliant with 40 to 60 km/h speed limit on urban roads (25 to 37 mph)



Design: Vertical Deflection / Speed Management



Design: Speed Limits / Camera Enforcement



Design: Modal Separation / Vertical Deflection



Design: Modal Separation / Vertical Deflection



1 lane – edge island neck down @ 40km/h



1 lane – signs, lines, and limits



Continued traffic diversion with L/R turn lanes



Design: Retrofitting a “Principal Arterial Road”



Design: Retrofitting a “Principal Arterial Road”



Design: Retrofitting a “Principal Arterial Road”



Speed Management

A new framework for
Aotearoa New Zealand

Anna Bray Sharpin
Principal Advisor Speed,
Infrastructure & Urban Mobility

An enabling moment for speed management

International direction and commitments

Sustainable development goals

Second Decade of Action on Road Safety

Stockholm Declaration on Global Road Safety

Government direction and priorities

Government Policy Statement on land transport (GPS)

Road to Zero Strategy and Action Plan

National Land Transport Programme (NLTP)

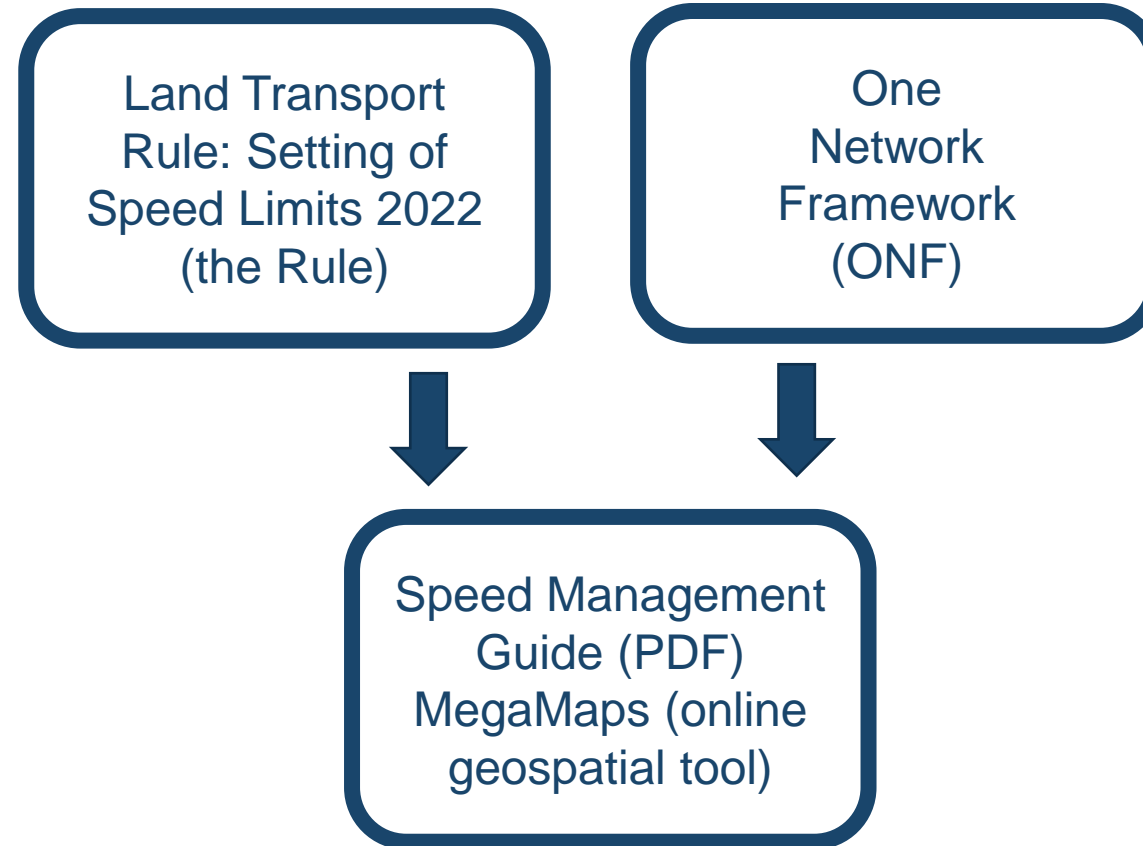
Safe and appropriate speed limits framework

One Network Framework (ONF)

Speed management guide

Land Transport Rule: Setting of Speed Limits Rule 2022 (the Rule)

A new framework for speed management



The guide is the “why” and the “how” of safe and appropriate speed limits (SAAS)
Megamaps is the “what” of SAAS

Land Transport Rule: Setting of Speed Limits 2022

The rule introduces a new approach to planning and consulting on speed limit changes

- One network-based speed management plan for each local authority or region
- Sets a 10-year vision (principles) and a 3-year implementation plan

The rule disconnects speed limit setting from infrastructure changes

- This means that speed limits can be set first, impacts monitored, and infrastructure implemented where it will have the best impact on safety and operating speeds on the network

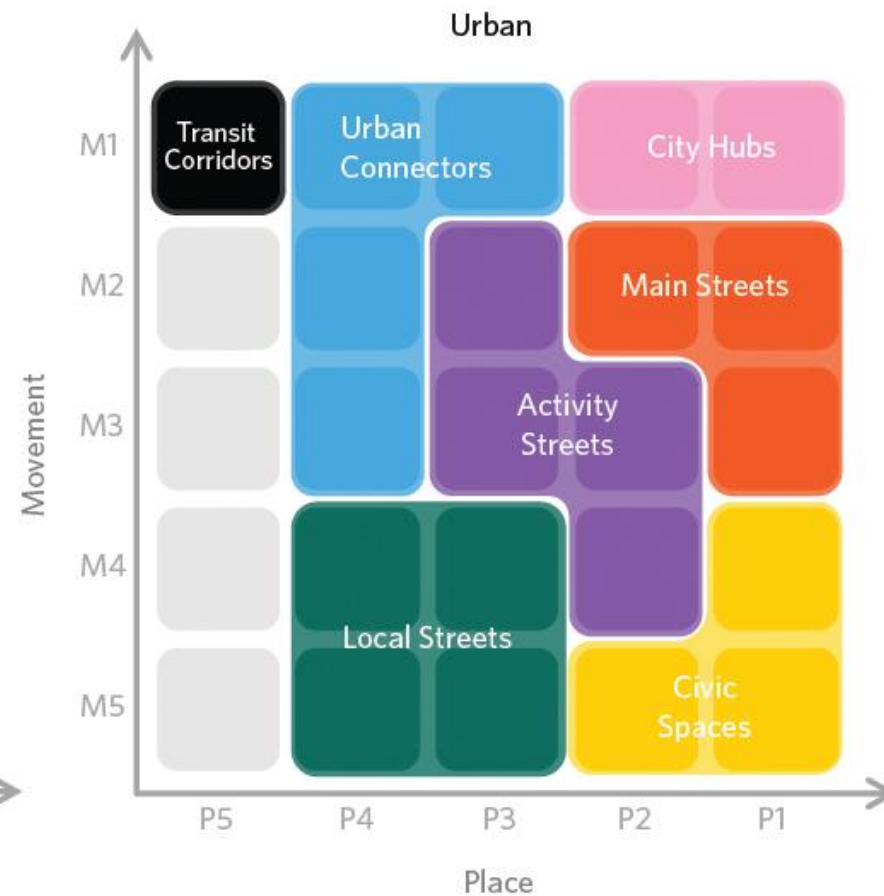
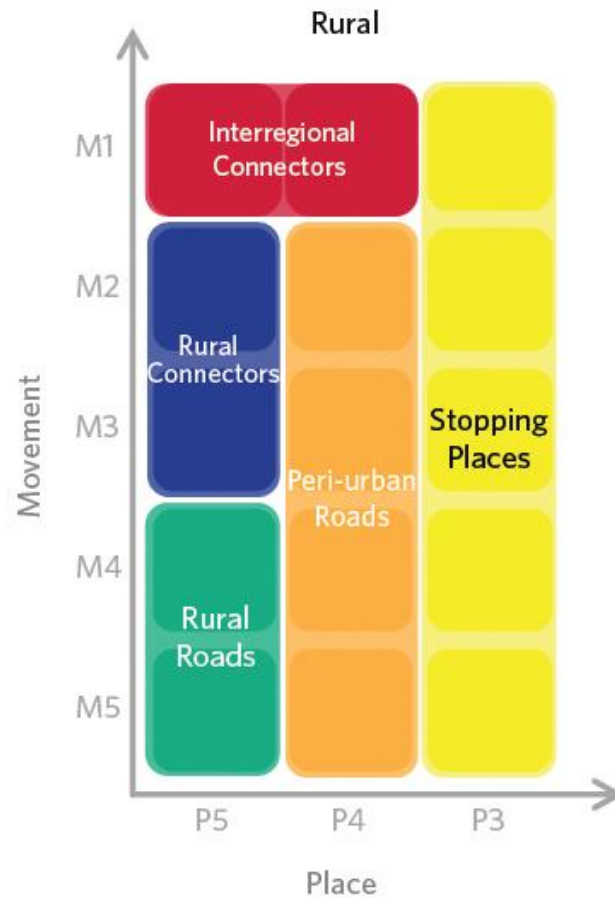
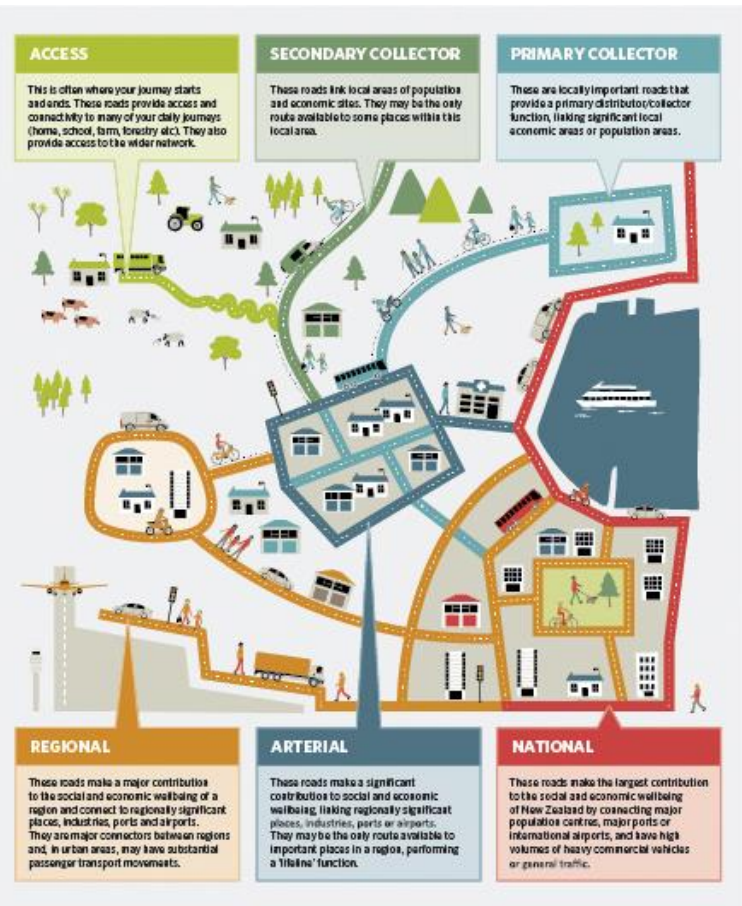
The rule sets targets for safe speeds around all schools

- RCAs must make best efforts for 40% of schools by 2024 and all schools by end of 2027
- Permanent school speed limits are now enabled

The rule establishes expectations for partnership with Māori

- Engagement with Māori is required during the development of speed management plans
- Fostering capacity for Māori to contribute to this is required
- Variable speed limits outside marae do not require Waka Kotahi approval

The One Network Framework



Speed Management Guide: Road to Zero Edition

Introduction

This section provides an overview of the purpose and audience for the guide and a brief summary of the Land Transport Rule: Setting of Speed Limits 2022.

