Global Benchmarking Webinar Series: Improving Pedestrian Safety on Urban Arterials (Part 1)

Introduction and Overview of Study Findings

Shari Schaftlein  Federal Highway Administration
Laura Sandt  UNC Highway Safety Research Center
Jonah Chiarenza  USDOT Volpe National Transportation Systems Center
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: Learning from Australasia

U.S. DOT Federal Highway Administration
Office of International Programs
September 2023
Study Team Overview

Shari Schaftlein
(Study Team Lead)
Director, Office of Human Environment
Federal Highway Administration
Shari.Schaftlein@dot.gov

Darren Buck (Study Team Co-Lead)
Pedestrian and Bicycle Program Coordinator
Federal Highway Administration
Darren.Buck@dot.gov

Tamara Redmon
Pedestrian and Bicyclist Safety Team Leader
Federal Highway Administration
Tamara.Redmon@dot.gov

Rachel Carpenter
Chief Safety Officer
California Department of Transportation
rachel.carpenter@dot.ca.gov

Mark A. Cole, PE
State Traffic Operations Engineer
Virginia Department of Transportation
Mark.Cole@VDOT.Virginia.gov

Lee Austin
Central Area Engineer
City of Austin, TX
Lee.Austin@austintexas.gov

Laura Sandt
Director, Pedestrian and Bike Information Center
University of North Carolina Highway Safety Research Center
sandt@hsrc.unc.edu

Jonah Chiarenza
Community Planner (Report Lead)
U.S. DOT Volpe Center
Jonah.Chiarenza@dot.gov

in coordination with:
Available Reports

FHWA Office of International Programs

Global Benchmarking Program:
Reducing Pedestrian Fatalities and Injuries on Urban Signalized Arterials

Improving Pedestrian Safety on Urban Arterials: Learning from Australasia

https://international.fhwa.dot.gov/programs/mrp/improving_pedestrian_safety.cfm
Pedestrian Fatality Trends 2010 – 2021

Data Source: ITF and FARS

71% increase since 2010
U.S. Domestic Context

52% of all fatal crashes

60% of fatal pedestrian crashes occurred on principal & minor arterials in 2021

Source: Volpe Center
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.

Source: FHWA.
Takeaway #1 – Policy & Law:
Pedestrian Safety is Foundational for Wellbeing and Livability

- Pedestrian movement is the foundation of transportation – it is the most elemental form of access to opportunity.

- Transportation systems that prioritize pedestrians are shaped by policies and laws that put human wellbeing at the center of policy goals.

- Policies that focus on the safe, efficient, and sustainable movement of people and goods, rather than the movement of vehicles, can more objectively balance multimodal access and mobility to achieve the best societal outcomes.
Takeaway #2 – Planning & Process:

Movement and Place are an Interconnected System

- Addressing safety, equity, climate, and economic challenges requires communities to understand the role that land use – place – plays in contextualizing the priorities for transportation – movement.

- *The Movement and Place Planning Framework* can help break the cycle of self-reinforcing auto-oriented land use and transportation projects.
Takeaway #3 – Design & Implementation:
Safety Challenges Benefit from Proactive and Interdisciplinary Solutions

- Communities cannot effectively address discrete transportation issues – safety, equity, public health, congestion, freight – in isolation.

- Sustainable solutions to these issues require analytical tools and multidisciplinary practitioners who can work outside of their silos to analyze the tradeoffs between different modal emphases through a rational, systemic approach.
Linking Policy – Planning – Design

Source: Transport for New South Wales
Insights for the U.S. Transportation Lifecycle

**Policy**
What outcomes do we want to achieve?

**Planning**
How should our system grow and change?

**Programming**
What changes should we make to the overall network?

**Design & Engineering**
What changes should we make to individual segments?

**Operations & Evaluation**
How are we performing compared to our goals?

---

**Safe System Principles**
- Eliminate fatal and serious crashes for all road users
- Work collaboratively with stakeholders to build a shared vision and coordinated action
- Use proactive tools to identify and mitigate latent risks in the system
- Keep impact energy on the human body at tolerable levels
- Develop holistic performance measures and supportive data and analysis tools

