VISION ZERO

ARLINGTON COUNTY

Community Planning Association of Southwest Idaho (COMPASS) Education Series:

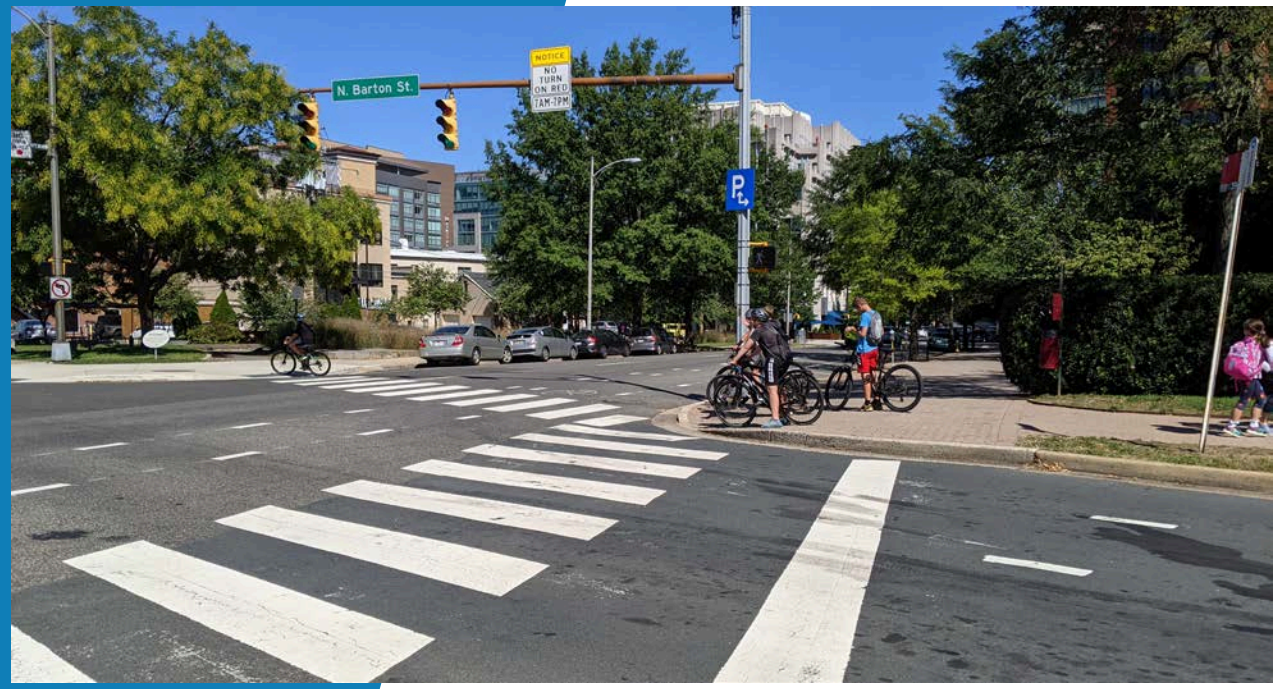
Putting Safety Into Action

August 2023

ARLINGTON
VIRGINIA

Agenda

- Introductions
  - Arlington County, VA
  - Vision Zero & safety
  - Balancing multimodal needs
- Safety Toolbox
  - Tools by category
  - Applying within context
- Identifying a Safety Issue
  - Genesis of an investigation
  - Data analysis and tool selection
- Tools in Action
  - Tactical projects
  - Quick-build projects
  - Pilot projects
  - Capital projects
- Wrap Up



Introductions

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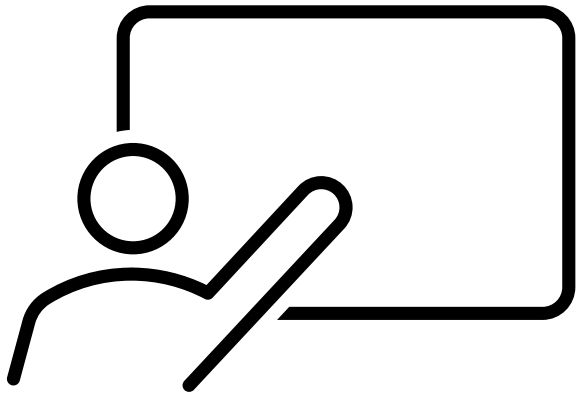

Arlington County, Virginia

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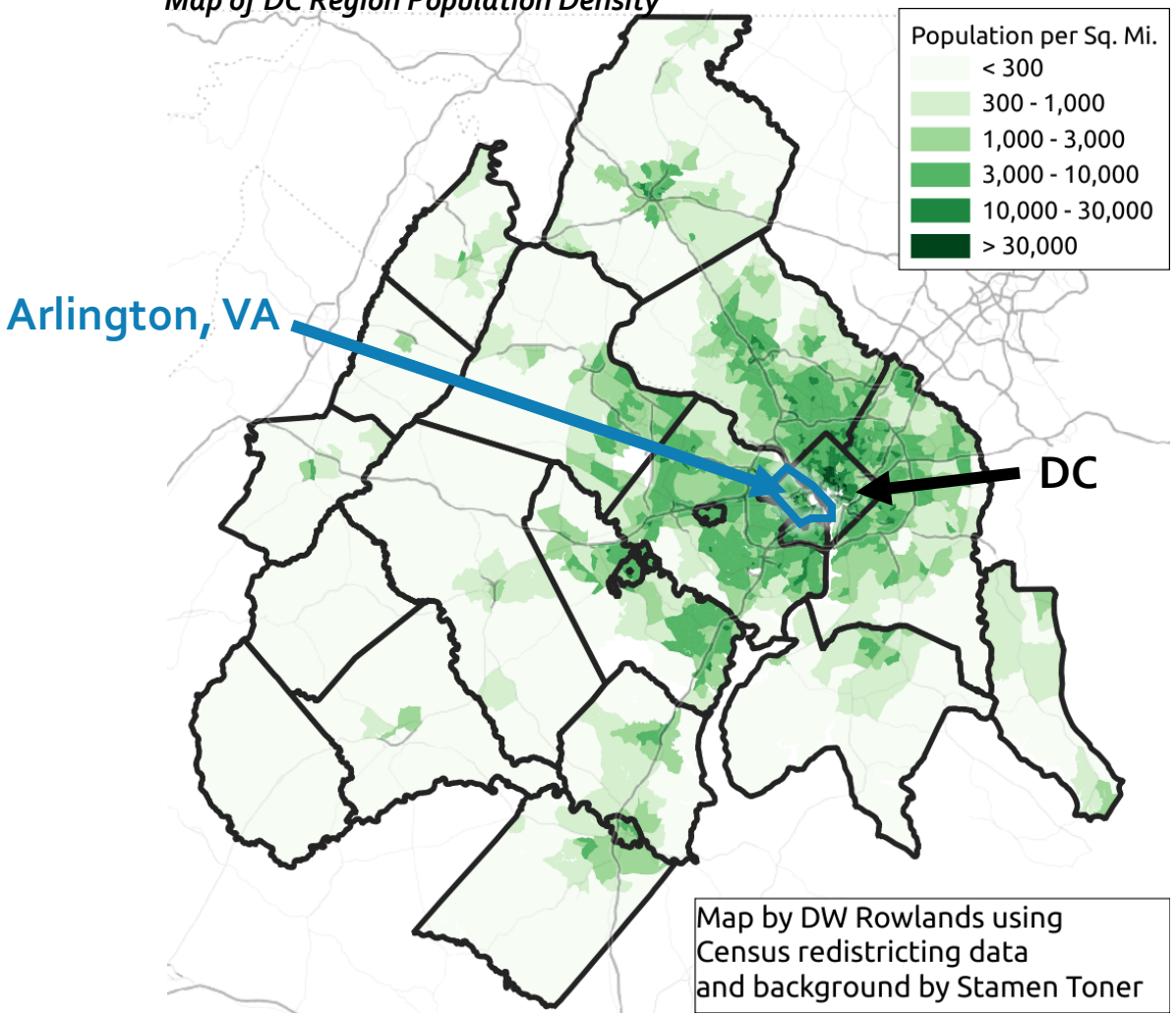
Arlington, VA is a semi-urban community located just southwest of Washington, DC

2023 Facts:

- **Population: 237,300**
- **Housing Units: 121,200**
- **Jobs: 214,600**
- **Land Area: 26.3 Sq mi**

Map of DC Region Population Density



Arlington County & Vision Zero

In July 2019, the County Board adopted a resolution committing to Vision Zero and requesting that staff create a Vision Zero Action Plan.

In May 2021, the County Board adopted a Five-Year Action Plan to get us to Vision Zero by 2030. The Action Plan includes:

- An assessment of existing safety needs/areas
- Goals for a safer transportation system
- A list of action items to achieve each safety goal
- A plan for tracking and reporting our progress

2030

What is Vision Zero?

TRADITIONAL APPROACH		VISION ZERO
Traffic deaths are **INEVITABLE**		Traffic deaths are **PREVENTABLE**
PERFECT human behavior	VS	Integrate **HUMAN FAILING** in approach
Prevent **COLLISIONS**		Prevent **FATAL AND SEVERE CRASHES**
INDIVIDUAL responsibility		**SYSTEMS** approach
Saving lives is **EXPENSIVE**		Saving lives is **NOT EXPENSIVE**

- Focus on preventing serious and fatal crashes.
- See a safety issue in one place and fix everywhere like it (aka – safe systems approach).
- Triage safety issues so that we address our biggest problems first.
- Ensure equity in access to safe transportation.

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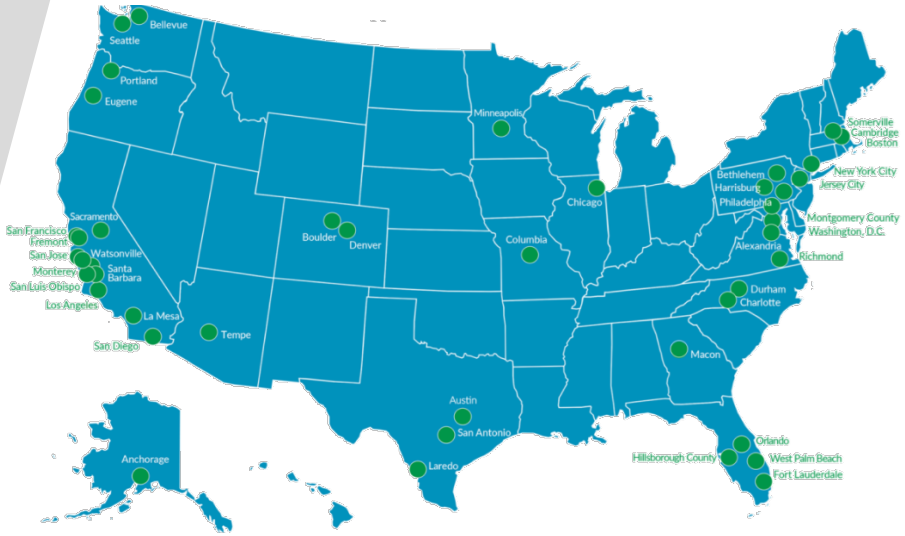
Vision Zero is:

"a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all."

- Vision Zero Network

visionzeronetwork.org/resources/vision-zero-cities/



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Community-Identified Vision Zero Goals

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	Our Vision Zero Program Will Be...	Community Action Plan Goals
	Multimodal	Ensure safe transportation, no matter how you get around.
	Safety-First	Put safety first on County projects and policies - big or small.
	Transparent & Accountable	Be transparent, responsive, and accountable on Vision Zero progress and outcomes.
	Data-Driven	Apply timely data to take action on safety.
	Collaborative	Promote a culture of transportation safety for everyone.
	Equitable	Prioritize transportation safety investments equitably in the most vulnerable communities.

Vision Zero Initiatives: Responsive vs. Proactive

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Responsive

Critical Crash Follow Up

Collaborate with an interdepartmental team to identify immediate action to address severe & fatal crash locations (and identify next steps to address similar locations to prevent crashes).

Hot Spot Program

Identify crash hot spots using crash & near miss data and implement safety improvements through quick-build projects.

High-Injury Network Audits

Conduct walking assessments of HIN corridors to identify quick fix/build improvements and ensure future planning efforts consider large scale corridor needs.

Community Report-A-Problem

Respond to safety concerns reported by community members – typically involves an investigation, data collection, and implementation of recommendations.

Proactive

Systemic Improvements

Identify a safety issue in one location, we actively identify and improve other similar locations to prevent crashes.

Equity Analysis

Perform an analysis of transportation safety issues countywide to identify and address areas or people disproportionately affected by crashes.

Community Education

Promote Vision Zero and transportation safety messaging through targeted advertisements and education materials throughout the community.