Principles

The **Guiding Principles for Speed Management** are designed to sum up key concepts to help guide the speed management plan process and understand the rationale behind advice about speed limits from Waka Kotahi.

Speed Limits

This section outlines the **Setting of Speed Limits Framework** which provides the rationale for assessing and confirming the safe and appropriate speed limits for all streets and roads.

Speed Management Plans

This section provides detailed information on the concept, content, process, and roles and responsibilities for **developing a speed management plan**.

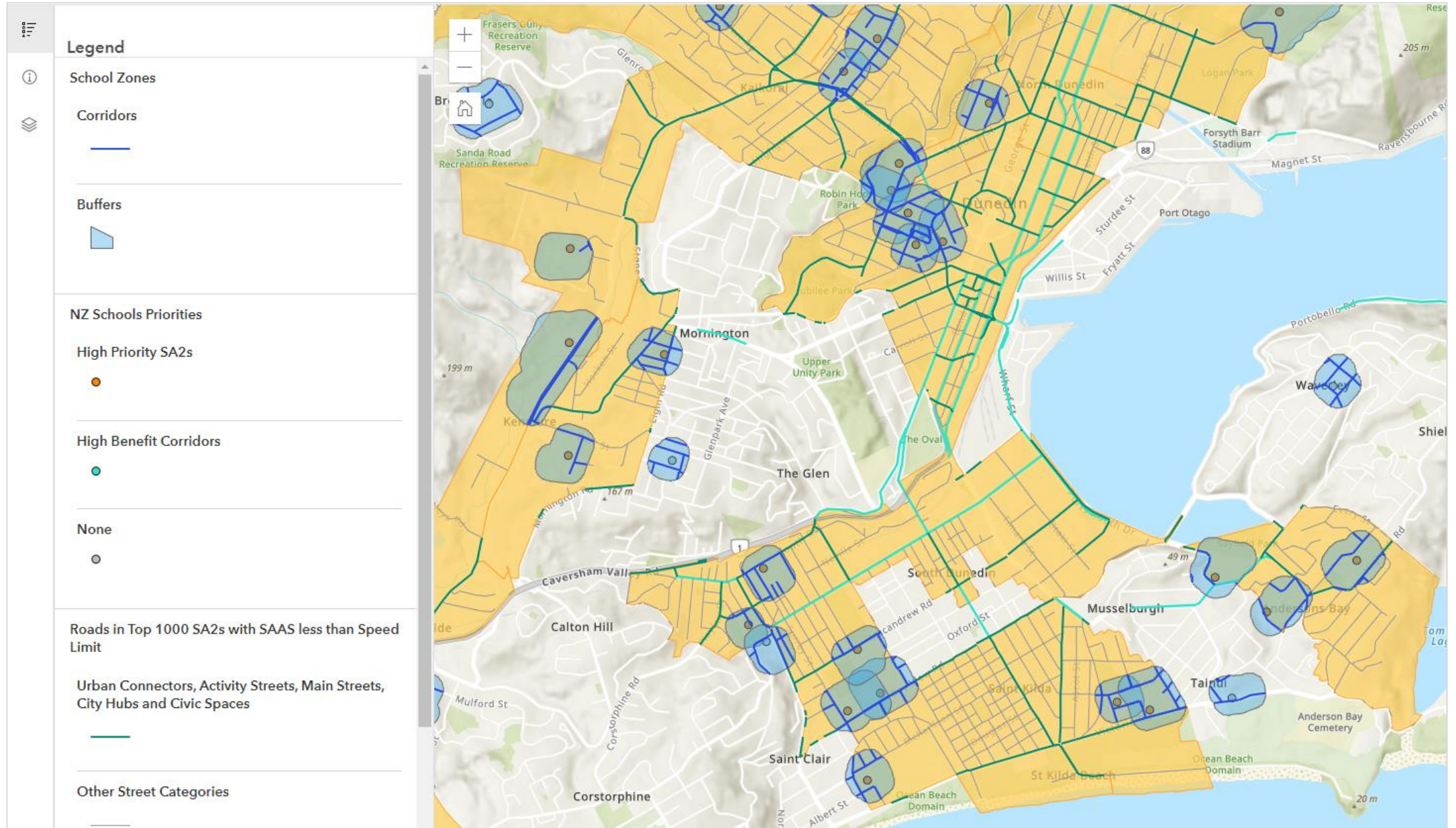


Appendices

Speed management guide:
Road to Zero edition



MegaMaps Road to Zero edition – Geospatial tool



Principles of Speed Management for Aotearoa



“A safe and appropriate speed limit is...a speed limit that is safe according to standards set by **the Safe System approach** and appropriate in terms of aligning with **community wellbeing** objectives as well as with the **movement and place function, design and infrastructure** of the street or road.”



Survivable Speeds



Risk of crash with vulnerable road users



Risk of crash at intersections



Risk of head-on crash

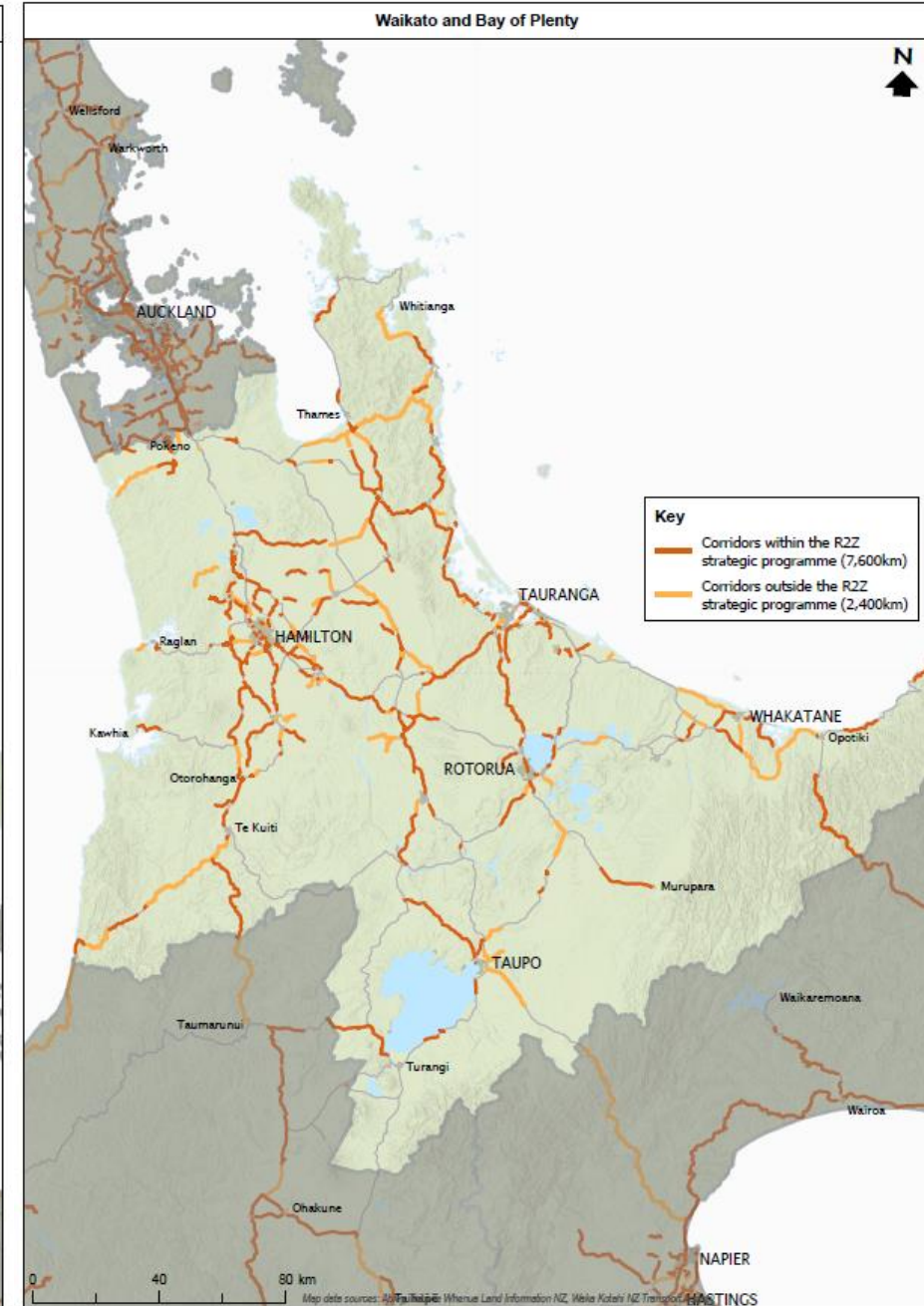
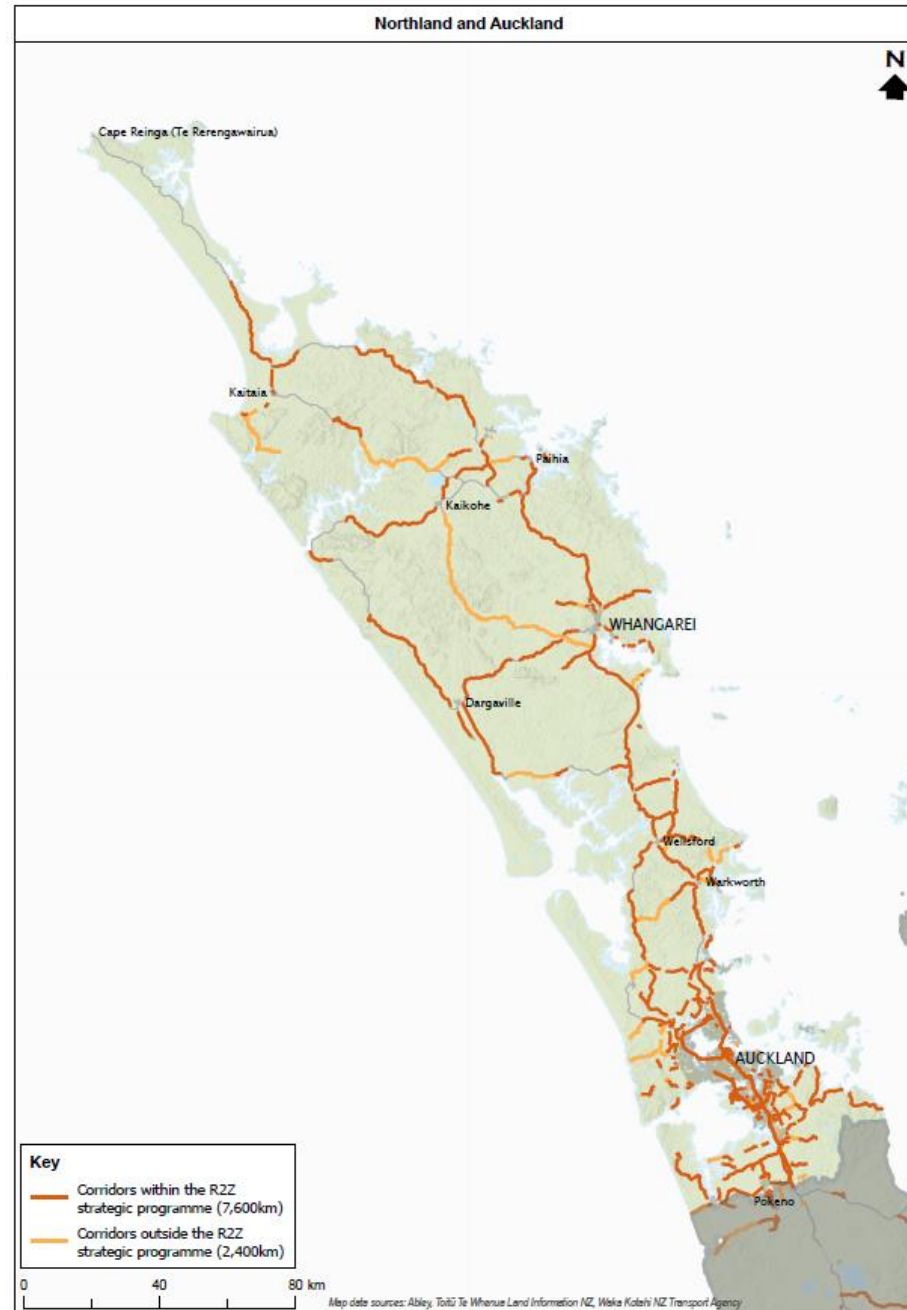


