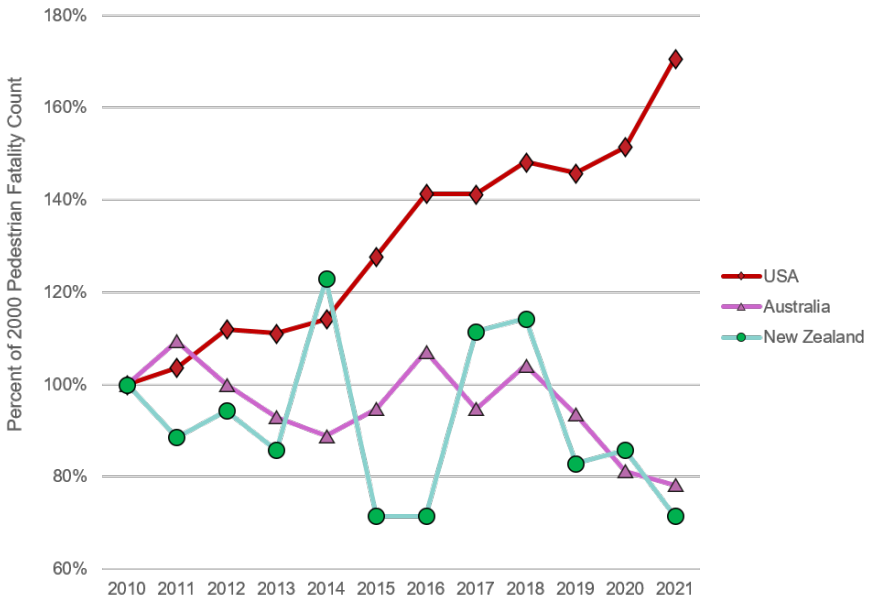
International Study Findings

Improving Pedestrian Safety on Urban Arterials Learning from Australasia

Overview

Arterial roadways--designed to accommodate higher motor vehicle volumes and speeds—create safety challenges between pedestrians, bicyclists, and vehicle traffic due to many potential points of conflict. In the United States (U.S.), **the majority of pedestrian fatalities take place on arterial roadways**.

While pedestrian fatalities in the U.S. continue to skyrocket, representing 15 percent to a third of all roadway deaths, other countries such as Australia and New Zealand (i.e., Australasia) are making notable safety gains (see figure at right). For decades, these countries have been implementing a **Safe System approach**, which focuses on eliminating fatal and serious roadway injuries through a holistic set of practices. The Safe System approach was adopted as a United States Department of Transportation (USDOT) national strategy in 2022 in the National Roadway Safety Strategy.



The USDOT Federal Highway Administration (FHWA) **Global Benchmarking Program** serves as a tool for accessing, evaluating, and implementing proven international best practices and technical innovations to improve highway transportation in the U.S. Beginning in 2020, a Global Benchmarking research team investigated Australasian approaches to reduce pedestrian fatalities and serious injuries on urban, signalized arterial roadways using the Safe System approach.

The study team identified three key Australasian practices—embedded in federal policy, safety plans, and local project delivery—that uniquely differ from current U.S. practice and are foundational to the safety improvements observed there. These include applying a **Movement and Place Framework** to integrate transportation and land use planning, an institutionalized process for conducting **Road Safety Audits**, and a holistic **Speed Management** approach. Combined, these Safe System approaches prioritize human health and mobility and help transform urban arterials from auto-oriented roads (see image below on the left) to multimodal streets (image below on the right) with improved safety and health outcomes for pedestrians and other road users as well.

