SPEED MANAGEMENT

Engineering, Education, and Community Engagement for Tribal Roads

A practical approach when ownership, authority, and responsibility are shared

60-minute training • Ready-to-use field and partnership tools

What you will be able to do

1

Recognize risk

Read the road, the roadside, the people, and the speed data—not just the posted sign.

2

Map authority

Separate ownership, maintenance, speed-setting, enforcement, funding, and project approval.

3

Act together

Use engineering, education, engagement, and enforcement as one coordinated system.

The speed problem is larger than speeding

29%

of U.S. traffic fatalities in 2024 involved speeding

Speed also determines...

- Whether a driver can stop in time
- Whether a curve, animal, child, or stalled vehicle becomes a conflict
- How much force the human body must absorb when prevention fails

Manage both excessive speed and speeds too high for conditions.

On tribal lands, the road network is shared

~157,000

miles in the national tribal transportation inventory

BIA system	~31,400 miles
Tribal system	~26,000 miles
State + local ownership	~101,000 miles

Presence in the inventory does not equal tribal ownership or control.

One road can have six different decision-makers

OWNER

title / jurisdiction

MAINTAINER

surface / signs / snow

SPEED AUTHORITY

limit / study / ordinance

ENFORCEMENT

who may stop and cite

PROJECT APPROVER

design / right-of-way / permits

FUNDER

eligible source / match / timing

What's the big deal about speed?

- We all know and understand that crashes will always happen, but the consequences do not need to be losing your life or even being seriously injured!
    - Greater the speed = lower survivability of crashes
    - Lower the speed = higher survivability of crashes
- Rural Roads Context
    - Different types of vehicles
    - Different roadway conditions
    - Limited site distance



Why This Matters

- Rural roads account for a disproportionate share of fatal crashes
- Speed is the primary severity driver—not just a behavior issue
- Understanding perception gaps is key to changing outcomes



SUV
4400 lb
(2000 kg)

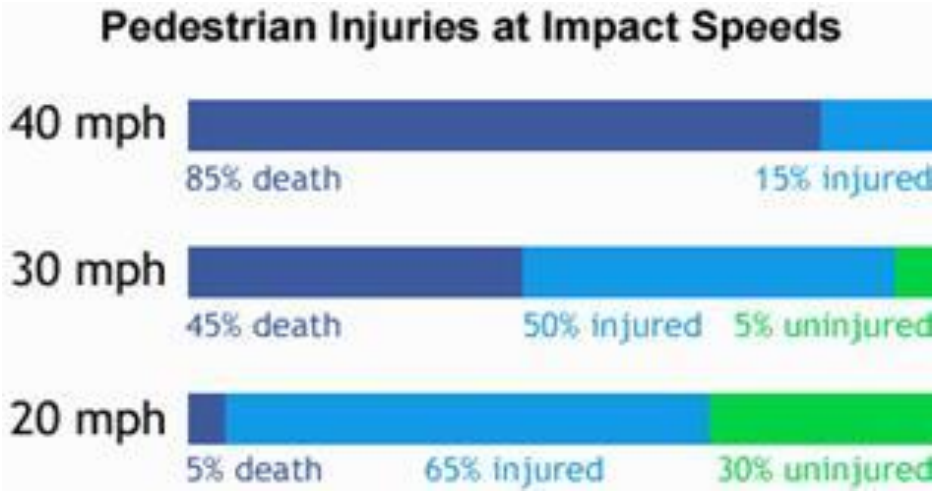


Kinetic Energy = ½mv^2

At 20 mph (30 km/h): KE = 0.5 x 2000 x (30000/3600)^2 = 70 kJ
At 30 mph (50 km/h): KE = 0.5 x 2000 x (50000/3600)^2 = 190 kJ
At 60 mph (100 km/h): KE = 0.5 x 2000 x (100000/3600)^2 = 770 kJ