. Proactive

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Proactive

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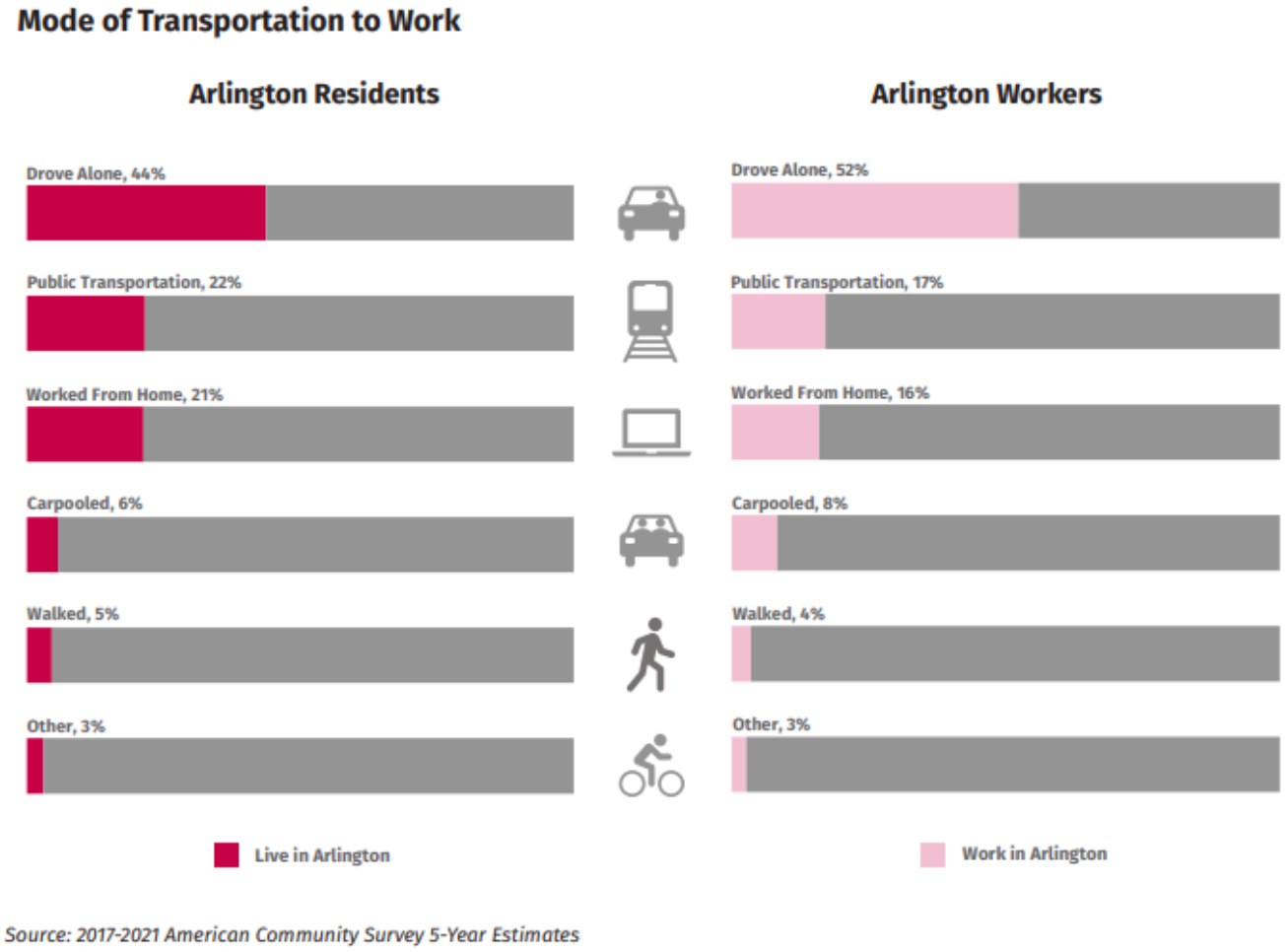
Balancing Multimodal Needs

- Walk Friendly Platinum Community
- "Silver" Bicycle Friendly Community
- Transit-Friendly
  - Metrorail Stations: 11
  - Bus Routes: 16 ART + more WMATA

FY 22 Trip Stats for Various Modes:

- Metrorail Avg Weekly Trips: 41,311
- Air Travel Passengers (DCA): 23,961,442
- Arlington Transit Bus Trips: 1,772,824
- Capital Bikeshare Total Trips: 234,881
- Scooter Share Total Trips: 441,654
- Other Shared E-Bike Trips: 53,663

13.8% of households do not have a car



Source: 2017-2021 American Community Survey 5-Year Estimates

Balancing Multimodal Needs

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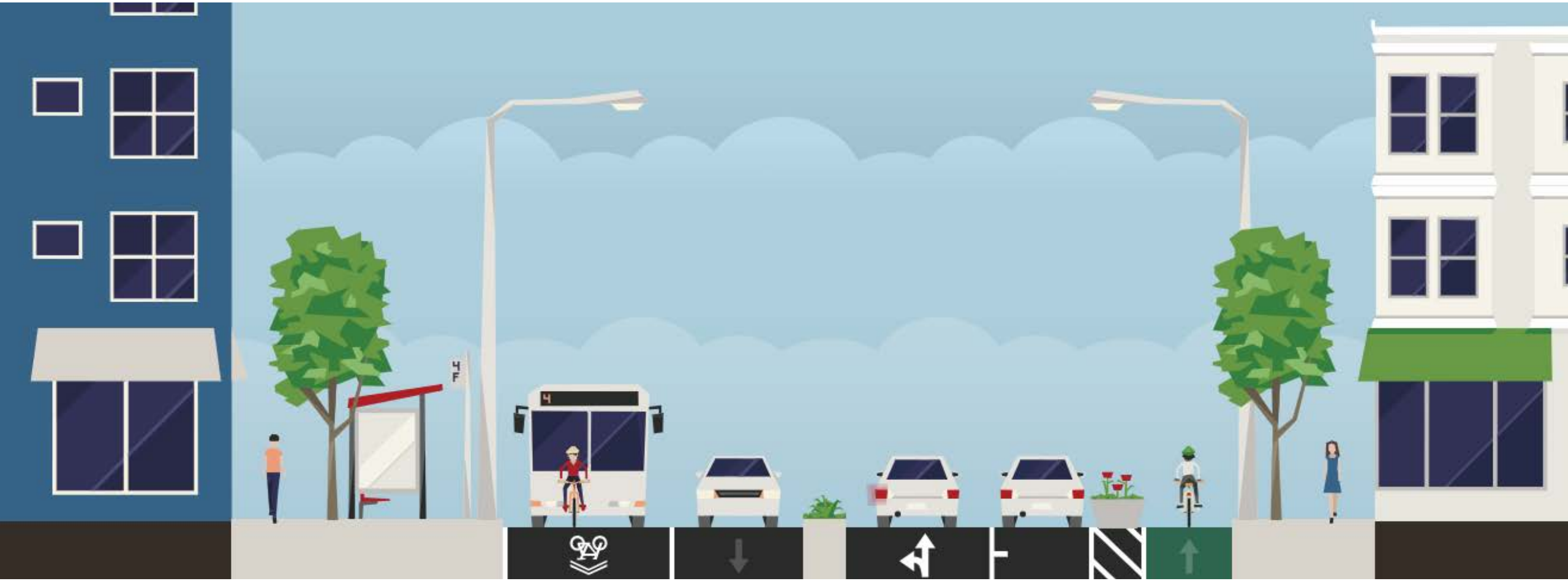
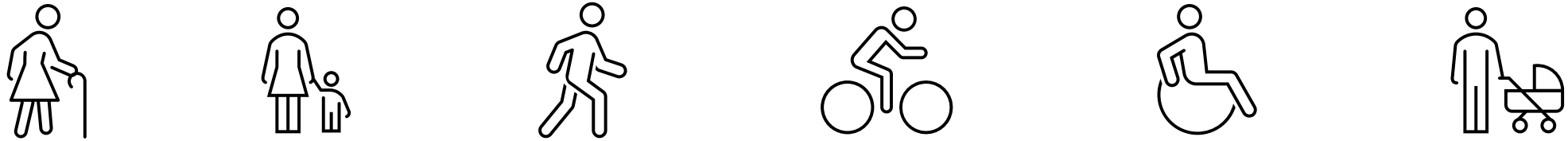
Vehicle Lanes + Bike Lanes + Bus Stops + Sidewalks + Curbside Loading + Trees + Lighting + Parking = A *whole lot* for one street



Balancing Multimodal Needs

Vehicle Lanes + Bike Lanes + Bus Stops + Sidewalks + Curbside Loading + Trees + Lighting + Parking = A *whole lot* for one street

With a Vision Zero policy, we put safety first, which means protecting vulnerable users.



The Multimodal Safety Engineering Toolbox

- Published in 2022 / Living document
- Informs internal and external stakeholders about safety improvement options and how they are selected and implemented
- Written for a community audience using easy-to-understand language
- Used for coordination with interdepartmental staff, contractors, developers, and the community when discussing transportation improvements
- Creates a shared understanding and realistic expectations around safety countermeasures

Tools: Crossings and Signals

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Tools: Crossings and Signals (Continued)

Traffic Signals

Traffic Signal Backplates

Travel Lane Signs and Markings

Leading Pedestrian Intervals

Red Light Cameras

No Turn on Red

Tools: Bicycle and Pedestrian Facilities

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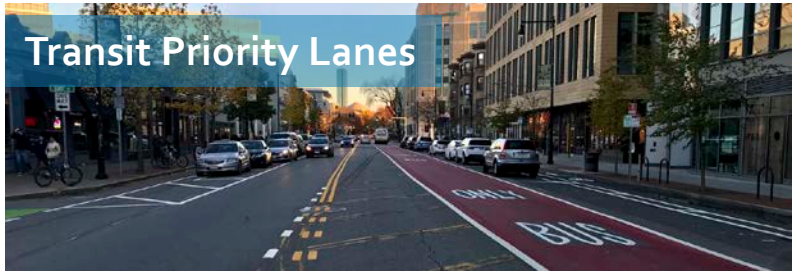
Tools: Transit Facilities



Tools: Speed and Traffic Management

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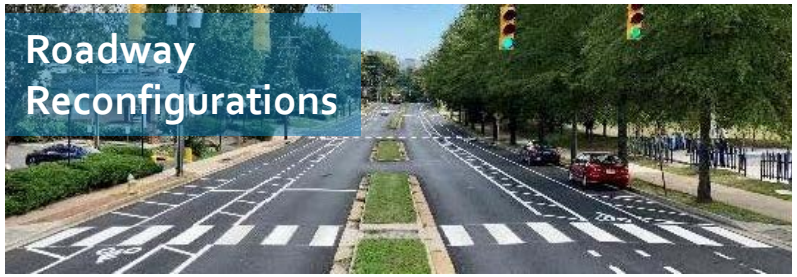
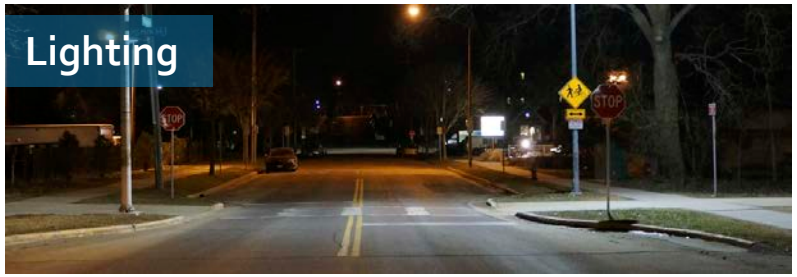
Tools: Other Road Design Elements





Example Summary Tools

Bicycle & Pedestrian Facilities				
Tool	Conventional Bike Lanes	Contraflow Bike Lanes	Buffered Bike Lanes	Separated Bicycle Facilities
Purpose	Provide dedicated, on-road space for bicycling.	Provide dedicated, on-road space for opposite direction bicycle travel on one-way streets.	Provide dedicated on-road space for bicycling with more space between vehicles and bicyclists.	Provide physical separation between the bicycle lane and travel lane.
Expected Crash Reduction	58% for bicycle-vehicle crashes	Studies show reduced risk	Expected crash reduction is greater than conventional bike lane	74% for bicycle-vehicle crashes
Timeline				
Cost				

Identifying a Safety Issue

Arlington County follows an established process to identify safety issues, perform in-depth analyses, evaluate, and implement the most feasible tool to address the issue.

Genesis of a Safety Investigation

Safety data analysis

- Crash hot spot analysis
- Annual crash review
- High-Injury Network safety audits
- Systemic & predictive crash analysis

Capital, redevelopment, maintenance projects

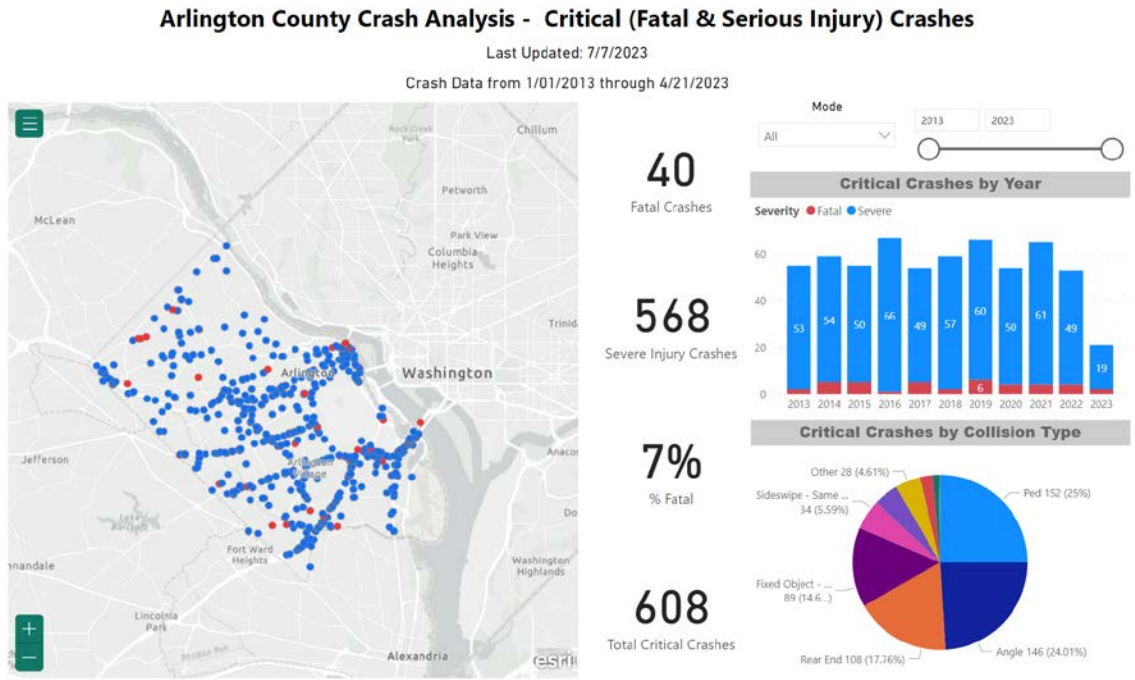
- Repaving
- Stormwater projects
- Capital improvement projects
- Site plan redevelopments