Source: AT 2019

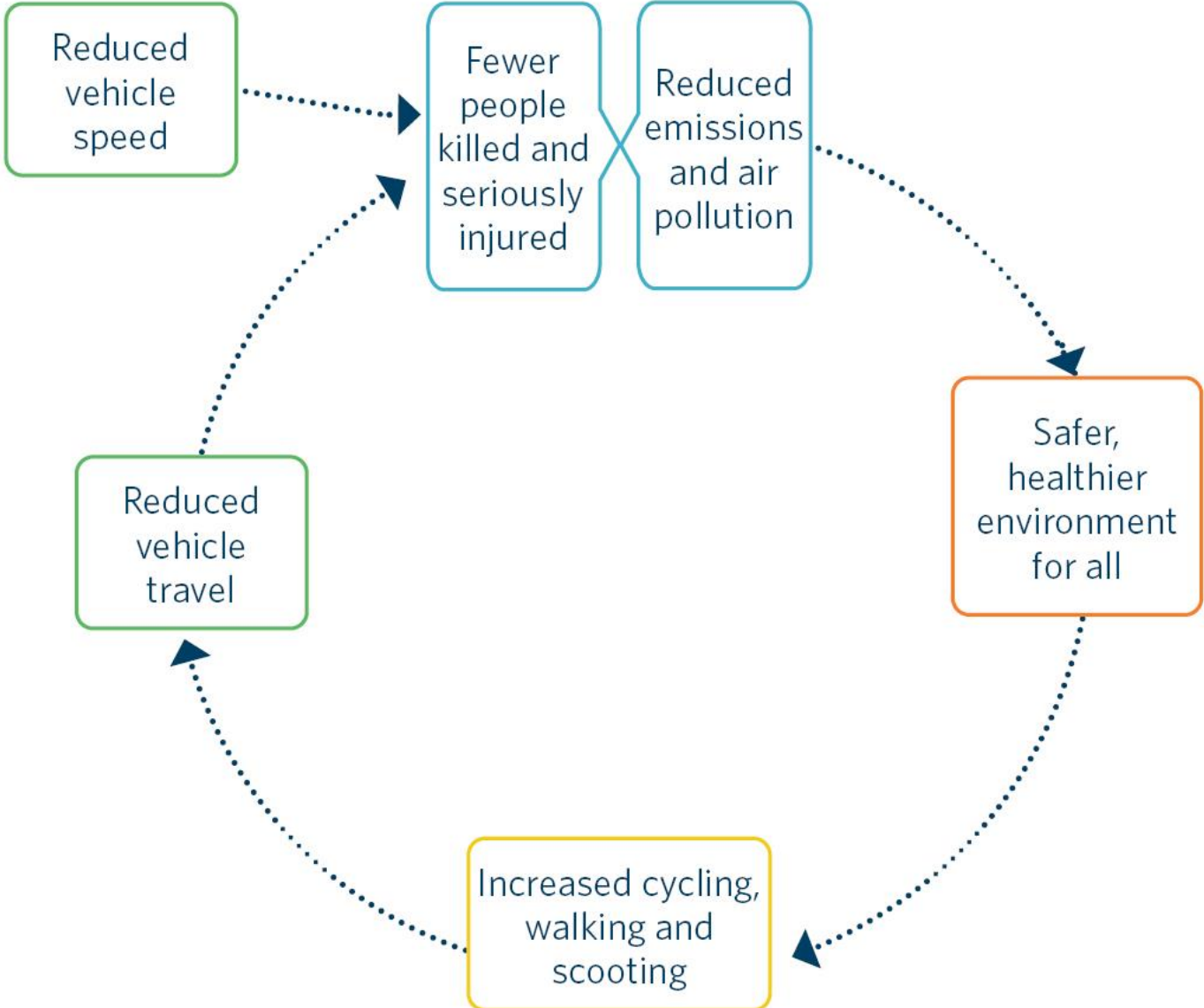
Managing speed presents a huge opportunity

Targeting the Top 10%

- Aligning speed limits with SAAS on **the Top 10% of roads (10,000km)** is estimated by the strategic programme to save 319 DSIs per annum, representing **80% of the full potential reduction** if all speed limits in NZ were aligned to SAAS
- The 10,000kms comprises approximately 6,500kms on State Highways and 3,500kms on local roads



Managing speed presents a huge opportunity

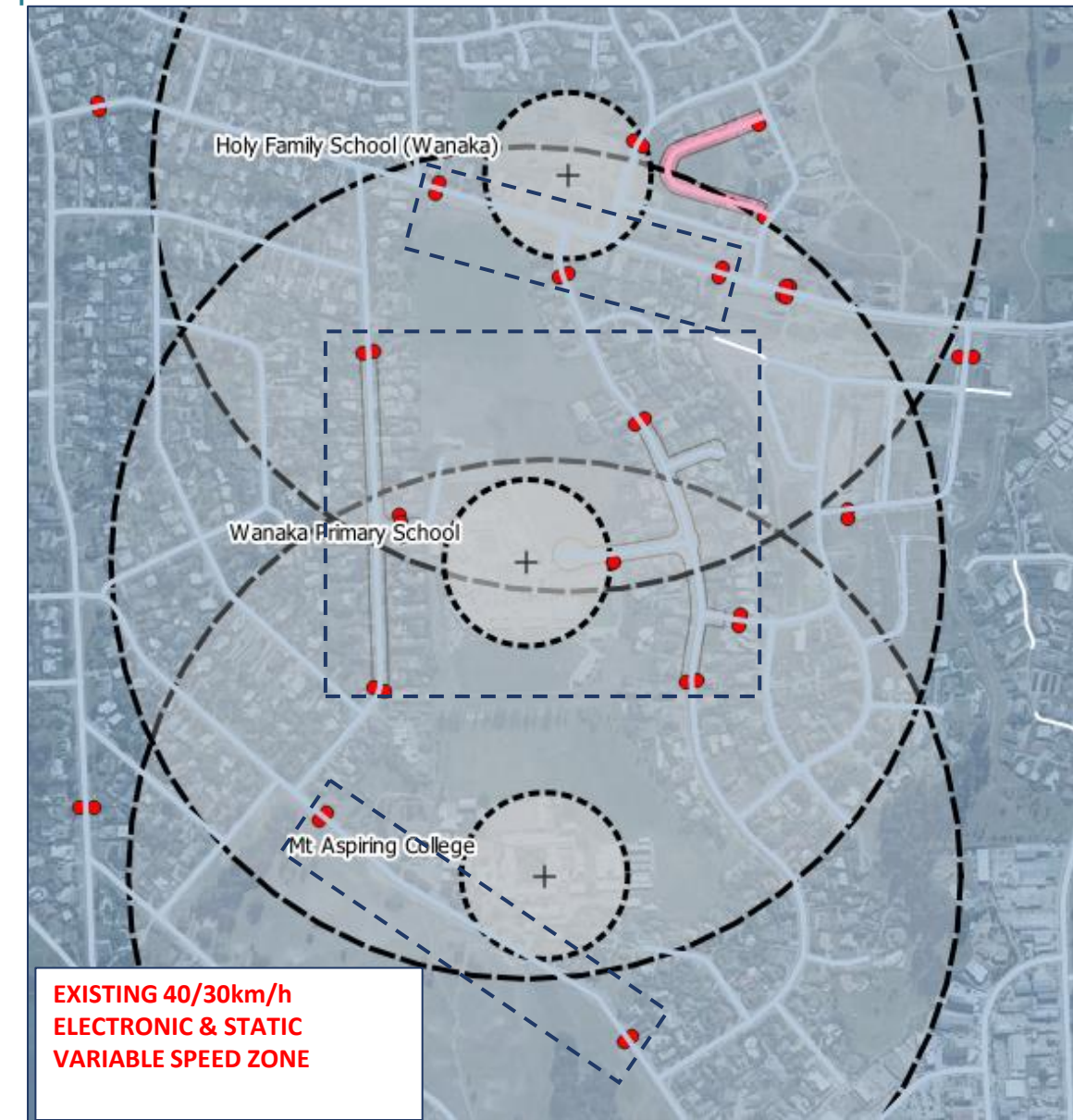


Adapted from: Welle, B. et al. (2018). Sustainable and Safe: A Vision and Guidance for Zero Road Deaths, World Resources Institute, Washington DC, pp.24

