



Safe System Principles and City of Seattle's Approach

2024 Safe Systems Tour - Joint Transportation Committee
September 24, 2024

Venu Nemani, P.E.
Chief Transportation Safety Officer/City Traffic Engineer



Our Vision, Mission, Values, & Goals

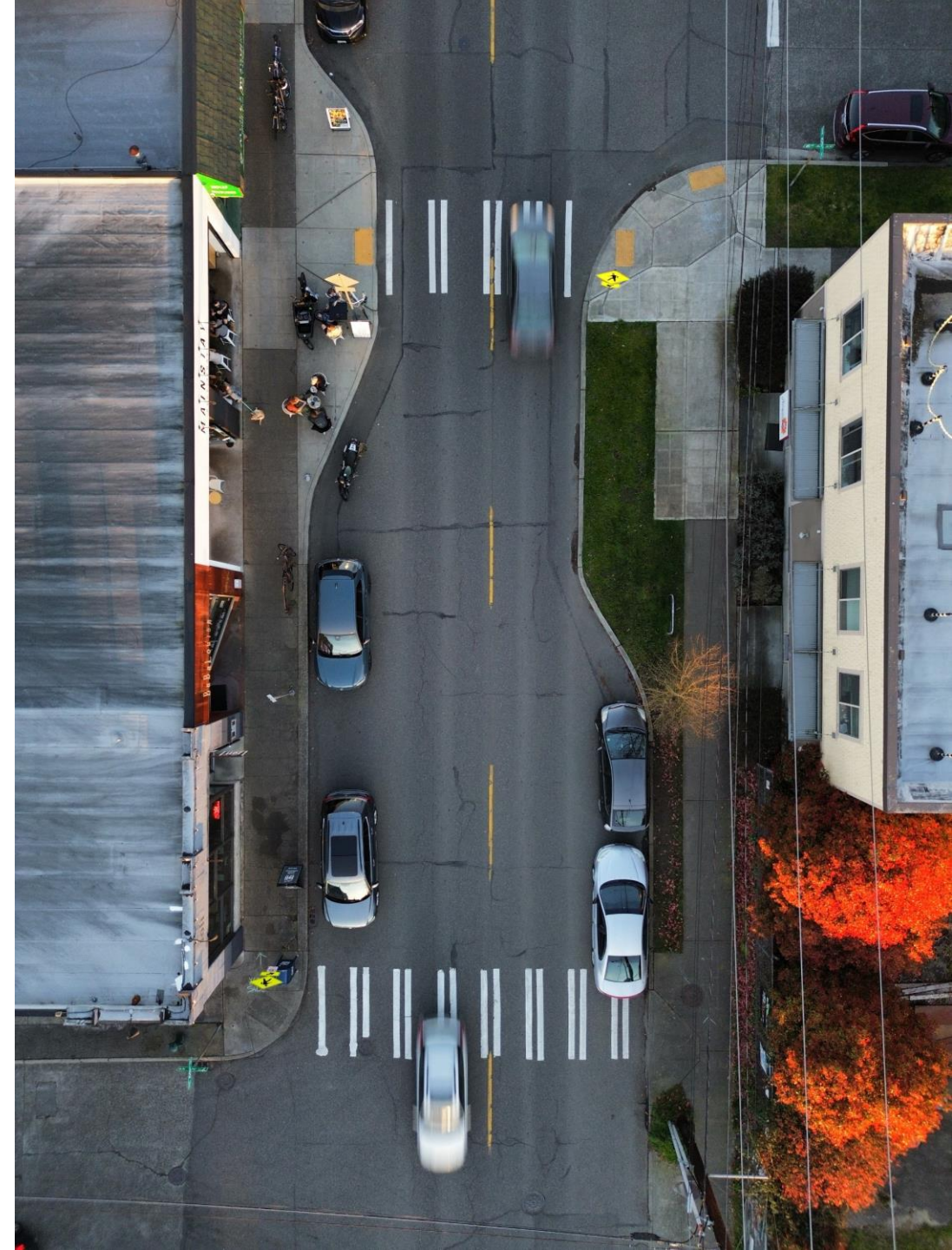
Seattle is a thriving equitable community powered by dependable transportation. We're on a mission to deliver a transportation system that provides safe and affordable access to places and opportunities.

Core Values & Goals:

Equity, Safety, Mobility, Sustainability, Livability, and Excellence.

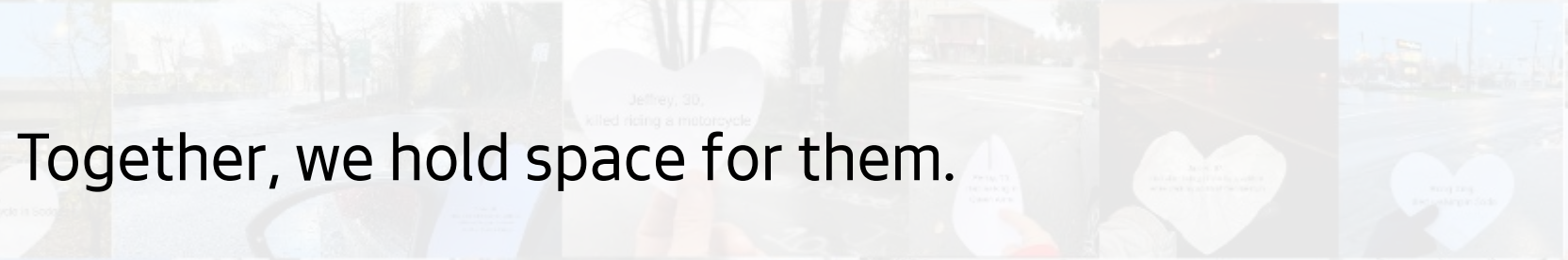
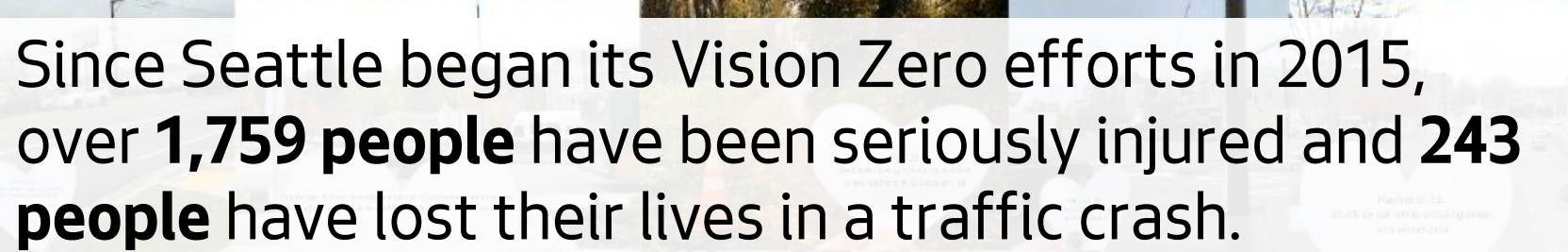
Presentation Overview

- Seattle's safety trends
- Our Safe Systems approach to Vision Zero
- Vision Zero Action Plan
- Prioritization based on Data
- What's next?

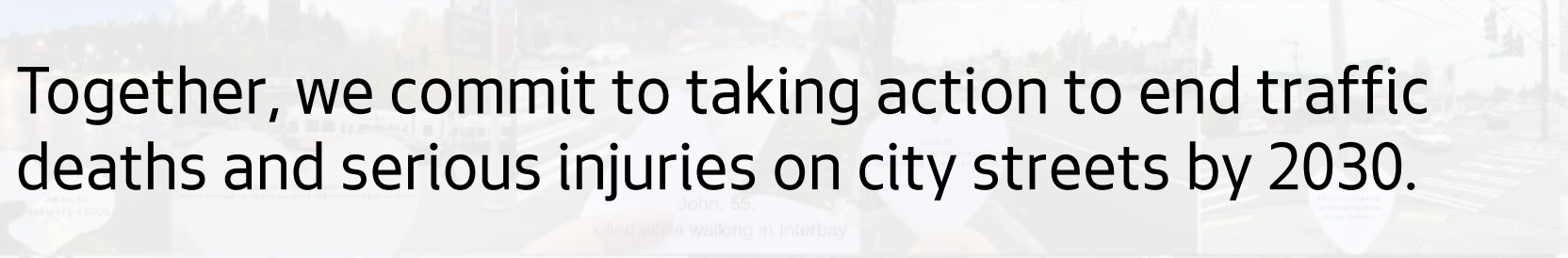




Since Seattle began its Vision Zero efforts in 2015, over **1,759 people** have been seriously injured and **243 people** have lost their lives in a traffic crash.