Doubling speed quadruples kinetic energy

Pedestrian or Worker-On-Foot Struck by Car: Probability of Death



Graph: FHWA

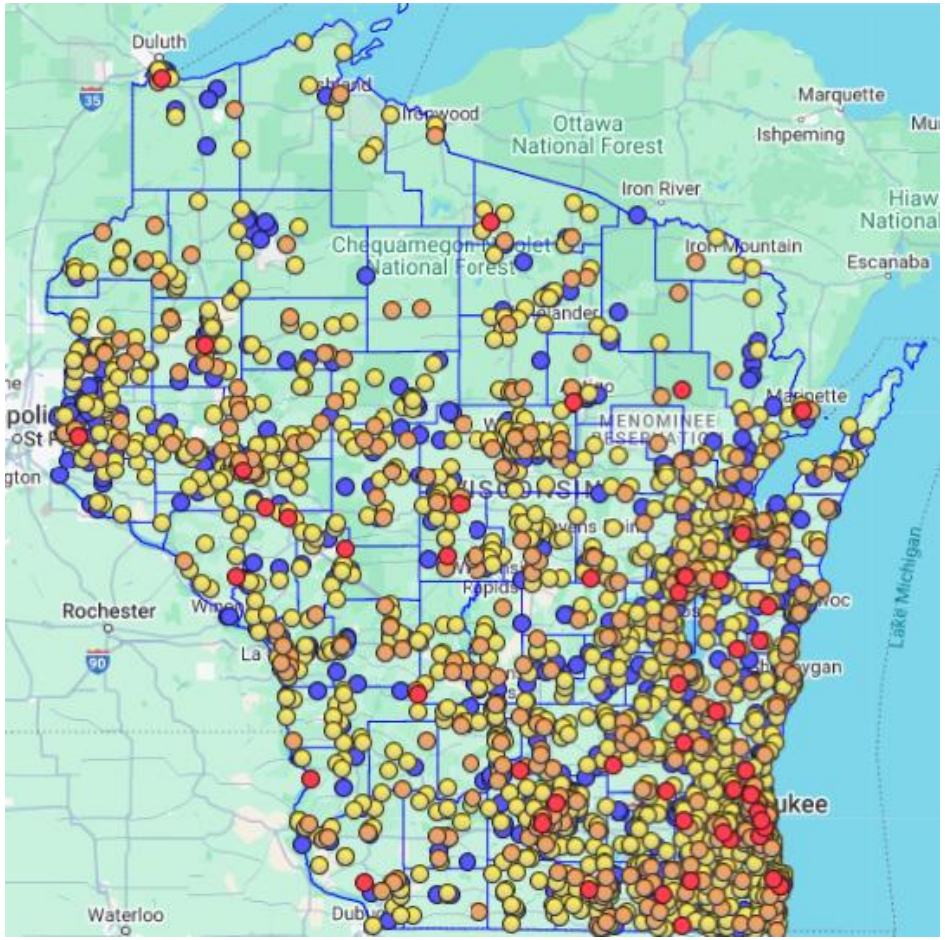


Learning to Drive

- Driving is a “learned behavior”
  - A behavior acquired through experience, observation, or interaction…
- When do children start “learning” how to drive?
  - When their car seat goes from rear facing to front facing!

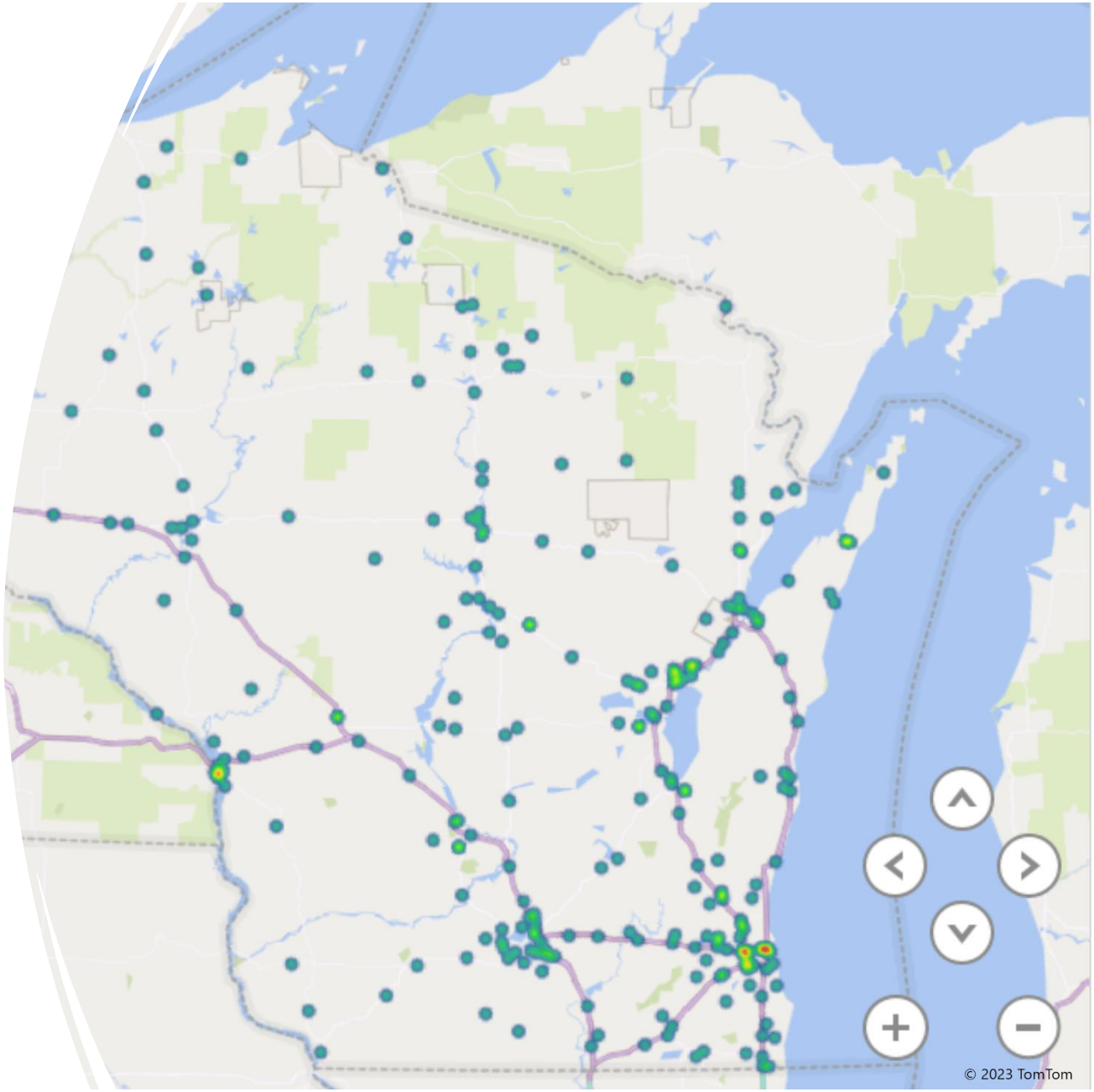
In 2025:

Speed was a factor in 16,559 crashes that claimed 181 lives and injured 6,281 people



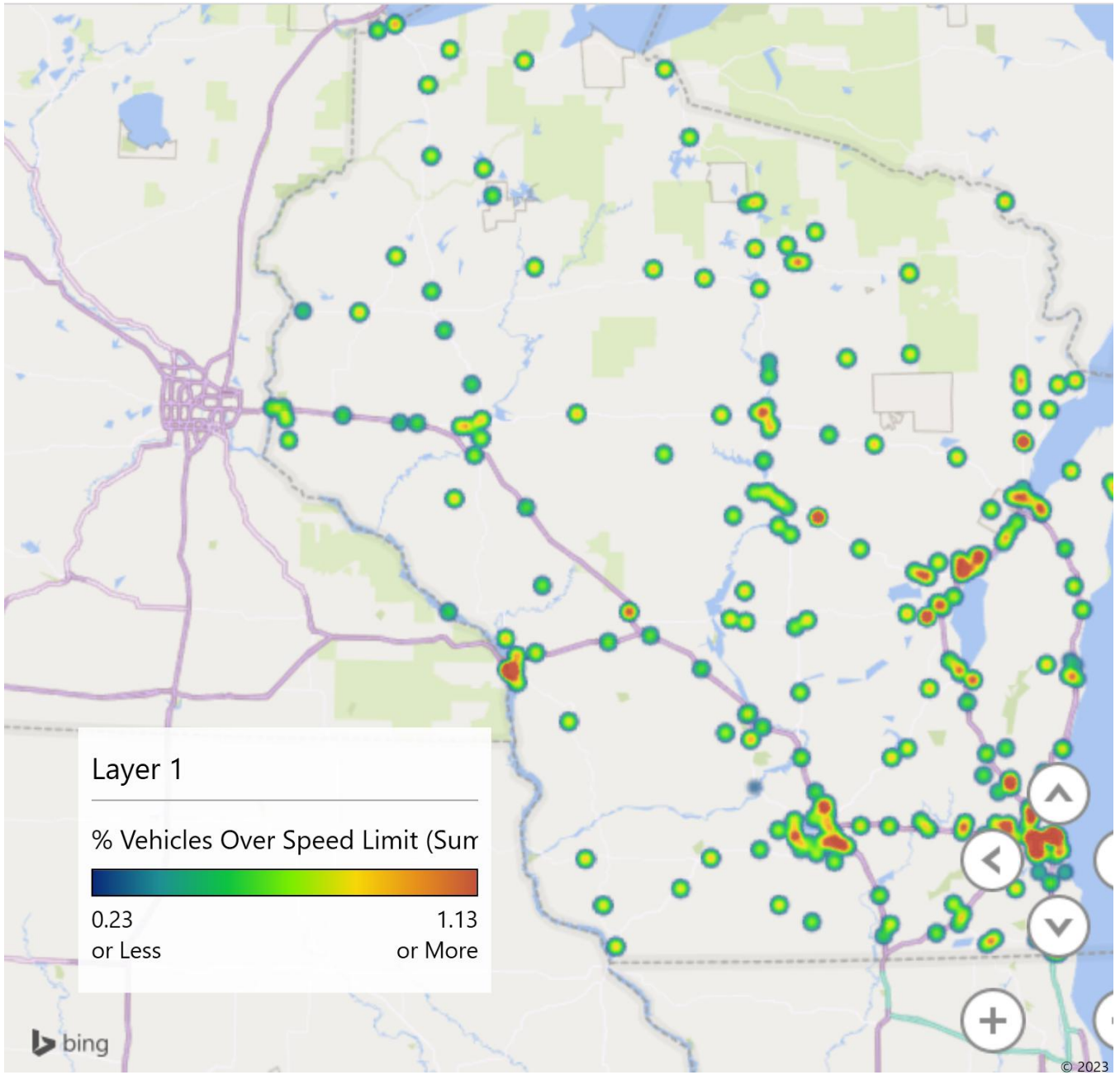
What does the data show?

- WisDOT Speed Data
  - 225 Countinuous Count Stations (Automated Traffic Recorders)
- Roughly 3 out of every 4 vehicles are above the posted limit



What does the data show?

- Vehicles over the speed limit
  - 2019 = 73.18%
  - 2020 = 76.41%
  - 2022 = 76.17%
- Vehicles 20+ over (limited data)
  - 2019 = 1.45%
  - 2020 = 2.13%
  - 2022 = 1.74%





Extreme (excessive) speeding

- We have always had the excessive speeder
- Acknowledge 2020 had an impact
  - Lower vehicle volume
  - Lower expectation of enforcement
  - Lower expectation of consequences
- Don’t have crash data that separates the excessive speed crash out

For the purposes of this breakout discussion, let’s set the “extreme speed” aside for right now

Speed Perception Survey Summary



Judges, Driver's Ed, Engineers, Law Enforcement, Educators, Analysts

Key Themes Across Surveys

- Speed perception varies by audience (public vs professionals)
- Underestimation of risk at moderate speeding levels
- Stronger support for safety messaging among professionals
- Behavioral gap between knowledge and driving habits

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Why do you speed?