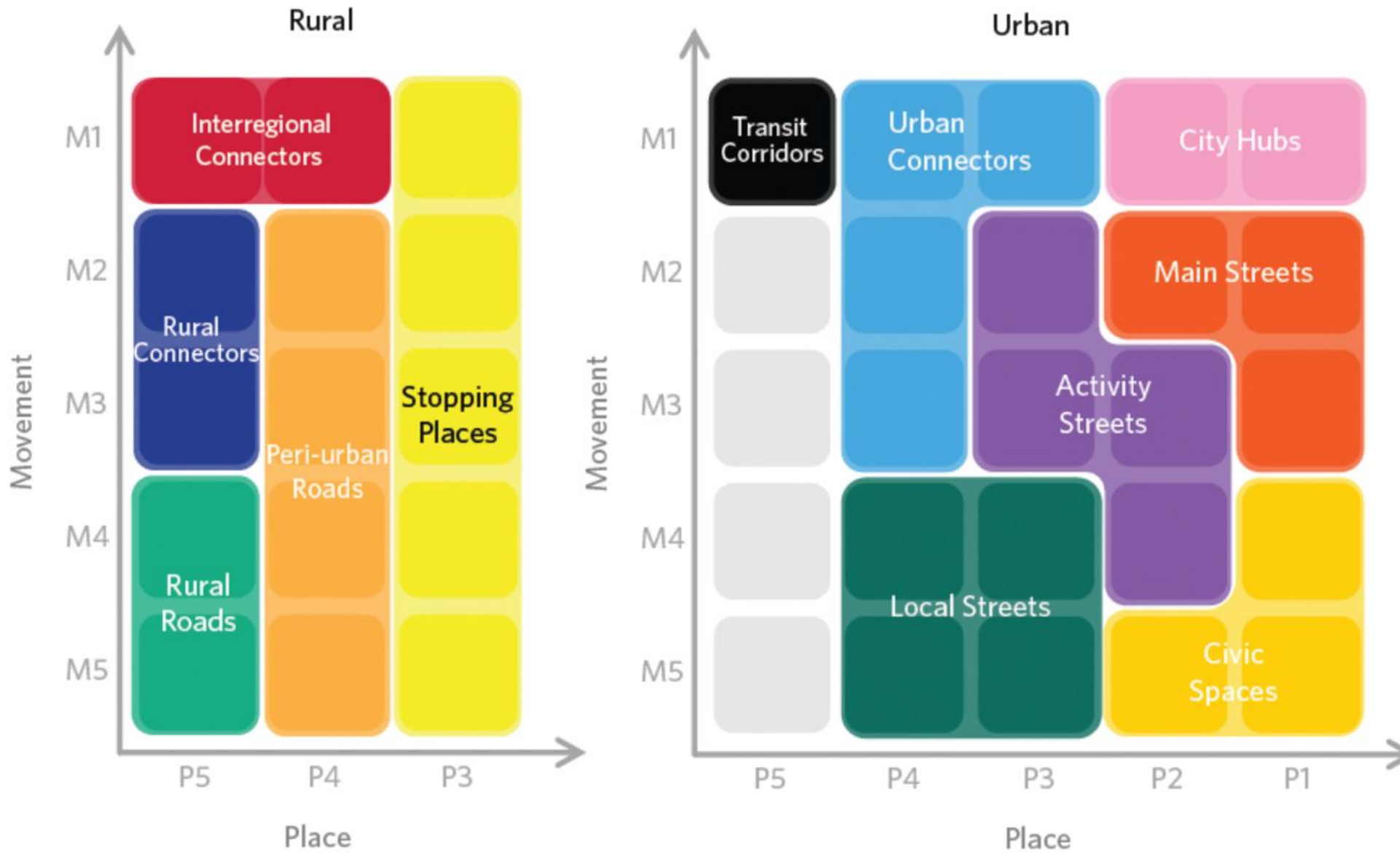


Safe Speeds around Schools

Queenstown District Council Example: Wanaka School Zone Transition from separate, variable speed limits at school entrances, to permanent 30km/h combined zones



The One Network Framework



Now we can match our network with safe speeds



Safe & appropriate speed limits framework

The framework follows proven **Safe System** thresholds

- This means the guidance indicates more 30km/h SAAS in areas with presence of vulnerable users, and 80km/h SAAS on undivided rural roads and highways

The framework introduces *movement and place* to speed limit setting

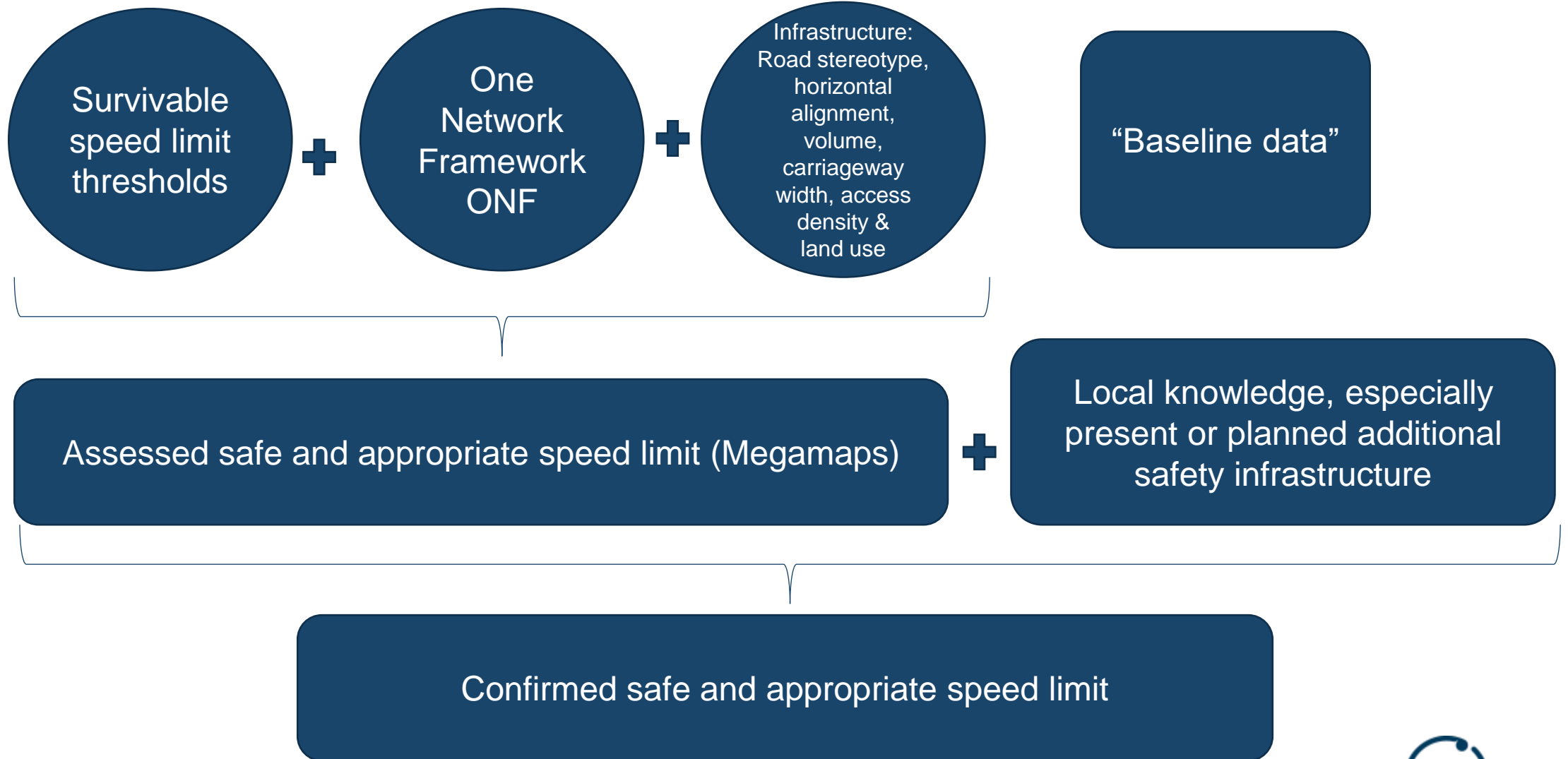
- The One Network Framework replaces the One Network Road Classification (movement only)
- Safe and appropriate speed limits (SAAS) are more clearly linked to adjacent land use and types of road users

The guidance takes into account infrastructure, such as

- The infrastructure risk rating (IRR) (most, but not all elements)
- The presence of safety infrastructure to manage speeds or avoid certain crash types

The expectation is for incremental change over time towards safe and appropriate speed limits across the network, aligned with Road to Zero Targets

Safe and appropriate speed limits inputs

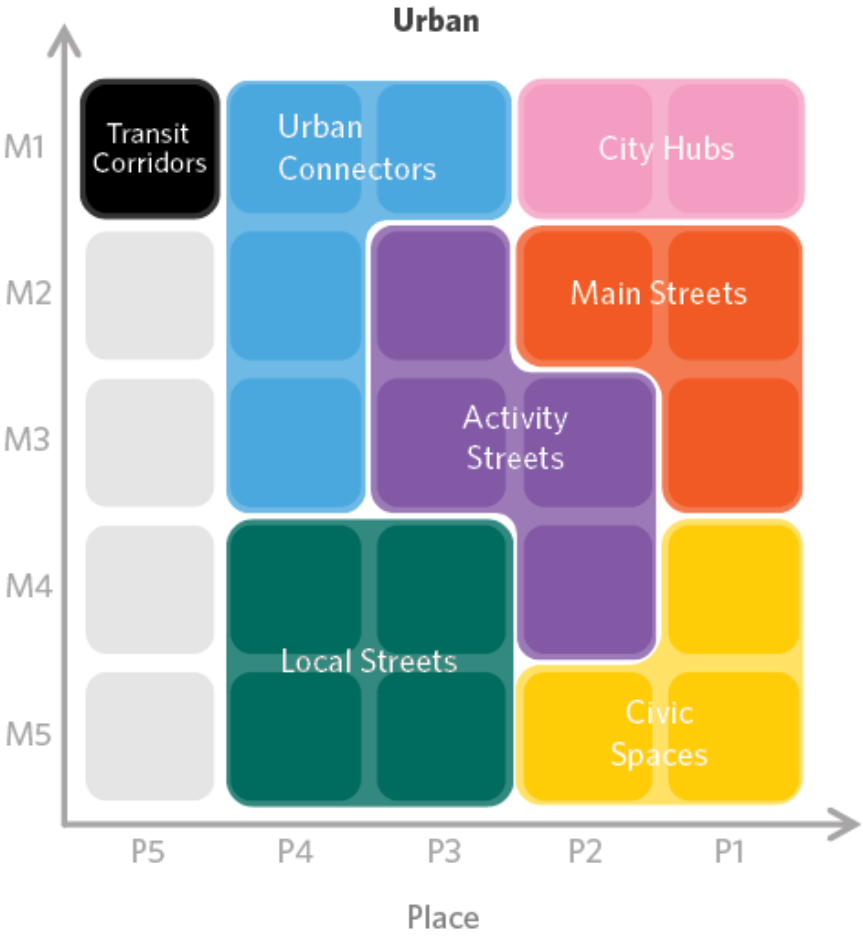


Safe & appropriate speed limit framework - Urban

Table 2 – One Network Framework urban street categories and safe speed limit ranges

Category	Description	Safe and appropriate speed limit*
Civic spaces	These streets have a higher place classification than other urban street categories, representing a higher level of on-street activity and higher-density adjacent land use generating that activity. These streets have a lower movement classification because they are mainly intended for localised on-street activity with little or no through movement.	10-20km/h
Local streets	These streets provide quiet and safe residential access for people of all ages and abilities and foster community spirit and local pride. They are part of the fabric of Aotearoa New Zealand neighbourhoods, and they facilitate local community access.	30km/h
Activity streets	These streets provide access to shops and services by all modes. They have a significant movement demand as well as place, so competing demands need to be managed within the available road space.	30-40km/h
Main streets	These streets have an important place function and a relatively important movement function. They support businesses, on-street activity and public life and connect with the wider transport network.	30-40km/h
City hubs	These are dense and vibrant places that have a high demand for people movement.	30-40km/h
Urban connectors	These streets provide safe, reliable and efficient movement of people and goods between regions and strategic centres and mitigate the impact on adjacent communities.	40-60km/h
Transit corridors	These streets provide for the fast and efficient long-distance movement of people and goods within the urban realm. They include motorways and urban expressways.	80-100km/h

*The safe and appropriate speed limit will typically be at the lower end of the range unless design and infrastructure criteria are met to justify a higher speed limit. For details on the criteria for each ONF street category see tables 4 and 5.