Together, we hold space for them.

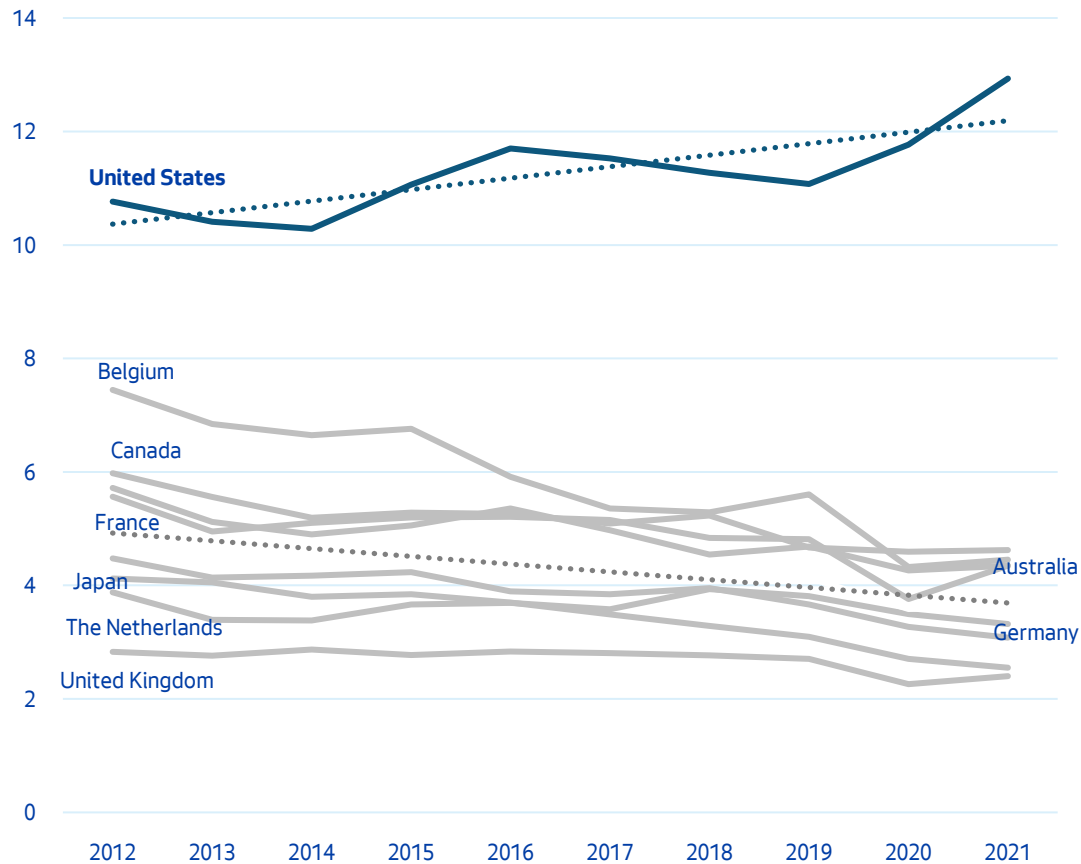


Together, we commit to taking action to end traffic deaths and serious injuries on city streets by 2030.