Planning studies

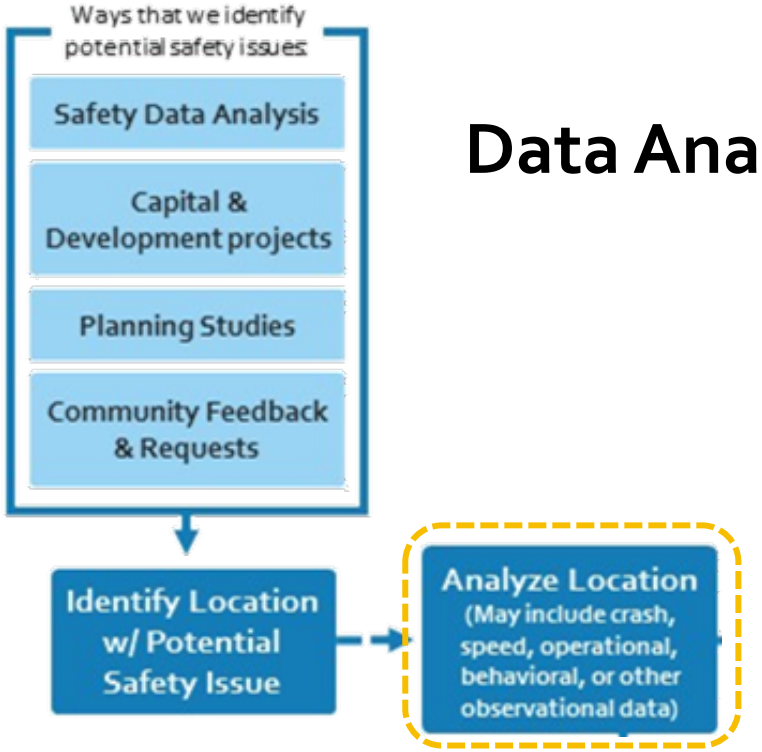
- Corridor plans
- Sector plans

Community feedback & requests

- Report-a-Problem and similar investigation requests
- School or Police reports



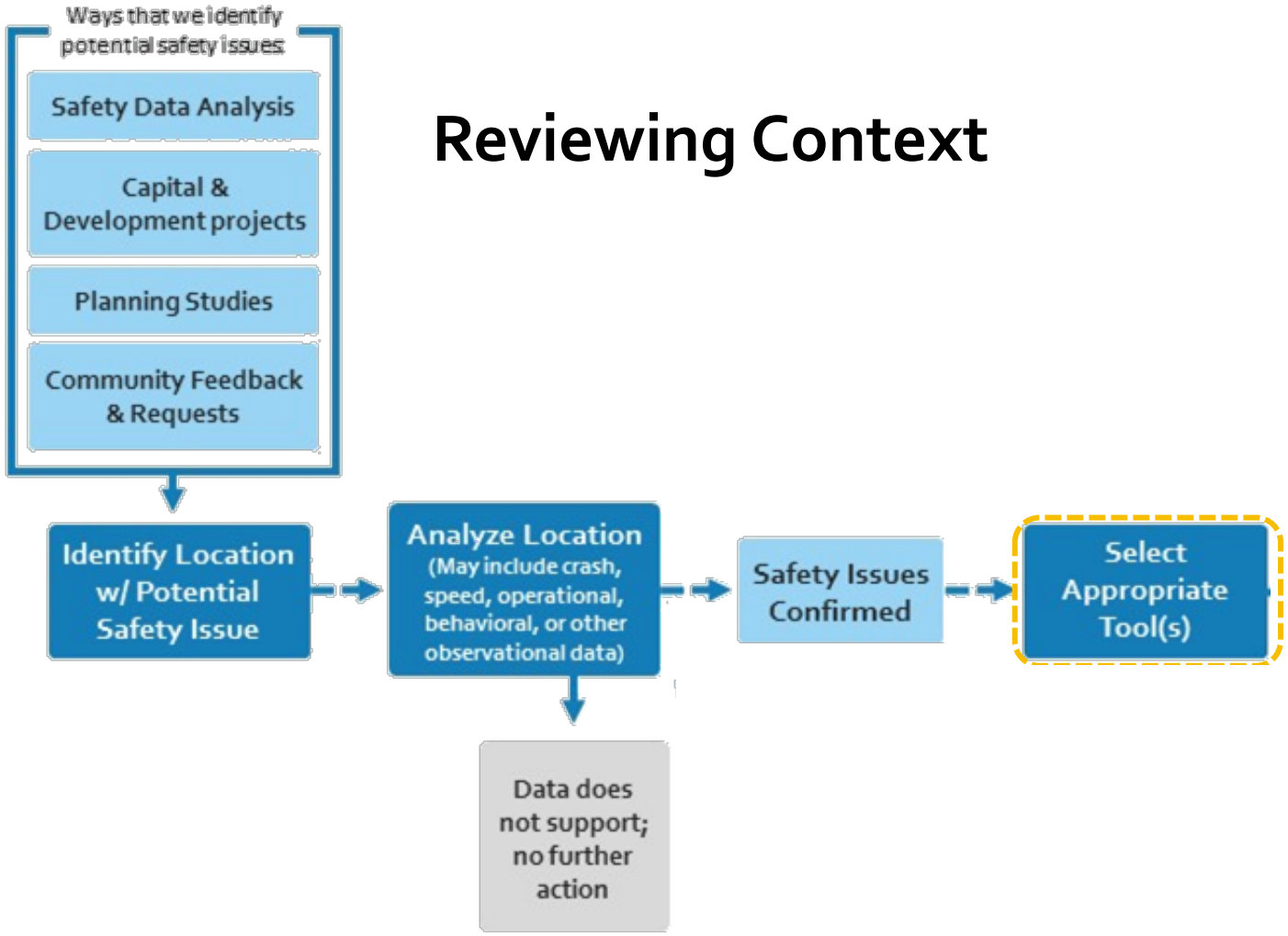
Data Analysis to Assess the Issue



We consider:

- Crash history and patterns
- 85th percentile speeds
- Operational behaviors
- Other observational data

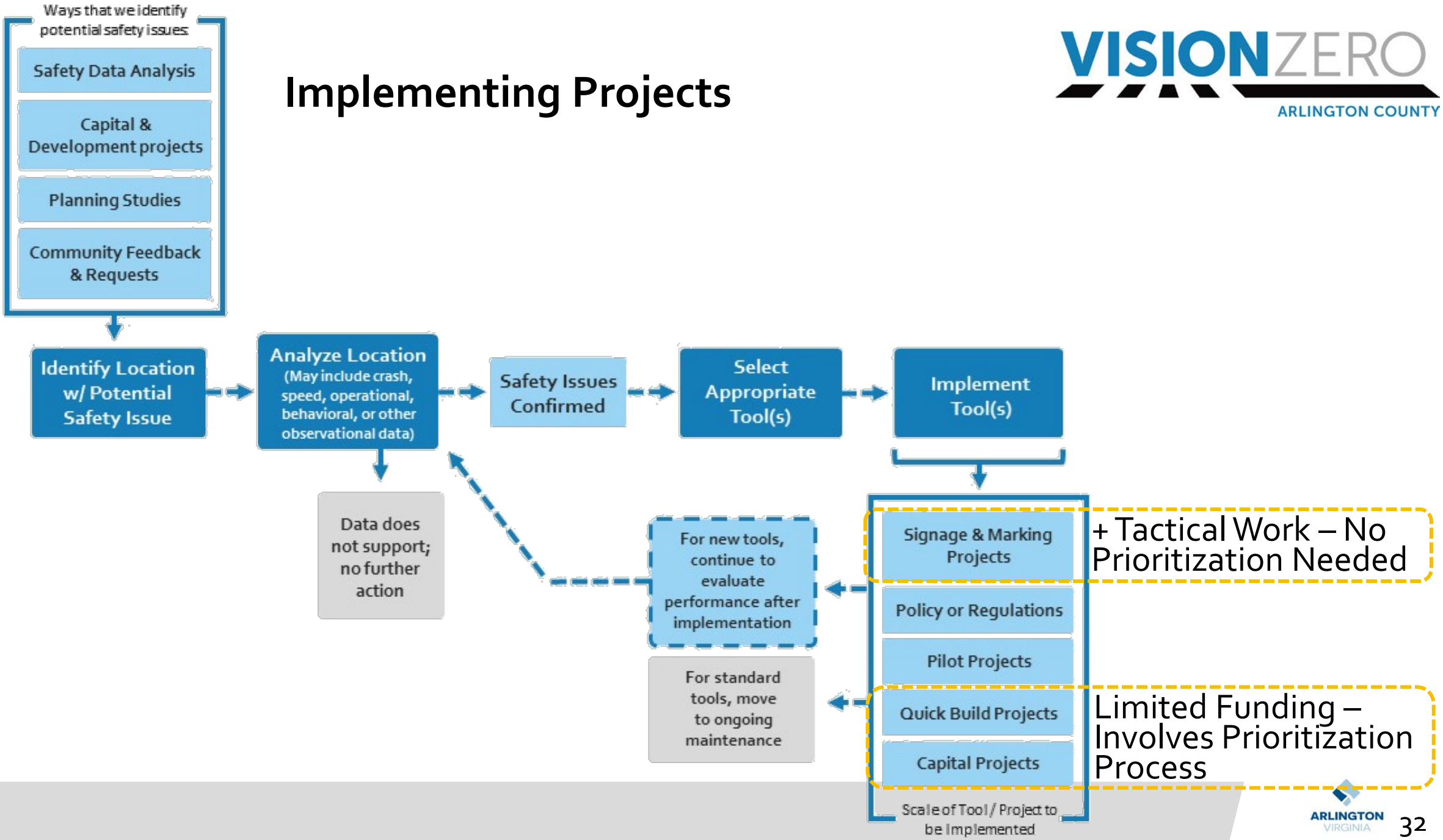
Reviewing Context



We consider:

- Street type
- Surrounding land use
- Primary users/modes
- Potential for crash reduction
- Cost & timeline
- Nearby projects/initiatives

Implementing Projects

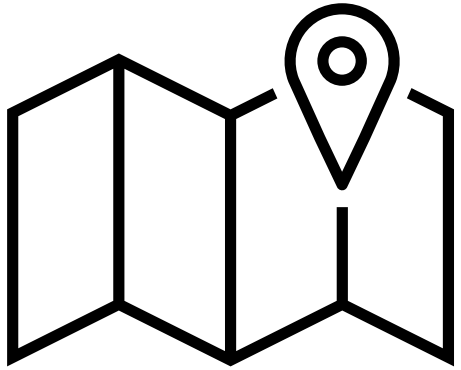


Tools into Action

Tools are delivered as projects, big or small. But all have significant safety benefits.

Some involved combinations of tools.

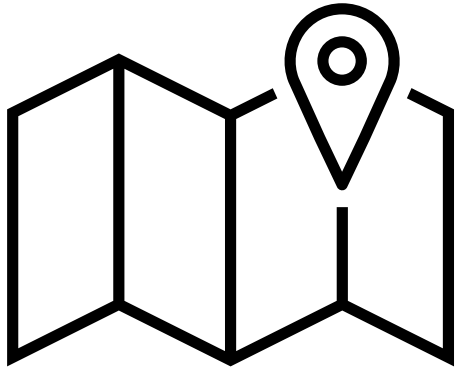
Some are temporary and some are permanent.



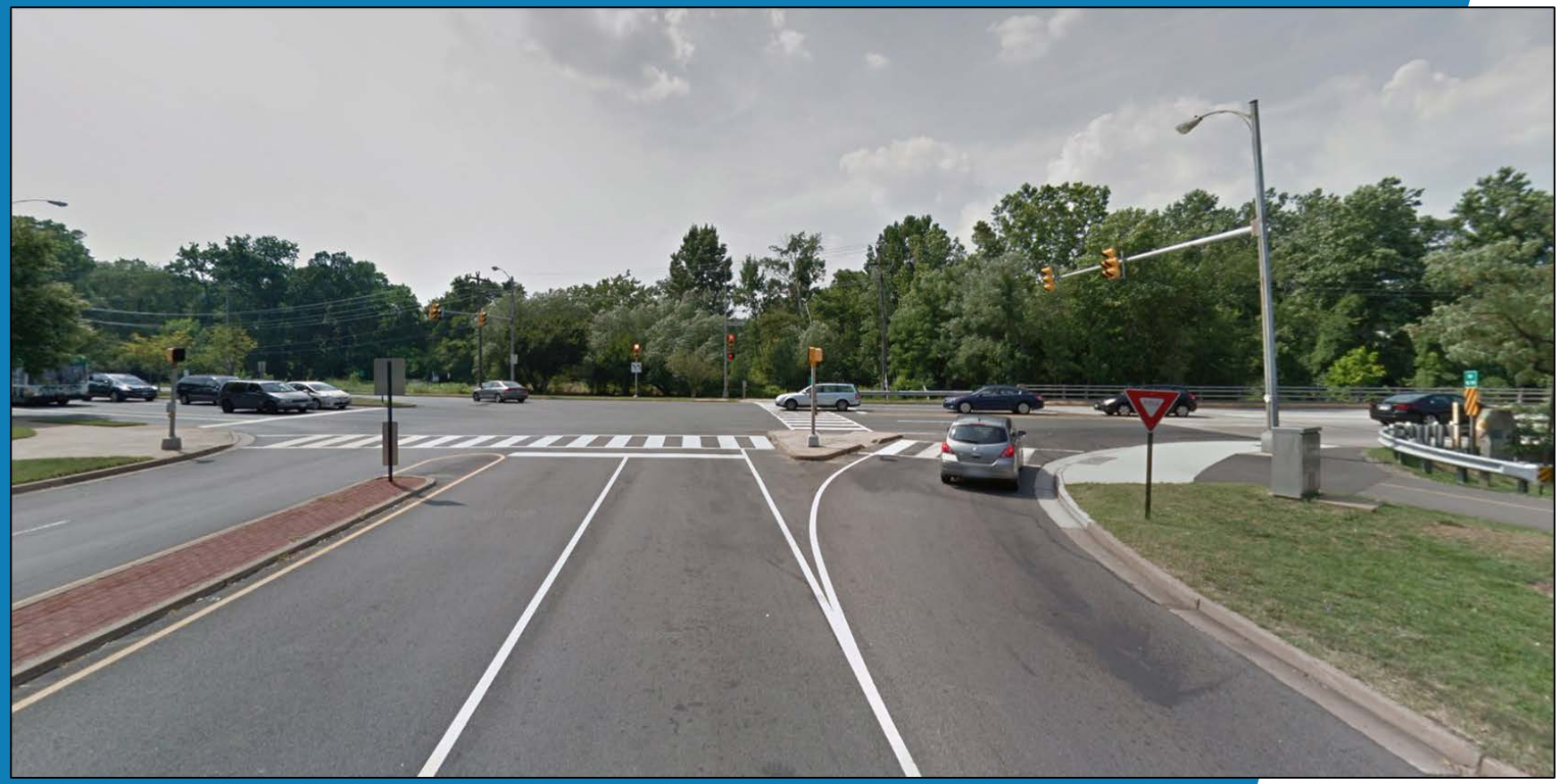
Tactical Safety Projects

- Typically includes signage, markings, flex posts, and/or other temporary materials
- Cost is low and typically funded through repaving or Vision Zero funds
- Can be implemented within a year
- Community engagement is typically low/"communicate" level
- Provides an opportunity to adjust the design based on real world operating conditions

Tactical Safety Projects



What is Tactical Design?

