Improving Road User Safety in the School Zone and Beyond

Nancy Pullen-Seufert National Center for Safe Routes to School
Christine Baker Arlington County, VA
Tobin Bennett-Gold City of Kenmore, WA

Housekeeping

⇨ Submit your questions

⇨ Webinar archive: www.pedbikeinfo.org/webinars

⇨ Certificates and professional development hours

⇨ Follow-up email with more details

⇨ Review previous episodes and sign up for upcoming sessions

School Zones: Opportunities for Community Engagement and Expansion

Nancy Pullen-Seufert, MPH

Pedestrian and Bicycle Information Center

SafeRoutes
National Center for Safe Routes to School


Celebrate
WALK BIKE & ROLL
TO SCHOOL DAY
With Us!
ISLAND PARK
PTA
WEDNESDAY
OCTOBER
8TH

Durham, NC. Source: S. Mullaney

Durham, NC. Source: NCDOT

Washington, DC. Source: J. MacMillan

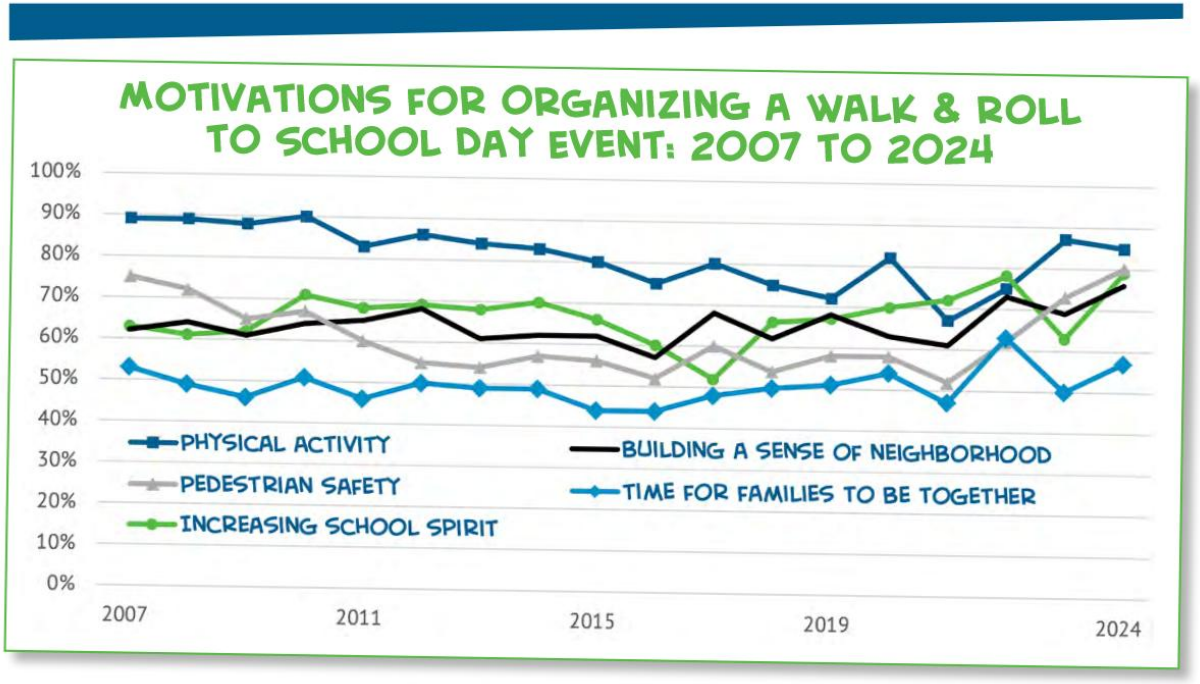
National Walk & Roll to School Day / National Bike & Roll to School Day

May 2025: 2,500 events

October 2025: 3,000 events and counting

www.walkbiketoschool.org

Why Do Communities Care About Walking and Biking?



SafeRoutes
National Center for Safe Routes to School

2024 Walk & Roll to School Day Report.
www.walkbiketoschool.org

Safe Streets and Roads for All

SS4A Awards That Mention Youth in the Context of Walking & Biking

- 2022: 14/511, 2.7%
- 2023: 30/620, 4.8%
- 2024: 45/453, 9.9%

Total: 1,584 grants awarded, 89 mention youth (5.6%)

Analysis by Rachel Auerbach for the National Center for Safe Routes to School

SafeRoutes
National Center for Safe Routes to School

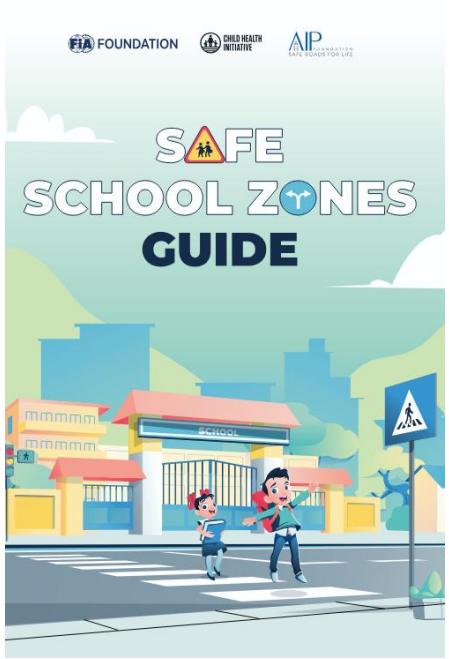
School Zone Speed Limits Vary Across the Country

Table 2. Summary of state SZSLs and whether they are defined by state statute or by state DOT guidance.

State defined SZSL(s)	Number of states	Statute defined	DOT defined
15 MPH	9	9	0
20 MPH	9	9	0
25 MPH	4	4	0
15+ MPH	3	3	0
20+ MPH	3	3	0
25+ MPH	1	1	0
15-20 MPH	2	2	0
15-25 MPH	1	1	0
15-40+ MPH (Minnesota)	1	1	0
25-45 MPH	1	0	1
10 MPH below posted	1	1	0
0 to 10 MPH below posted	2	0	2
0 to 20 MPH below posted	1	1	0
10 MPH below posted, no lower than 25 MPH	1	0	1
15 MPH below 85th to 35 MPH	1	0	1
15 MPH to 10 MPH below 85th	1	0	1
25 MPH typical; 15 MPH in residential areas	1	1	0
No guidance defined	9		
Total states (and D.C.)	**51**		

Minnesota DOT. (2023). *School Zone Speed Limits: Effectiveness of SZSLs in reducing vehicle speeds, crash severity and crash frequency*

Hanoi, Vietnam
Source: Global Designing Cities Initiative



Hanoi, Vietnam

2025 Vision Zero for Youth International Leadership Award Winner

"It's about community. If you address 30 kph [20 mph] to the public, people say it's too slow. When you ask if you want a safer zone for children, they say yes."