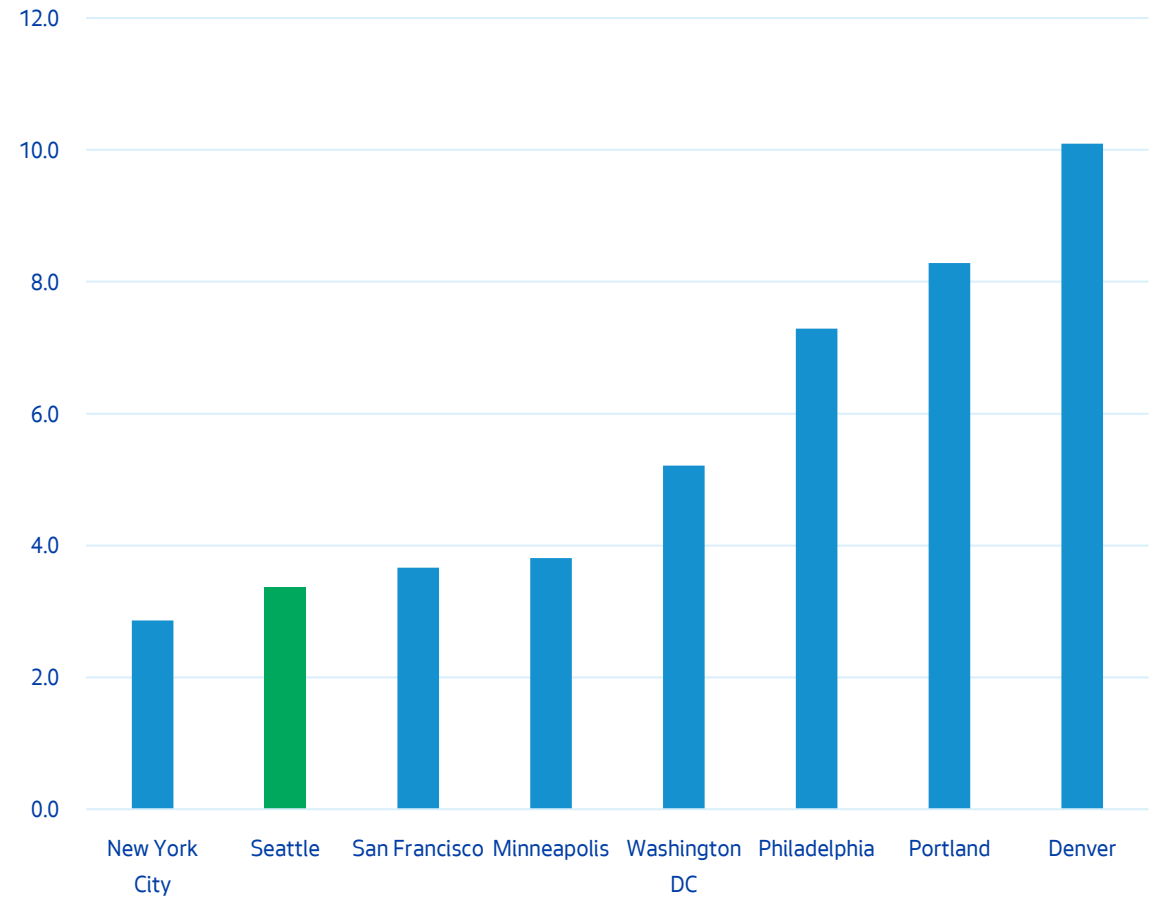
National and City Comparisons

Traffic Fatalities per 1M Inhabitants by Country*



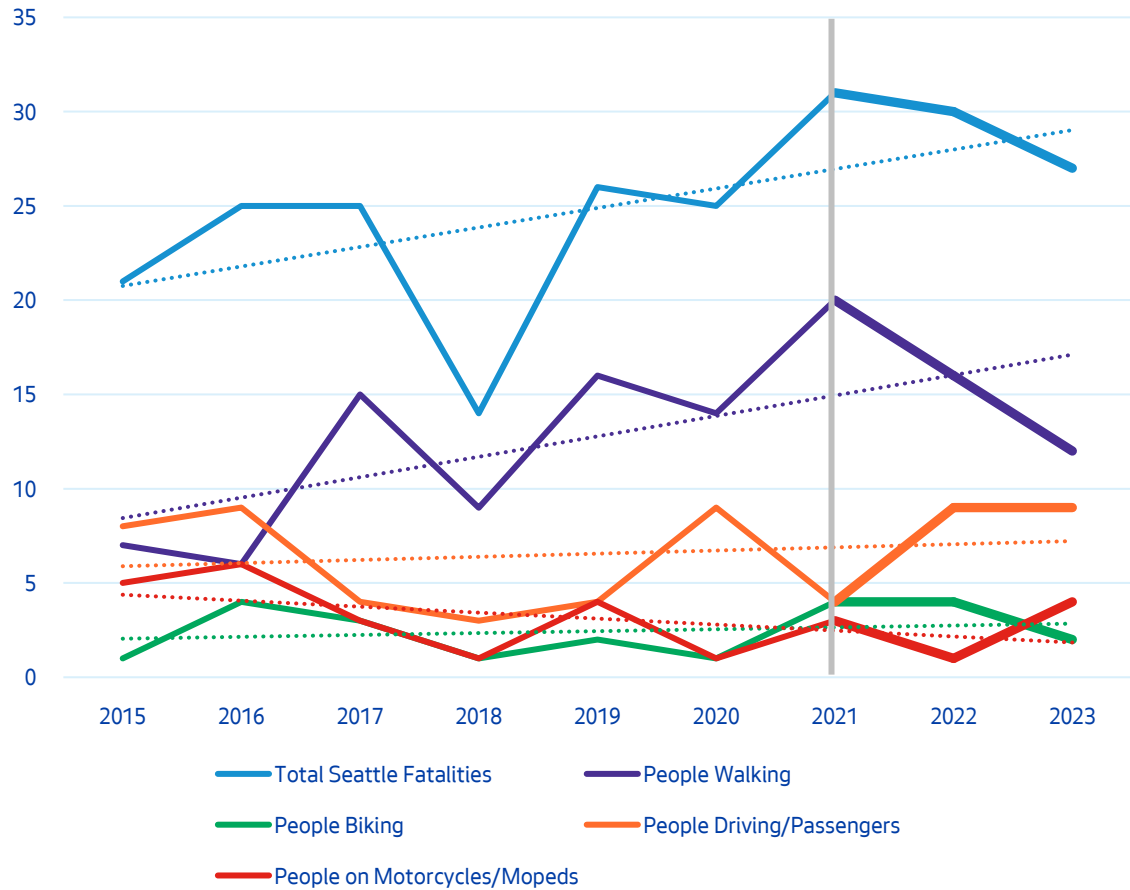
*Source: Data from OECD Road Accident Database

5-Year Average Fatalities per 100,000 Residents (2018-2022)

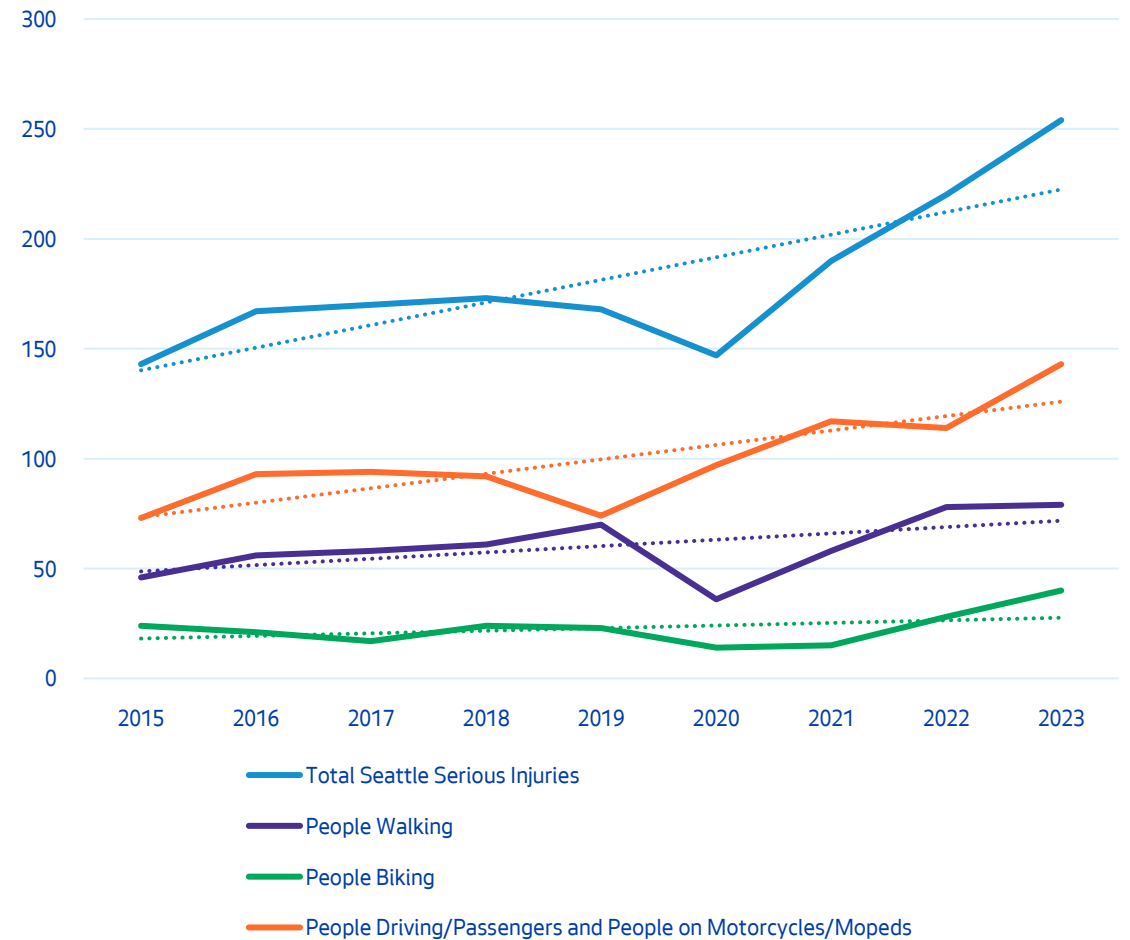


Collision Trends on Seattle's Streets

Lives Lost on Seattle Streets

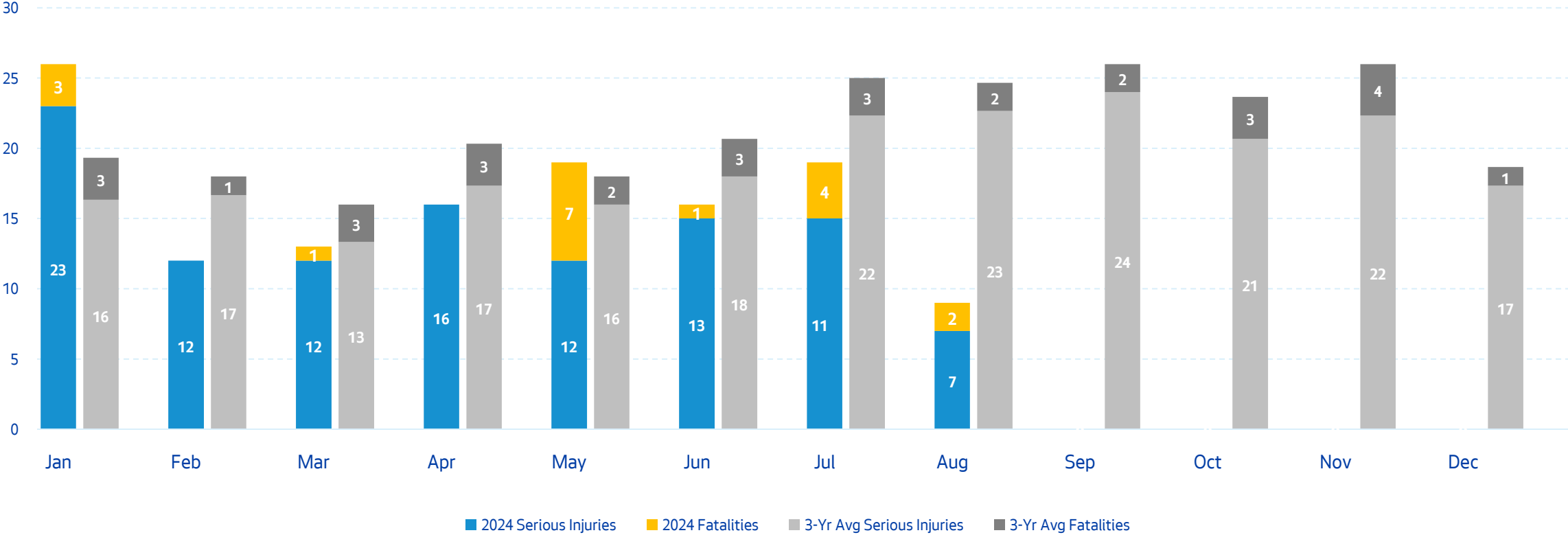


Serious Injuries on Seattle Streets



2024 Year-to-Date

Fatal + Serious Injury Collisions
 3 Year Average vs. Current Year
 (as of 9/19/2024)