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Why do you speed?



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Why do you speed?



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Mentimeter

Why do you speed?



Why do we speed

- Time management?
  - We know we only save mere minutes by speeding
- Reality – aren't we all in a "hurry", for just about anything?
  - Grocery store line – do you go to the longest or shortest line / when next line over moves faster do you switch lines?
  - What does almost everyone do when behind slow moving traffic (i.e. ag equipment, large slow truck, etc.)?
- Reminder > Wi speed limits are absolute
  - So why do even traffic safety professionals speed "just a little"

Key Finding: Risk Perception Gap

- Most respondents underestimate how quickly crash severity increases with speed
- Moderate speeding (5–10 mph over) is often viewed as low risk
- Reality: injury severity increases exponentially with speed

Key Finding: Knowledge vs Behavior

- Strong awareness that speed contributes to crashes
- But self-reported behaviors don’t align with that knowledge
- Indicates cultural normalization of speeding



Safety professionals show higher risk awareness



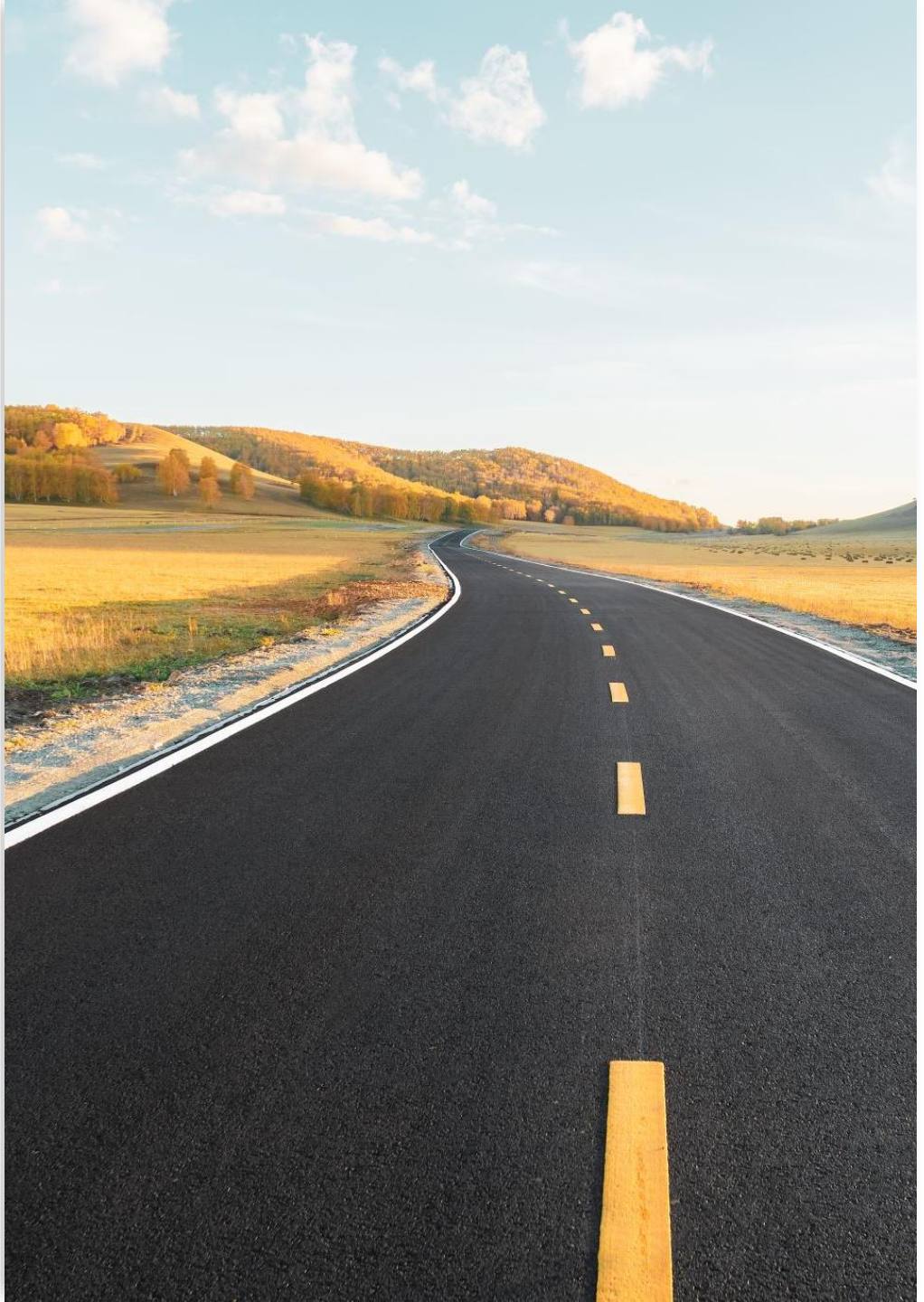
General audiences show more tolerance for speeding