-Tatiana Mihailova, Executive Director, Automobile Club of Moldova

Moldova

2024 Vision Zero for Youth International Leadership Award Winner

Youth-Specific Data

Travel patterns

- https://bikewalkroll.org
- Observational counts

Safety concerns

- Apps to identify locations

Arlington, VA
Image: AB Corson

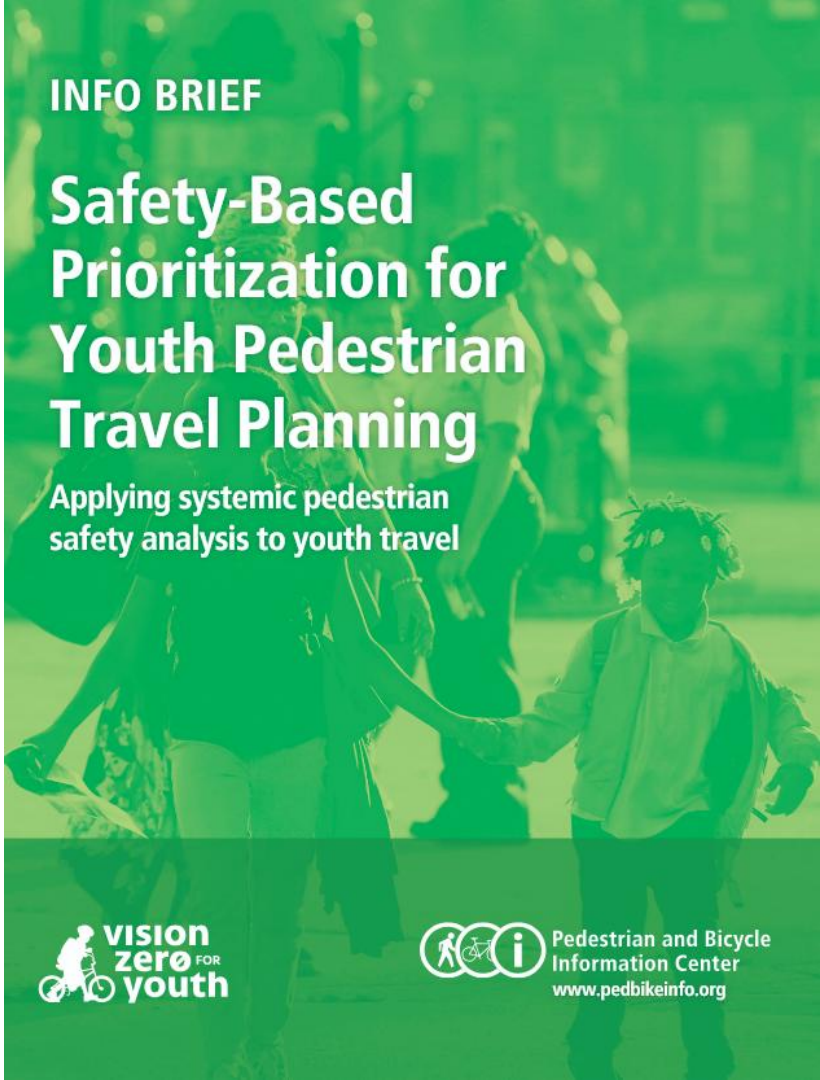
Understanding Risk

Vision Zero for Youth Demonstration Project with the City of Philadelphia

- Vehicle volume
- Speed
- Number of lanes
- Crash history around schools

Outcome: prioritized list of segments and intersections

SafeRoutes
National Center for Safe Routes to School



National Center for Safe Routes to School Quick-Build Minigrant Project, Detroit, MI. Image: City of Detroit

Honolulu, HI
Source: Ulupono Initiative

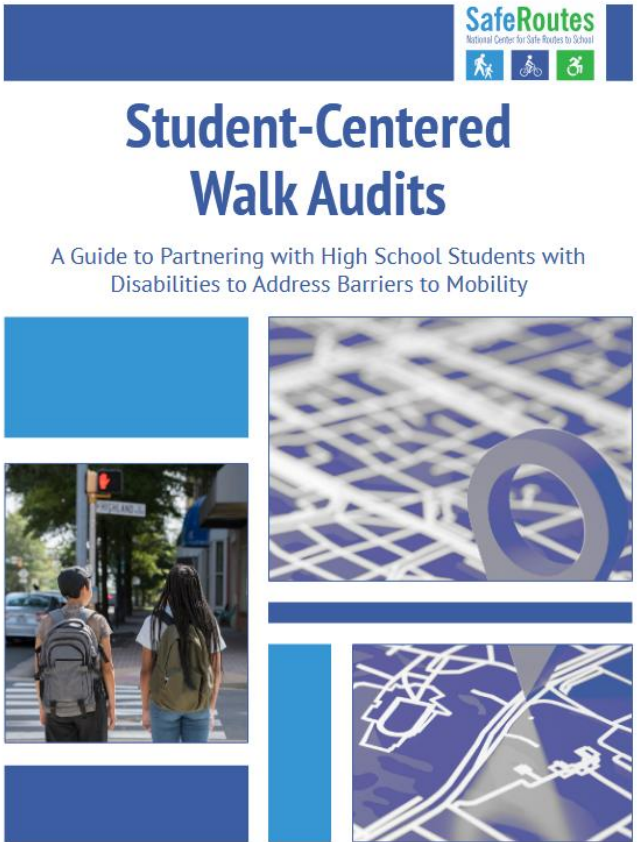
Youth as community members

- Youth representatives, youth advisory councils
- Engaging youth in quick-build projects

See: visionzeroforyouth.org/stories/engage

Including High School Students with Disabilities

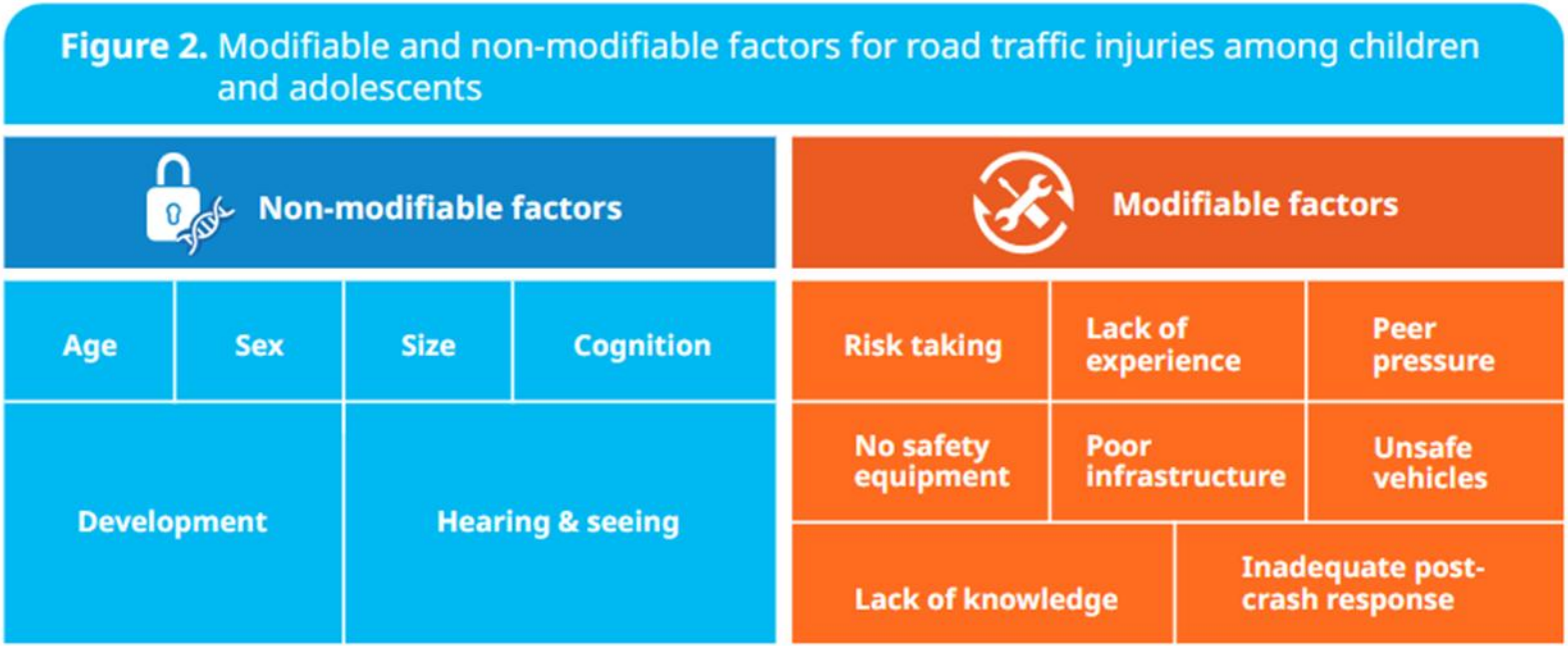
- Asking questions: Understanding travel patterns
- Walk/bike audits to engage and identify improvements
- Bike fleet maintenance



SafeRoutes
National Center for Safe Routes to School

Consider the Cognitive and Physical Abilities of Children When Making Changes to the Built Environment

Figure 2. Modifiable and non-modifiable factors for road traffic injuries among children and adolescents



Source: Child and Adolescent Road Safety in East Asia and Pacific nations, UNICEF 2023.

Consider the Cognitive and Physical Abilities of Children When Making Changes to the Built Environment

Images: Pedestrian & Bicycle Information Center

- Physical separation
- Shorten crossing distance
- Slow traffic speeds
- Improve visibility

School Zone Safety Improvements

- Improvements around all schools in Fremont, CA; Seattle, WA
- Daylighting school crosswalks in San Francisco
- Beyond the school zone
  - Ex: Lincoln, NE; Arlington, VA

Making Trips to School Safer Across the City: A New Daylighting Program

Share this: Facebook Twitter LinkedIn

By Rebecca Ashton-Dziedzan
Thursday, April 17, 2025

Children help make their school zone safer by painting curbs red near crosswalks at a community event.

Source: SFMTA.

SafeRoutes
National Center for Safe Routes to School

seattledot • Follow

seattledot 6w
School Streets: have you noticed streets next to schools that are CLOSED to through traffic? That's a School Street! School Streets are becoming more and more popular, and we have 19 across the city.

School Streets disperse the car traffic around a school so walking and biking to school is more welcoming with cleaner air and more comfortable crossings.

We're accepting applications for School Streets right now. Check the link in our profile to learn the requirements and how to apply.

265 likes
September 2

Log in to like or comment.