Top-to-Bottom Review Overview



Key Recommendations

- 12 broad recommendations for realigning SDOT's Vision Zero efforts
- Recommendations focus toward:
 - **Adopting the Safe System Approach throughout the department and with external partners**
 - Incorporating Vision Zero into every project and program
 - Strengthening processes and culture around Vision Zero
 - Addressing equity along with safety



Getting to Zero: Adopting the Safe System Approach

- Seattle adopted new USDOT guiding paradigm to address roadway safety
- Includes multiple layers of protection to reduce the likelihood and severity of crashes
- Adds redundancy to accommodate both human mistakes and human vulnerability



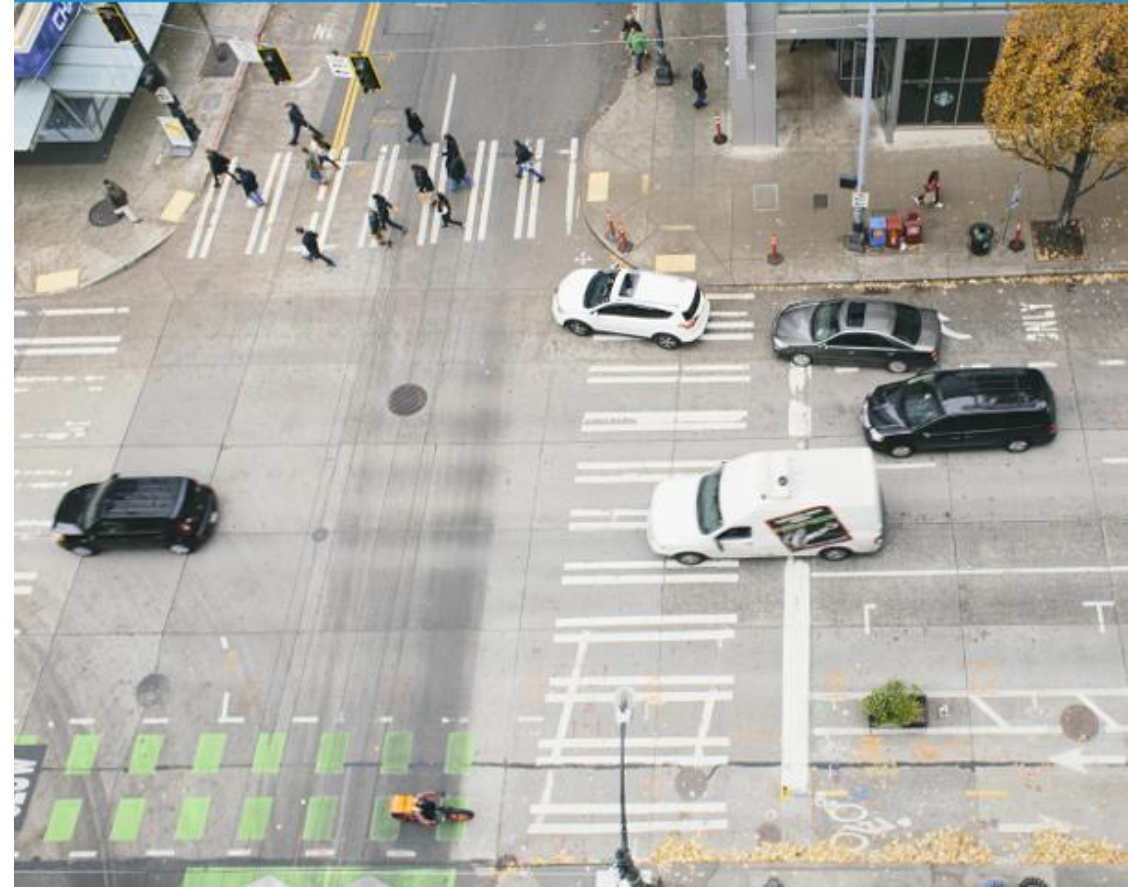
2024-2026 Vision Zero Action Plan

- Establishes **3-year strategy** with **2024 targeted actions** to reduce the number and severity of crashes
- Organizes over 20 strategies and 80 actions around the **five elements of the Safe System Approach**
- Tracks **Vision Zero progress**
- Includes toolkit of **safety countermeasures**

Seattle Department of Transportation

VISION ZERO ACTION PLAN

2024 Update



May 2024



Seattle
Department of
Transportation

VISION
ZERO
SAFER STREETS FOR SEATTLE

Three Prongs to Seattle's Vision Zero



Responsive Safety

Use data from past collisions to inform new safety strategies



Proactive Safety

Scale up delivery of effective safety treatments and deploy them where they will have the greatest impact



Capital Project Partnerships

Conduct safety evaluations for all capital projects and develop safety improvements in priority locations

Safer Streets

Safer streets seek to mitigate human mistakes, be self-enforcing by design, encourage safe travel behaviors, protect the most vulnerable users, and reduce potential for high severity crashes.

Key Strategies:

- Integrate **safety improvements into all capital projects** and in coordination with agency partners
- Advance **responsive safety treatments** at **crash-prone locations**
- Accelerate and **proactively** implement **proven safety treatments** (LPs, NTOR, road reconfiguration, protected turns, enhanced crossings, bike lanes, etc.)
- Deliver **Safe Streets for All projects**
- Develop an **industrial-focused Vision Zero** initiative
- Improve **dedicated facilities for people** walking, rolling, biking, and taking transit

Safer Streets: Madison St



Before



After

Safer Streets: MLK Jr Way S



Safer Streets: Pinehurst Way NE at NE 117th St



Safer Streets: Dexter Ave N at Thomas St



Proven Safety Countermeasures

<https://highways.dot.gov/safety/proven-safety-countermeasures>

 <p><u>Appropriate Speed Limits for All Road Users</u></p>	 <p><u>Leading Pedestrian Interval</u></p>	 <p><u>Road Diets (Roadway Reconfiguration)</u></p>	 <p><u>Bicycle Lanes</u></p>	 <p><u>Lighting</u></p>
 <p><u>Medians and Pedestrian Refuge Islands in Urban and Suburban Areas</u></p>	 <p><u>Crosswalk Visibility Enhancements</u></p>	 <p><u>Rectangular Rapid Flashing Beacons (RRFB)</u></p>	 <p><u>Pedestrian Half Signals</u></p>	 <p><u>Walkways and Sidewalks</u></p>
 <p><u>Roundabouts</u></p>	 <p><u>Wider Edge Lines and Narrow Lanes</u></p>	 <p><u>Arterial Traffic Calming</u></p>	 <p><u>Enhanced Delineation for Horizontal Curves</u></p>	 <p><u>Speed Safety Cameras</u></p>
 <p><u>Backplates with Retroreflective Borders</u></p>	 <p><u>Dedicated Left- and Right-Turn Lanes at Intersections and Dedicated Turn Phasing</u></p>	 <p><u>Yellow Change Intervals</u></p>	 <p><u>No Turn on Red</u></p>	
 <p><u>Hardened Centerlines</u></p>	 <p><u>Intersection Daylighting</u></p>	 <p><u>Turn Calming</u></p>	 <p><u>Raised Pavement Markers</u></p>	