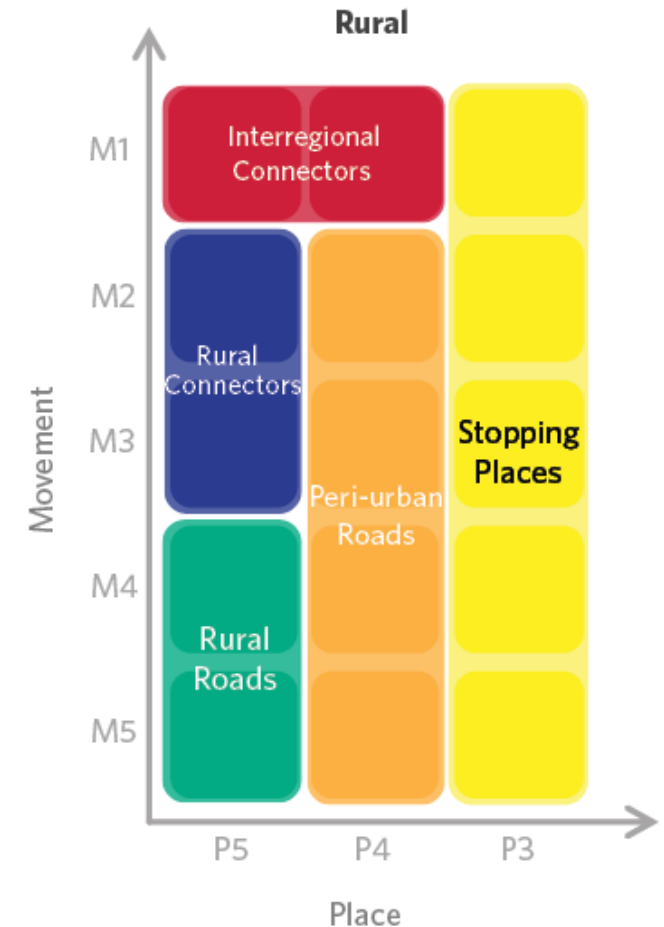


Safe & appropriate speed limit framework - Rural

Table 3 – One Network Framework rural street categories and safe speed limit ranges

Category	Description	Safe and appropriate speed limit*
Interregional connectors	These roads provide safe, reliable and efficient movement of people and goods between regions and strategic centres in a rural context.	60-110km/h
Rural connectors	These roads provide the link between rural roads and interregional connectors.	60-100km/h
Rural roads	These roads primarily provide access to rural land for people who live there and support the land-use activity being undertaken.	60-80km/h
Peri-urban roads	These roads primarily provide access from residential property on the urban fringe, where the predominant adjacent land use is residential, but usually at a lower density than in urban residential locations.	50-80km/h
Stopping places	These are where people gather in a rural setting. Adjacent land use generates on-street activity, and people are likely to be crossing the road.	40-80km/h

*The safe and appropriate speed limit will typically be at the lower end of the range unless design and infrastructure criteria are met to justify a higher speed limit. For details on the criteria for each ONF street category see tables 6 and 7.



Additional considerations for a safe and appropriate speed limit

Some things to keep in mind

- Safe and appropriate speed are the desired 'end state' but will take time
 - Speed limit changes may be phased to progressively transition to SAAS
- Highest benefit areas may be prioritised as part of the transition to SAAS
 - These include best opportunities to reduce trauma and support active travel
- The Rule does not require speed limit changes to be considered in relation to current mean operating speeds
 - Once speed limit changes have been made, mean operating speeds should be monitored, and additional speed management tools applied where they are most needed on the network
- Variable speed limits can be appropriate to support permanent SAAS changes
 - Variable speed limits are an additional speed management tool to address specific safety needs, but do not replace the need for transition to permanent SAAS over time



Changing perceptions about safe speed limits is our next generational change



IT TAKES

TO GET TO NO ONE.





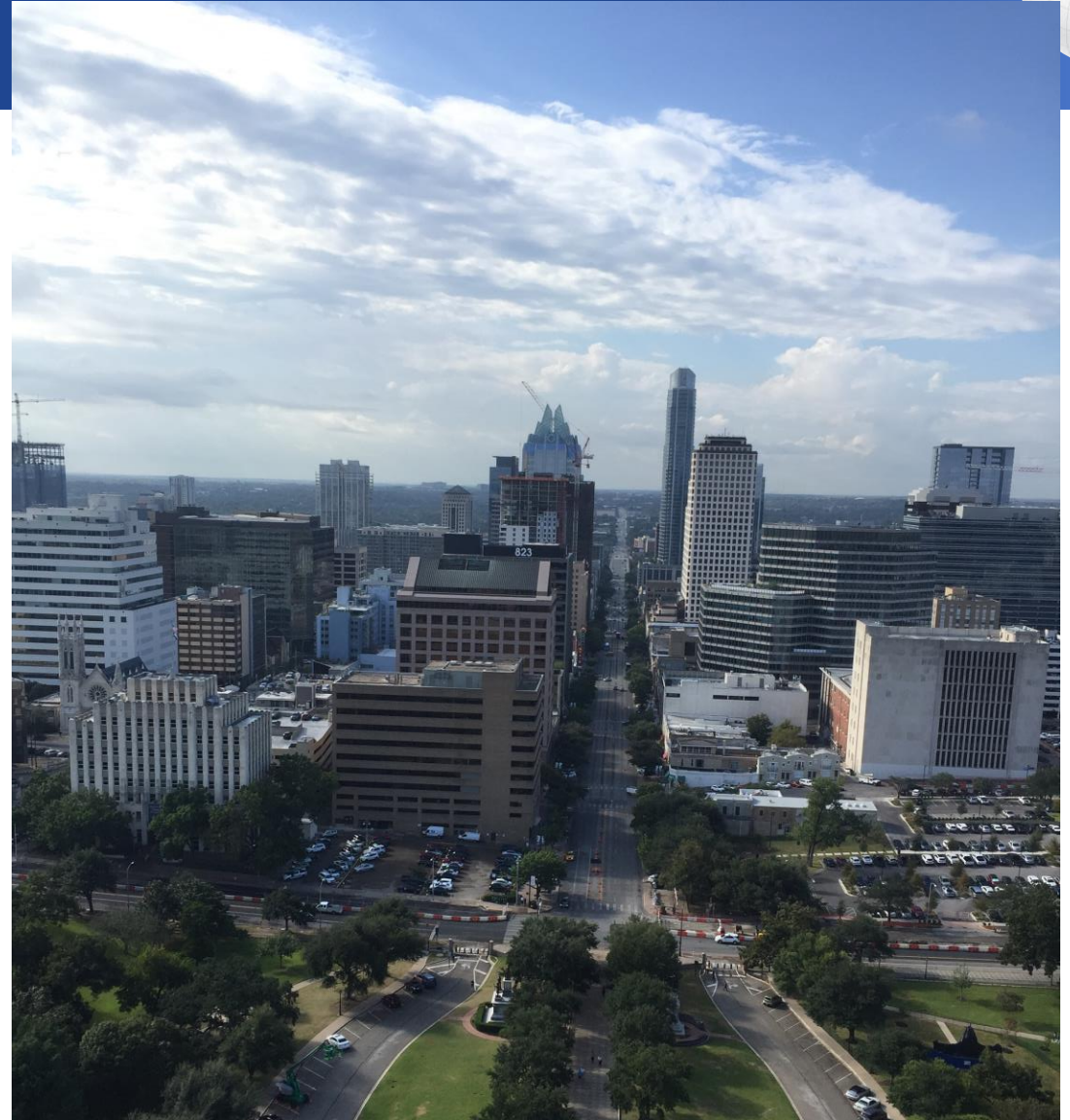
Speed Management in Austin, Texas

Lee Austin, P.E.

Austin, Texas



- 10th largest US city
- 26th largest metro area
- Less density than Houston
- ~3% yearly population increase
- Accompanying rise in crashes and fatalities



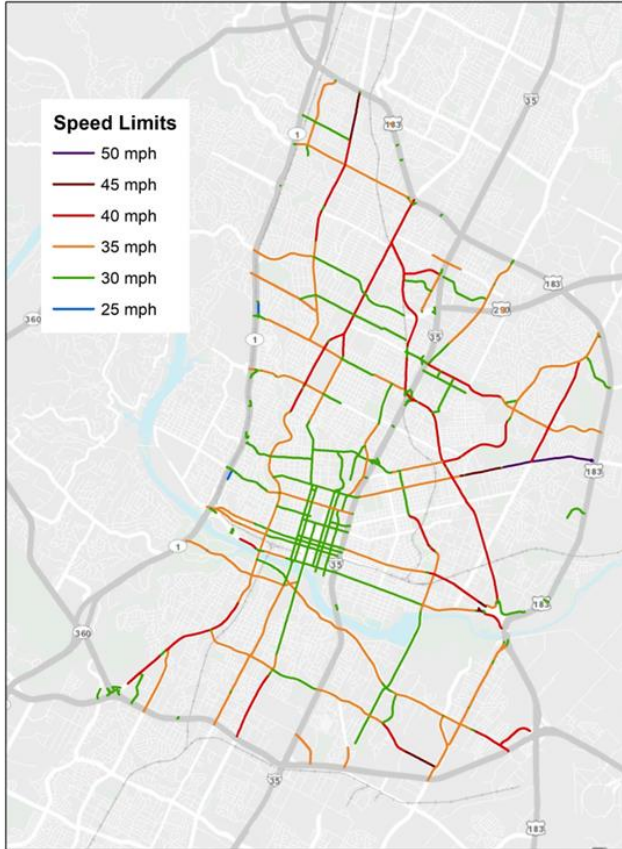
Texas' Regulatory Climate



- **Texas State Law**
 - The commission, in conducting the engineering and traffic investigation specified by Subsection (a), shall follow the "Procedure for Establishing Speed Zones" as adopted by the commission.
- **TxDOT Procedures**
 - The maximum speed limits posted as the result of a study should be based primarily on the 85th percentile speed
- **Red Light Cameras prohibited in 2019**



Re-examining Arterial Speeds



- Systematically collected data on urban arterials
- Applied USLIMITS2
 - 50th percentile speed
 - Driveway Density
 - Traffic Controls
 - Adjacent Land Use
 - Bike/Ped Activity
 - Crash History
 - Plus Others