SafeRoutes
National Center for Safe Routes to School

Seattle, WA. Source: SDOT Instagram

Cincinnati, OH

Context: Crossing between after-school care and school located on high-crash corridor

Project:

Curb extension and parking spot removal on crossing

Cincinnati, OH
Source: City of Cincinnati

SafeRoutes
National Center for Safe Routes to School

Cincinnati, OH

Before

	Wednesday, Jun 29, 2023		Thursday, Jun 30, 2023	
	Southbound	Northbound	Southbound	Northbound
85th percentile speed	36	34	36	34
Average speed	29	29	30	29
Total vehicles	5541	5241	5335	5052
Vehicles speeding (over 30mph)	2900 (52%)	2260 (43%)	2895 (54%)	2333 (46%)
Vehicles exceeding 40mph	309 (5%)	116 (2%)	300 (5%)	117 (2%)

After

	Wednesday, Nov 8, 2023		Thursday, Nov 9, 2023	
	Southbound	Northbound	Southbound	Northbound
85th percentile speed	33	33	32	33
Average speed	27	28	26	28
Total Vehicles	4240	4433	4619	4592
Vehicles speeding (over 30mph)	1203 (28%)	1456 (33%)	1273 (28%)	1475 (32%)
Vehicles exceeding 40mph	58 (1%)	70 (2%)	45 (1%)	79 (2%)

Atlanta, GA

National Center for SRTS Quick-Build Minigrant

Context:

Road bordering middle school in a Community of Concern. Fast moving traffic, no space to walk on one side.

Project:

Tactical walk/bike lane to create separation and slow speeds

- Thermoplastic traffic striping
- Flex posts
- Wheel stops

National Center for SRTS Quick-Build Minigrant Atlanta, GA
Source: City of Atlanta

Atlanta, GA Results

- Funding of additional quick-build projects by Atlanta Councilmembers
- Demonstrating to the community that promises are kept

Atlanta Mayor, Council Member, Department of Transportation Commissioner and members of the Crawford Long Middle School community gather at a ribbon cutting to launch a quick-build walk/bike lane on Empire Boulevard SW during Bike & Roll to School Day 2023.
Source: The City of Atlanta.

National Center for SRTS Quick Build Pilot Project

Cincinnati Uses Quick-Build Project to Address an Urgent Safety Need

A rou
co
wi
projects.
pilot initi
functiona
effectiver
reducing
speeds. U
like paint
flexible p
communi
makers a
infrastruc
provide in

On Walk & Roll to School Day 2022, Crawford Long Middle School students use a crosswalk during an educational pop-up demonstration designed to gain community feedback on a quick-build walk, bike lane on Empire Boulevard SW. Source: The City of Atlanta.

Atlanta Uses Quick-Build Projects to Engage Community and Improve Road Safety for Young Pedestrians and Bicyclists

Expand the Network of Partners Who Care About Safety

- School attendance
- Pick up and drop off pain
- Disaster planning
- Family-friendly communities
- Access to jobs
- Integration into existing plans
  - Pedestrian/Complete Streets/Vision Zero plans
  - City climate action plans
- More

SafeRoutes
National Center for Safe Routes to School

Final Mentions

- State SRTS contacts available on Pedbikeinfo.org

- 2026 Vision Zero for Youth Leadership Award applications opens later this week at Visionzeroforyouth.org.
  - All communities eligible

Walk & Roll to School Day registration open through Oct 31 at www.walkbiketoschool.org

SafeRoutes
National Center for Safe Routes to School

Acknowledgments

- Melissa McVay, City of Cincinnati
- Nichole Hollis, City of Atlanta
- Erin McCargar, Idrees Mutahr and Bashar Dimitry, City of Detroit
- Tatiana Mihailova, Automobile Club of Moldova
- Khe Nguyen, AIP Foundation
- Stephen Heiny, Jennifer Palcher-Silliman, Elizabeth Pinyan & Sandro Figueroa, Natl Center for Safe Routes to School
- National Walk & Roll to School Day Communities
- General Motors
- FIA Foundation
- FHWA

SafeRoutes
National Center for Safe Routes to School

VISION ZERO

ARLINGTON COUNTY

Pedestrian & Bicycle Information Center Webinar: School Zones

Department of Environmental Services
Transportation Engineering & Operations

October 21, 2025

ARLINGTON
VIRGINIA

VISION ZERO
ARLINGTON COUNTY

Arlington's School Zone Journey…

- School Zone Guideline Development
- School Zone Retrofits & Updates
- Data & Engagement Findings
- Lessons Learned
- Paving the Way for More…

ARLINGTON
VIRGINIA

School Zone Guideline Development: *Why*

Creating new school zone guidelines was recommended in the Vision Zero Action Plan.

Guidelines fostered consistency for:

- Typical signs, crosswalks, pavement markings, and other aspects in areas within 750 feet of school access points.
- School zone speed limits – bringing all to 20mph either ***dynamically*** using beacons at arrival/dismissal times or ***statically*** using new permanent slow zones.

Set the stage for future improvements:

- Reintroducing speed humps.
- Launching speed safety camera program.

School Zone Guideline Development: *How*

VISION ZERO
ARLINGTON COUNTY

Not a hard sell.

Slower speeds around schools is beneficial for everyone:

- 1 in 4 crashes in Arlington involves speeding.
- The risk of injuries and deaths increases as vehicle speed increases.
- Children are still learning how to travel safely.

Started with demonstrations at 13 schools in 2022 to ***test the guidelines*** before applying countywide.

School Zone Guideline Specifications

VISION ZERO
ARLINGTON COUNTY

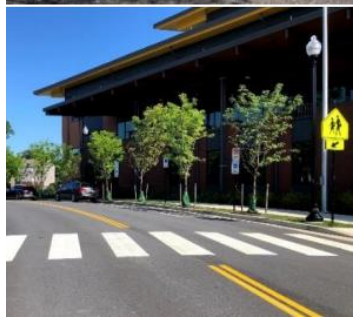
Speed Limit Signs with Flashing Beacons (Arterials)

Slow Zone Speed Limit Signs (Locals)

End School Zone Signs

School Crossing Signs

SLOW SCHOOL XING Markings (Arterials)



High Visibility Crosswalks

SCHOOL or SCHOOL ZONE Markings (Arterials)

20 MPH Markings (Locals)

School Zone Update Process

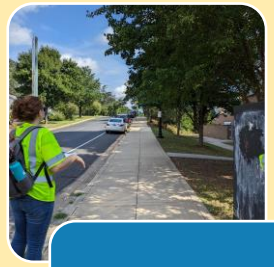
Batched schools (10-15 at a time)

Met with schools

Conducted walk throughs

Created signing/ marking plans

Installed school zones



Verified in field

QUICK TIPS BY STEP

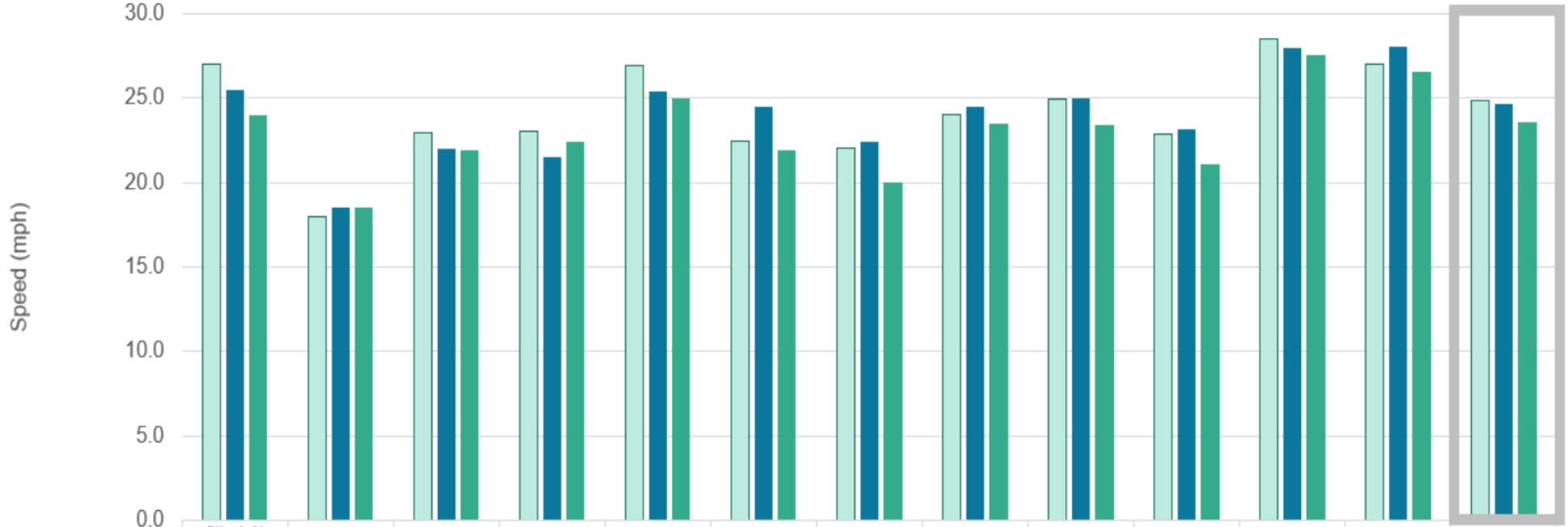
- Keep the workload manageable
- Build relationships and trust
- Flag additional safety needs
- Host group reviews
- Launch a campaign
- ALWAYS quality check