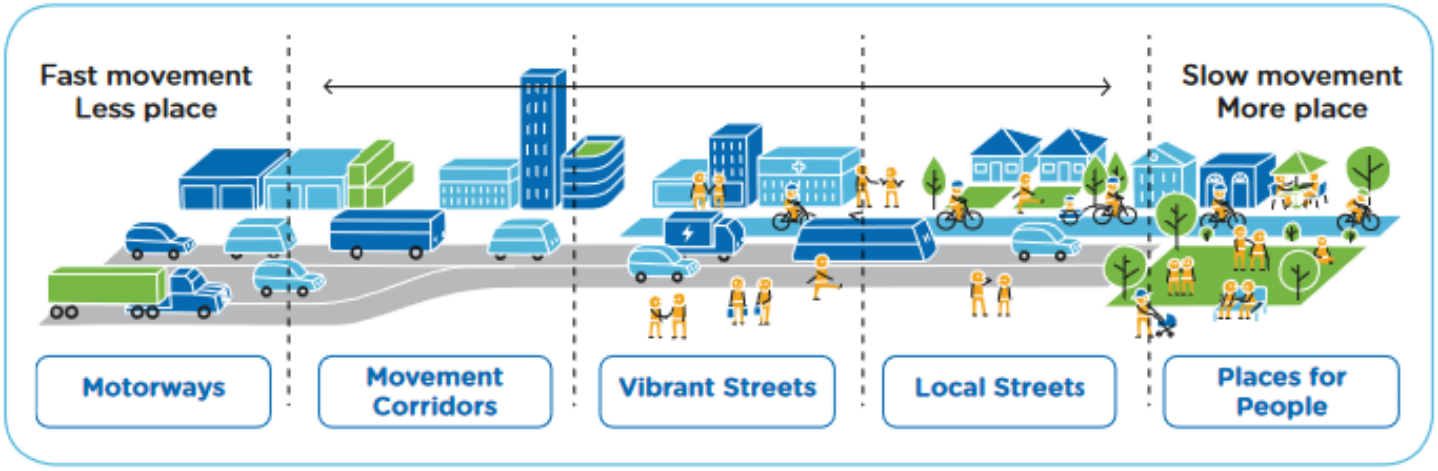
Movement and Place Framework

Transportation Planning in the U.S.

In the U.S., transportation planning is often car-centric, and roadway classification does not necessarily account for land use context or the safety needs of all road users. Roads are categorized based on their purpose for motor vehicle traffic, and specific design standards are then linked to these categories, determining features like lane widths, curb radii, and posted speed limits. Roads are also often classified by transportation agencies acting alone rather than in concert with state, local, and regional planning entities, who may have differing goals for the functionality of their roadway networks. These approaches can lead to safety problems when land use and community needs change from one segment of a roadway to the next, as roadway classification and design no longer matches the context or desired function.

Movement and Place Framework to Transportation Planning

Transportation planning in Australasia takes a people-centric approach by prioritizing the needs of local communities and emphasizing its "Movement and Place" Framework (see figure below). It goes beyond solely focusing on vehicles and considers the movement of goods and people, by many modes. Speed limits and the need for dedicated space to serve various modes are carefully assessed and adjusted based on the specific context and long-range plans of each area. In this way, goals related to connectivity and efficiency are better aligned with system design and land use.



The Movement and Place Framework has been shown to provide multiple benefits:

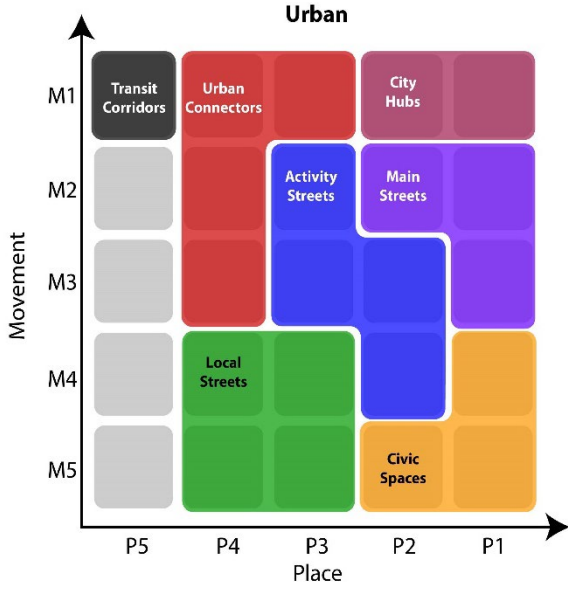
1. **Enhance multimodal integration**: This comprehensive view of the network allows for better modal integration and ensures that the needs of all road users are met. The focus on moving people and goods through various ways—including via cars, walking, cycling, public transit, and freight—helps to develop a more efficient network, clarifying the roles and priorities of different modes that collectively create a complete transportation system.
2. **Establish a common basis for decision making**: With a strong emphasis on community engagement and input, the Movement and Place Framework serves as a strategic tool for planning for change while prioritizing safety. The framework provides agencies with a consistent basis for determining how each road functions within a larger network to set priorities and plan for future change.
3. **Coordinate the transformation of transportation and land use**: The Framework helps plan for the development of places, such as residential, commercial, and public spaces, to envision future places and transportation networks that accommodate various modes of travel and create a more efficient, people-centered environment.