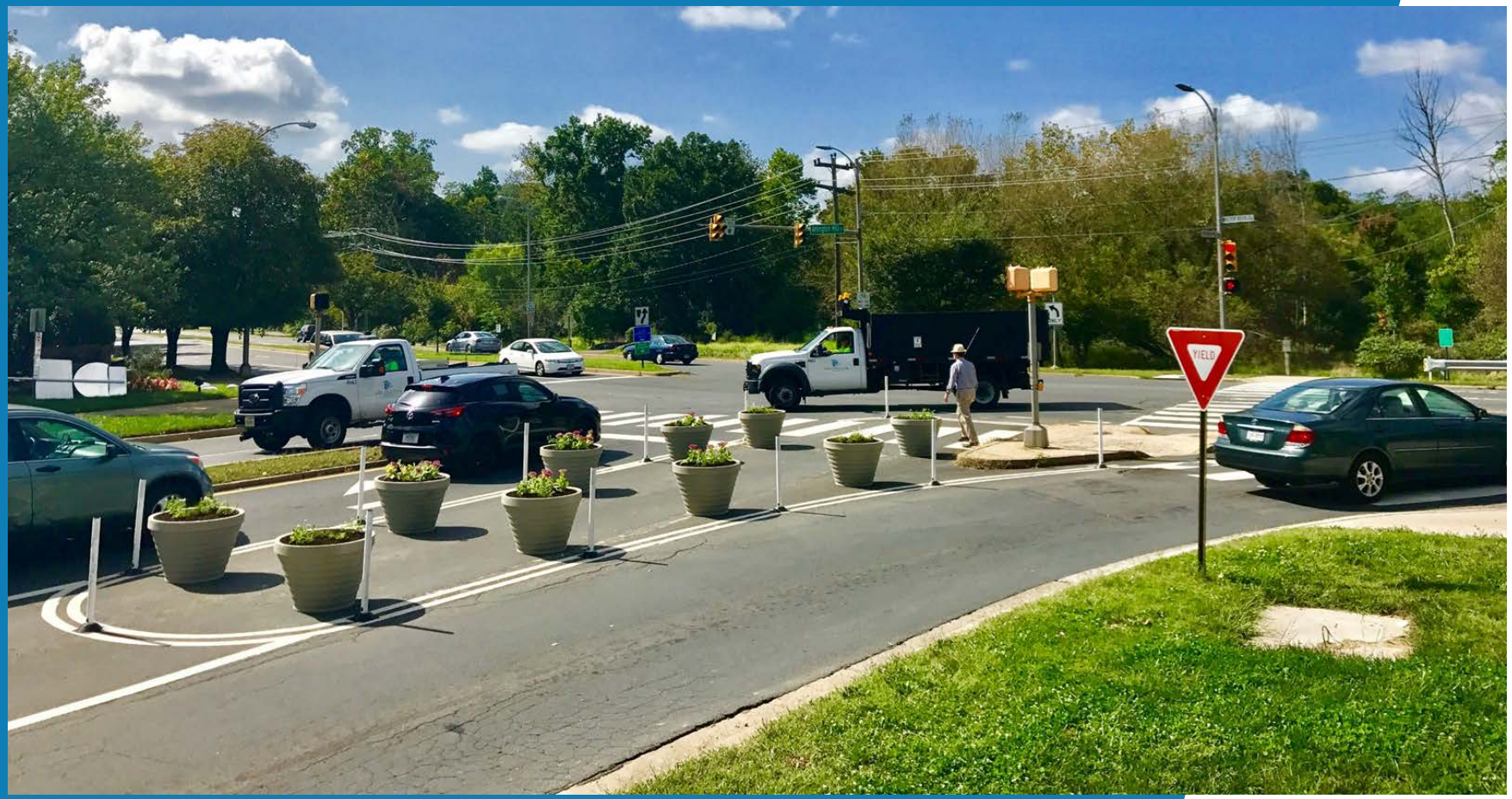


Transforming auto-oriented roadways…

What is Tactical Design?

…by repurposing space for other modes, as a short-term means…

What is Tactical Design?



…through a phased approach…

What is Tactical Design?

...to achieve long-term goals.

What is Tactical Design?

Tactical design allows concepts to be tested to see if concepts will work

Achieving Success with Tactical Design

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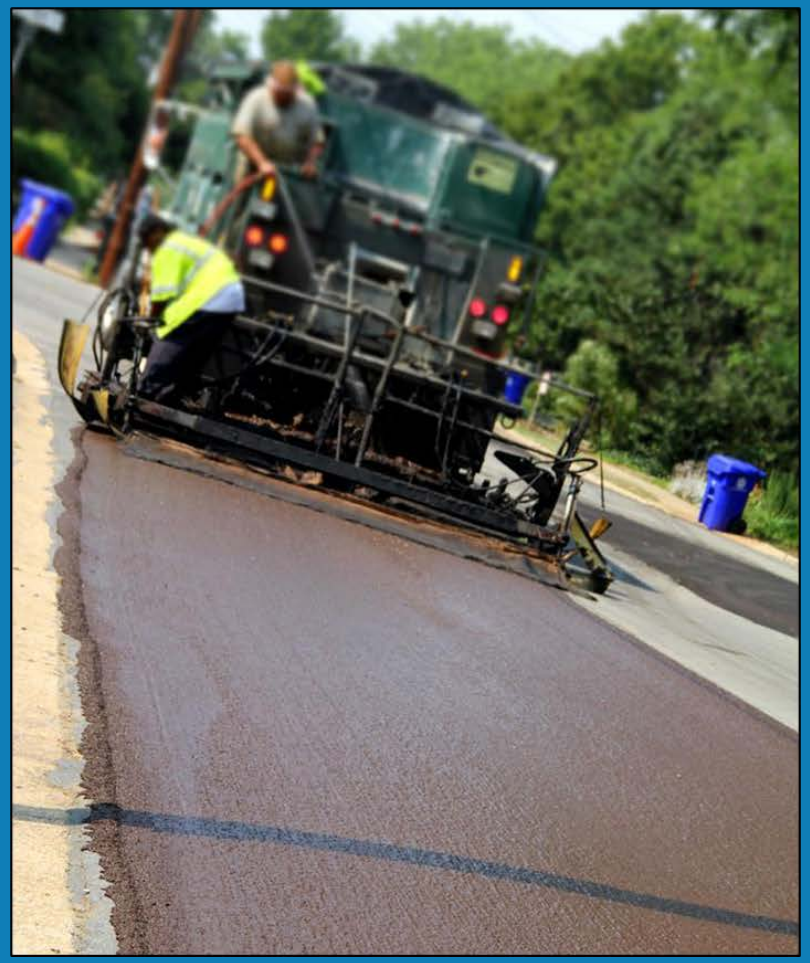
Step 1



Find opportunities though routine maintenance

Achieving Success with Tactical Design

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Step 2

Consider long-term design

Achieving Success with Tactical Design

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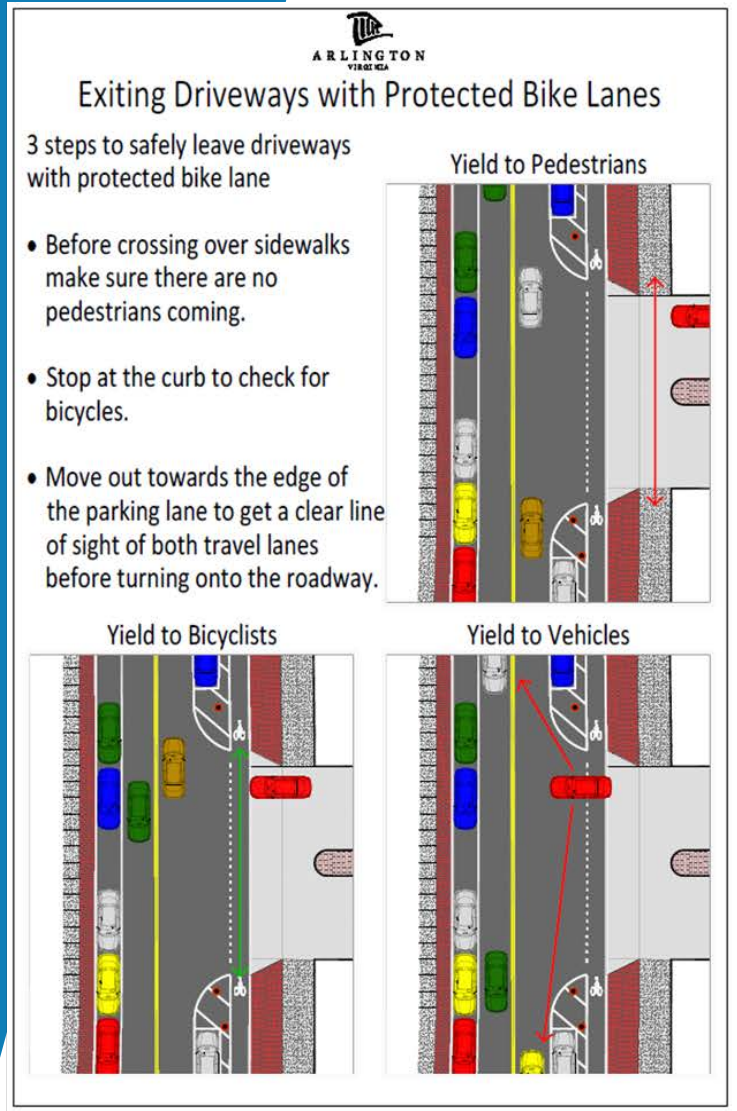
Step 3