Speed Data Collection Findings

We collected speed data:

1. Before school slow zone installation
2. Once school slow zone installed (interim)
3. After speed limit pavement markings installed

Overall, the changes resulted in minor reductions of 85th% speeds, but…



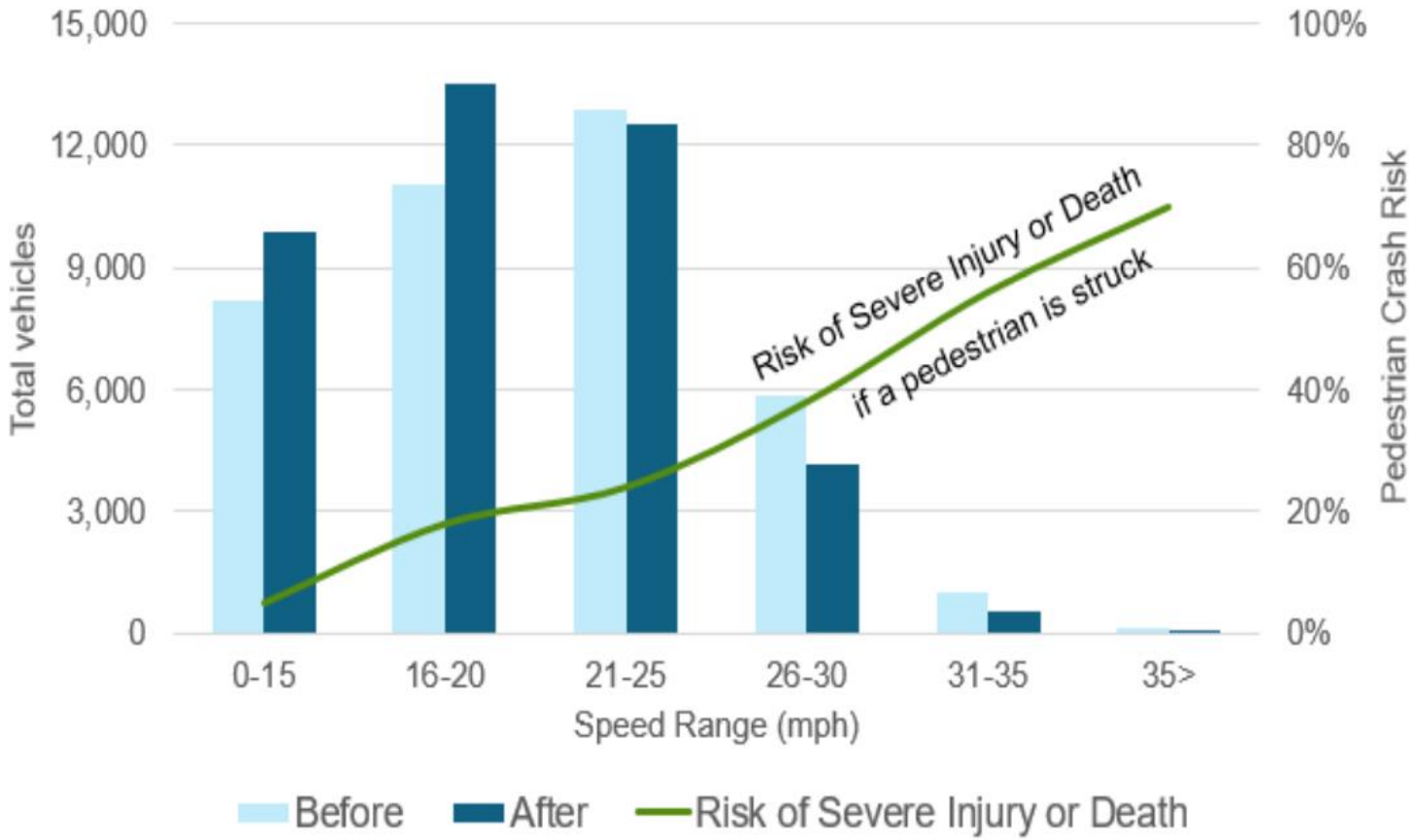
	Site 1: N Manchester St*	Site 2: Vacation Ln*	Site 3: Vacation Ln*	Site 4: N Albemarle St*	Site 5: 36th St N	Site 6: N Culpeper St	Site 8: S Meade St	Site 9: S Quincy St	Site 10: N Stafford St	Site 11: N Stafford St	Site 12: 15th St N	Site 13: 15th St N	All Sites
85th % Speed Before	27.0	18.0	23.0	23.0	26.9	22.5	22.0	24.0	24.9	22.8	28.5	27.0	24.8
85th % Speed Interim	25.5	18.5	21.9	21.5	25.4	24.5	22.4	24.5	25.0	23.2	27.9	28.0	24.7
85th % Speed After	24.0	18.5	21.9	22.4	25.0	21.9	20.0	23.5	23.4	21.1	27.5	26.5	23.6

Speed Data Collection Findings

VISION ZERO
ARLINGTON COUNTY

A significant reduction in high-end speeders!

The number of drivers traveling over 30 mph decreased by 47%.



Data citation for Risk of Severe Injury or Death: Tefft, B.C. (2011). Impact Speed and a Pedestrian's Risk of Severe Injury or Death (Technical Report). Washington, D.C.: AAA Foundation for Traffic Safety

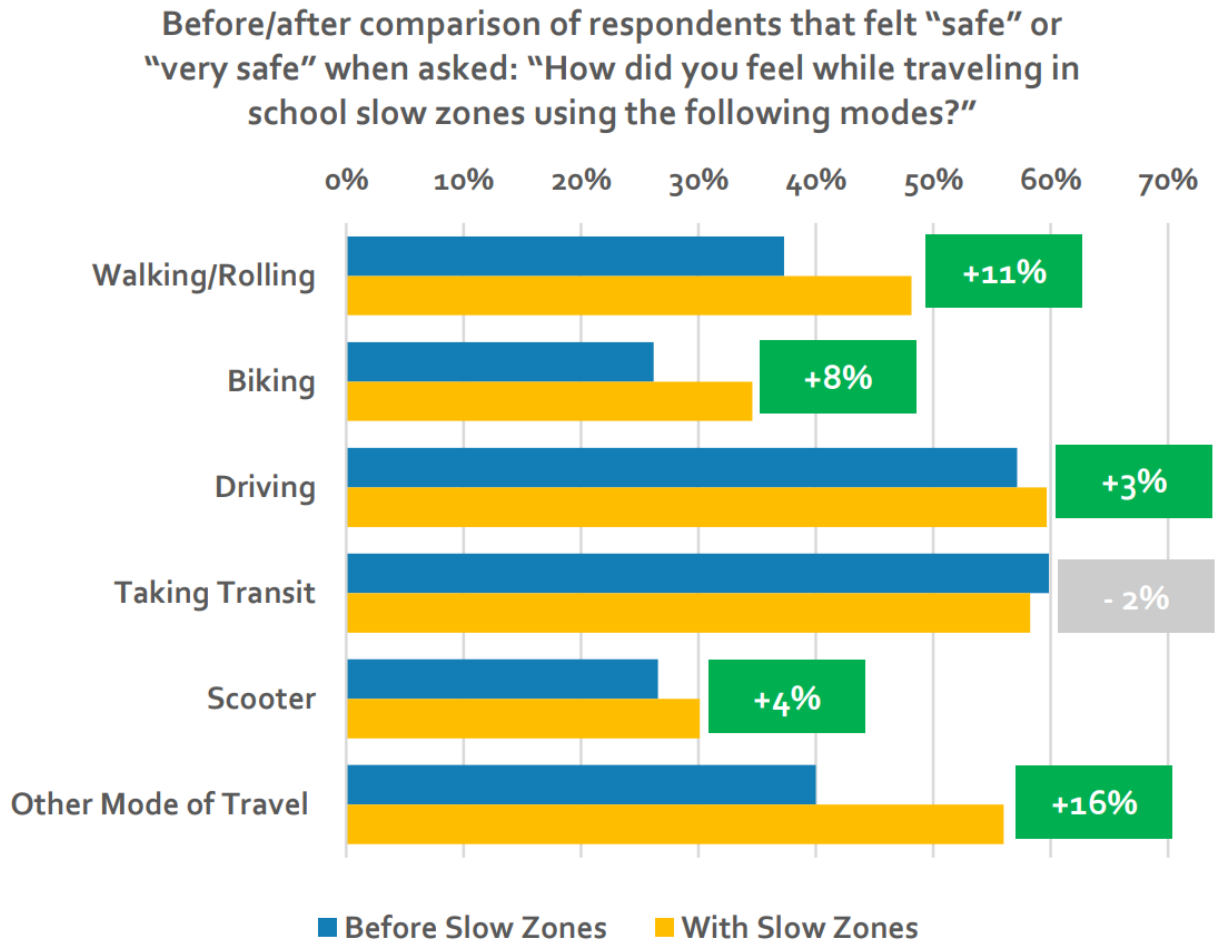
Community Feedback Findings

We hosted an online feedback form advertised through schools and County outlets over the course of a month.