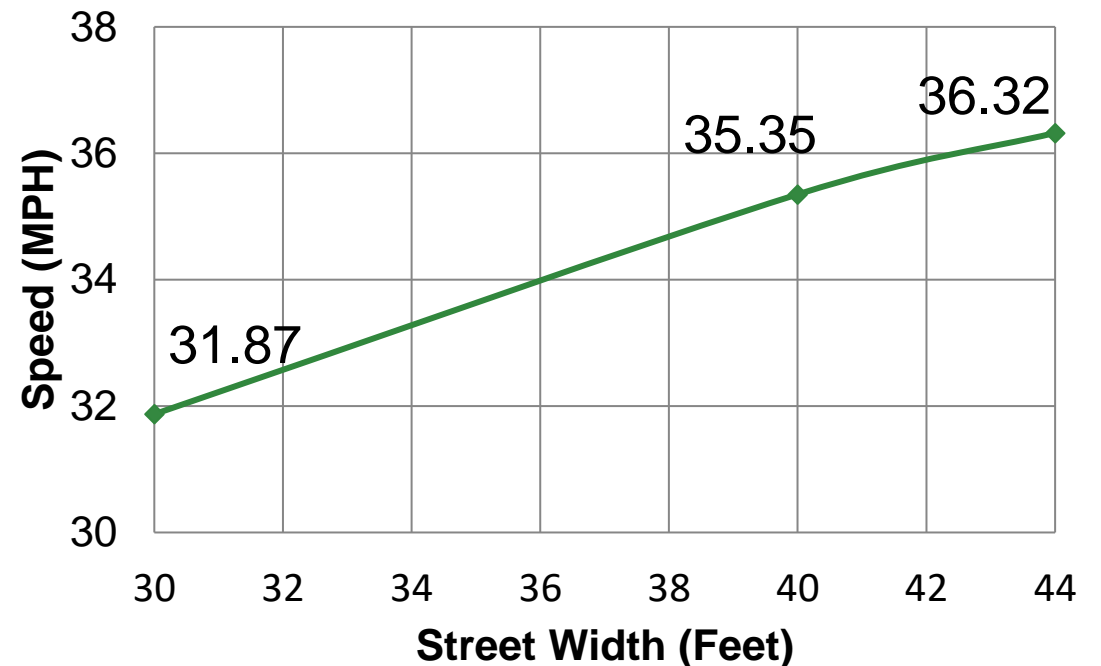




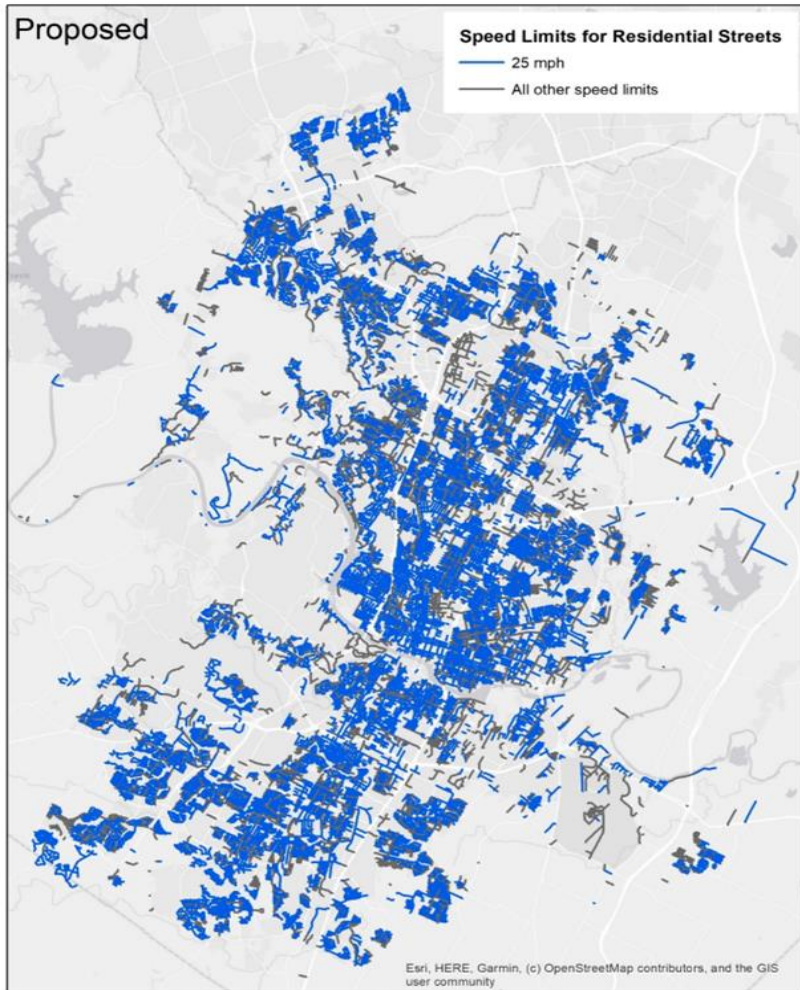
Engineering Study for Street Characteristics

- Sampled data on ~600 streets and calculated statistical values for ~100 to determine how the built environment influences prevailing speeds
- Speeds increase in a nearly linear relationship to street width
- Speeds are most influenced by on-street parking utilization, conflicts from driveways, and visual cues from adjacent front-facing residences
- Speeds are not strongly influenced by traffic volume or speed limit alone
- Street widths less than 36 feet cause yield-flow operation

Prevailing Speed as a Function of Street Width



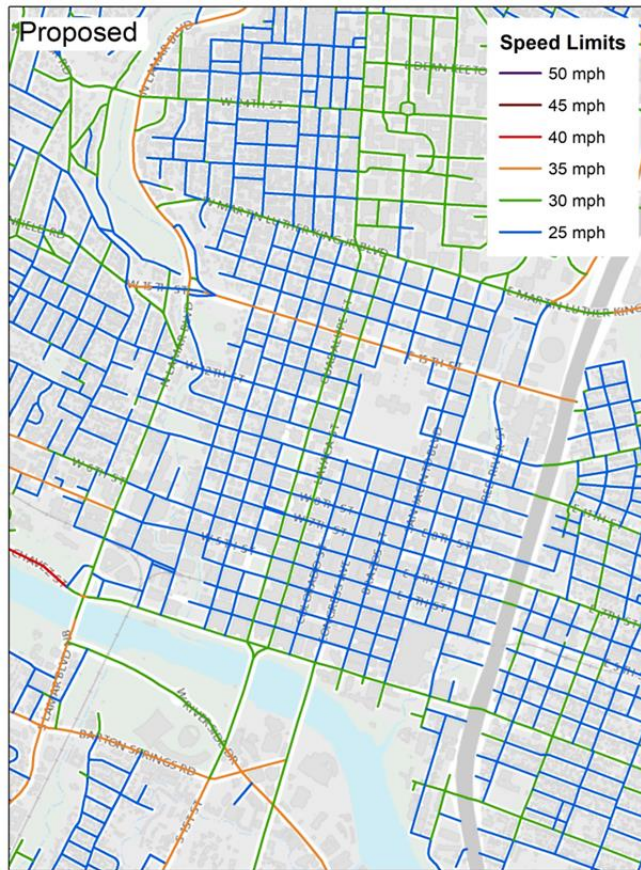
Neighborhood 25 mph Speed Limit



- For streets 36 feet or less in width, establish a citywide speed limit of 25 miles per hour (mph).
- For streets between 36 feet and 40 feet in width, establish a speed limit of 25 mph based on individual evaluation or by implementation of appropriate speed mitigation measures.



Downtown 25 mph Speed Limit



- Downtown core of the City was built on a grid layout with consistent block lengths
- Operation is typically controlled by traffic signals set at a progression speed or all-way stop signs
- Streets have consistent, and generally slower, prevailing speeds less than the nominally posted speed limit of 30 mph



Traffic Calming/Pedestrian Refuge Islands



- Yielding comparable to RRFBS or greater
- Speed reduction if designed well
- Use design speed below posted
- Place making opportunity



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Office of International Programs

Barton Springs Pilot



- Four lane divided arterial
- Main access to large park
- Connects to limited access highway
- Urban context
- ADT ~ 30,000
- 85% ~ 37 mph

47 PEOPLE INJURED



A breakdown of injuries within the project limits from May 2018 through April 2023.
Injuries shown by mode.



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Barton Springs Pilot

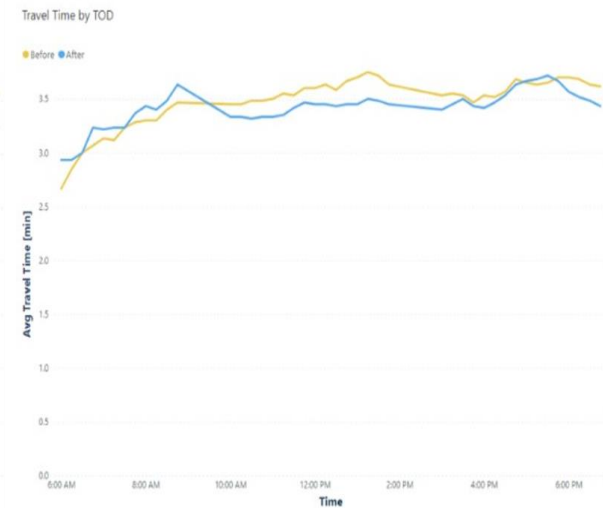
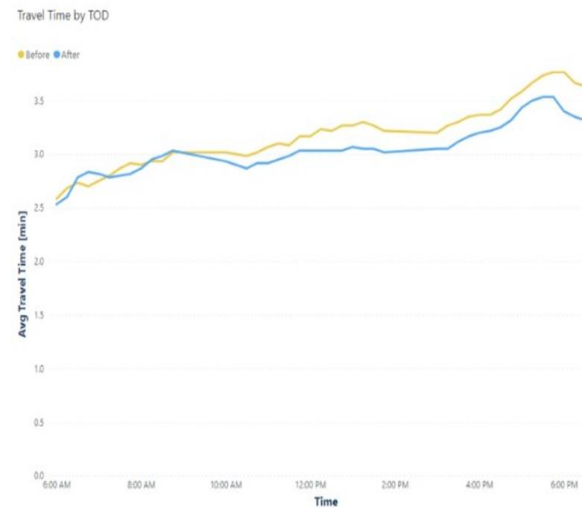
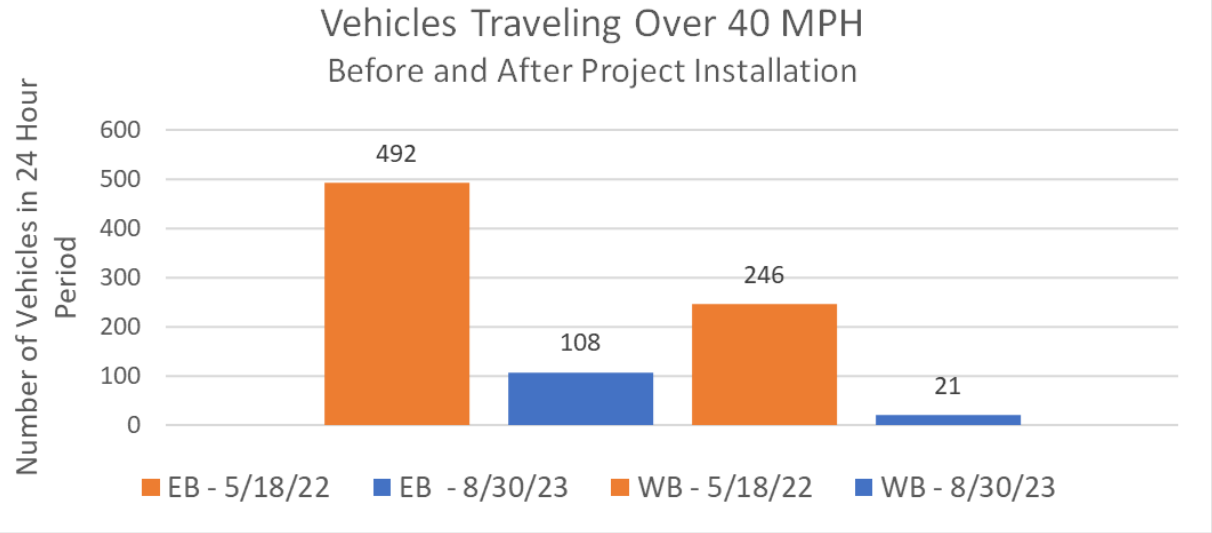


Figure 1: Barton Springs Rd Eastbound Comparison (Weekday)

Figure 2: Barton Springs Rd Westbound Comparison (Weekday)

Barton Springs Pilot



How can we apply at a state DOT?