Engage effectively

Achieving Success with Tactical Design

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Step 4

Iterative implementation

Example: Two-way Cycle Track

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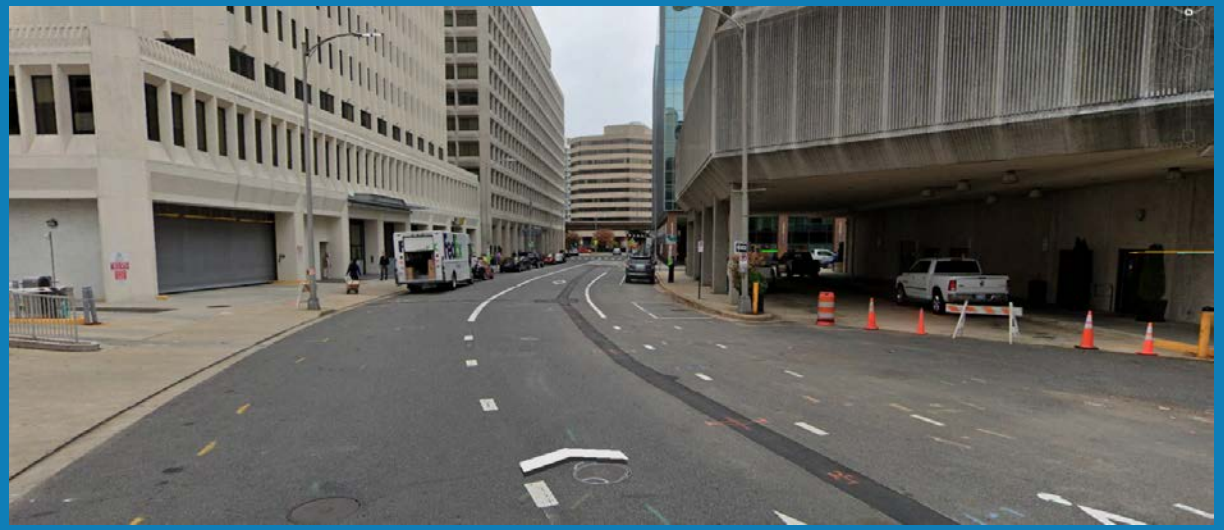
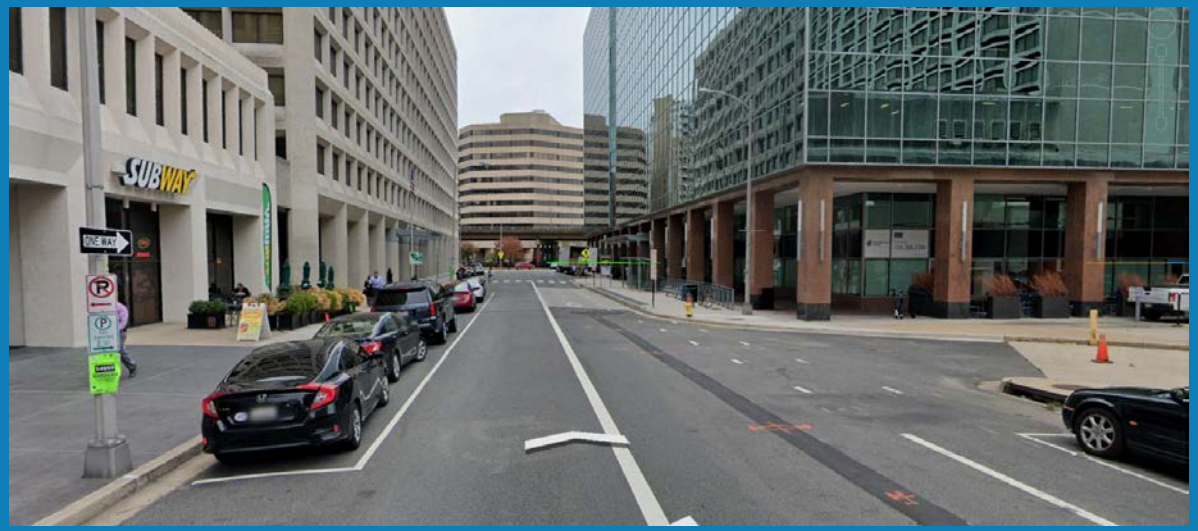
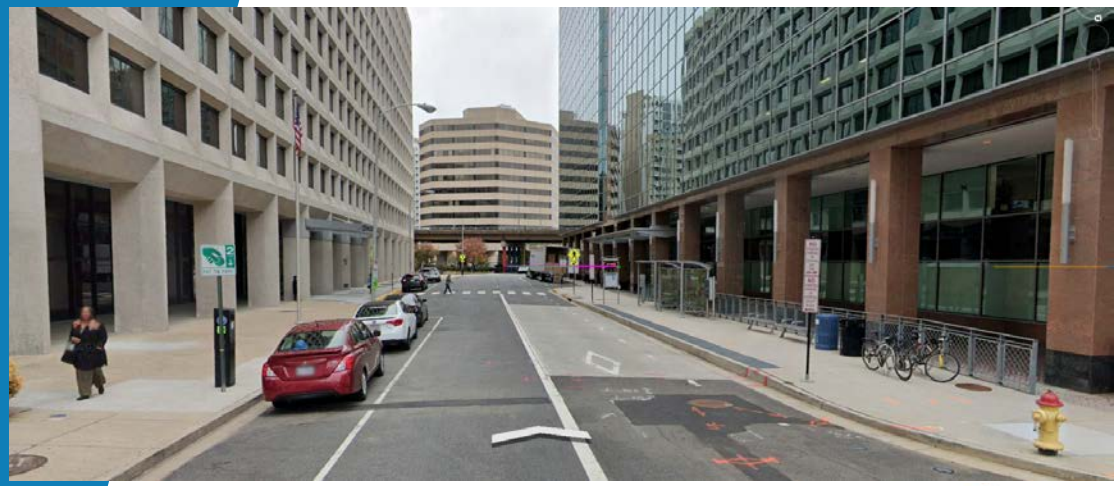
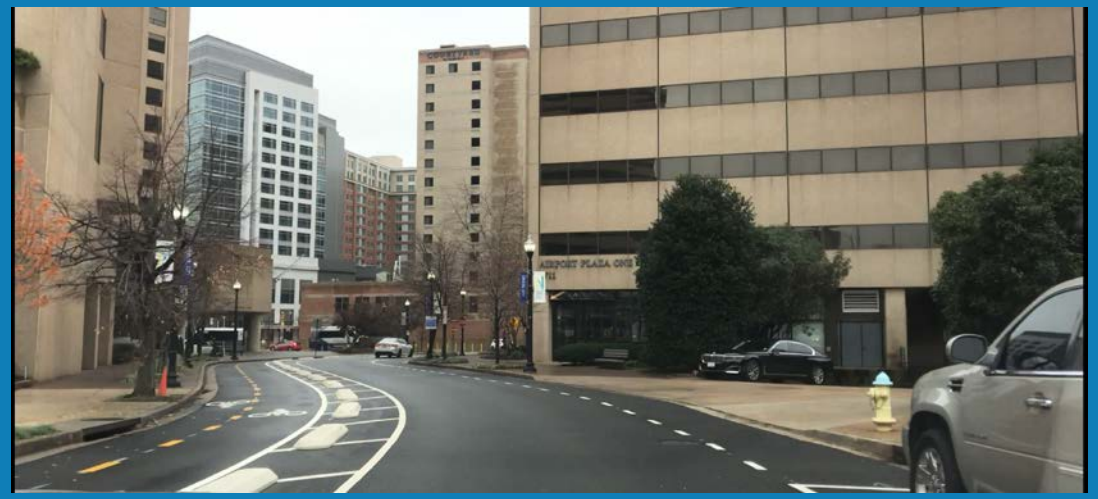


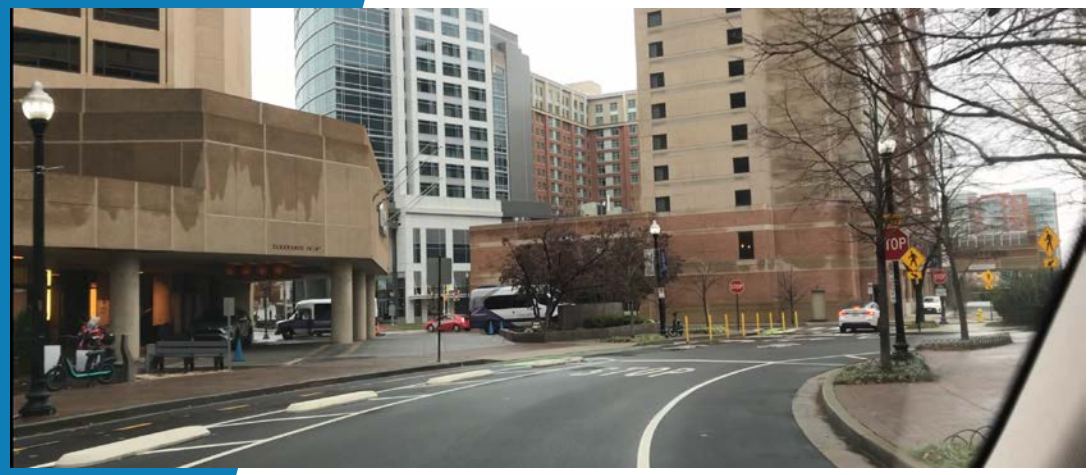




Example: Two-way Cycle Track

AFTER





Example: Two-way Cycle Track

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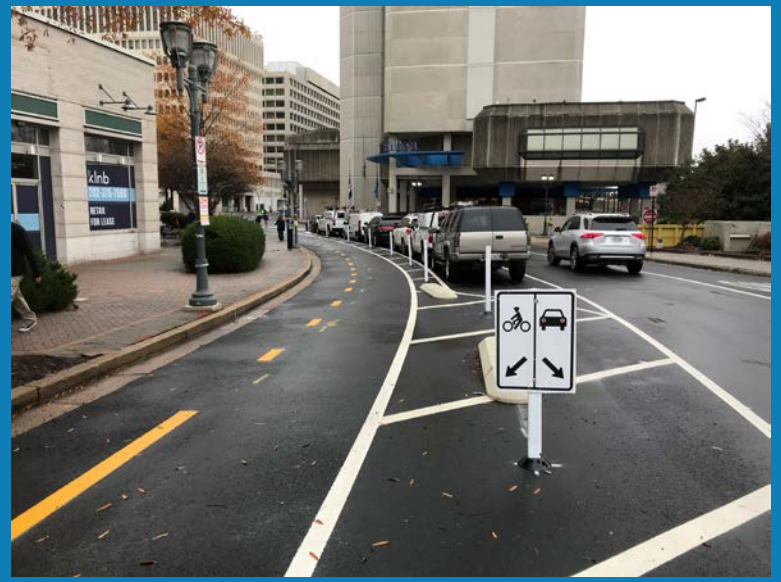

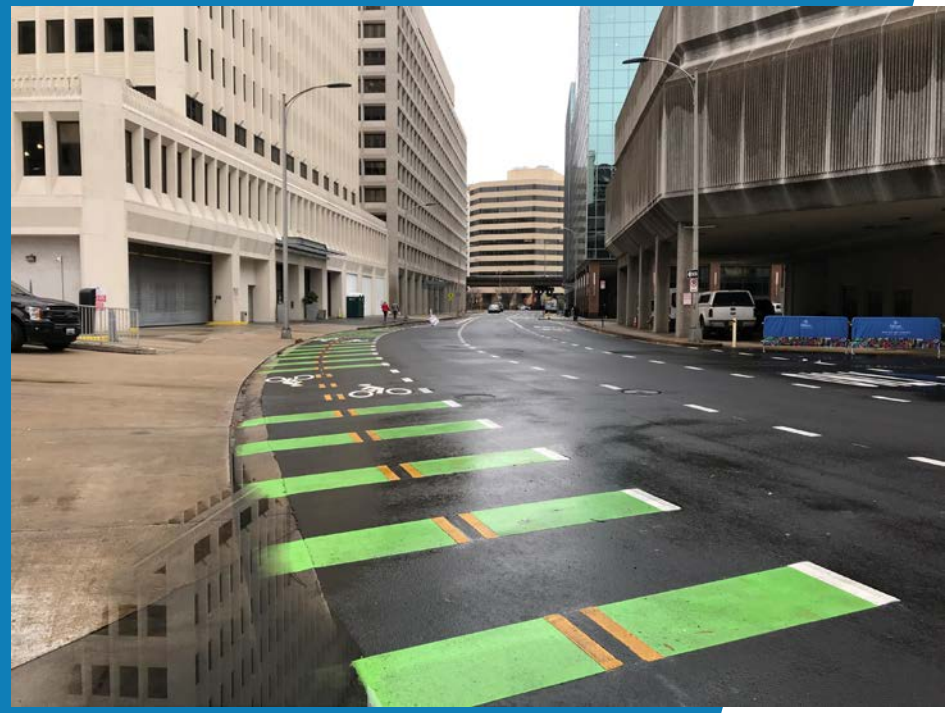

Tactical Safety Project: Before/After

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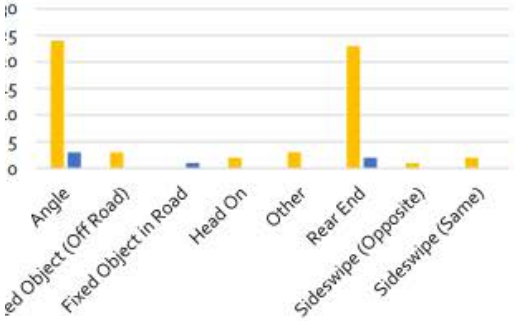
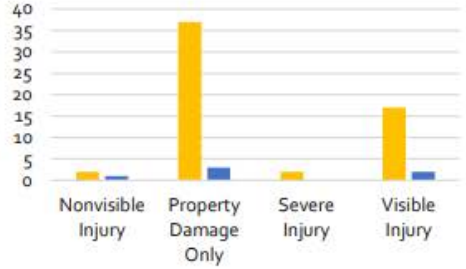
Collisions Before and After: Richmond Hwy & N Marshall Dr

In 2020, the County installed safety modifications at the intersection of Richmond Hwy and N Marshall Dr, including signs to clarify turning movements for vehicles on Richmond Hwy. **The average number of collisions per year decreased from 8.3 in 2014-2020 (before project) to 3 in 2021-2022 (after project).**

Collision Type



Collision Severity

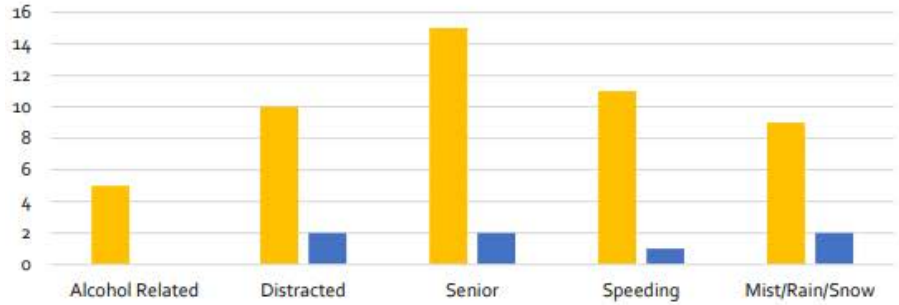


Tools Implemented

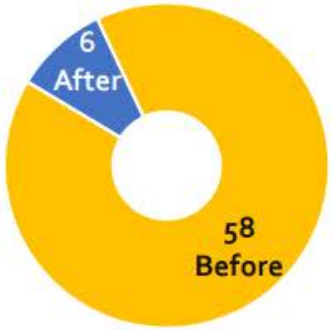
Travel Lane Signs & Markings

Inform road users of regulations and warnings to facilitate safe flow of all road users.

Collision Characteristics



Total Collisions



Before (2014 - 2020) After (2021 - 2022)

Tactical Safety Project: Before/After

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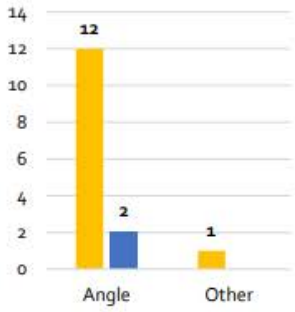
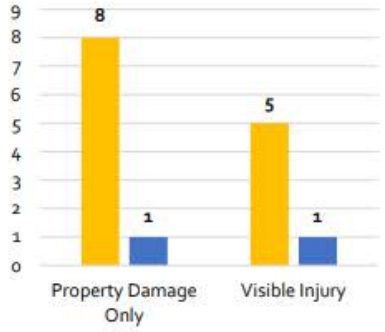
Collisions Before and After: N Pershing Dr & N Irving St

In August 2017, the County installed an all-way stop at N Pershing Dr and N Irving St due to a high number of qualifying collisions within 12 months. **The average number of collisions per year decreased from 3.25 in 2014-2017 (before project) to .5 in 2018-2022 (after project).**

Types of Collisions



Severity of Collisions

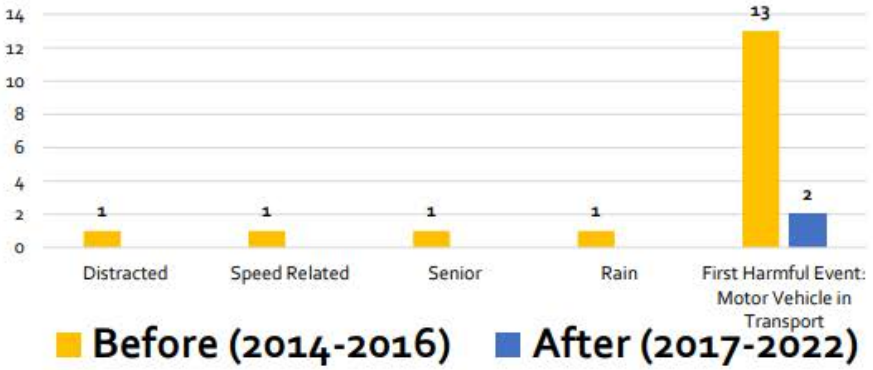


Tools Implemented

Stop Sign Control

Indicate where traffic is required to stop (using MUTCD standards).