We asked the community:
"What aspects of the demonstration school zone could be improved?"

The top responses included:

- Increase enforcement (via police officer or by speed cameras)
- Improve signage (e.g., by adjusting sign location or clarifying language)
- Provide clarity on the slow zones (e.g., note that they are 24/7)
- Expand the program to more schools



Lessons Learned

- Communicate early and often
- Work directly with the schools
- Integrate quick-builds & other improvements
- Meet early and often to quality check
- Collect data & feedback to build the case
- Think about the long-game (how will you use the school zone designation within your policies and other guidelines?)

Quick Build Construction Project

Tactical Quick Build Project

Paving the Way for More…

Tactical Speed Hump Pilot

- In 2023, we reintroduced speed humps after a 10-year moratorium in Arlington.
- We implementing tactical speed humps via our pilot project program in school slow zones (local roads).
- The tactical speed humps reinforce the new speed limits and have **reduced instances of drivers going above 20mph up to 72%.**

Paving the Way for More…

- In 2024, we launched the county's speed safety camera program.
- Speed cameras are limited to school zones by state law. Cameras must be placed in view of the beacons (wish we knew this during the retrofits!).
- The speed safety cameras reinforce the new speed limits and **have resulted in reductions in speeding (metrics TBD).**

Speed Safety Cameras

Learn more about School Zones in Arlington:

https://www.arlingtonva.us/Government/Programs/Transportation/Vision-Zero/Action/Safety-Projects/School-Zones

View the StoryMap:

https://storymaps.arcgis.com/stories/0409c56a0d19440092a7f55ce7c8d9998

Christine Baker, Vision Zero Program Manager

Arlington County, VA

csbaker@arlingtonva.us

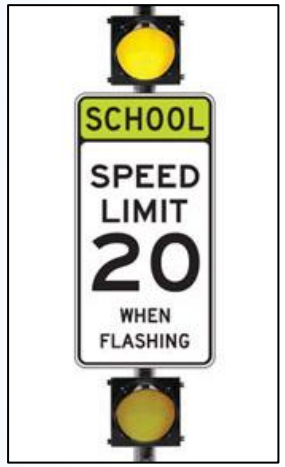
Kenmore Automated Photo Enforcement

Effective & Responsible Photo Enforcement

Tobin Bennett-Gold, P.E.
City Traffic Engineer

Tuesday October 21, 2025

Motivating Results



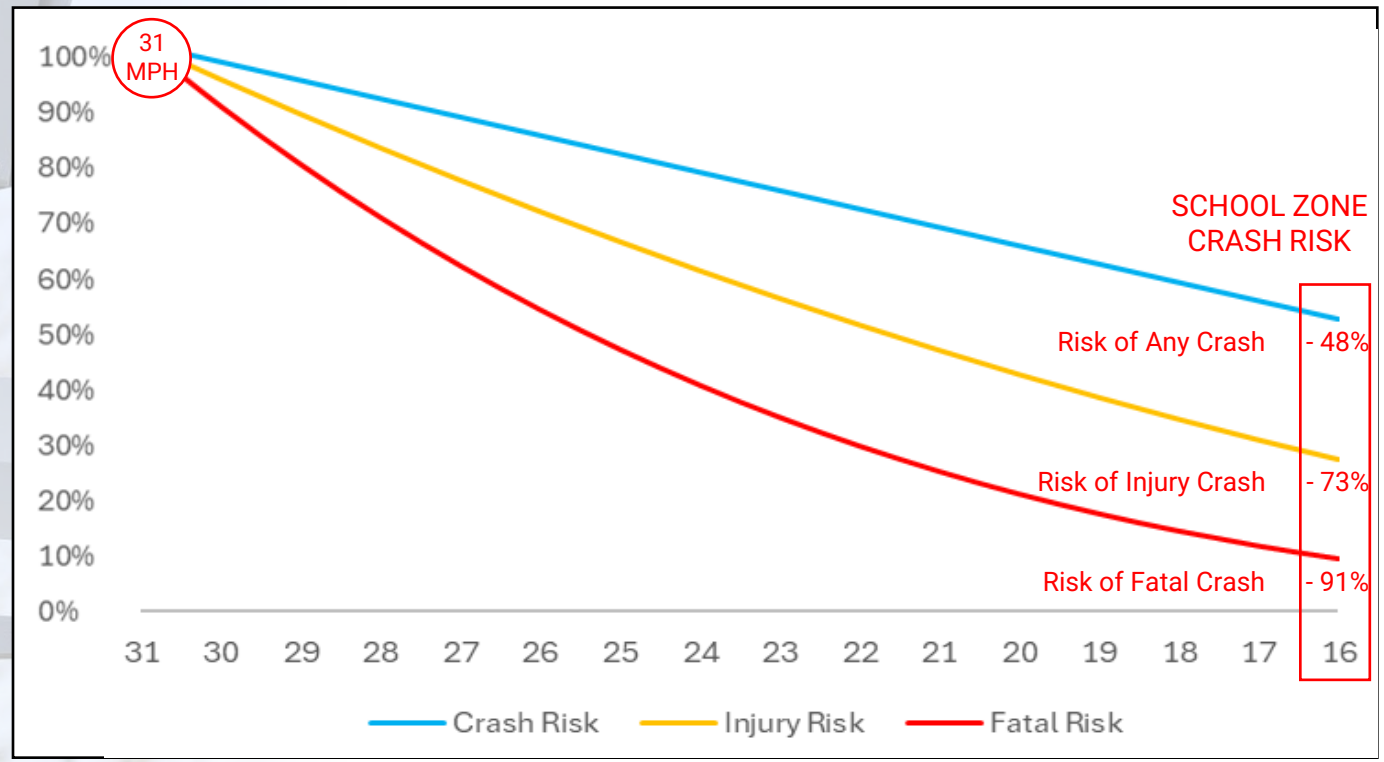
	Baseline	School Zone Enforcement	Regulatory Enforcement
SZ 6+ MPH Violation Rate	95%	1.5%	0.86%
SZ Ave. Speed	31 MPH	21 MPH	16 MPH
Reg 6+ MPH Violation Rate	30%	20%	0.96%
Reg Ave. Speed	35 MPH	31 MPH	25 MPH

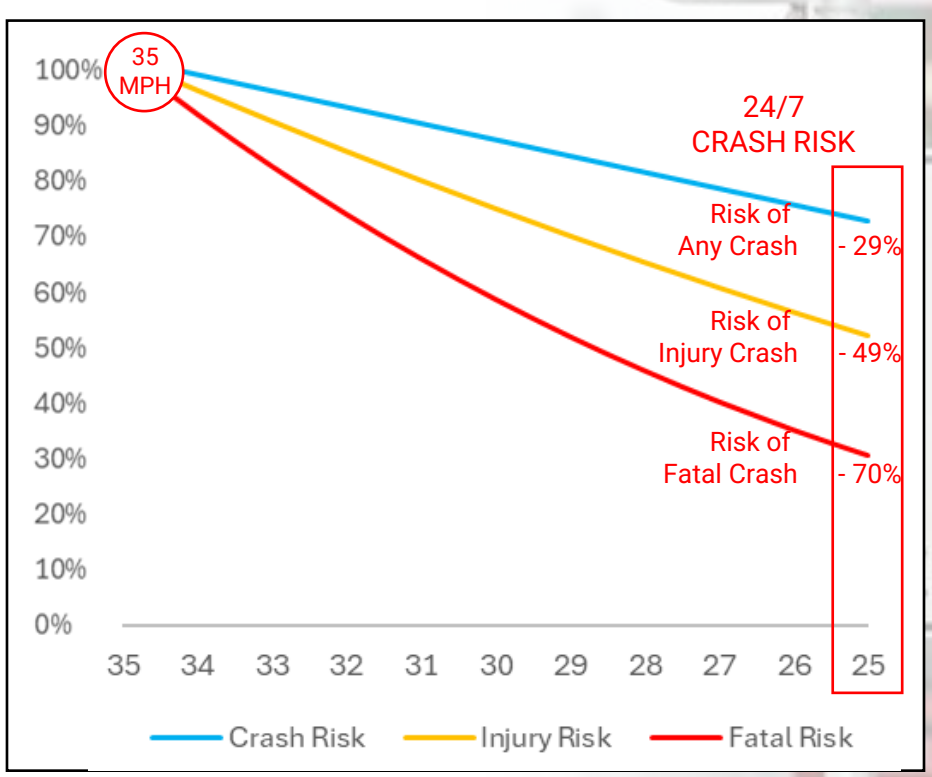
Why is Speed Reduction Important?