Virginia

- Adopted Safe System Approach as part of Strategic Highway Safety Plan
 - Kicking off effort to incorporate safe systems principles & road safety audits throughout project lifecycle
 - Will include discussion with traffic operations, planning, and design leads to reach consensus on target design speeds based on context to promote safe speeds for all road users
- Revamping speed study policy to include target speeds based on roadway type
- Utilizing automated speed enforcement cameras in school zones and work zones, thanks to recent legislation



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ZERO IS OUR
GOAL
A SAFE SYSTEM IS HOW WE GET THERE

FHWA Update Speed Management Resources

Anyesha Mookherjee, P.E.
FHWA's Office of Safety

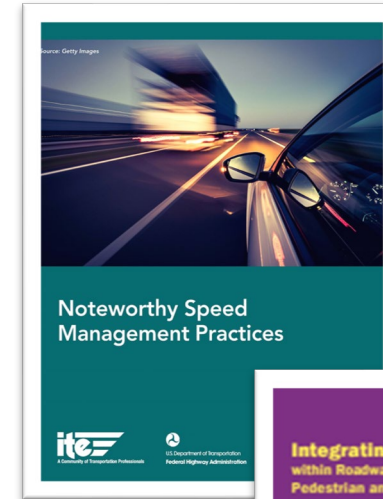


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Promoting Speed Management Countermeasures

- Self-Enforcing Roadways: A Guidance Report
- ePrimers
 - Speed Management for Rural Transition Zones and Town Center
 - Traffic Calming
- Guidelines for the Use of Variable Speed Limit Systems in Wet Weather
- Noteworthy Speed Management Practices
- Speed Management Proven Safety Countermeasures (PSCs)
- Speed Safety Camera Program Planning and Operations Guide **NEW!**
- Safe System Approach for Speed Management **NEW!**
- NHI Course: Designing and Operating Roadways for Safe Speeds **NEW!**



Source: FHWA

Speed Management ePrimer for Rural Transition Zones and Town Centers

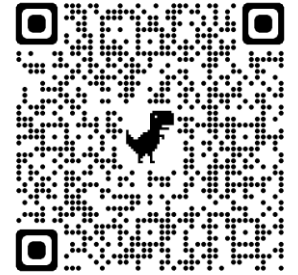


Image Source: Neal Hawkins

- Free, online resource for rural transportation professionals and community decision-makers seeking to mitigate speeding-related safety issues facing rural communities.
- Six distinct modules allow the reader to move between each to find the desired information, without a cover-to-cover reading.
- Case studies that cover effective processes used to plan and define a rural community speed management program or project.

Traffic Calming ePrimer



- ▶ Presents a thorough review of current traffic calming practice.
- ▶ Illustrates 22 different types of traffic calming measures; considerations for their appropriate application, including effects and design and installation specifics.
- ▶ Case studies that cover effective processes used to plan and define a local traffic calming program or project.



Image Source: Jeff Gulden

SPEED MANAGEMENT



Speed Safety
Cameras



Variable Speed Limits



Appropriate Speed
Limits for All Road Users

ROADWAY DEPARTURE



Wider Edge Lines



Enhanced Delineation
for Horizontal Curves



Longitudinal Rumble
Strips and Stripes on
Two-Lane Roads



SafetyEdge™



Roadside Design
Improvements at
Curves



Median Barriers

INTERSECTIONS



Backplates with
Retroreflective
Borders



Corridor Access
Management



Dedicated Left- and
Right-Turn Lanes at
Intersections



Reduced Left-Turn
Conflict Intersections



Roundabouts



Systemic Application
of Multiple Low-Cost
Countermeasures at
Stop-Controlled
Intersections



Yellow Change
Intervals

PEDESTRIANS/BICYCLES



Crosswalk Visibility
Enhancements



Bicycle Lanes



Rectangular Rapid
Flashing Beacons
(RRFB)



Leading Pedestrian
Interval



Medians and Pedestrian
Refuge Islands in Urban
and Suburban Areas



Pedestrian Hybrid
Beacons



Road Diets (Roadway
Reconfiguration)



Walkways

CROSSCUTTING



Pavement Friction
Management



Lighting

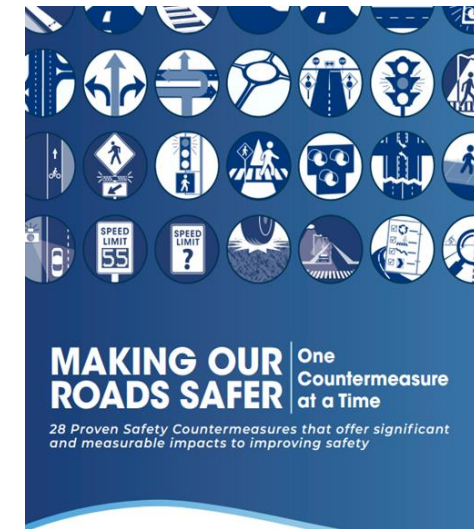


Local Road Safety Plans



Road Safety Audit

- **Proven Safety Countermeasures** is a collection of countermeasures and strategies effective in reducing roadway fatalities and serious injuries
- Choose from 28 PSCs
- Implement quickly



Proven Speed Management Safety Countermeasures

- Appropriate Speed Limits for All Road Users
- Speed Safety Cameras
- Variable Speed Limits

Department of Transportation
Federal Highway Administration

OFFICE OF SAFETY
Proven Safety Countermeasures

Appropriate Speed Limits for All Road Users

There is broad consensus among global roadway safety experts that speed control is one of the most important methods for reducing fatalities and serious injuries. Speed is an especially important factor on nonlimited access roadways where vehicles and vulnerable road users mix.

A driver may not see or be aware of the conditions within a corridor, and may drive at a speed that feels reasonable for themselves but may not be for all users of the roadway, especially vulnerable road users, including children and seniors. A driver traveling at 30 miles per hour who hits a pedestrian has a 45 percent chance of killing or seriously injuring them.¹ At 20 miles per hour, that percentage drops to 5 percent.¹ A number of cities across the United States, including New York, Washington, Seattle and Minneapolis, have reduced their local speed limits in recent years in an effort to reduce fatalities and serious injuries, with most having to secure State legislative authorization to do so.

States and local jurisdictions should set appropriate speed limits to reduce the significant risks drivers impose on others—especially vulnerable road users—and on themselves. Addressing speed is fundamental to the Safe System Approach to making streets safer, and a growing body of research shows that speed limit changes alone can lead to measurable declines in speeds and crashes.²

Applications
Posted speed limits are often the same as the legislative statutory speed limit. Agencies with designated authorities to set speed limits, which include States, and sometimes local jurisdictions, can establish non-statutory speed limits or designate reduced speed zones, and a growing number are doing so. While non-statutory speed limits must be based on an engineering study, conducted in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) involving multiple factors and engineering judgment, FHWA is also encouraging agencies to use the following:³

- Expert Systems tools,
 - USLIMITS⁴
 - NCIPRP⁵ 2016, Posted Speed Limit Setting Procedures and Tool⁶
- Safe System approach, based on international experience and implementation in the United States. The use of 20 mph speed zones or speed limits in urban core areas where vulnerable users share the road environment with motorists may result in further safety benefits.⁷

Considerations
When setting a speed limit, agencies should consider a range of factors such as pedestrian and bicyclist activity, crash history, land use context, intersection spacing, driveway density, roadway geometry, roadside conditions, roadway functional classification, traffic volume, and observed speeds.

To achieve desired speeds, agencies often implement other speed management strategies concurrently with setting speed limits, such as self-enforcing roadways, traffic calming, and speed safety cameras. Additional information is in the following FHWA resources:

- FHWA Speed Management website
- Self-Enforcing Roadways: A Guidance Report
- Noteworthy Speed Management Practices
- Jurisdiction Speed Management Action Plan Development Package
- Traffic Calming website

Safety Benefits:
Traffic fatalities in the City of Seattle decreased 26 percent after the city implemented comprehensive, city-wide speed management strategies and countermeasures inspired by Vision Zero. This included setting speed limits on all non-arterial streets at 20 mph and 200 miles of arterial streets at 25 mph.⁸

One study found that on rural roads, when considering other relevant factors in the engineering study along with the speed distribution, setting a speed limit no more than 5 mph below the 85th-percentile speed may result in fewer total and fatal plus injury crashes, and lead to drivers complying closely with the posted speed limit.⁹

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/preventioncountermeasures/> and <https://safety.fhwa.dot.gov/speeding/ref.html>.

FHWA-SA-21-034

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Speed Safety Cameras

Safe Speeds is a core principle of the Safe System Approach since humans are less likely to survive high speed crashes. Enforcing safe speeds has been challenging; however, with more information and tools communities can make progress in reducing speeds. Agencies can use speed safety cameras (SSCs) as an effective and reliable technology to supplement more traditional methods of enforcement, engineering measures, and education to alter the social norms of speeding. SSCs use speed measurement devices to detect speeding and capture photographic or video evidence of vehicles that are violating a set speed threshold.

Applications
Agencies should conduct a network analysis of speeding-related crashes to identify locations to implement SSCs. The analysis can include scope (e.g., widespread, localized), location types (e.g., urban/suburban/rural, work zones, residential, school zones), roadway types (e.g., expressways, arterials, local streets), times of day, and road users most affected by speed-related crashes (e.g., pedestrians, bicyclists).

SSCs can be deployed as:

- **Fixed units**—a single, stationary camera targeting one location.
- **Point-to-Point (P2P) units**—multiple cameras to capture average speed over a certain distance.
- **Mobile units**—a portable camera, generally in a vehicle or trailer.

The table below describes suitable circumstances for SSC deployment.¹

Considerations
SSCs can produce a crash reduction upstream and downstream, thus generating a spillover effect.²

Public trust is essential for any type of enforcement. With proper controls in place, SSCs can offer fair and equitable enforcement of speeding, regardless of driver age, race, gender, or socio-economic status. SSCs should be planned with community input and equity impacts in mind.

- Using both overt (e.g., highly visible) and covert (e.g., hidden) enforcement may encourage drivers to comply with limits everywhere, not only at sites they are aware are enforced.
- Agencies should conduct evaluations regularly to determine if SSCs are accomplishing safety goals and whether changes in strategy, scheduling, communications, or public engagement are necessary.
- Agencies should conduct a legal and policy review to determine if SSCs are authorized within a jurisdiction and how the authorization and other traffic laws will affect a SSC program.
- Agencies should develop an SSC program plan with consideration of the USDOT SSC guidelines for planning, public involvement, stakeholder coordination, implementation, maintenance, evaluation, etc.³

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/preventioncountermeasures/> and <https://safety.fhwa.dot.gov/speeding/>.

The contents of this Fact Sheet do not have the force and effect of law and are not meant to bind the public in any way. This Fact Sheet is intended only to provide clarity regarding existing requirements under the law or agency policies.

FHWA-SA-21-070

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Variable Speed Limits

Selecting appropriate speed limits on roadways is important in maintaining a safe and efficient transportation network. Speed limits are established with an engineering study based on inputs like traffic volume, operating speeds, roadway characteristics, and crash history. However, conditions on the roadway are susceptible to change in a short amount of time (e.g., congestion, crashes, weather). Drivers typically determine their operating speeds under normal weather conditions on a straight roadway section with good pavement quality and adequate sight distances. If ideal conditions do not exist and the roadway does not meet the driver's expectations, there is a greater chance that a driver error could result in a crash. Providing variable speed limits (VSL) capable of adapting to changing circumstances could reduce crash frequency and severity. Speed management strategies, including VSLs, are integral to the Safe Speeds element of the Safe System Approach. Because humans are unlikely to survive high-speed crashes, VSLs reduce speeds so that human injury tolerances are accommodated in three ways: improving visibility, providing additional time for drivers to stop, and reducing impact forces.