**Barriers to Safe System Adoption**
- Competing policy interests and/or weak safety goals
- Silo'ed planning processes
- Lack of public engagement
- Outdated/poor forecasting models
- Misalignment with policies
  - Inappropriate/outdated prioritization tools (e.g., hotspot focus)
  - Risk assessment too downstream
- Outdated design standards
  - Design standards misaligned with agency policies/goals (e.g., do not prioritize safety)
  - Weak or missing policy supports
  - Lack of systematic safety checks
- Weak or missing safety metrics
  - Focus on lagging indicators rather than leading indicators

---

Office of International Programs
Insights for the U.S. Transportation Lifecycle

- **Policy**: What outcomes do we want to achieve?
- **Planning**: How should our system grow and change?
- **Programming**: What changes should we make to the overall network?
- **Design & Engineering**: What changes should we make to individual segments?
- **Operations & Evaluation**: How are we performing compared to our goals?

**Measurable Goals**

**Movement & Place**: Linking land use and transportation through context classification

**Design Standards**

**Road Safety Audit Process**: Integrating safety auditing into all stages of the transportation lifecycle

**Performance Management**

**Speed Management**: Policies and practices that achieve safe and appropriate vehicle speed limits and behavior
Study Focus Areas

- Policy
- Planning
- Design
- System Support
- Data
- Tech

Core Report Sections
“Road safety goes beyond our obligation to prevent deaths and injuries to improving lives and lifestyles too. It ensures everyone, even our most vulnerable road users, feels safe to use our transport network.”

- New Zealand Road Safety Strategy 2020 – 2030

**Policy: Link Policy to Performance**

<table>
<thead>
<tr>
<th>Strategic Priority</th>
<th>Transport Outcome(s)</th>
<th>Proposed indicator(s)</th>
</tr>
</thead>
</table>
| Strategic priority 1: Developing a transport system where no-one is killed or seriously injured | 1. Deaths and serious injuries on the road and rail corridor  
2. Hospitalisations from road crashes  
3. Pedestrian and cyclist injuries  
4. Deaths and serious injuries where alcohol, drugs, speed, fatigue or distraction was a contributing factor  
5. % of state highway and local road networks modified to align with a safe and appropriate speed  
6. % of road network covered by automated safety cameras  
7. % of urban network with speed limit of 40 km/h or below | |
| Strategic priority 2: Providing people with better travel options to access places for earning, learning, and participating in society | 10. Access to jobs  
11. Access to essential services (i.e. shopping, education and health facilities)  
12. % of population with access to frequent public transport services  
13. Mode share for people (i.e. % of travel by mode)  
14. Number of passenger boardings using urban public transport services (by region)  
15. SuperGold boardings  
16. Use of specialised services  
17. Network kilometres of walking and cycling facilities delivered  
18. Cycling count in urban areas | |
| Strategic priority 3: Improving freight connections to support economic development | 19. Predictability of travel times on priority routes1  
20. Mode share for domestic freight (i.e. % of freight moved by road, rail, and coastal shipping)  
21. Availability of state highway network  
22. Number of affected travel hours that priority routes are unavailable  
23. % of priority routes that have viable alternative routes  
24. Kilometres of road and rail infrastructure susceptible to coastal inundation with sea level rise  
25. Maintenance cost per lane kilometre delivered for: (i) state highway, (ii) local roads | |
| Strategic priority 4: Transforming to a low carbon transport system that supports emissions reductions aligned with national commitments, while improving safety and inclusive access | 26. Tonnes of greenhouse gases emitted per year from land transport  
27. Tonnes of harmful emissions per year from land transport  
28. Number of people exposed to elevated concentrations of land transport-related air pollution  
29. Number of people exposed to elevated levels of land transport noise  
30. Vehicle kilometres travelled  
31. Distance per capita travelled in single occupancy vehicles | |

Source: New Zealand GPS 2021 on Land Transport
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)

Source: New South Wales 2026 Road Safety Action Plan
**Policy: Coordinate Priorities for Urban Areas**

**A4E coordinated campaign:**

- Limit motorized through-traffic
- Prioritize access to city center destinations
- Improve access for service, freight, and delivery
- Favor public transport, walking and cycling
- Create new places for people

Source: City of Auckland Access for Everyone (A4E)
Policy: Bake in Safety through Road Safety Audits