$$\frac{New\ Crash\ Rate}{Old\ Crash\ Rate} = \frac{New\ Speed}{Old\ Speed}$$

$$\frac{New\ Injury\ Crash\ Rate}{Old\ Injury\ Crash\ Rate} = \left(\frac{New\ Speed}{Old\ Speed}\right)^2$$

$$\frac{New\ Fatal\ Crash\ Rate}{Old\ Fatal\ Crash\ Rate} = \left(\frac{New\ Speed}{Old\ Speed}\right)^4$$





Use of 2023 / 2024 Revenue

$250,000 contributed to 73rd Av Sidewalks Project
- New Bicycle and Pedestrian Facilities
- Bicycle and Pedestrian Safety Improvements
- Speed Management
- Pavement Overlay
- Signal Upgrades

$55,000 in School Zone Improvements
- Improved device reliability
- New school zone flashers and speed feedback signs

Planned Use of 2025 / 2026 Revenue

$625,000 to 61st Av Sidewalks Project
- New Bicycle and Pedestrian Facilities
- Bicycle and Pedestrian Safety Improvements
- Speed Management
- Pavement Overlay

$250,000 for Narrow Street Sweeper
- Bike lanes
- Narrow travel lanes

$1,100,000 to Capital Projects
- Arrowhead Dr Sidewalks Project
- 80th Av Bike / Ped Improvements

$550,000 for Pavement Management
- Pavement Seals
- Channelization Improvements
- Systemic Safety Investment

$170,000 for Other Traffic Safety Investment
- Traffic Count Program
- Traffic Calming Program
- Local Road Safety Plan Projects

Photo enforcement improves safety and generates revenue

Evaluation of automated speed enforcement on Loop 101 freeway in Scottsdale, Arizona

Retting, Richard A. / Kyrychenko, Sergey Y. / McCartt, Anne T.
Accident Analysis & Prevention (AAP)
July 2008

Speed cameras can reduce speeding and injury crashes, but in many communities they are confined to low-speed settings such as residential streets and school zones. In 2006 the city of Scottsdale, Arizona, implemented a 9-month pilot program to evaluate the feasibility and effects of highly visible speed camera enforcement on a busy urban freeway. This was the first use of fixed speed cameras on a major US highway. Deployment of six cameras along an 8-mile corridor was associated with large declines in mean speeds and an 88% decrease in the odds of vehicles traveling 11mph or more above the 65mph limit. Traffic speeds increased soon after the pilot program was suspended. In addition to reducing speeding along the enforcement

lose is if
a program

Pima Ends P

Board voted 4-0 not to renew traffic camer

The Pima County Board of Super
least temporarily.

The board voted 4-0 not to renev
Solutions, the company that ope
the meeting, but has been vocal

on's red-light

ed camera photos late

ght cameras and speed

ichael Ortega said in
ed until later this
of the voters by ending

At least half a dozen photo enforcement programs in the Puget Sound region ended between 2011 and 2017

KAPE Foundational Values

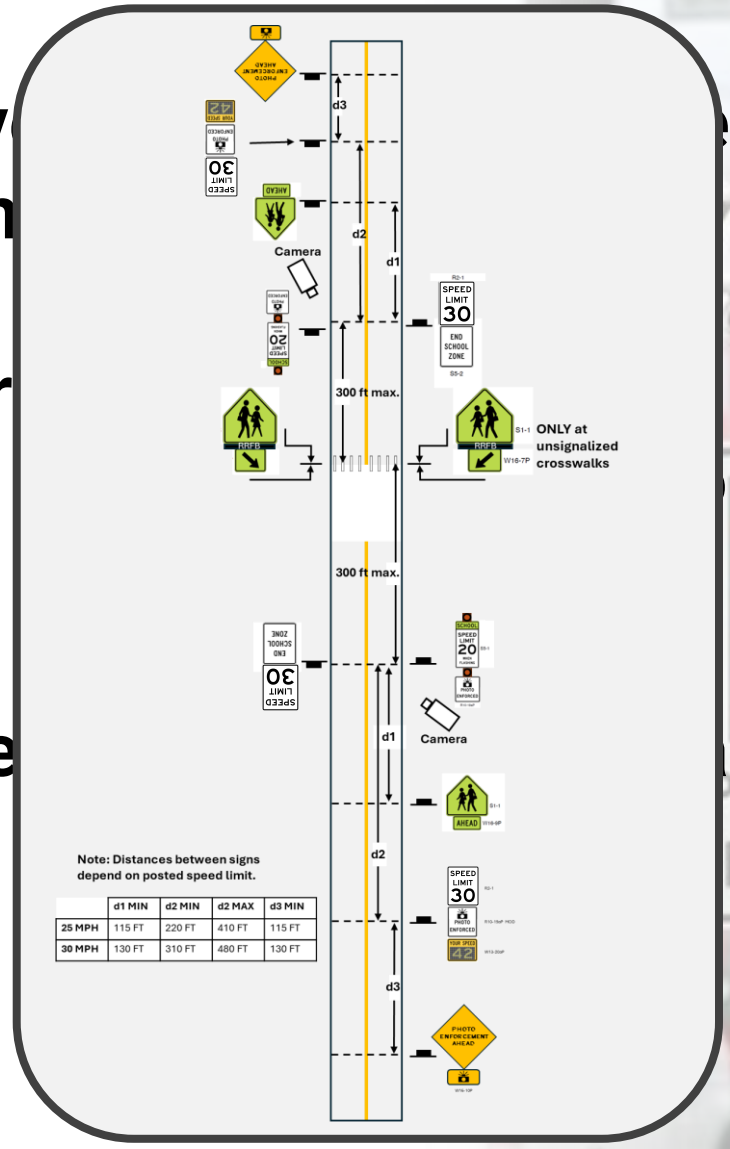
Fair

Equitable

Transparent

Safe

- **Last resort – inv… …nt interventions wh…**
- **5 MPH grace for … speed feedback … self-correct**
- **Enforcement are… …nd not exploitative**



	d1 MIN	d2 MIN	d2 MAX	d3 MIN
25 MPH	115 FT	220 FT	410 FT	115 FT
30 MPH	130 FT	310 FT	480 FT	130 FT

KAPE Foundational Values

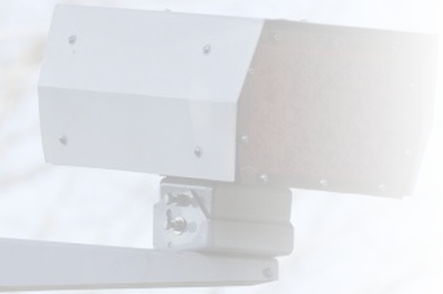
Fair

Equitable

Transparent

Safe

- **Low burden for drivers who are financially vulnerable**
- **Does not disproportionately impact disadvantaged groups**
- **Reduces need for police stops for speed enforcement**



KAPE Foundational Values

Fair

Equitable

Transparent

Safe

- **Extensive outreach and education for all program changes**
- **All program practices public-facing and available on program website**
- **Annual reporting includes safety impact, program revenue and expenses, and infraction outcomes**

KAPE Foundational Values

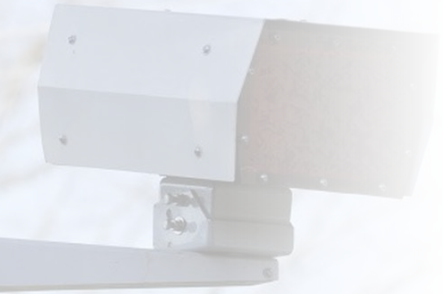
Fair

Equitable

Transparent

Safe

- **Target areas with high opportunity for safety impact**
- **Net safety must be positive for all enforcement applications**
- **All revenue re-invested in safety projects and programs**



Building a Program

Phased Scaling

School Zone Enforcement

- School zone speed management has least feasible alternatives
- Earn trust with effective and responsible program practices
- Greatly reduced scale of positive and negative impact (10% of annual traffic)

Regulatory Speed Limit Enforcement

General Area Speed Enforcement

Will help prevent the unbearably tragic school zone crash

But will not move the needle on crash risk in the corridor

Building a Program

Phased Scaling

School Zone Enforcement

Regulatory Speed Limit Enforcement

General Area Speed Enforcement

- Leverage investments already made at existing enforcement sites
- Expand safety benefit to 100% of traffic
- Demonstrate potential for substantive safety investment
- Provide salient quality of life improvement at enforcement locations

The crash risk reduction is substantial

But crashes are highly variable, and short-term safety benefits may not be dramatic