Judicial perspectives highlight enforcement and consequence gaps

Rural-Specific Challenges

- Higher speeds and longer emergency response times
- Roadway design encourages speed (wide lanes, clear zones)
- Lower perceived enforcement presence
- Familiar roads create overconfidence



01

Shift from awareness → behavior change

02

Target perception of 'acceptable speeding'

03

Reinforce Safe System: human mistakes should not be fatal

04

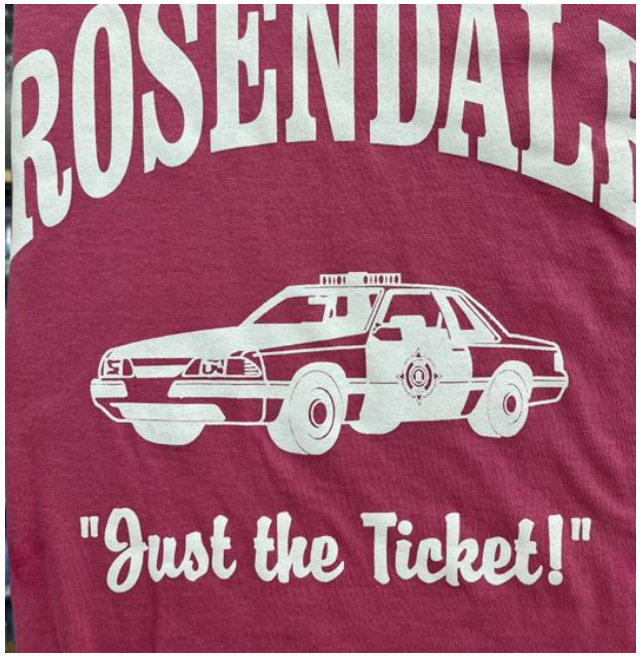
Align engineering, enforcement, and messaging

- Why is a certain amount of speeding acceptable?
    - We all know speed directly impacts the survivability of a crash, why do we tolerate violation of our speed limits but not other life protecting laws?

- How did we get to where our “maximum speed limit” is actually the minimum speed?









- Why is “Rosendale” so well known
  - T-shirts
- How did this happen?
- Why is it sustainable?

Compliance is achieved through?

- General moral character – most people desire to be law abiding citizens
    - Discuss why speed boards have proven to be effective (and “how” they are used impacts their effectiveness)



Compliance is achieved through?

- Accountability
  - Realistic expectation of being caught
  - Consequences of being caught
- Discuss automated enforcement