Systemic Approach
Span all stages of the project lifecycle:
1. Network / corridor-scale planning
2. Programming
3. Scoping / developing countermeasures
4. Project development / detailed design
5. Project delivery
6. Post project
7. Network operation / maintenance

Safety Vision
- Network Safety Review
- QA Check
- TMP Design and Compliance Check
- Monitoring and Evaluation
- Road Safety Audit (including Thematic Audits)

Proactive Techniques
- Feasibility RSA
- Preliminary & Detailed RSA
- Construction RSA
- Pre-opening RSA
- Post-opening RSA (<3 months)

Predictive Techniques
- Techniques such as ANRAM/AusRAP/IRR
- Monitoring and Evaluation (Benefits Realisation and Continuous Improvement)

Reactive Techniques
- Safe System Assessment
- Crash Data Analysis
- Treatment of Crash Locations
- At-scene Crash Assessments
- Crash Investigations
- Crash Reviews

Safe System Principles
- Safety in Design
- Movement and Place (Safe Mobility)
- Road Asset Management / Inspection

Source: Austroads Managing Road Safety Audits
Planning: Movement and Place Frameworks

* Note, the name “transit corridors” should not be confused with the United States’ use of the term “transit,” which references public transit service and transit vehicles like buses and trains.
Planning: Customizing the Framework for Context

P1/M3
P1/M3 play a vital role in moving people around the region. The focus is on moving significant volumes of people, goods, and services in an efficient and reliable way.

P2/M3
P2/M3 may be a local centre that sits on a critical strategic link. It may be the only connection into or through an area but is also an important destination for the surrounding community with shops and services along it.

P3/M3
P3/M3 are locations which are both a crucial link in the transport network and attract people from across the region or country. The focus is on accommodating the efficient movement of people while maintaining a pleasant and attractive environment.

P1/M2
P1/M2 are connections between adjacent areas and links to strategic routes. Their focus is on preserving reliable and comfortable routes for general traffic and/or public transport and cycling.

P2/M2
P2/M2 have an important role to play within the community, providing access to many of the local services and amenities. The focus is on accommodating movement and place function needs.

P3/M2
P3/M2 attract people from across the region or country and maintain an important role in the transport network. The focus is on enhancing the key characteristics of the surrounding land use, while allowing for a high volume of people to travel in a variety of ways.

P1/M1
The majority of streets in Auckland are P1/M1. Most of them are residential and are destinations for people who live there.

P2/M1
P2/M1 attract people from wider than the local area but may not be the main road or street within this location. The focus is for people travelling at walking pace in a safe environment with places to rest and enjoy the surroundings.

P3/M1
P3/M1 are places which attract people from across the region and potentially the country to visit and spend time in. They should be pedestrian-friendly environments encouraging high levels of activity.

Source: Auckland Transport; Transport for New South Wales
Design: Retrofitting a “Connector Avenue”
Design: Retrofitting a “Connector Avenue”
Design: Retrofitting a “Connector Avenue”

Source: Google Streetview
Design: Retrofitting a “Principal Arterial Road”
Design: Retrofitting a “Principal Arterial Road”

Source: Google Streetview
Design: Retrofitting a “Principal Arterial Road”
Design: Speed Limits / Camera Enforcement
Design: Modal Separation / Camera Enforcement
Design: Modal Separation / Speed Management
Design: Modal Separation / Vertical Deflection

Source: FHWA
Design: Modal Separation / Vertical Deflection

Source: FHWA
Design: Vertical Deflection / Speed Management

Source: FHWA
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: Planning and Programming / Design and Engineering / Construction and Operation

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 2
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

https://highways.dot.gov/complete-streets/make-complete-streets-default-approach
Q&A

Shari Schaftlein, Director, Office of Human Environment
Federal Highway Administration
Shari.Schaftlein@dot.gov

Dr. Laura Sandt, Senior Research Associate, UNC Highway Safety Research Center
Director, Collaborative Sciences Center for Road Safety
Director, Pedestrian and Bicycle Information Center
sandt@hsrc.unc.edu

Jonah Chiarenza, U.S. DOT Volpe Center
Jonah.Chiarenza@dot.gov
Discussion

⇒ Send us your questions

⇒ Follow up with us:
  ⇒ General Inquiries pbic@pedbikeinfo.org

⇒ Archive at www.pedbikeinfo.org/webinars