Movement and Place Framework

Movement and Place in Practice

One Network Framework in New Zealand

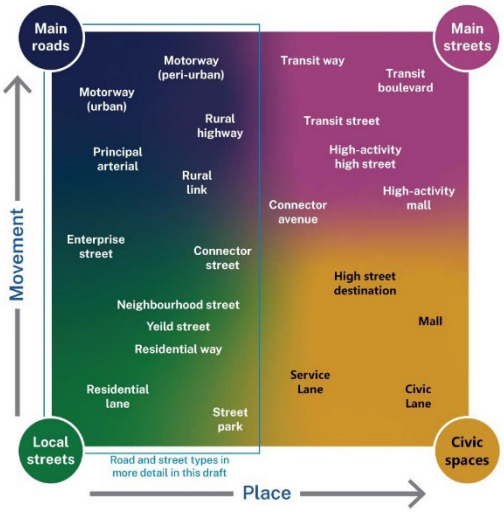
New Zealand incorporates the Movement and Place principles in their One Network Framework (ONF) that offers a roadway classification matrix to match to Movement and Place functions and characteristics. The movement function is based on the daily volume of people traveling through a corridor using all modes of transportation and the nature of that movement. The place function is based on the level of on-street activity happening within a corridor, including pedestrian activity, and the adjacent land uses. Cross-referencing the matrix and tables helps practitioners to clearly identify appropriate speed limits and design investment decisions.



Movement function	Movement significance	Nature of movement, primarily along the corridor	Daily volume of people (all modes) along the corridor
M1	Major	Mass movement of people and goods, both regionally and nationally	More than 20,000
M2	Significant	Movement of people and goods on regional and local routes linking major destinations and urban centers	10,000 – 25,000
M3	Moderate	Movement of people and goods within a town, city, or region	3,000 – 12,000
M4	Minor	Local movement by people for short trips or to connect to higher-movement segments	300 – 4,000
M5	Low	Local movement by local people	Fewer than 500

Transport for New South Wales, Australia

New South Wales, Australia, uses the Movement and Place framework in their transportation planning, which integrates movement and place considerations throughout the entire planning lifecycle. They follow a six-step process, starting with developing a vision and studying the area, applying design principles, developing options, selecting a preferred design, implementing the project, and then maintaining, improving, and adapting as needs and land use changes. Design resources for New South Wales also include road and street classification tools for identifying design issues and opportunities for all modes.



Data Supports for Movement and Place Applications

The Movement and Place framework emphasizes understanding the land use context and how people use the roads and streets—both currently and in the future. This approach takes into account a number of data sources, including baseline and projected community and land use characteristics, current and desired mobility goals, daily volume of people using different modes, and others. Integrating these data measures helps agencies to develop a deeper understanding of how the community currently utilizes the roads and how to plan to address locations where there is a gap in the current roadway design and the transportation mobility and safety goals of the future.