Applications
VSLs use prevailing information on the roadway, like traffic speed, volume, weather, and road surface conditions, to determine appropriate speeds and display them to drivers. This strategy improves safety performance and traffic flow by reducing speed variance (e.g., improving speed harmonization). VSLs may also improve driver expectation by providing information in advance of slowdowns and potential lane closures, which could reduce the probability for secondary crashes. VSLs can mitigate adverse weather conditions or to slow faster-moving traffic as it approaches a queue or bottleneck.

Agencies can implement VSLs for the following applications:

- Congestion
- Incidents
- Work Zones
- Inclusion Weather

Safety Benefits:
VSLs can reduce crashes on freeways up to:

- **34%** for total crashes.¹
- **65%** for rear-end crashes.¹
- **51%** for fatal and injury crashes.¹

Benefit/Cost Ratios range between* 9:1- 40:1

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/preventioncountermeasures/> and <https://safety.fhwa.dot.gov/speeding/ref.html>.

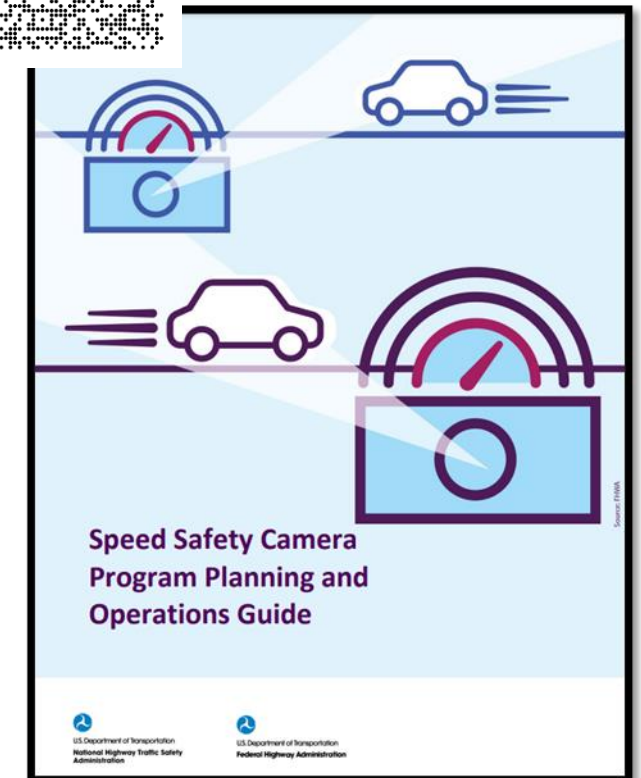
FHWA-SA-21-054

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Speed Safety Camera (SSC) Program Planning and Operations Guide



- Update to the Speed Enforcement Camera Systems Operational Guidelines published in 2008 (jointly by FHWA and NHTSA).
- Expanded information on how program decisions affect transparency, equity, public perception, and “Focus on Safety” –pitfalls to avoid.
- Greater emphasis on SSCs as a component of a comprehensive speed management program.
- New technologies and processes, like Point-to-Point (speed over distance) enforcement and automated citation processing.
- Expanded range of performance measures.
- New noteworthy practices on how jurisdictions are addressing concerns to implement programs, including equity.

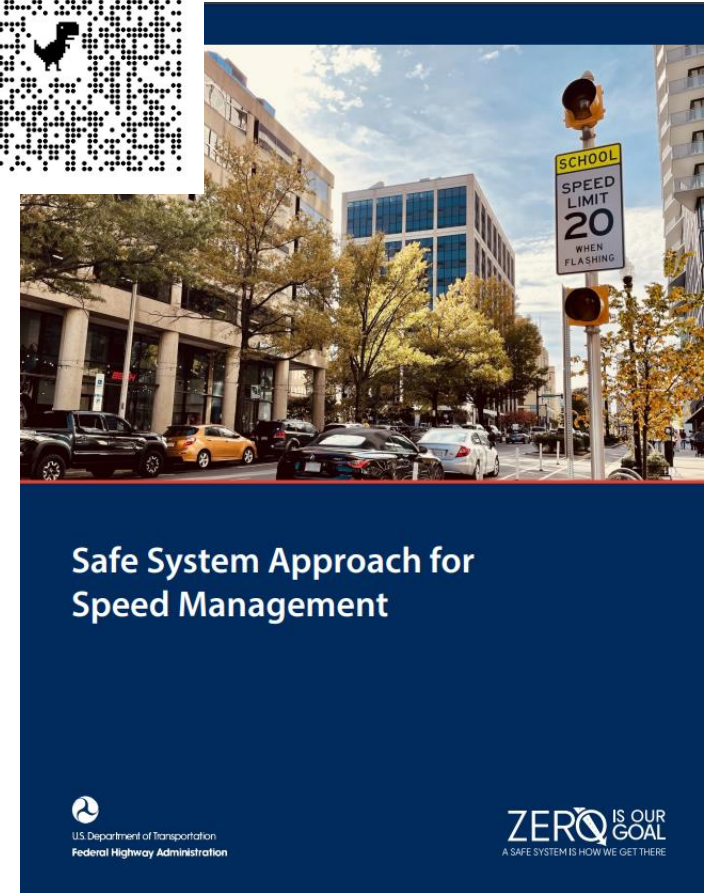


Source: FHWA

Safe System Approach for Speed Management



- A comprehensive resource for practitioners interested in implementing a Speed Management program using the Safe System Approach.
- Helps practitioners understand the impacts of speed on traffic safety and explore linkages between speed management and the Safe System Approach by introducing a five-tiered Safe System Approach for Speed Management Framework.
- Includes noteworthy practices to highlight successful deployments.



Source: FHWA

NHI Course: Designing and Operating Roadways for Safe Speeds



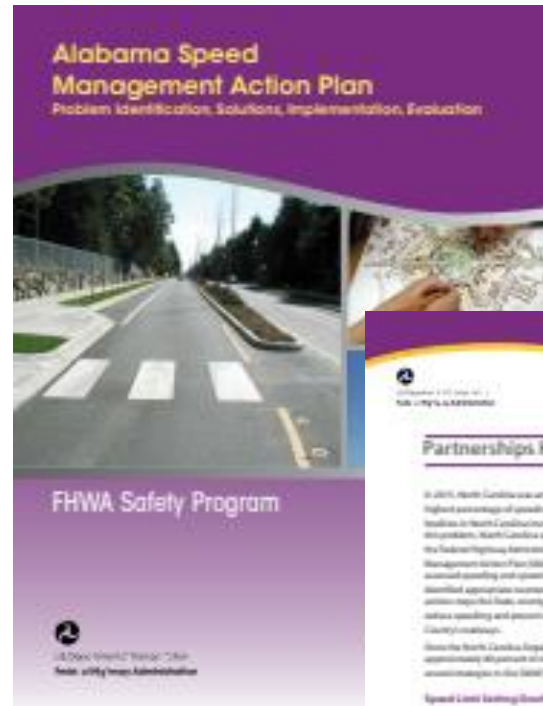
- A 10-hour, Web-based Training (WBT) on the importance of considering all road users at each stage of design and operations to encourage safe speeds and proactively address safety issues.
- Designed to be both a comprehensive self-paced course and serve as a prerequisite for an Instructor Led Training (ILT).
- Be a Safe Speed Superhero!



Source: FHWA/NHI

Assistance to States & Locals

FHWA provides technical assistance to States, local, and tribal agencies for developing and implementing speed management action plan.



Source: FHWA



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ZERO IS OUR
GOAL
A SAFE SYSTEM IS HOW WE GET THERE



Disclaimer

Except for any statutes or regulations cited, the contents of this presentation do not have the force and effect of law and are not meant to bind the States or the public in any way. This presentation is intended only to provide information regarding existing requirements under the law or agency policies.

Note: Unless otherwise indicated, FHWA is the source for all images in the presentation.

Implementation Goal Areas & Upcoming Webinars

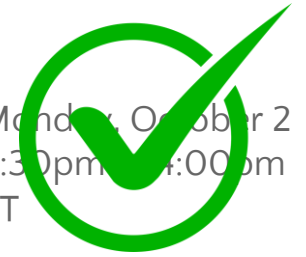


- **Goal 1: Opportunities to integrate Movement & Place**
 - Context Classification @ State/Metro Planning (LRTP/MTP)
 - AASHTO Green Book 8
 - FHWA Resources
- **Goal 2: Opportunities to integrate RSA “transportation lifecycle process”**
 - State/Metro Process Integration
 - AASHTO Safety Summit – Mid-October
- **Goal 3: Opportunities to integrate Speed Management**
 - FHWA / NCHRP Resources (USLIMITS 2, etc.)
 - Speed Limit Setting Guidance
 - Camera-based Enforcement

Movement & Place

Linking land use and transportation through context classification

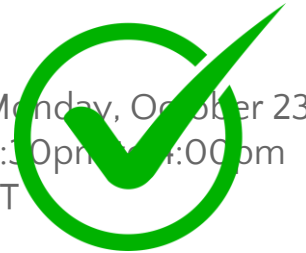
Monday, October 22
2:30pm to 4:00pm ET



Road Safety Audit Process

Integrating safety auditing into all stages of the transportation lifecycle

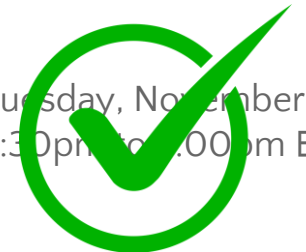
Monday, October 23
2:30pm to 4:00pm ET



Speed Management

Policies and practices that achieve safe and appropriate vehicle speed limits and behavior

Tuesday, November 7
2:30pm to 4:00pm ET



U.S. DOT Funding Opportunities



FUNDING SAFETY FOR ALL.

FHWA encourages implementation of projects and programs that improve safety, equity, and accessibility for all road users. Take the first step toward exploring federal funding opportunities for your Complete Streets Network.

[Federal Transit Administration Grant Programs](#)

[National Highway Performance Program](#)

[Surface Transportation Block Grant Program](#)

[Bridge Replacement and Rehabilitation Program](#)

[Highway Safety Improvement Program](#)

[Congestion Mitigation and Air Quality Improvement Program](#)

[Bridge Investment Program](#)

[Transportation Alternatives](#)

[Carbon Reduction Program](#)

[Tribal Transportation Program](#)

[Metropolitan Planning Funds](#)

[PROTECT](#)

[Railway-Highway Crossing Program](#)

[Statewide Planning and Research](#)

[Recreational Trails Program](#)

[Bridge Formula Program](#)

[Railroad Rehabilitation & Improvement Financing](#)

[TIFIA Program](#)

[Federal Lands and Tribal Transportation Programs](#)

[Tribal Transportation Program Safety Fund](#)

[ATTAIN](#)

[RAISE Discretionary Grants](#)

[INFRA Grants](#)

[Safe Streets and Roads for All Grants](#)

[Transit Oriented Development](#)

[Reconnecting Communities Pilot Program](#)

[Areas of Persistent Poverty Program](#)

[National Scenic Byways Program](#)

[Active Transportation Infrastructure Investment Program](#)



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<https://highways.dot.gov/complete-streets/make-complete-streets-default-approach>

Q&A

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USDOT - Federal Highway Administration



Source: USDOT/Getty



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Discussion

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