Collision Characteristics*



Total Collisions

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Before/After: Systemic Evaluation of AWS Application

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All Way Stops 2018-2022
Crashes Before & After

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Crash Date	Crash Severity	Intersection	Civic Associati
All	All	All	All

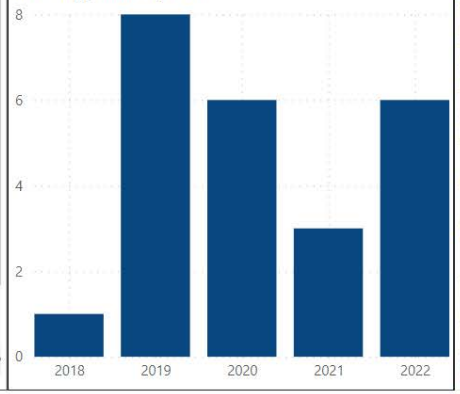
24
# of AWS Installs

53
Before AWS upgrade

6
After AWS Upgrade

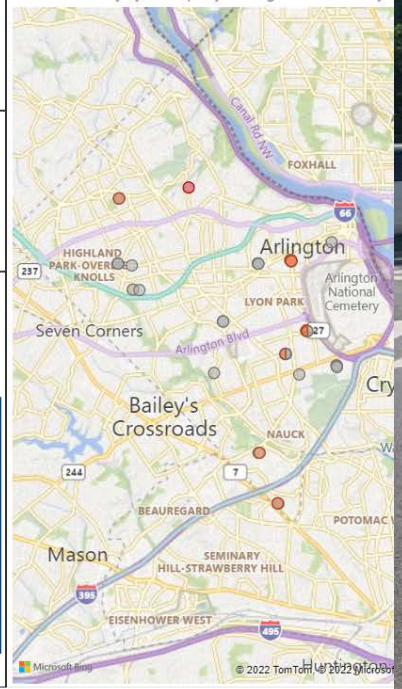
Intersection	Upgrade Date	cgURL
N THOMAS ST & 4TH ST N	5/18/2018	
N PIERCE ST & 16TH ST N	3/29/2019	
N IRVING ST & 13TH ST N	4/18/2019	
16TH ST N & N JEFFERSON ST	10/25/2019	
17TH ST N & N STAFFORD ST	10/26/2019	
S WAYNE ST & 2ND ST S & S UHLE ST	11/15/2019	
S WAKEFIELD ST & 28TH RD S	11/22/2019	
11TH ST N & N KENSINGTON ST	12/13/2019	
N KENNEBEC ST & 11TH ST N	12/20/2019	
S HIGHLAND ST & 7TH ST S	5/12/2020	
S IRVING ST & 6TH ST S	5/19/2020	
17TH ST N & N OAK ST	7/9/2020	
KEY BLVD & N DANVILLE ST	9/3/2020	
N BARTON ST & FAIRFAX DR	9/21/2020	
S FOUR MILE RUN DR	10/22/2020	
N VERMONT ST & N UPSHUR ST	1/12/2021	
N LEXINGTON ST & 18TH ST N	4/20/2021	
22ND ST N & N ROOSEVELT ST	11/9/2021	
S ROLFE ST & 12TH ST S	6/17/2022	
11TH ST S & S EDGEWOOD ST	6/27/2022	
S WAKEFIELD ST & 36TH ST S	6/28/2022	
S CLARK ST & 26TH ST S	9/27/2022	

AWS Upgrades by Year



Crashes within 100' of an AWS Intersection

Nonvisible Injury Property Damage... Severe Inju



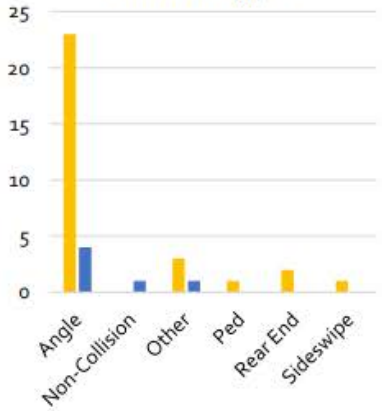
Tactical Safety Project: Before/After

VISION ZERO
ARLINGTON COUNTY

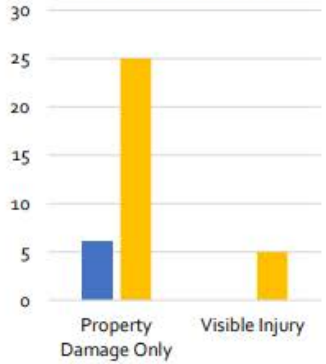
Collisions Before and After: N Meade St & Arlington Blvd

In October 2020, the County installed safety modifications at the intersection of N Meade St and Arlington Blvd to remove the southbound turn lane and add a protected bike lane. **The average number of collisions per year decreased from 4.3 in 2014-2020 (before the project) to 3 in 2020-2022 (after the project).**

Collision Types



Collision Severity



Tools Implemented

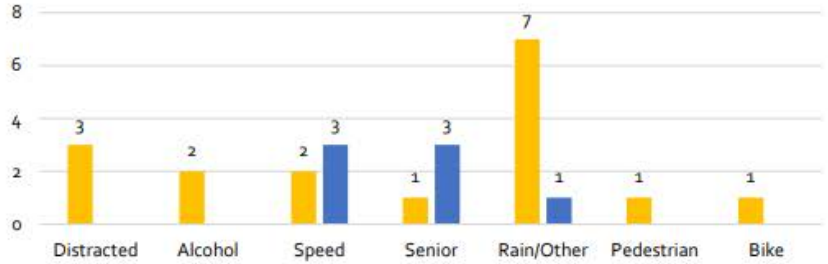
Roadway Reconfigurations

Reduce the speed of traffic, crossing distances, and/or provide additional space for other uses of the roadway.

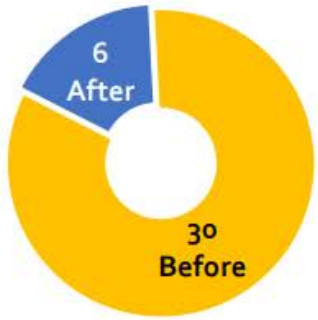
Separated Bicycle Facilities

Provide physical separation between the bicycle lane and travel lane.

Collision Characteristics



Total Collisions



Before (2014 - Oct 2020) After (Nov 2020 - 2022)

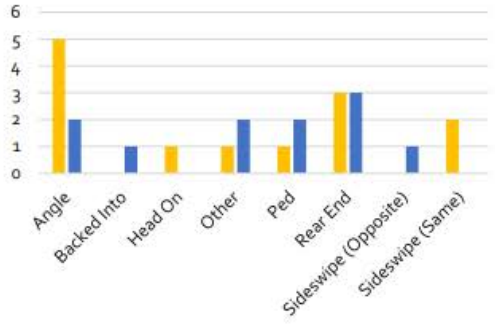
ARLINGTON VIRGINIA

Tactical Safety Project: Before/After

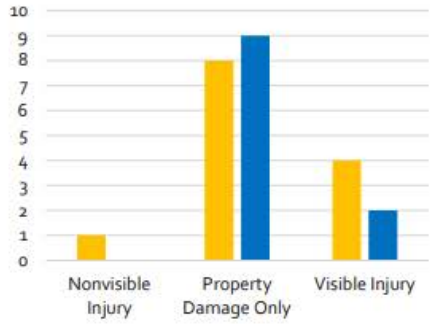
Collisions Before and After: Fort Myer Dr and N Fairfax Dr

In November 2017, the County installed safety modifications at the intersection of Fort Myer Dr and N Fairfax Dr to clarify the merging and turning lanes and implement a yield sign. **The average number of collisions per year decreased from 3.25 in 2014-2017 (before the project) to 2.2 in 2018-2022 (after the project).**

Collision Types



Collision Severity

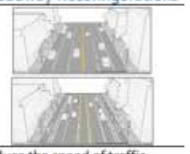


Tools Implemented

Travel Lane Signs & Markings

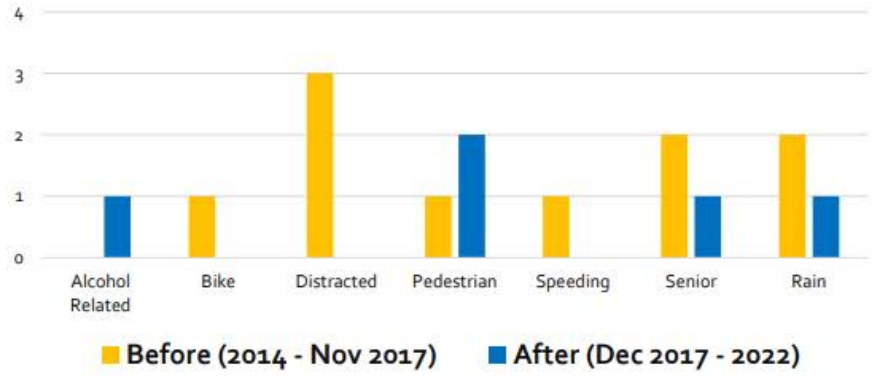
Inform road users of regulations and warnings to facilitate safe flow of all road users.

Roadway Reconfigurations



Reduce the speed of traffic, crossing distances, and/or provide additional space for other uses of the roadway.

Collision Characteristics



Total Collisions

Tactical Safety Project: Chicane

Midblock Crossing

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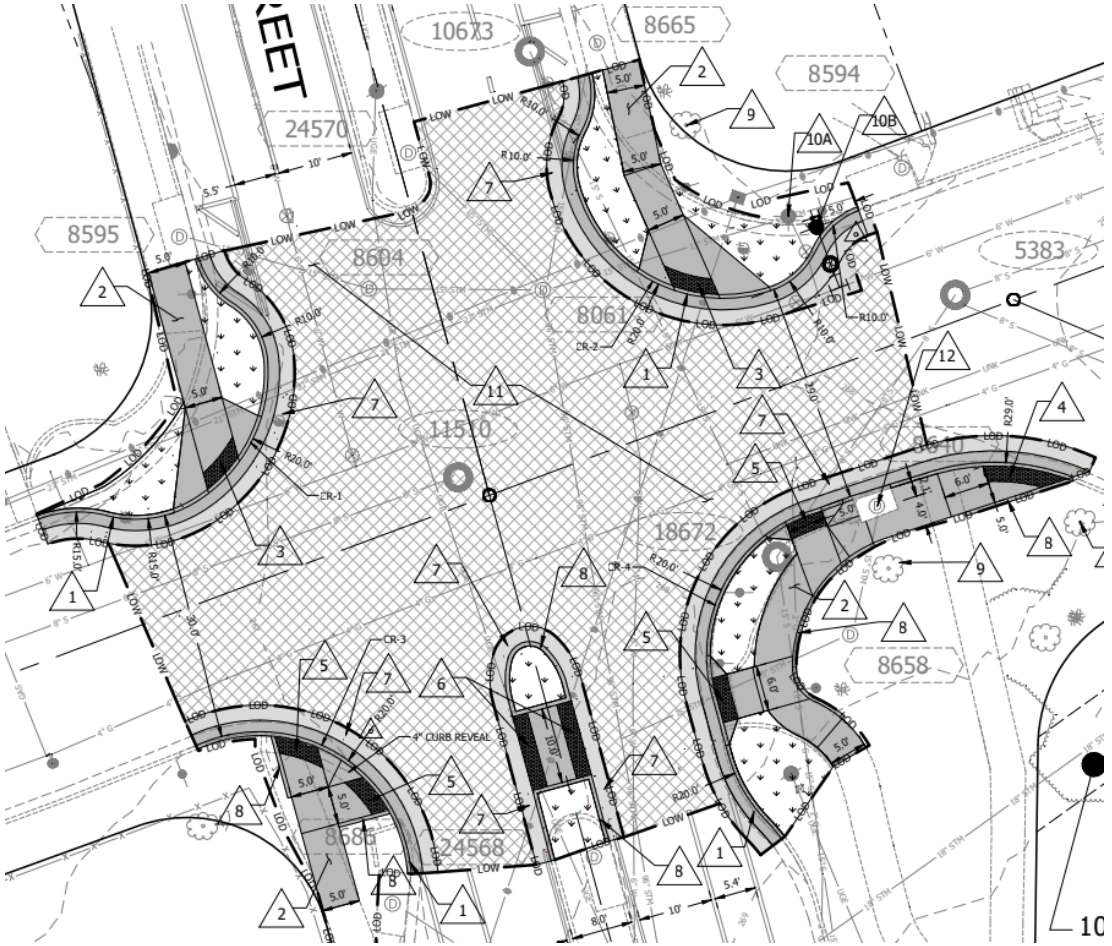
ARLINGTON COUNTY

Do you see any issues?

What tactical measures could improve the crossing?