PSCs - Implement at Scale



Leading Pedestrian Intervals



No Turn on Red



Dedicated Turn Phasing



Intersection Daylighting



Enhanced Pedestrian Crossings



Road Reconfigurations



Corridor Lighting



Arterial Traffic Calming



Safer Streets



Arterial Traffic Calming



No Turn on Red



**Protected Turn Phasing
6th Ave James St: Before**



Intersection Daylighting



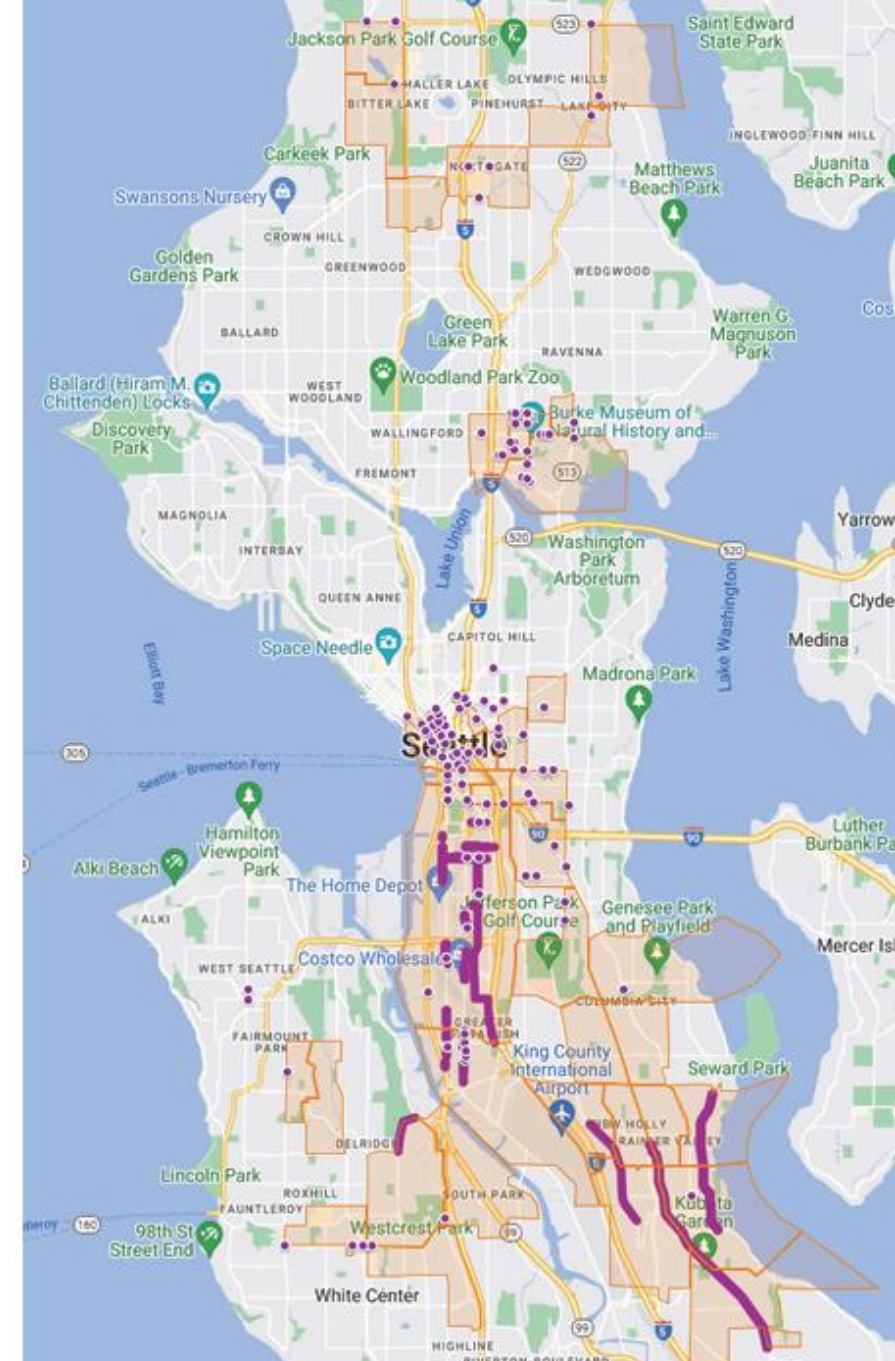
Enhanced Pedestrian Crossings



**Protected Turn Phasing
6th Ave James St: After**

Safe Streets and Roads for All Grant Update

- Received a \$25.64M federal SS4A grant in 2023 to build safety projects in underserved areas
 - Local match is about \$6.4M
 - Scope includes curb ramps, new sidewalks, bike lanes, accessible pedestrian signals, leading pedestrian intervals, marked crosswalks, rectangular flashing beacons, curb extensions, etc.
- Anticipated grant obligation in Q4 2024 with completion by 2028



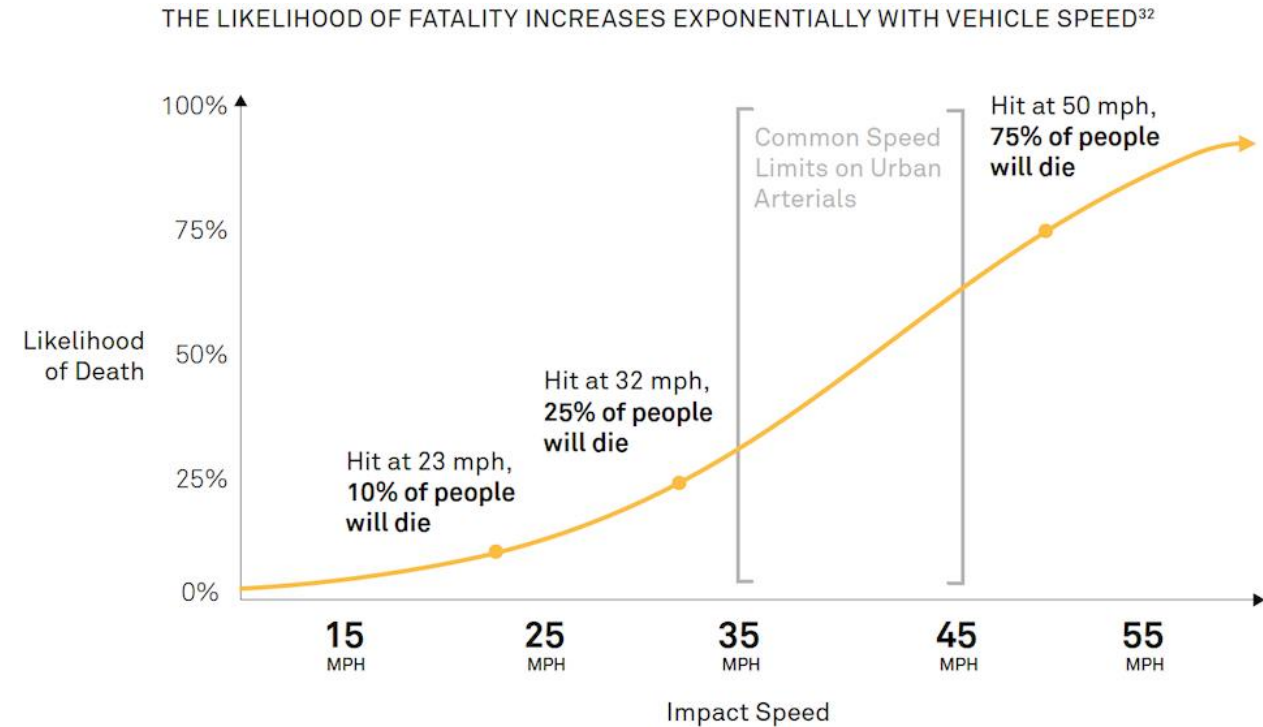
Purple: Planned project locations for SS4A
Orange: SS4A Underserved Communities census tracts

Safer Speeds

Speed is a leading determinant of the severity of crashes. A pedestrian's chance of surviving a crash decreases significantly with faster vehicle speeds.