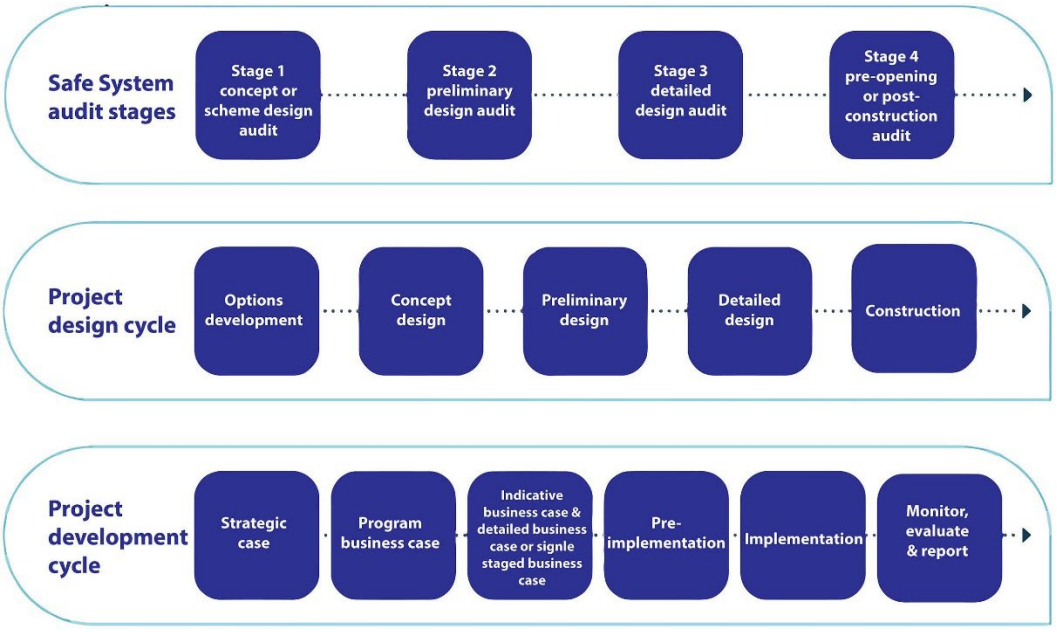
Road Safety Audits

Road Safety Audits in the United States

In the U.S., agencies take many approaches to identify and address pedestrian and bicycle safety needs and issues. Some cities and states initiate road safety audits (RSAs), an impartial assessment of a roadway design. Although road safety audit guidance is available to agencies in the U.S., it is not a required step within transportation planning and project delivery. No state routinely performs RSAs on all projects pre-construction. Typically, RSAs are conducted in an ad hoc fashion on existing facilities, particularly in areas where safety issues have been identified through crash analyses. State DOTs typically do not have institutionalized RSA programs, such as having mandatory certification or training for RSA auditors or overseeing bodies responsible for RSA accreditation and compliance.

Road Safety Audits in Australasia

In Australasia, a RSA is a formal safety performance process that is applied to both existing and proposed road or intersection designs. The RSA involves a qualitative assessment and reporting of potential road safety concerns, highlighting opportunities for enhancing safety for all road users. These assessments are carried out by an impartial, diverse team, offering a valuable "check and balance" for project design teams. The RSAs do not replace quality control, design, peer review, project redesign, or other existing review processes and tools. Rather, they are embedded throughout the project delivery life cycle.



Road Safety Audits in Practice

In New Zealand, RSAs are performed through the lens of the Safe System approach. They are conducted by a trained and certified external auditor who assesses transportation safety risks for new or improvement projects, and they are completed at several project phases. The audits provide a process by which the project's safety vision can be clarified and proactive techniques can be applied to predict potential safety risks and reassess design options. Similarly, the Queensland Department of Transport and Main Roads developed a Safety Assessment Framework that includes a Safe System Audit and a safety audit is a required step in project development.

Data Supports for Road Safety Audits

Audits provide measures at various stages to evaluate and score the project and highlight identified safety concerns. A safety concern risk rating matrix provides recommendations for actions in the New Zealand approach. A Safe System assessment table is also used to assess the alignment of the project with Safe System principles.