Quick-Build Safety Projects

- Cost is typically low- to mid-range and funded through capital funds.
- Can be implemented within one to three years.
- Intended to be permanent projects.
- Lower intensity planning and design compared to longer-term, capital-funded projects.
- Community engagement is typically low/ "communicate" level.
- Can begin with temporary materials and later be followed up with permanent materials.



Quick-Build Safety Projects: Before/After

VISION ZERO
ARLINGTON COUNTY

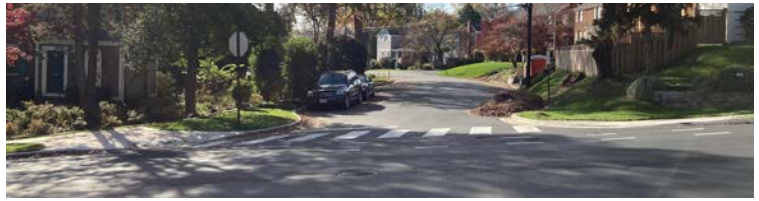
This project installed flashing beacons to improve pedestrian visibility at this mid-block crossing that is on a critical path to three schools.

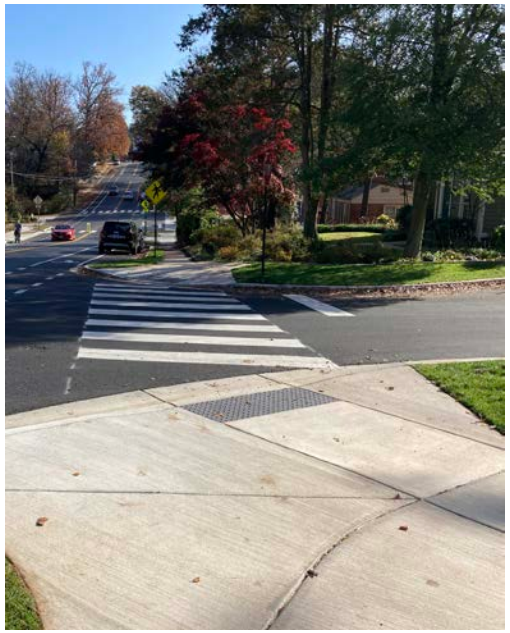
Quick-Build Safety Projects: Before/After

VISION ZERO
ARLINGTON COUNTY

BEFORE TREATMENT

AFTER TREATMENT





This project added curb extensions to visually and physically narrow the roadway, reduce crossing distance for pedestrians/bikes, and reduce turning vehicle speeds. The project included marking stop bars and high visibility crosswalks.

Quick-Build Safety Projects: Before/After

RRFBs

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ARLINGTON COUNTY

BEFORE TREATMENT

This project added RRFBs as well as signage and markings to improve yielding to pedestrians

AFTER TREATMENT

Quick-Build Safety Projects: Before/After

VISION ZERO
ARLINGTON COUNTY

BEFORE TREATMENT

AFTER TREATMENT

This project added median noses to provide better sight lines for vehicles, crossings to reduce conflicts, and bike lanes. Together the project defined space for each mode.

Uncontrolled Crossing and Protected Bike Lane

VISION ZERO
ARLINGTON COUNTY

Do you see any issues with the crossing?

Do you see any issues with the bike lane?

What measures could improve the condition?

Pilot Safety Projects

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ARLINGTON COUNTY

When we apply a new safety tool or strategy for the first time or in a new type of location, it is called a "pilot safety project." Pilot projects typically use temporary materials so they can be installed, adjusted, and removed easily.

Why do we pilot?

We place pilot projects where there is a safety concern identified by observations and data.

Pilots allow us to (1) respond quickly to safety needs and (2) test materials or strategies in new environments to determine their effectiveness or impact.

How long is a pilot?

A pilot can last from one month to over one year.

If the pilot addresses the safety concern and receives positive feedback, it may remain in place longer. If the pilot does not have the intended safety impacts or creates new concerns, we may adjust or end it sooner.

How is the community involved?

Pilots are a temporary response to safety concerns, so pre-project engagement involves only those directly affected.

During the pilot, we welcome feedback from the community and may host a formal call to gather feedback.

What next?

Staff defines performance metrics, collects data, and reviews results/feedback to assess if the pilot was impactful in addressing the safety concern.

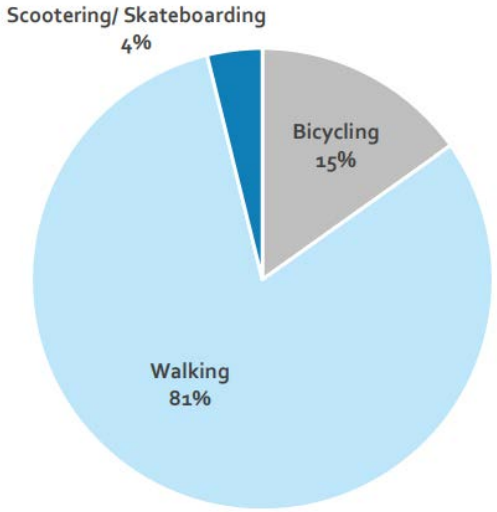
If the pilot was impactful, we may keep it in place or install permanent materials. If the pilot had adverse impacts, we may try something different.

Observe, Adjust, Repeat

Because pilots involve new tools or settings, we closely observe how the pilot is working and adjust or remove if there are immediate safety concerns.

Pilot Safety Project Example – Lane Closure

Observed travel modes along the sidewalk and buffer area:



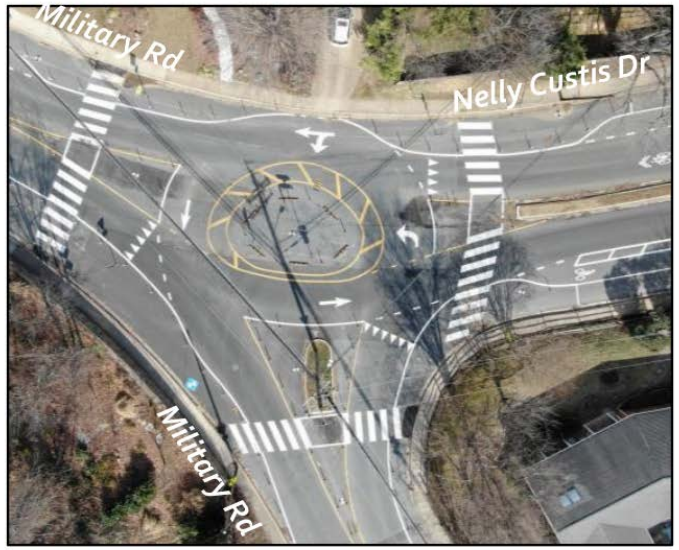
There were 100-130 people using the buffer area per day.
40-50% were students.

The pilot reduced travel lane space, which encouraged yielding for vehicles entering/exiting driveways.

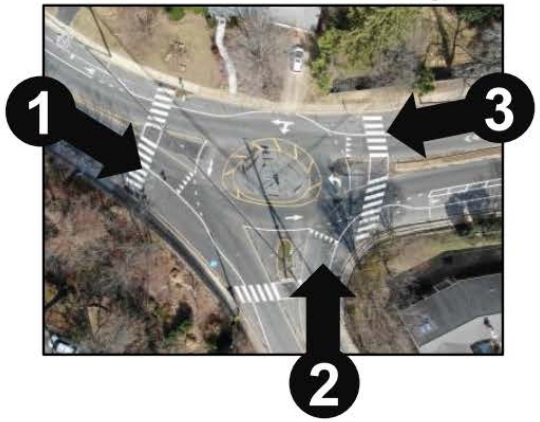
About 9 in 10 cars approaching the driveways yielded to approaching pedestrians/bicycles/etc.

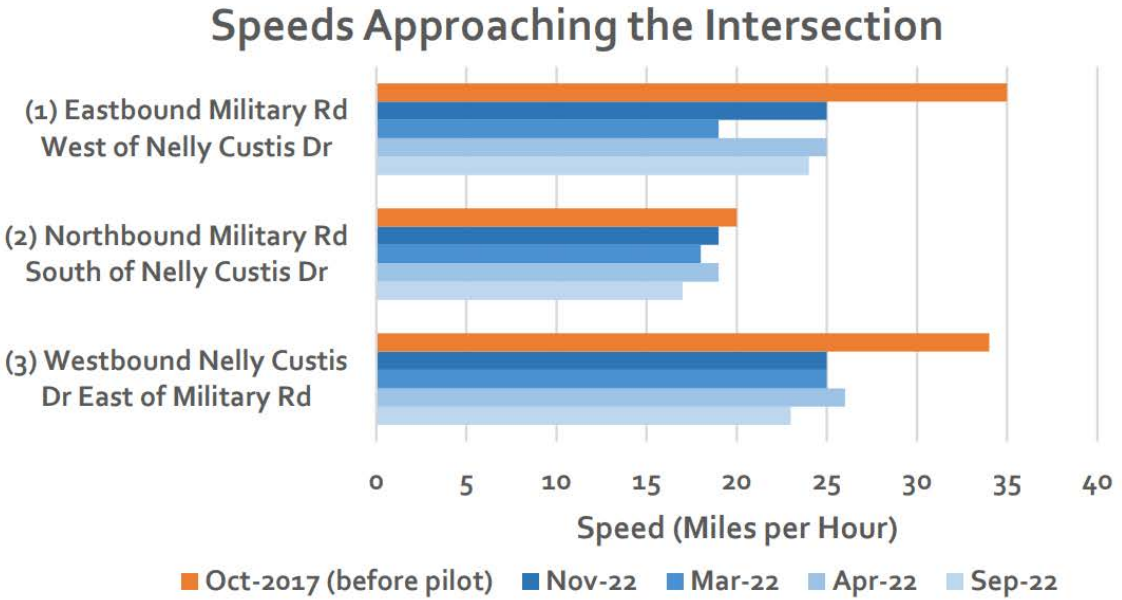
Pilot Safety Project Example – Temporary Roundabout

VISION ZERO
ARLINGTON COUNTY

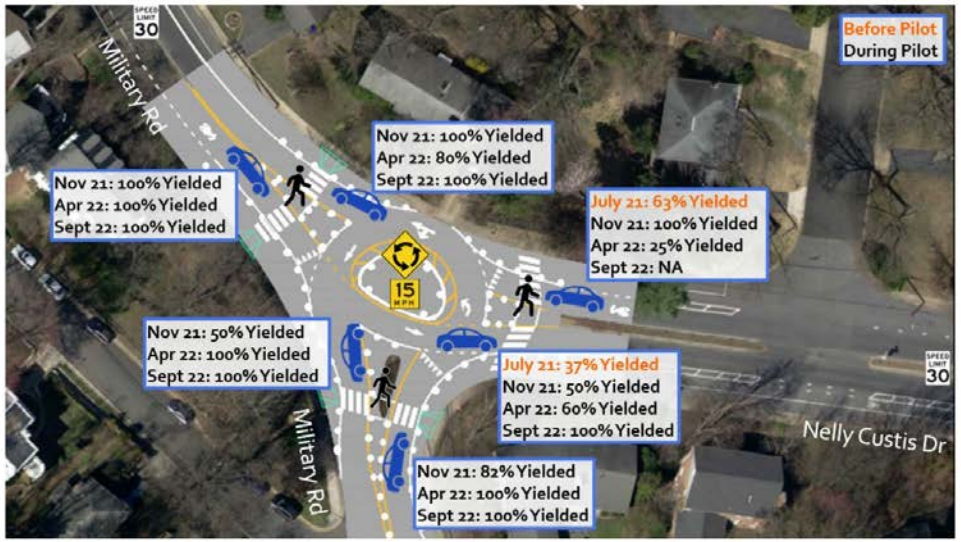


Numbers on map correspond with numbers on chart at left.





Driver Yield Rates to Pedestrians Crossing: Despite a low sample size, data generally indicate that yield rates are high for pedestrians at new crosswalks and improved at pre-existing crosswalks.