Building a Program

Phased Scaling

School Zone Enforcement

- Wide area of effect offers greatest potential for systemic safety benefit
- Large scale deployment increases the need to mitigate negative impact

Regulatory Speed Limit Enforcement

- Greater toolbox of enforcement and non-enforcement interventions

General Area Speed Enforcement

Edge-cases become standard occurrences at scale

Need to air-tight legal, operational, and customer service procedures

Program Considerations

Local Laws Vary

Loop in your lawyer – the stakes are high and the laws are complicated

Accessory Devices

Placing and maintenance of signing and devices, e.g. flashers, speed feedback signs

Courts are Critical

Processing and adjudication requires staff and planning

Data Collection

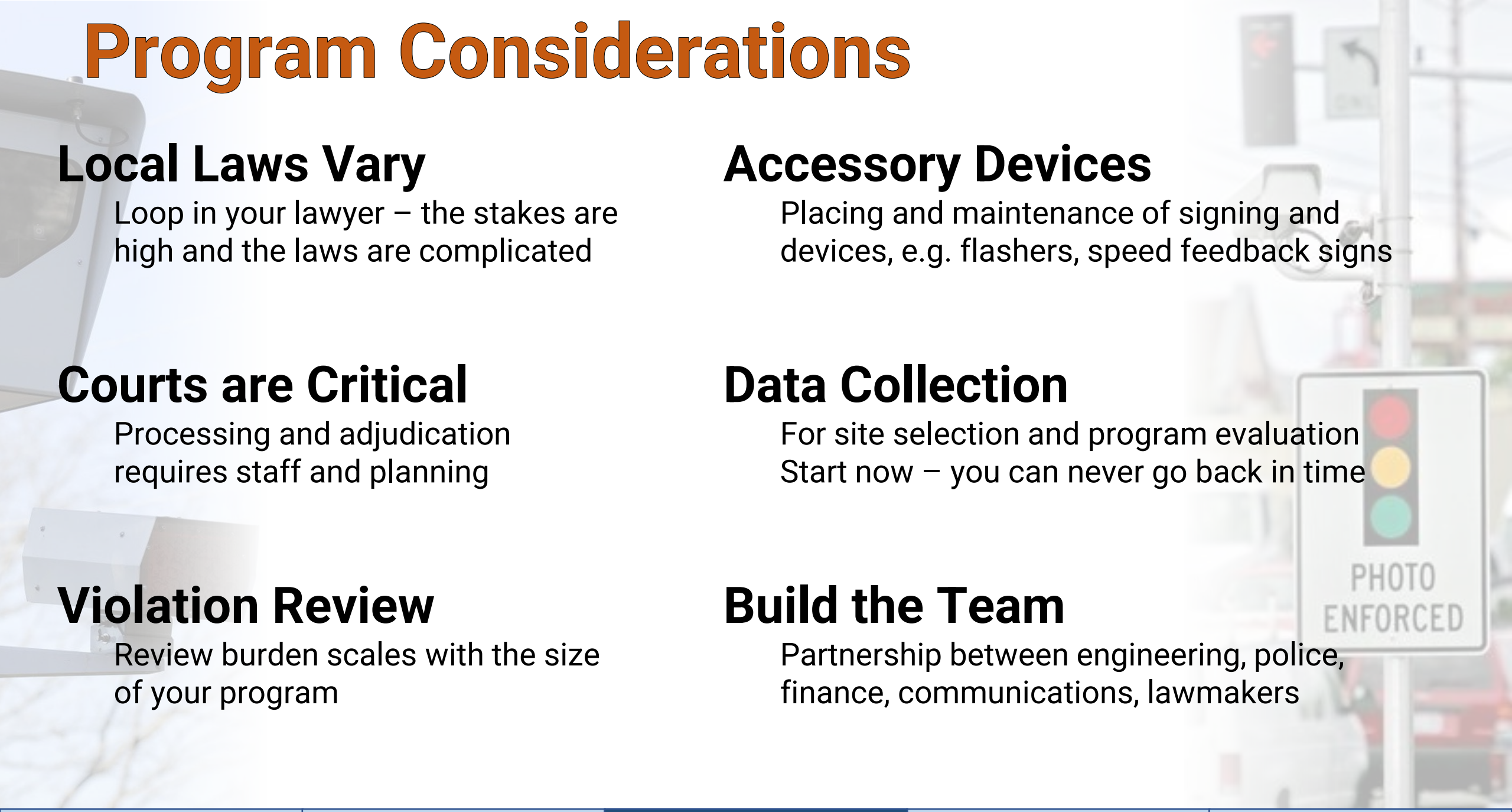
For site selection and program evaluation
Start now – you can never go back in time

Violation Review

Review burden scales with the size of your program

Build the Team

Partnership between engineering, police, finance, communications, lawmakers



Design for safety – the revenue will come anyway

Variable costs

Function of violation rate and traffic volume

- Police review (overtime)
- Printing and mailing
- Court costs
- Non-payment

Net Remittance Per Fine

```
        $110 base fine
      x   70% paid in full

         -$3 police Review
         -$5 printing & mailing
        -$20 avg. court fees
--------------------------------
         $50 remitted to the City

      x1,000 ADT
      x  365 days
      x    1% violation rate
--------------------------------
      $182,500 per 1,000 ADT
```

Design for safety – the revenue will come anyway

Variable costs

Function of violation rate and traffic volume

- Police review (overtime)
- Printing and mailing
- Court costs
- Non-payment

Fixed costs

Constant for a given program size

- Camera operation
- Device maintenance
- Program administration

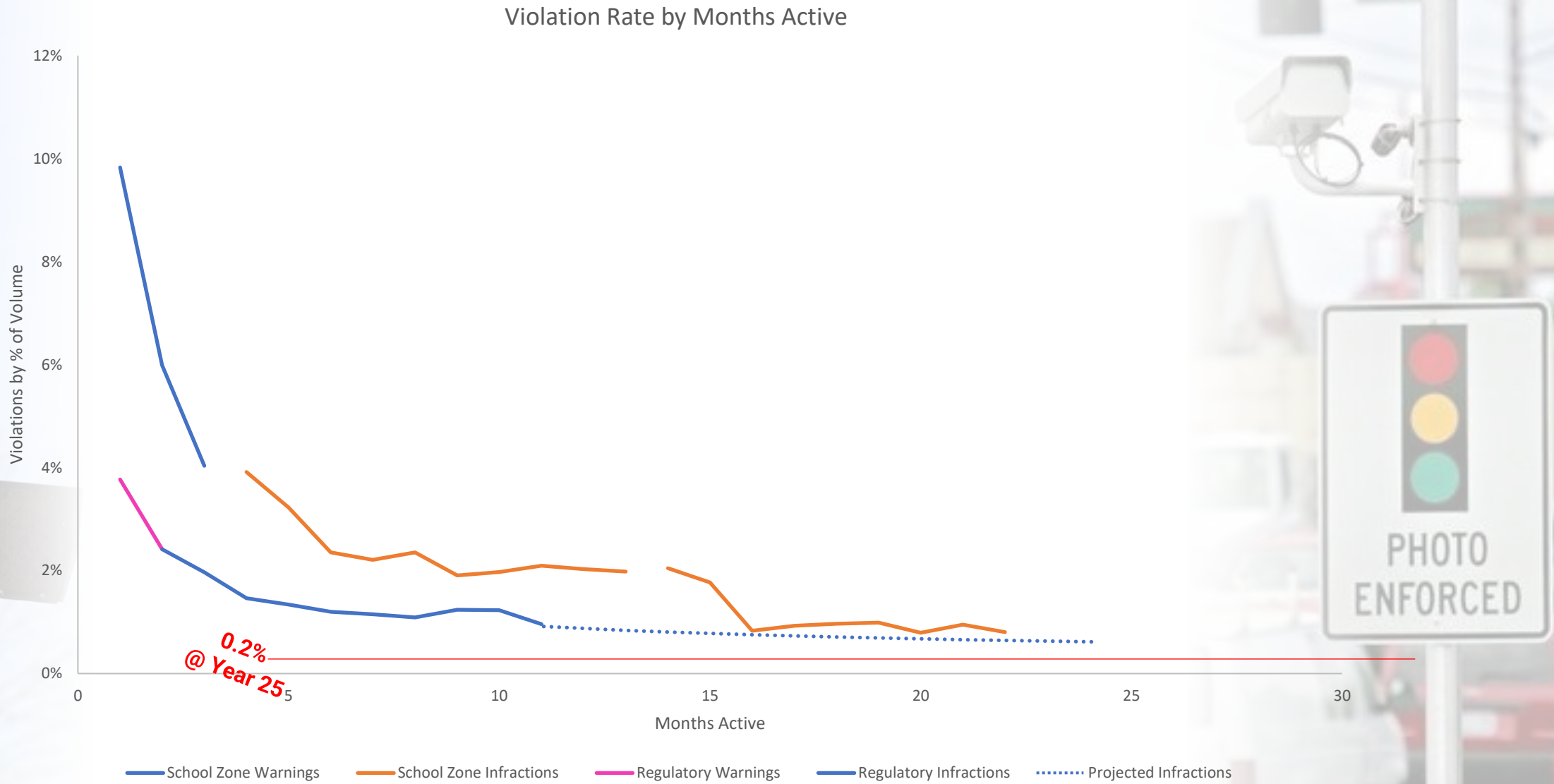
Estimated Net Revenue

```
$182,500 per 1,000 ADT
x     20k ADT captured

-$54,000 annual camera fee
x      6 cameras

-$25,000 estimated O&M
-$100,000 program staff
-------------------------------
$3.2M program net revenue
```