Speed Management

Speed Limit Setting Approaches in the United States

Guidance provided by the Federal Highway Administration (FHWA) regarding road classification recognizes the balance between accommodating traffic flow and providing access to destinations. This guidance references tools that aid states and cities in determining appropriate speed limits by considering factors such as the local context and land use. However, there is some uncertainty about how road classification, speed management considerations, and safety goals align. To date, there is no comprehensive national policy or tool to guide speed limit setting—and subsequent roadway design—that explicitly incorporates community preferences and contextual elements in the network planning process. Instead, the traditional approach to speed limit setting in the U.S. is rooted in an engineering application of the 85th percentile rule, where the speed at which 85 percent of drivers travel at or below on a specific road segment determines the speed limit. This approach, however, poses challenges to pedestrian safety, and in fact, most other road users, as it results in roadways designed for speeds that may be significantly higher than the desired or even posted speed.

Australasia Approaches to Speed Limit Setting

National speed management policy principles in Australasia encompass four elements:

1. **Safety**: reduce the potential for fatal and severe injuries for all road users by mitigating impact speeds and crash forces.
2. **Whole of System**: integrate speed limit setting with other initiatives, such as regulation, enforcement, communications, engagement, and monitoring.
3. **Community Wellbeing**: enable all people to travel in safe and healthy ways by setting speed limits that are appropriate and comfortable, and result in public health, accessibility, environmental and amenity co-benefits.
4. **Movement and Place**: establish speed limits that align with the One Network Framework street categories, design, and infrastructure.

Collectively, these policy principles support a more integrated approach to speed management that begins early in the network planning stage, using the Movement and Place Framework.

Speed Management in Practice

New Zealand Speed Limit Guidelines

In New Zealand, the default speed limits are 100km/h on rural roads and 50km/h on urban streets, but it is estimated that over 90 percent of roads and streets have speed limits considered too high for safety. While local communities can modify these limits, the transition to safe and appropriate speeds depends on individual speed management plans. To facilitate this transition, a rule was introduced in 2022 that aims to enhance road safety by adopting a holistic approach that factors in safety and infrastructure. It empowers road authorities to set speed limits and mandates the creation of ten-year vision speed management plans with three-year implementation strategies. Unlike the previous rule, this new approach encourages speed limit changes as a foundation for a safe system and links speed targets to roadway function. Speed limit setting practices in New Zealand prior to 2022 closely matched current U.S. practices. Learning more about their processes and policies to update their practices could hold promise for adoption in the U.S.

Speed Management

Transport for New South Wales' High Pedestrian Activity Program

An example of speed management practices through framework approaches in Australasia took place in New South Wales, Australia. Under the High Pedestrian Activity Program, a programmatic effort to reduce the speed limit, areas with high pedestrian traffic, including around bus interchanges, train stations, and shopping districts, posted speed limits in 29 zones were reduced to 40 km/h (25 mph). Self-enforcing changes via roadway design and signage helped signal to drivers to reduce speed. In other locations, including a central business district and beachside community, existing roads were reduced to 30 km/h (19 mph). Road features like speed tables, anti-skid surfaces and conspicuous crossings at intersections contributed to self-enforcing street design. Although roadway design helped to slow speeds, automated enforcement via mobile and fixed camera units, some paired with advance signage to notify motorists of cameras, served as a prevailing method to enforce speed limits.

Speed Management Metrics

Beyond traditional speed management metrics, like speed limit reductions and driver compliance rates, the Australasia approaches extend to measure percent of urban roads with safe speed limits, and percent of at-grade urban intersections designed in places with lower speed limits and with more pedestrian traffic. Speed management safety outcomes such as pedestrian fatality and severe injury rates are also included in safe speed measures, as are other outcomes in keeping with other approaches and strategies. For example, speed limits can impact equitable access to safe and healthy transport options, such as walking and biking, due to the level of comfort and ability that people may have in higher or lower speed environments. These different transportation options relate to the whole transportation system as speed management activities are determined by the various modes, road users, and land context, and the Movement and Place / One Network Framework principles.