Rumble Strips

Alert drifting drivers
Reduce severe crashes
Low cost





Curve Warning Signs

Improve recognition
Critical on curves
Night visibility



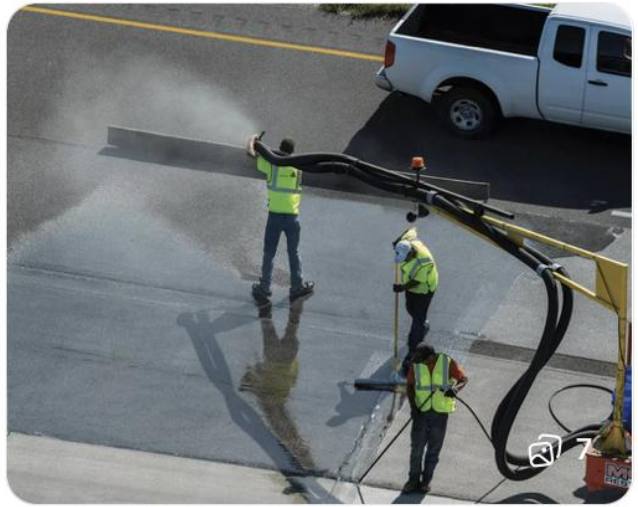




High Friction Surface

Increase grip
Target high-risk areas





Speed Feedback Signs

Real-time feedback
3–9 mph reduction





Gateway Treatments

Transition to low speed
Visual cues





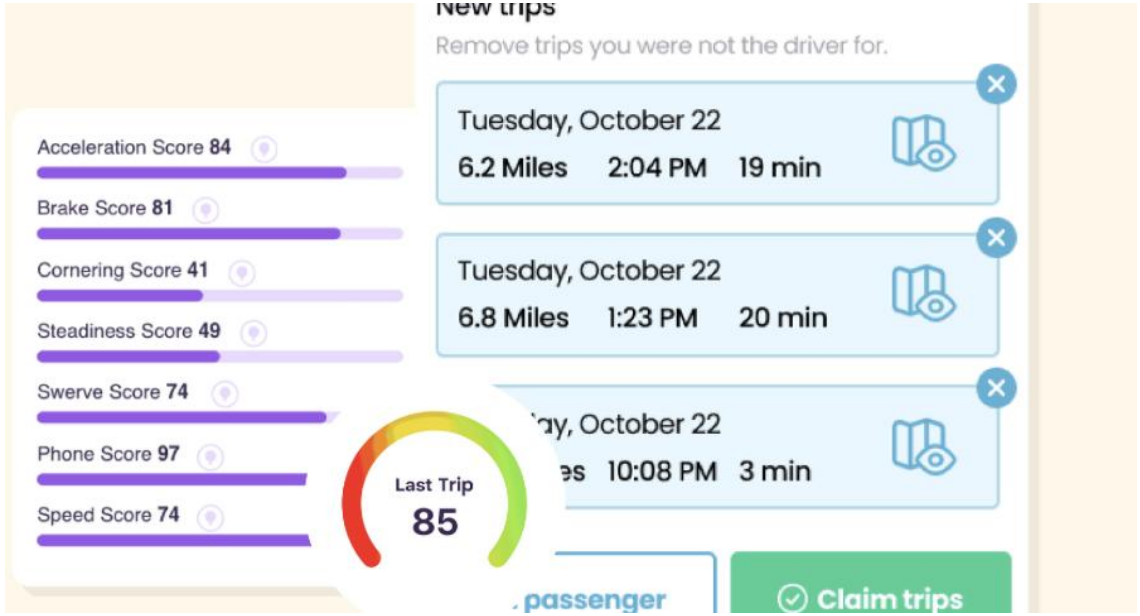


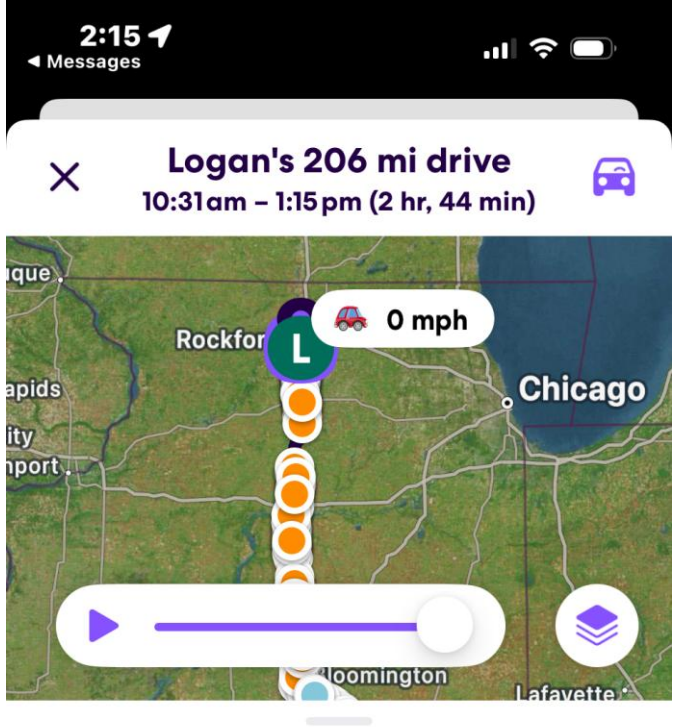

HOW INTELLIGENT SPEED ASSISTANCE WORKS
50
STEP 1
Onboard software logs the position of the car using GPS data and a digital map.
STEP 2
The car's traffic sign recognition camera also logs the speed limit.
STEP 3
If the car is above the speed limit, a warning will sound and the car will slow down automatically.


20
IS PLENTY
SLOWER
IS
SAFER
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VISION ZERO
MADISON


COUNTERMEASURES THAT WORK
SPEEDING AND SPEED MANAGEMENT
COUNTERMEASURES
OTHER STRATEGIES FOR BEHAVIOR CHANGE
Intelligent Speed Assistance


80
60
100
40
20
45
mph
R
N
P
D





Logan's drive details

I-74 W	10:31 AM
4734 Baxter Rd	1:15 PM

Drive events

89 MPH	116	7	0	0
Top Spee	High Spee	Phon e	Hard Braki	Rapid Accel

OUR WORK INSIGHTS & PERSPECTIVES ABOUT

Pew

Using data to make a difference.

Founded in 1948, Pew addresses the challenges of a changing world by illuminating issues, creating common ground, and advancing ambitious projects that lead to tangible progress.

Read More

Bottom Line

- Speed is not just a behavior—it’s a system failure point
- Changing perception is essential to changing outcomes
- Safer speeds = safer rural communities

Activity: map one real corridor

Choose a location where speed feels unsafe.

1. Who owns it?
2. Who maintains signs and pavement?
3. **Who sets or changes the limit?**
4. Who enforces?
5. Who approves a project?
6. Who has data or funding?

If an answer is “we don’t know,” that is your first action item.

Start with harm—not with a requested treatment

A

Define the place

Segment, intersection, school route, town center, curve, bridge, or recurring event.

B

Define the exposure

Who is present? Drivers, children, elders, people walking, bicyclists, livestock, ATVs, transit, emergency vehicles.

C

Define the harm

High speeds, speed variance, near misses, road departures, severe crashes, noise, dust, or loss of access.

What to look for: the road is giving drivers cues

Cues that invite speed

- Long, straight sight lines
- Wide lanes and shoulders
- Few visual edges or buildings
- High-speed approach to a community
- Inconsistent curves or hidden intersections

Conditions that magnify harm

- Gravel loss, washboarding, dust
- Drop-offs and unforgiving roadsides
- Missing/damaged/dark signs
- Lighting gaps and animal activity
- Pedestrians sharing the travel way

What to look for: five useful data streams

CRASH	fatal + injury, road departures, curves, time, weather
SPEED	85th percentile, pace, % over threshold, time of day, direction
VOLUME	vehicles, trucks, seasonal/event variation
CONFLICT	near misses, hard braking, community observations
CONTEXT	homes, schools, clinics, transit, trails, ceremonies, animals

Measure the speed that matters

Median	What is typical?
85th percentile	What do faster drivers commonly choose?
Pace	How concentrated are speeds?
% above threshold	How many exceed the safe target—not merely the sign?
Time profile	When and in which direction is risk highest?