Pilot Safety Project Example – Turn Lane Removal & LPI

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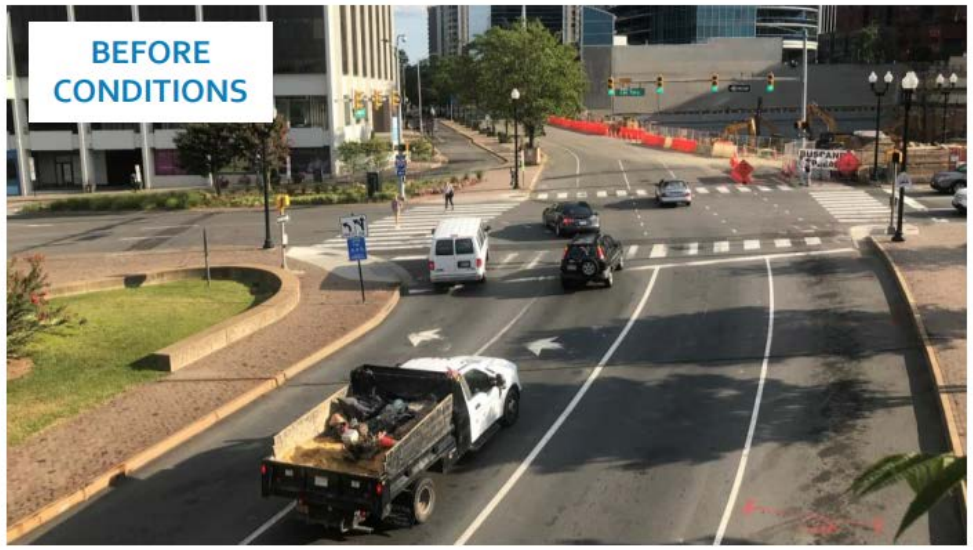
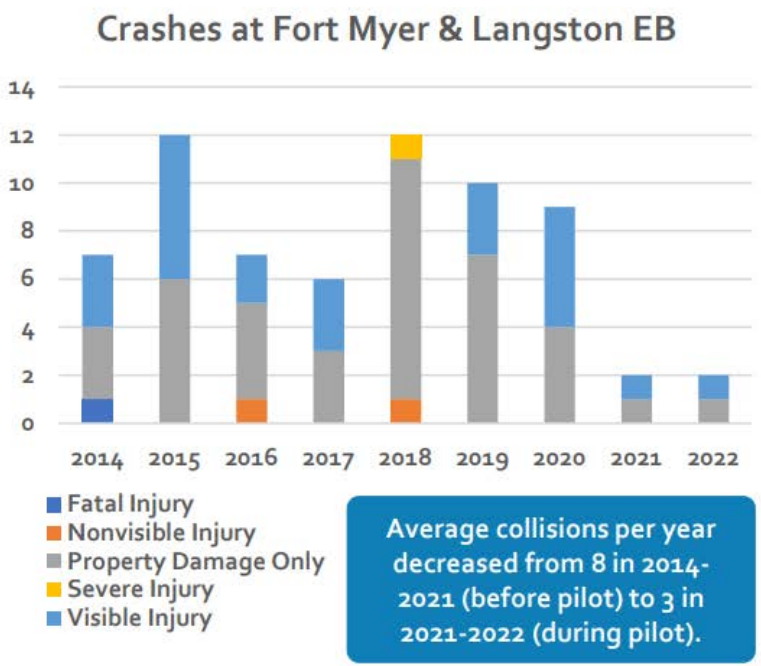
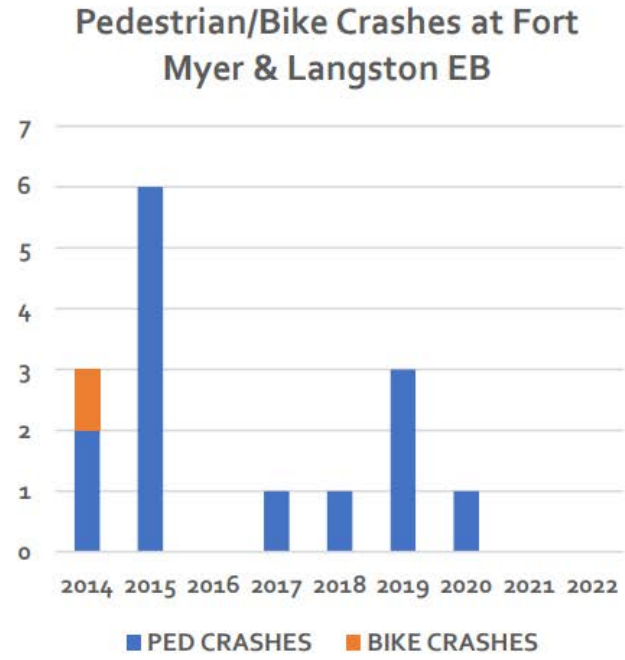
ARLINGTON COUNTY





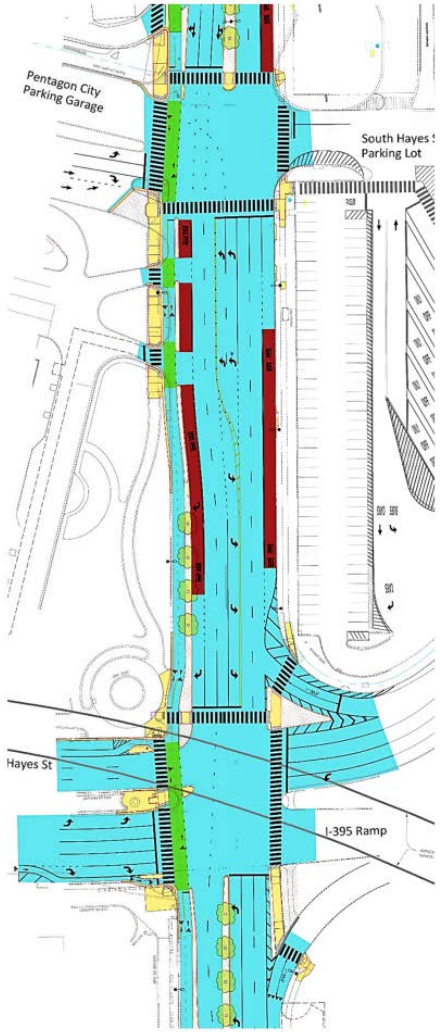
Average collisions per year decreased from 8 in 2014-2021 (before pilot) to 3 in 2021-2022 (during pilot).



Removal of the outer left turn lane and addition of the Leading Pedestrian Interval (LPI) phase now **allows 40% of pedestrians to cross with no vehicle conflict.**

Capital Safety Projects

- Cost is mid-range to high (funded through the Capital Improvement Program or part of a site plan development).
- Longer implementation timeframes (three or more years).
- Typically built with permanent materials.
- Requires significant data collection before implementation to ensure appropriate long-term design.
- Intensive planning and design of individual capital projects is the most intensive (ex. may require easements, etc.).
- May require procurement for construction services.
- High level of community engagement.



Capital Safety Projects: Langston Blvd Esplanade Project

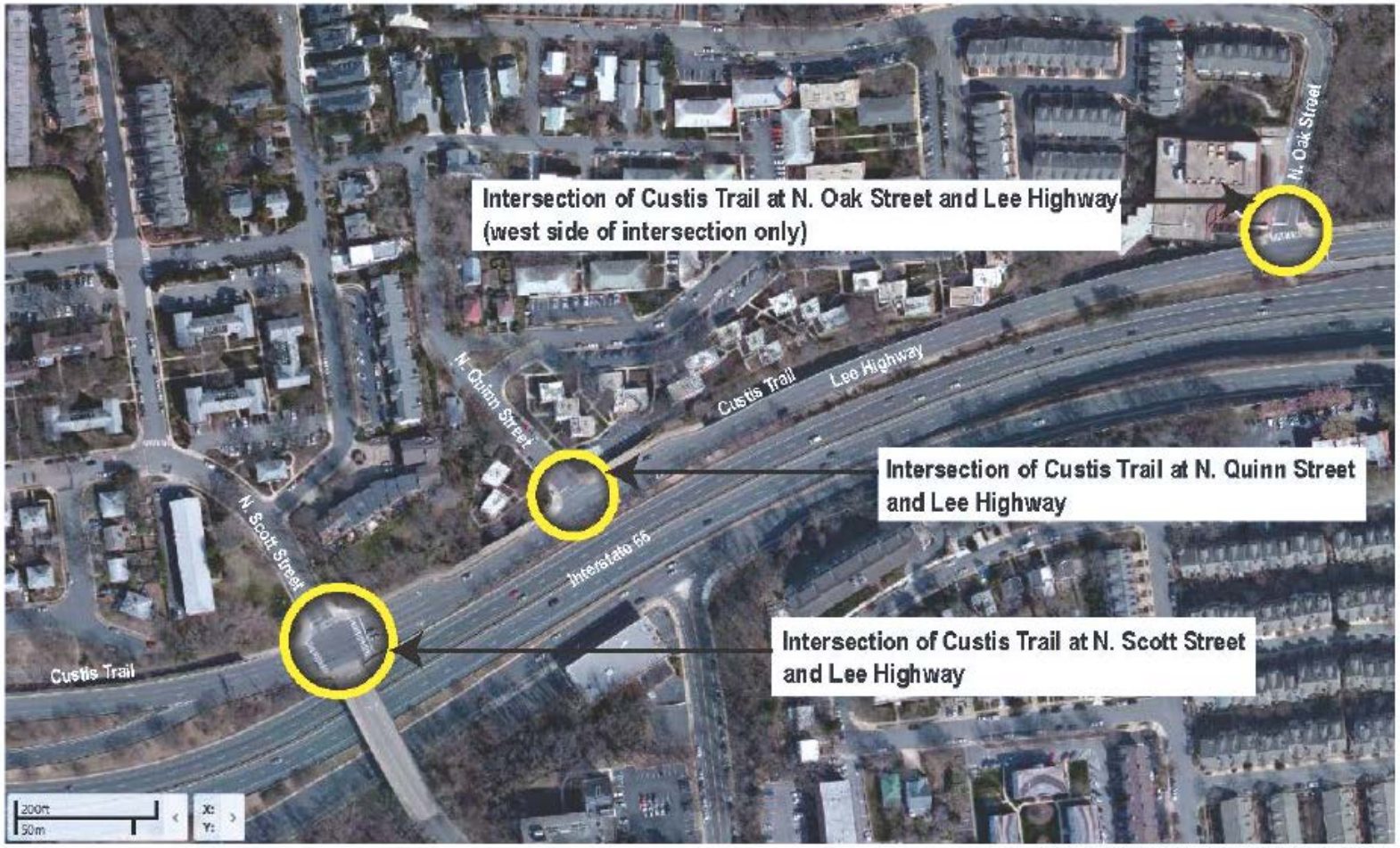
VISION ZERO
ARLINGTON COUNTY

Condition

- Heavily used trail
- Adjacent arterial

General Improvements

- Improve crossings (3)
- Widen trail



Capital Safety Projects: Langston Blvd Esplanade Project

VISION ZERO
ARLINGTON COUNTY

Condition

- Heavily used trail
- Adjacent arterial

General Improvements

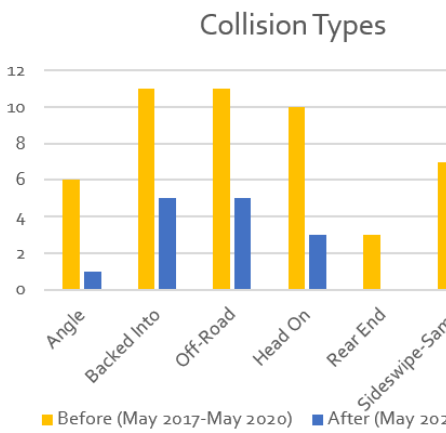
- Improve crossings (3)
- Widen trail

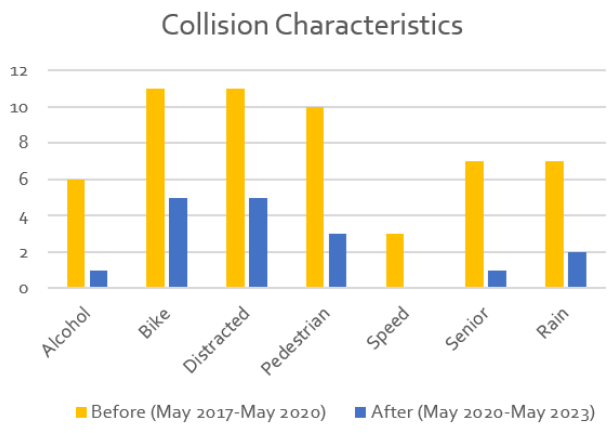
Capital Safety Projects: Before/After

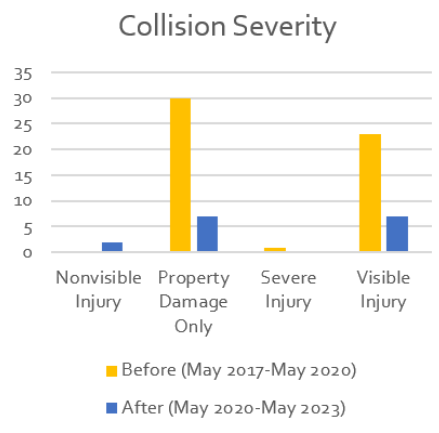
VISION ZERO
ARLINGTON COUNTY

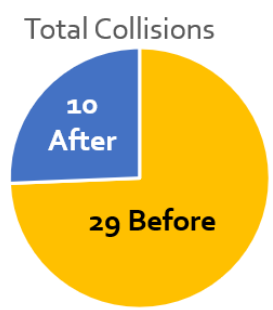
Collisions Before and After: Langston Blvd Esplanade Project

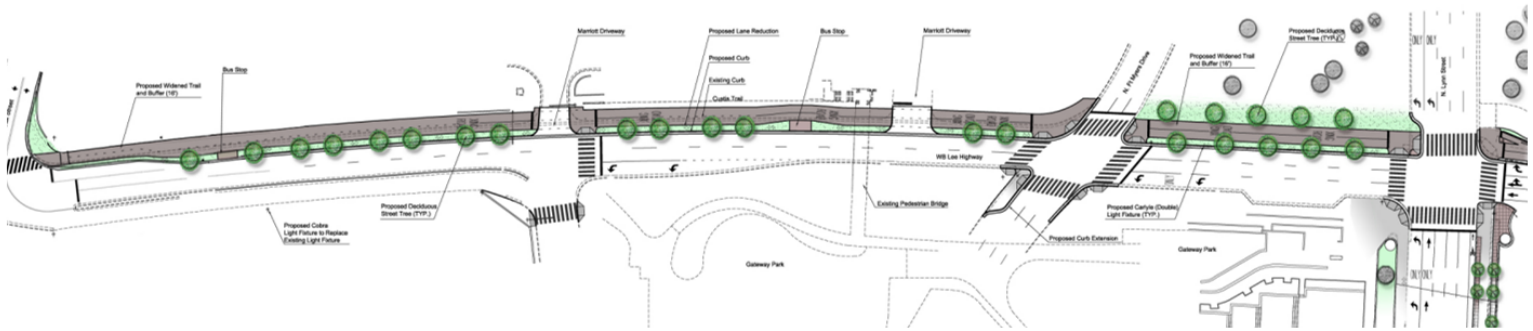
In May 2020, the County completed the removal of a traffic lane and enhancement of the multi-use trail on Langston Blvd from N Lynn St to N Oak St. **The average number of collisions per year decreased from 29 in 2017-2020 (before the project) to 10 in 2020-2023 (after the project).**





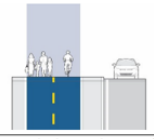






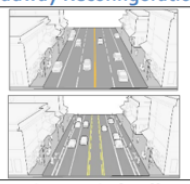
Tools Implemented

Multi-Use Trails / Pathways



Create a dedicated route for pedestrians and bicyclists that is separate from vehicles.

Roadway Reconfigurations



Reduce the speed of traffic, crossing distances, and/or provide additional space for other uses of the roadway.

Wrap Up & Questions

dnabors@arlingtonva.us