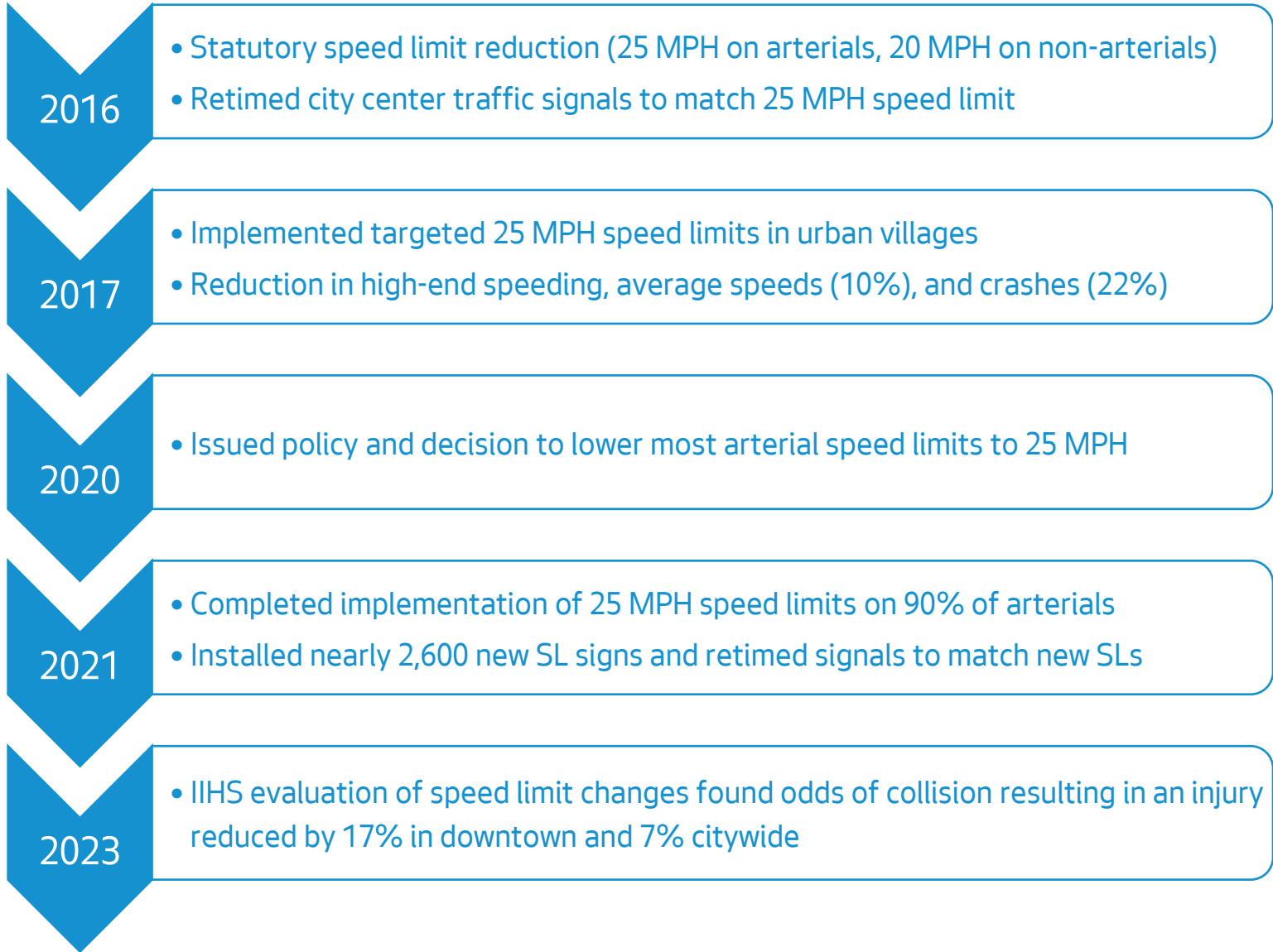
Key Strategies:

- Continue to apply **context-sensitive speed limit reductions** on City and State-operated arterials
- Encourage slower speeds using **traffic calming treatments and road reconfigurations**
- Equitably expand **traffic safety cameras** on high-speed and crash-prone corridors



Source: NACTO; AAA Foundation for Traffic Safety

Speed Limits Reduction - A Timeline



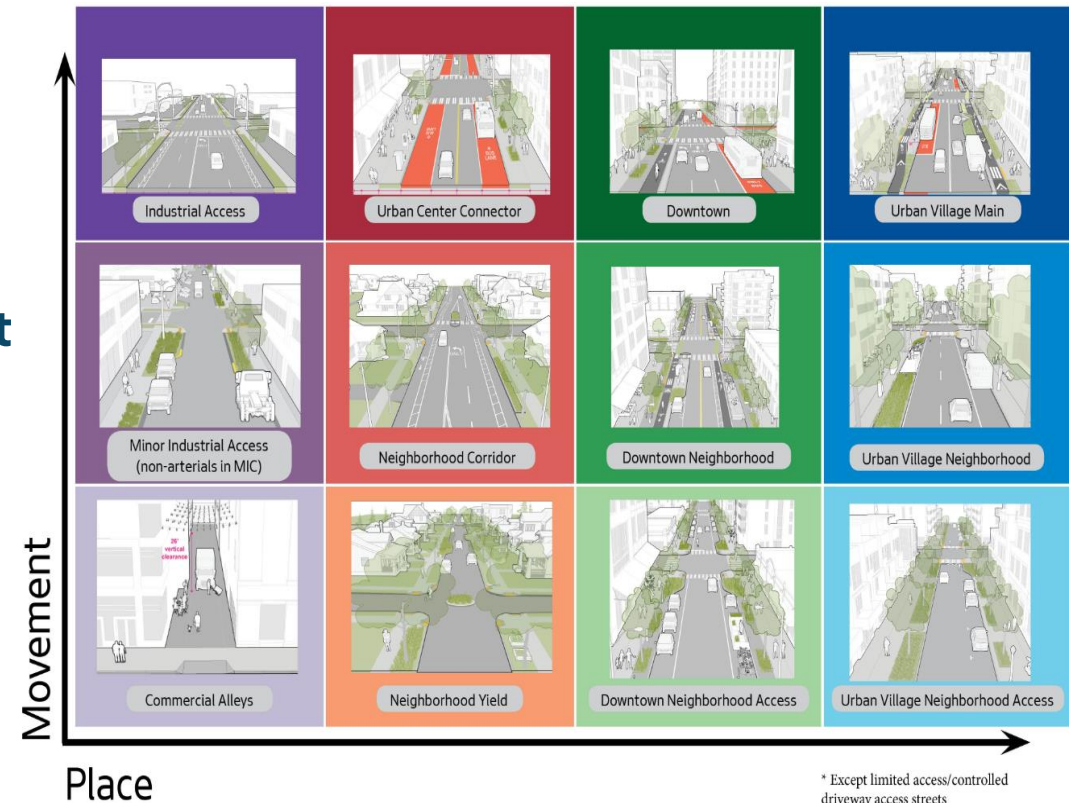
Lower Speeds Through Design

- Target speed for all city street types
- Streets Illustrated - design manual
- Update SI to make **lower speeds the centerpiece** of our design philosophy

Principal Arterials
25-40 mph*

Minor/Collect or Arterials
25-30 mph

Non-arterials
20 mph
(15 mph for alleys)



Benefits of School Speed Zone Camera Program

SINCE START OF SCHOOL SPEED ZONE SAFETY CAMERA PROGRAM



↓ 64%

The average number of traffic violations per camera *per day* has decreased by 64%



↓ 4%

Average speeds have decreased by 4%



90%

90% of people who receive a speeding citation and pay it, do not pay for another citation

COLLISIONS ARE DOWN

↓ 50%

50% drop in total collisions, pedestrian, and bicycle collisions, all times of the day

↓ 71%

71% drop in total collisions during the camera activation hours

∅

No pedestrian/bicycle collisions in the after period during camera activation times



Safety Benefits:

Fixed units can reduce crashes on urban principal arterials up to: ⁴

54%

for all crashes.

47%

for injury crashes.

School Zone Cameras effectively reduce speeding and enhance safety for Seattle students.