Collect before and after data under comparable conditions.

Separate posted, operating, design, and target speed

POSTED

legal maximum under normal conditions

OPERATING

speeds people actually choose

DESIGN

speed assumptions embedded in geometry

TARGET

desired speed for context and survivable outcomes

If the road looks and feels fast, a new sign alone rarely changes behavior.

Choose a target speed from context and consequence

OPEN RURAL	Mobility dominant; manage curves, roadside, passing, animals
TRANSITION	Create a clear gateway and staged deceleration
COMMUNITY CENTER	More access and activity; lower and reinforce operating speed
PEOPLE-FIRST ZONE	Schools, clinics, housing, events; prioritize survivability

The Safe System asks us to manage kinetic energy

CRASH LIKELIHOOD + **CRASH SEVERITY**

Speed influences both sides of the equation.

Prevent

See sooner • decide sooner • stop sooner

Protect

Lower impact speed • safer roadsides • safer crossings

Prepare

EMS access • location accuracy • post-crash response

Engineering: match the treatment to the road function

OPEN RURAL	curve warning + chevrons; delineation; shoulder/edge treatments; roadside recovery
TRANSITION	gateway; pavement markings; lane narrowing; optical cues; advance warning
COMMUNITY	crossing visibility; lighting; access management; lane reallocation; traffic calming
GRAVEL	surface/gradation; drainage; dust control; delineation; curve and intersection emphasis

Low-cost measures can create an early win

01

Restore the basics

Replace missing signs, improve retroreflectivity, refresh markings, clear sight obstructions, repair edge drop-offs.

02

Make risk visible

Curve delineation, chevrons, object markers, edge lines, enhanced crossing or intersection warning.

03

Test and measure

Temporary gateway, speed feedback display, portable delineation, pilot striping, before/after counts.

Gravel roads need a different speed conversation

What changes quickly

- Surface moisture and loose aggregate
- Washboarding, potholes, ruts, and crown
- Dust and visibility
- Edge definition and roadside encroachment
- Seasonal traffic and maintenance cycles

What to do

- Manage surface and drainage first
- Delineate curves, intersections, bridges, and hazards
- Use advisory speeds where supported
- Address dust near homes and activity centers
- Recheck after grading and seasonal change

Transition zones must tell drivers: “the context changed”

1

ADVANCE

Give early notice

2

GATEWAY

Create a visible threshold

3

REINFORCE

Repeat cues and narrow attention

4

ARRIVAL

Match design to community activity

A single sign at the first home is too late.

Speed limits: treat the sign as one part of a system

1. Document context + speed data
2. Confirm legal authority
3. Complete engineering review
4. **Set a credible limit**
5. Align road cues
6. Communicate + enforce fairly
7. Evaluate operating speed

Education works best when it explains a real change

Weak message

“Slow down.”

Generic • short-lived • easy to ignore

Stronger message

“Children cross here after school. The new gateway and 25 mph zone begin Monday.”

Specific • local • connected to action

Community engagement is a source of evidence

LISTEN	Where do people feel exposed or avoid walking?
VALIDATE	Compare stories with observations, speed, crashes, and conditions.
CO-DESIGN	Let residents shape priorities, pilots, messages, and evaluation.
REPORT BACK	Show what was heard, what changed, what did not, and why.

Enforcement should be targeted, coordinated, and legitimate

- Confirm jurisdiction, authority, cross-deputation, and citation process
- Use data to focus on the highest-risk times, locations, and behaviors
- Pair visible enforcement with advance communication and credible limits
- Monitor equity, community trust, warnings/citations, and safety outcomes
- Use enforcement as a layer—not the only layer

Engineering shapes everyday behavior. Enforcement addresses the remaining high-risk behavior.

When you do not own the road, build a decision-ready request

1	**LOCATION**	Map, route, limits, photos
2	**PROBLEM**	Who is exposed and what harm occurs
3	**EVIDENCE**	Speeds, crashes, conflicts, context
4	**AUTHORITY**	Owner, maintainer, approver, enforcer
5	**REQUEST**	Specific study, pilot, maintenance, or project
6	**COMMITMENT**	What the tribe can contribute
7	**MEASURE**	How success will be evaluated