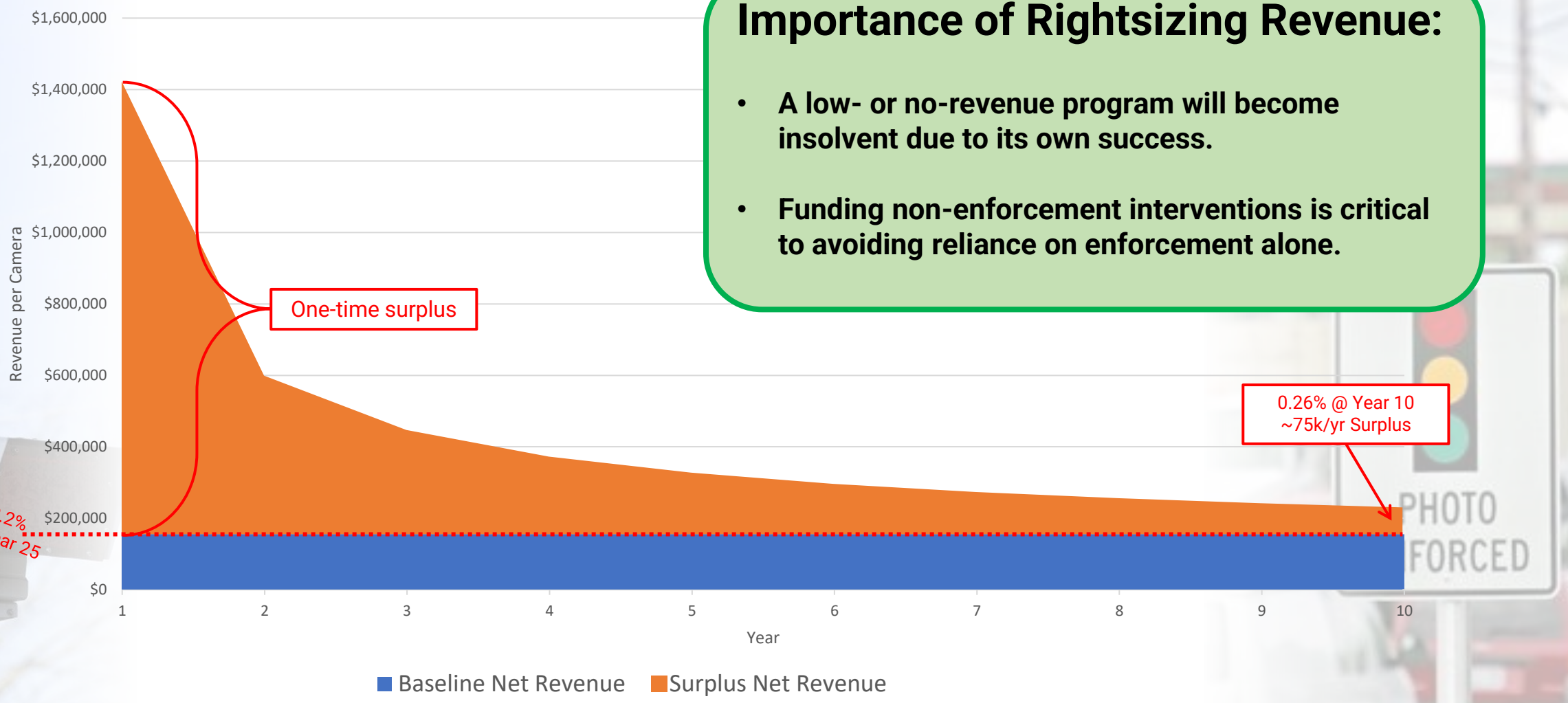
Success Means Less Speeding

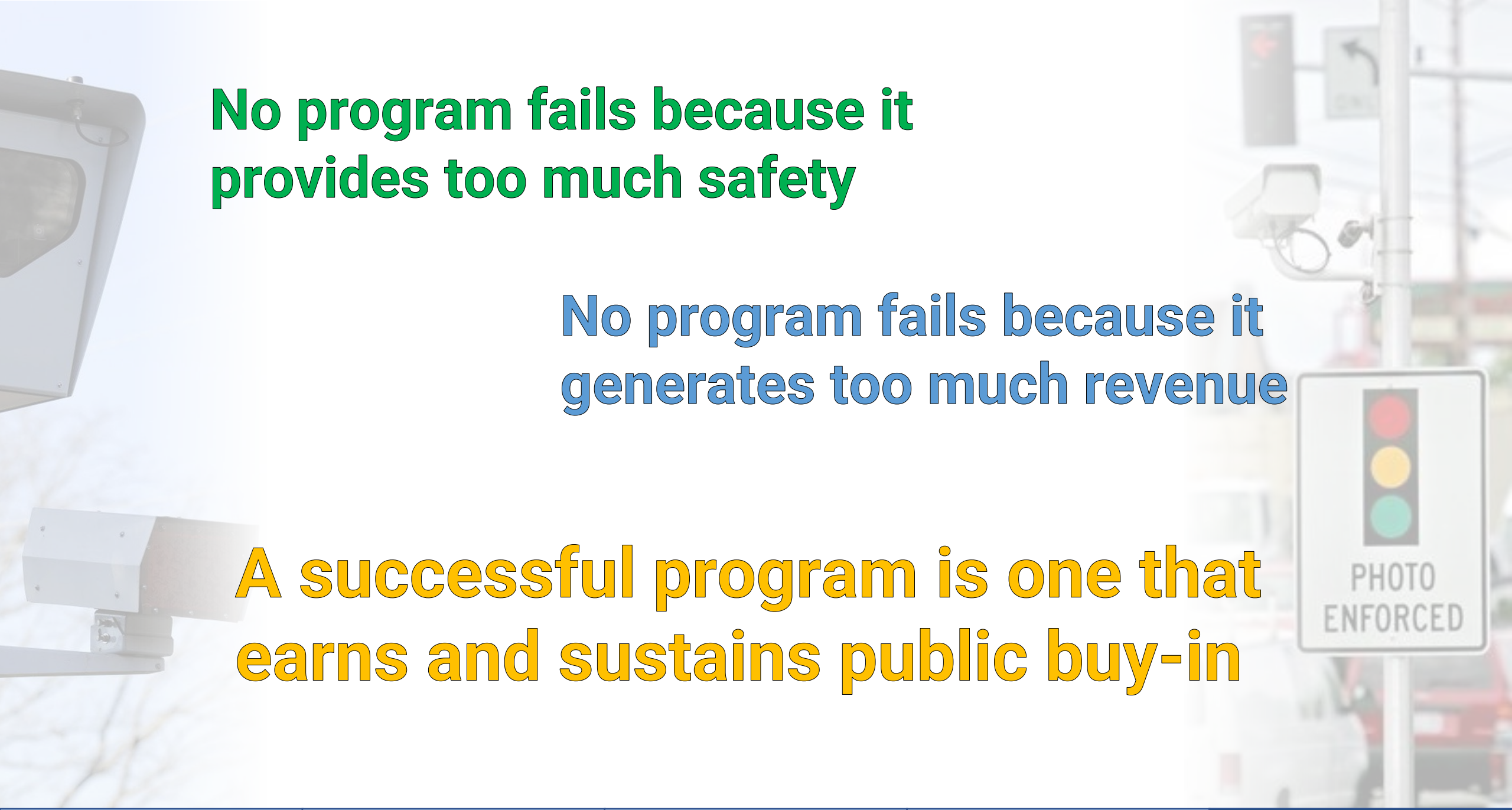


As Violations Go, So Goes Revenue

Importance of Rightsizing Revenue:

- **A low- or no-revenue program will become insolvent due to its own success.**
- **Funding non-enforcement interventions is critical to avoiding reliance on enforcement alone.**





No program fails because it provides too much safety

No program fails because it generates too much revenue

A successful program is one that earns and sustains public buy-in

Discussion

- ⇨ Send us your questions
- ⇨ Follow up with us:
  - ⇨ General Inquiries pbic@pedbikeinfo.org
- ⇨ Archive at www.pedbikeinfo.org/webinars