Safer People

Encourage people who use our transportation system to practice safe and responsible travel behaviors and empower people to engage with us on how we can advance safety on their streets.

Key Strategies:

- Expand and evaluate focused safety **education and encouragement campaigns**
- **Engage vulnerable users** in the planning of safety improvements
- Improve **safety data transparency** and use community perspectives to inform the prioritization of projects



Safer Vehicles

The size and weight of vehicles, as well as availability of vehicle safety systems, plays a major role in the likelihood and severity of crashes.

Key Strategies:

- Pilot new **safety features on City fleet vehicles**, such as vulnerable road user detection, truck sideguards, and intelligent speed assistance
- Explore opportunities to **advocate and influence regulations** around vehicle size, weight, and safety standards as well as autonomous vehicles



Post-Crash Care

Post-crash care focuses on improving the survivability of people involved in crashes with timely access to medical services as well as implementing effective traffic incident management, data collection at the crash site, and effective follow-up responses.

Key Strategies:

- Implement **signal technology upgrades for emergency vehicles** to improve response times
- Partner with SPD and SFD to improve **data collection at crash sites** and around emergency vehicle response times

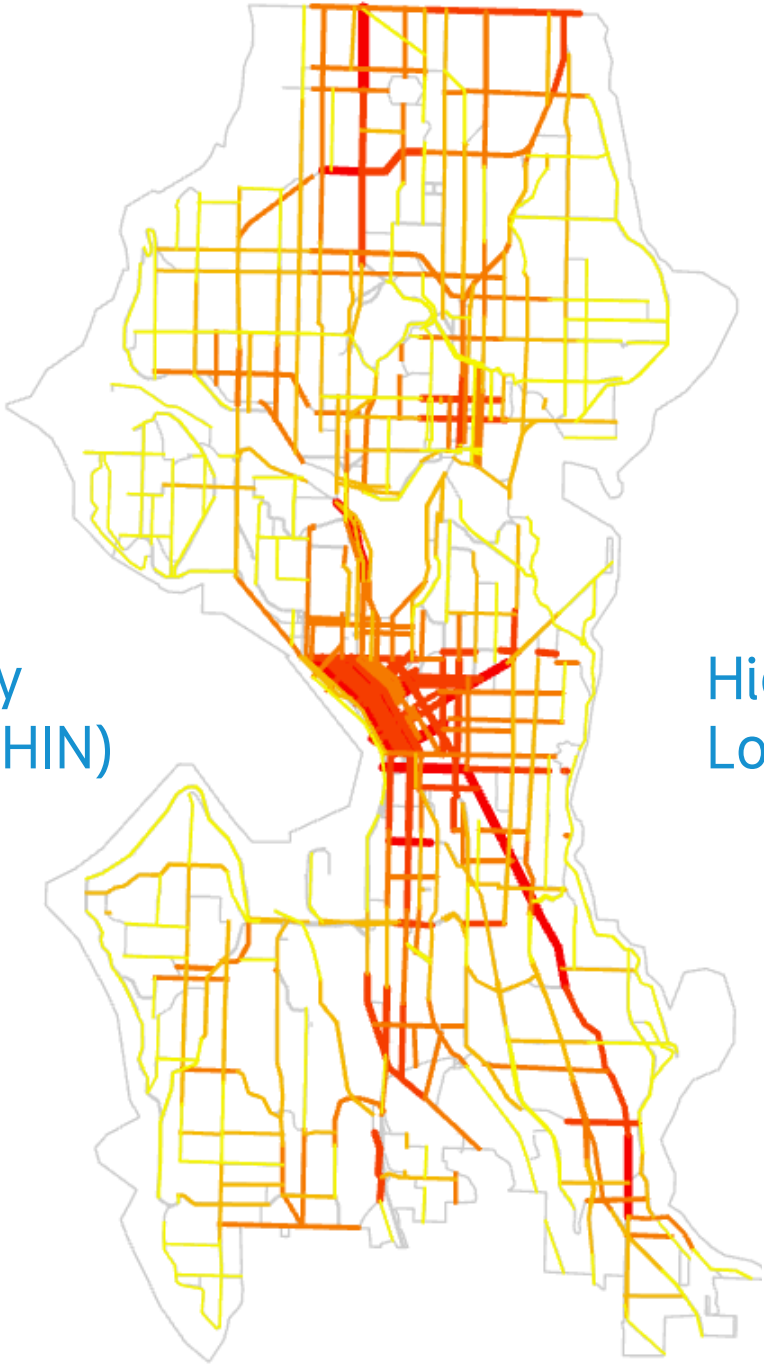


Data-Informed Approach to Prioritization

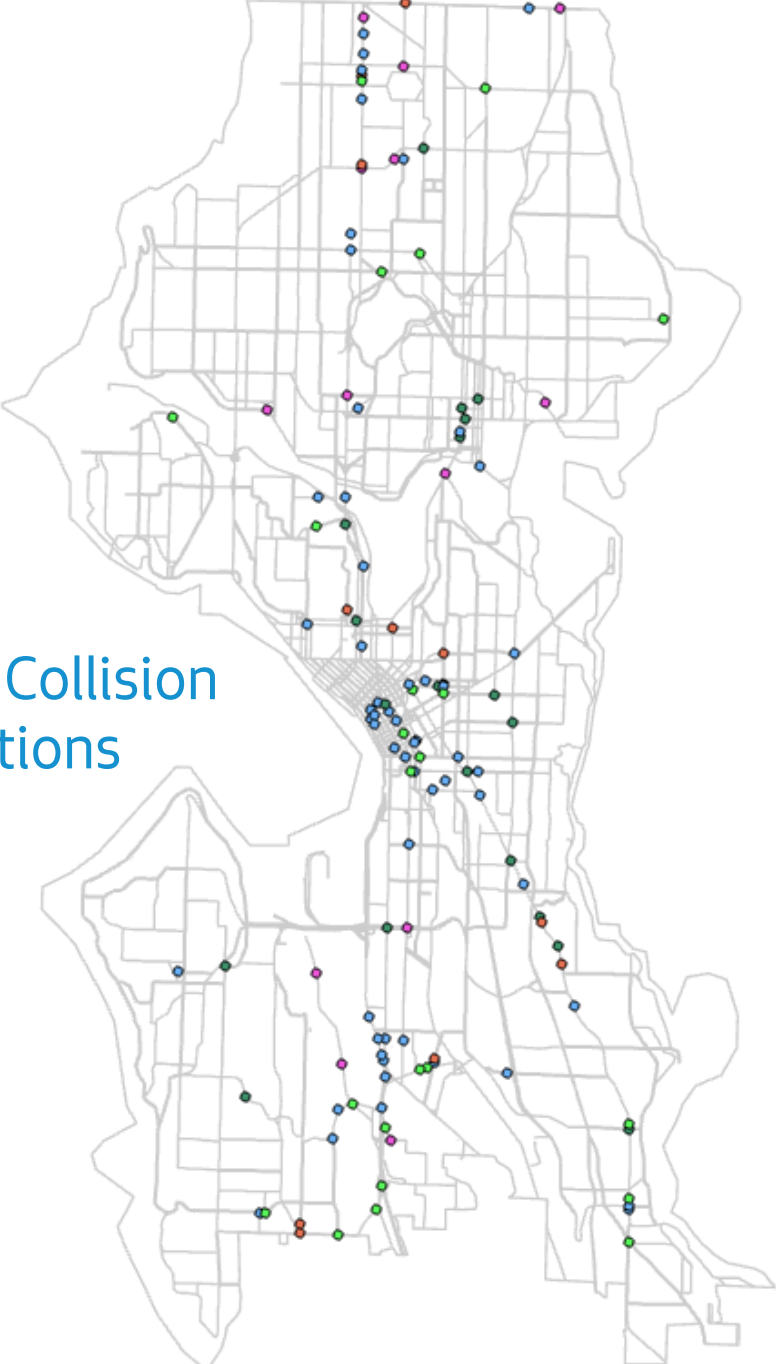


Responsive Data Sources

High Injury
Network (HIN)