Use agreements to turn goodwill into repeatable action

MOU / MOA

Roles, coordination, data, maintenance, enforcement

PROJECT AGREEMENT

Scope, design review, funding, permits, schedule

MAINTENANCE AGREEMENT

Signs, markings, vegetation, snow, gravel condition

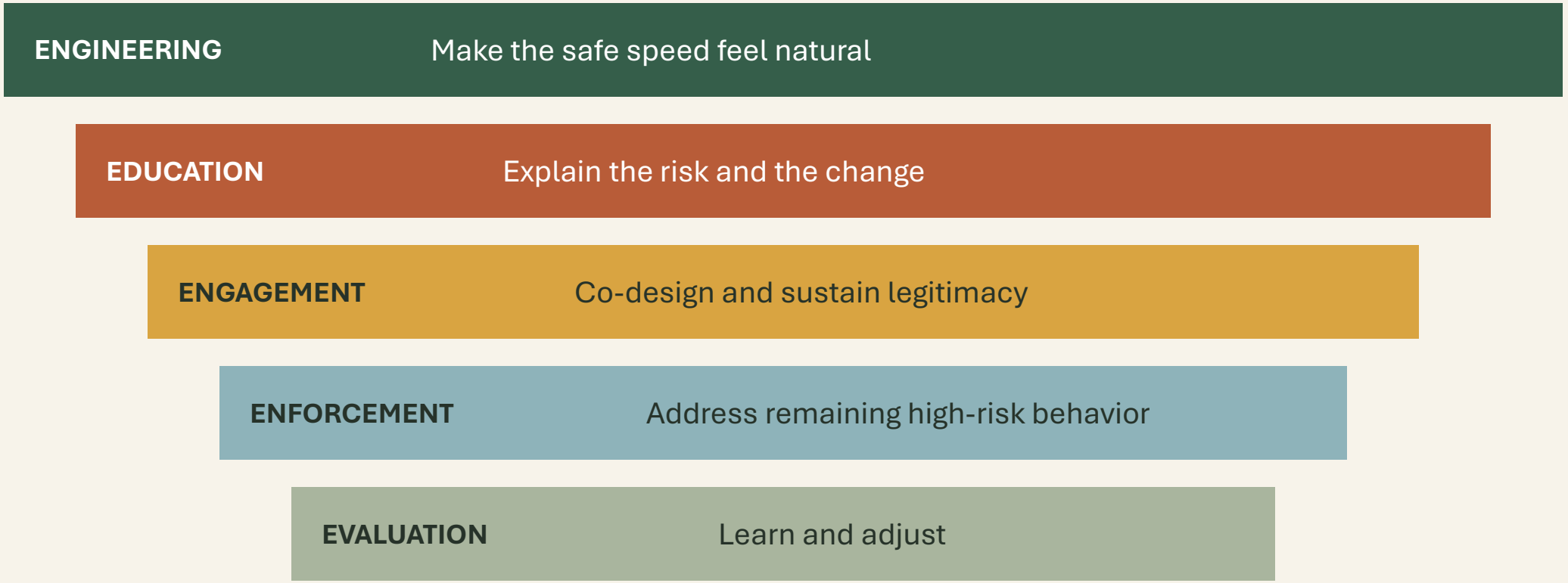
DATA AGREEMENT

Access, privacy, sovereignty, sharing, return of results

Prioritize with risk, feasibility, and readiness

Candidate	Serious-risk potential	Near-term feasibility	Partner readiness	Next step
Community gateway	High	High	Medium	Pilot + count
Rural curve package	High	Medium	High	Field review
Major reconstruction	High	Low	Medium	Program project
Education only	Low	High	High	Pair with action

Build a layered speed-management package



Activity: build the package

Return to your corridor. Choose one action in each row.

Engineering	What physical cue or maintenance action?
Education	What specific message, for whom, through whom?
Engagement	Whose knowledge or consent is needed?
Enforcement	What authority and targeted role?
Partnership	What exact request goes to the owner?
Evaluation	What will you measure before and after?

Evaluate whether the road became safer

SPEED	median, 85th, high-end, variance
SAFETY	crashes, severity, conflicts, road departures
BEHAVIOR	yielding, stopping, crossing, helmet/seat belt where relevant
EXPERIENCE	perceived safety, walking, dust/noise, trust
DELIVERY	time, cost, maintenance, partner commitments

A 30 / 60 / 90-day path to action

30

Define + map

Select one corridor. Write the problem statement. Collect available data. Identify the six decision roles.

60

Observe + convene

Conduct day/night field review and speed study. Meet the owner, maintainer, enforcement, health, and community voices.

90

Pilot + commit

Submit a decision-ready request. Launch a feasible pilot or maintenance action. Set measures and next meeting.

Field checklist: what to look for tomorrow

- Approach speed and first cue of community context
- Curves, intersections, crossings, bridges, roadside hazards
- Homes, schools, clinics, trails, transit, events, livestock/ATVs
- Signs, markings, lighting, delineation, sight distance, maintenance
- Gravel condition, dust, drainage, edge definition, seasonal change
- Day/night and both travel directions
- Owner, maintainer, speed authority, enforcement, approver, funder

Photograph • map • count • listen • verify authority

The most effective question is not “Who owns it?”

Ask instead:

“Who can help change the risk—and what decision do we need from each person?”

Tribal leadership can define the problem, convene partners, contribute evidence, shape priorities, advocate, invest, and hold the system accountable—even when another agency owns the pavement.

Core resources

FHWA Speed Management	Concepts, planning, limits, rural transitions, countermeasures
BIA Division of Transportation	TTP, road maintenance, inventory, program documents
NHTSA Speeding	Current national data and behavioral resources
USLIMITS2	Decision support for speed-limit reviews
Local requirements	State/tribal law, MUTCD, owner policies, engineering standards