Conclusions

As these examples around transportation planning, road safety audits, and speed management show, there are noteworthy differences between the U.S. and Australasian approaches to transportation safety, which affect pedestrian injury outcomes. The Australasian approach to transportation planning is centered on producing a system that improves wellbeing, livability, and encompasses inclusive access, economic prosperity, resilience and security, environmental sustainability, and healthy and safe people. These multidisciplinary priorities invite collaboration and produce co-benefits stemming from active travel as a safe and attractive transportation option. Projects can be better programmed and accelerated with increased alignment between government and private sector transportation practitioners. Public involvement can focus on very localized needs rather than require repeated project-by-project conflict management.

Policies and guidance related to land use, speed limit setting, and road safety auditing are among many tools used to improve safety, support consistency across the entire roadway network, and provide opportunities for continuous performance assessment. Collectively, these approaches support a culture that prioritizes transportation safety as a principle within society: that all people deserve to use roads—in whatever mode of travel may be appropriate—and arrive at their destination safe and unharmed.

Many of the innovative practices and lessons learned in Australasia are already being recognized and championed in the U.S. This study highlights three Australasian approaches to safety that are effective and viable for U.S. adoption. Key opportunities for institutionalizing these practices include:

Updating the U.S. Roadway Classification System and Improving System Inventories

Australasian practices include a comprehensive, network wide roadway classification that includes land use and features. This informs their Movement and Place Framework. The U.S. has the ability to incorporate this approach by reassessing its current roadway classification—in partnership with local jurisdictions—and identifying opportunities to reclassify roads depending on changing land use and needs of communities. There is also an opportunity to update tools and guidance, and enable a more precise and relevant classification that aligns local characteristics and needs. This would bridge the gap between current U.S. Safe System approaches and practice, allowing for a more adaptable and context-sensitive system. Updated roadway facilities inventories could provide data on existing or missing pedestrian and bicycle facilities, such as sidewalks, dedicated bike lanes, off-street paths, and other multimodal measures that separate people from vehicles. These roadway infrastructure sources of data are key to planning and prioritization in Australasia.

Improving Speed Limit Setting Practices and Speed Management

Speed limit setting—as an important tool in the wider approach to speed management—needs to be tied more closely to desired roadway function and context. Australasian approaches clearly offer speed limit setting guidance that is based on the Movement and Place goals and land use context. Many agencies evaluate their speed management performance by measuring the percentage of the road network that has been adjusted for safer speeds, and the percentage of the urban network with speeds below 25 mph. Integrating this information within a U.S. roadway classification system would provide more information for speed management practices to encourage safe speeds in connection with land use and where people use the roads by walking, biking, and other mobility options outside of the vehicle.

Formalizing Road Safety Audits Into Roadway Design and Infrastructure Delivery Processes

Road Safety Audits of existing facilities were a practice identified from earlier Global Benchmarking Studies and have already been introduced and adopted in the U.S. The next step in institutionalizing this process is to establish stronger mandates for trained and certified RSA specialists to perform multimodal road safety audits in various predesign phases for all federally, state, and locally-funded roadway design and improvement projects.

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SUGGESTED CITATION: Sandt, L., and Blank, K. (September 2023). SUMMARY BRIEF: International Study Findings: Improving Pedestrian Safety on Urban Arterials. Pedestrian and Bicycle Information Center.

ACKNOWLEDGEMENT: The authors gratefully acknowledge the input and review provided by: Shari Schaftlein, FHWA; Jonah Chiarenza, USDOT Volpe National Transportation Systems Center; and Mark Cole, Virginia Department of Transportation.

DISCLAIMER: This material is based upon work supported by the Federal Highway Administration under Cooperative Agreement No. 693JJ32250017. Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the Author(s) and do not necessarily reflect the view of the Federal Highway Administration.

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