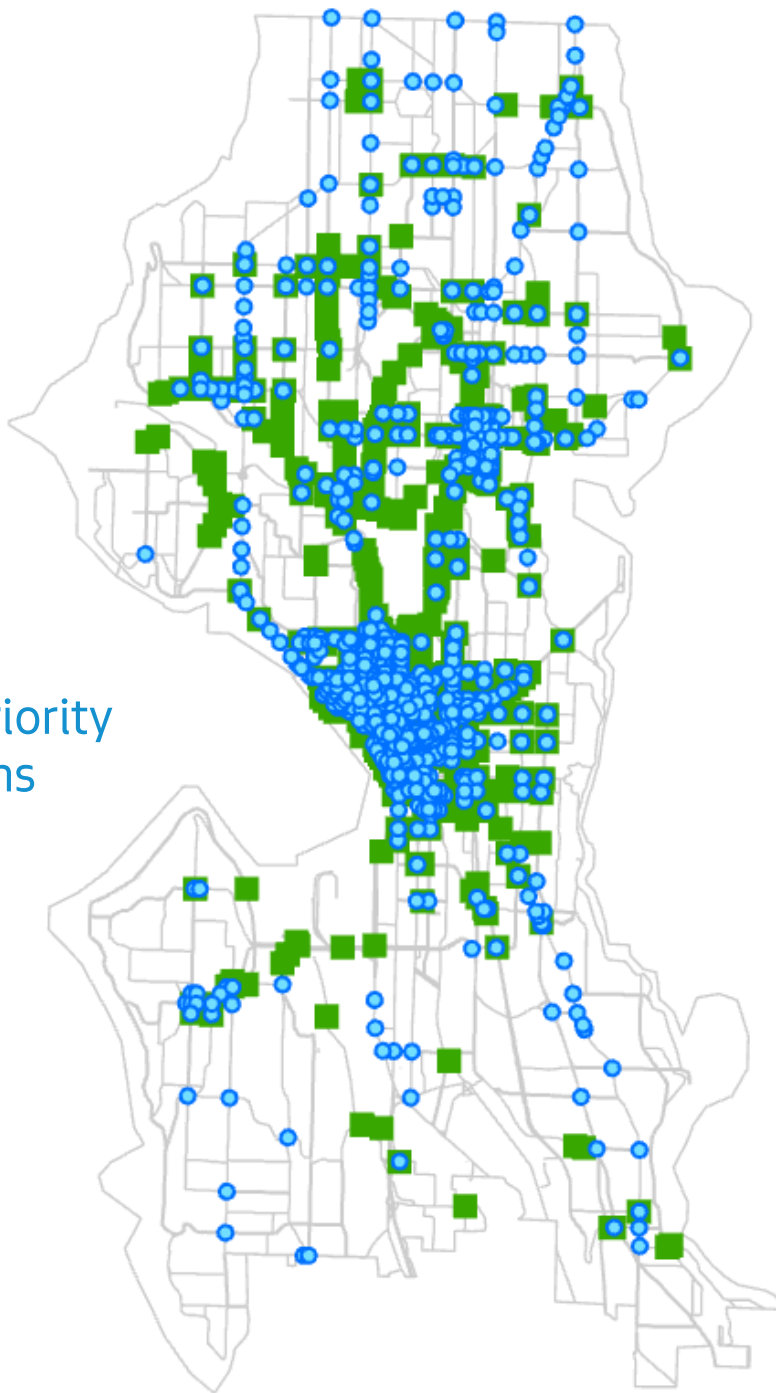


High Collision
Locations

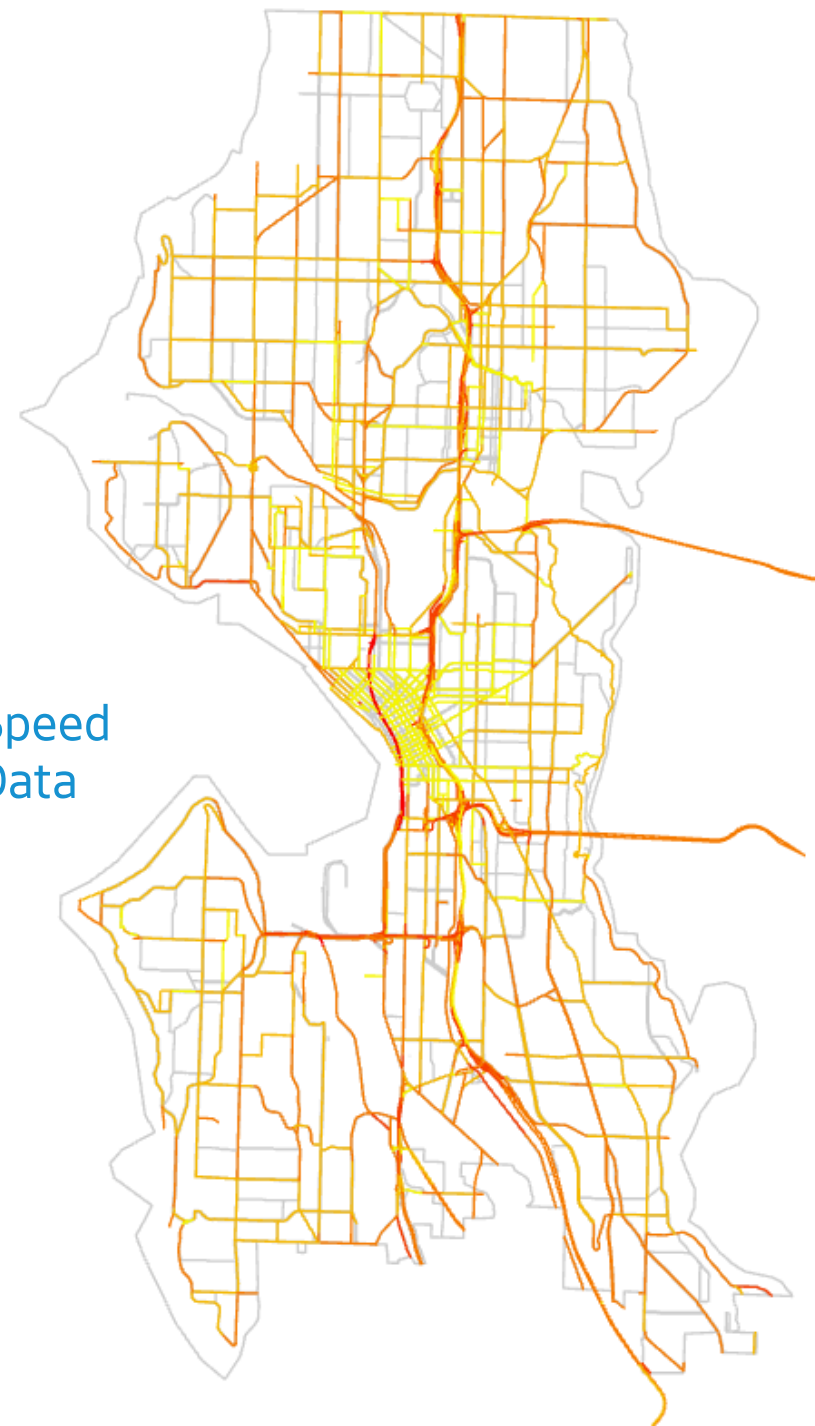


Proactive Data Sources

BPSA Priority Locations



Speed Data



A Safer System is a Shared Responsibility...



TOD, P&P,
PDD, CP, SU,
T&M, RS, IAP,
P+C, PSMD,
ROWUF,
WSDOT, SCL,
SPU, SFD,
SPD



TOD, PDD, SPD,
WSDOT



TOD, P&P, PDD,
DO, T&M, POS,
NWSA



TOD, PSMD, DO,
FAS, SFD, SCL,
SPU, SPD, OIR



TOD, SFD, SPD

What's Next?

- Ongoing tracking of 2024 VZ action items
- Launching public-facing VZ data dashboard
- Developing supportive policies to expand proactive and responsive safety toolkit
- Planning for future safety corridors and spot treatments while implementing current work, including grant funded projects





From the entire SDOT Team:
Thank you!

