Vision Zero: Suburban Challenges, Suburban Solutions

NPC19858456

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Goals of this Session

- Define Vision Zero and describe how safety is created
- Identify strategies for applying Vision Zero on high-speed roadways
- Explore a combination of interventions to transform auto-oriented roadways
- Advance Vision Zero through data collection and analysis, direct observation and establishment of a constituency to promote safe streets

What is Vision Zero?

Vision Zero is a Paradigm Shift

- Vision Zero says that there is no acceptable number of traffic deaths or serious injuries
- While vision zero suggests some engineering approaches, its foundation is ethical

System Designers:
Responsible for safety level in entire system

If Road Users Fail to Comply:
System designers take new steps to assure safety

Road Users:
Responsible for following rules

Graphic credit: Vision Zero Network

Vision Zero's Long History

1997:
Swedish Parliament adopts Vision Zero as official policy

"In every situation a person might fail. The road system should not."
- Claes Tingvall

Chicago, 2012:
"Eliminate all pedestrian, bicycle and overall traffic crash fatalities within 10 years" is a performance measure Chicago Forward

San Francisco and NYC, 2014:
Both cities adopt Vision Zero plans in January, 2014

Edmonton Canada, 2015:
Edmonton is the first Canadian city to officially adopt Vision Zero

2017: Montgomery County is one of the first county governments in the United States to initiate a Vision Zero plan

How is Safety Created?

Creating Safety Through Engineering

Engineering interventions can help design facilities to:

- Decrease the **frequency** of crashes
- Decrease the **severity** of crashes

Reducing crash severity is paramount from a Vision Zero perspective, which would prefer many "property damage only" crashes to a single serious injury or fatality

"Life and health can never be exchanged for other benefits within the society" (Tingvall and Haworth, 1999)

Reducing Crash Frequency

Reducing conflicts:

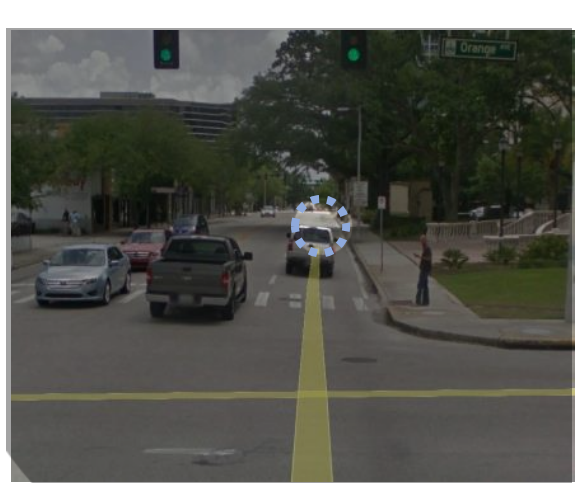
- Dedicate space for different travel modes/directions
- Use traffic signals to manage conflicts at crossings by providing signal phases for different movements
- Reduce crossing distances

Image credits: NACTO

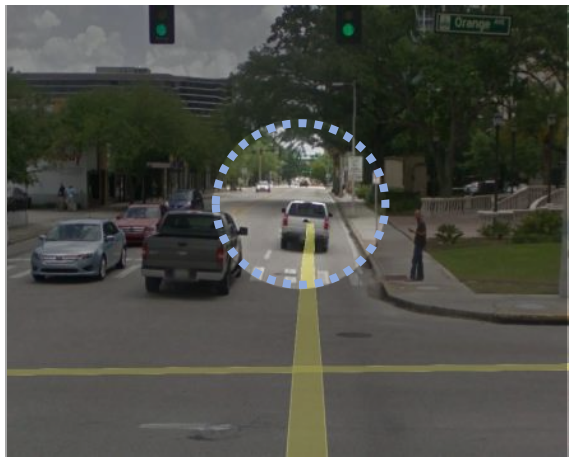
Reducing Crash Frequency

Support successful yielding if a conflict occurs: **Reduce vehicle speed**

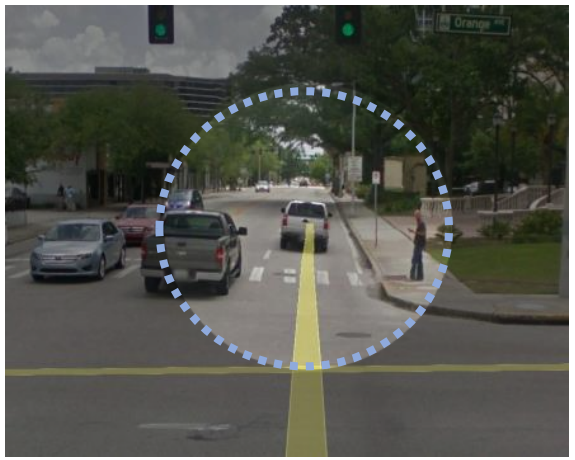
Driver cone of vision at different speeds



40 MPH



30 MPH

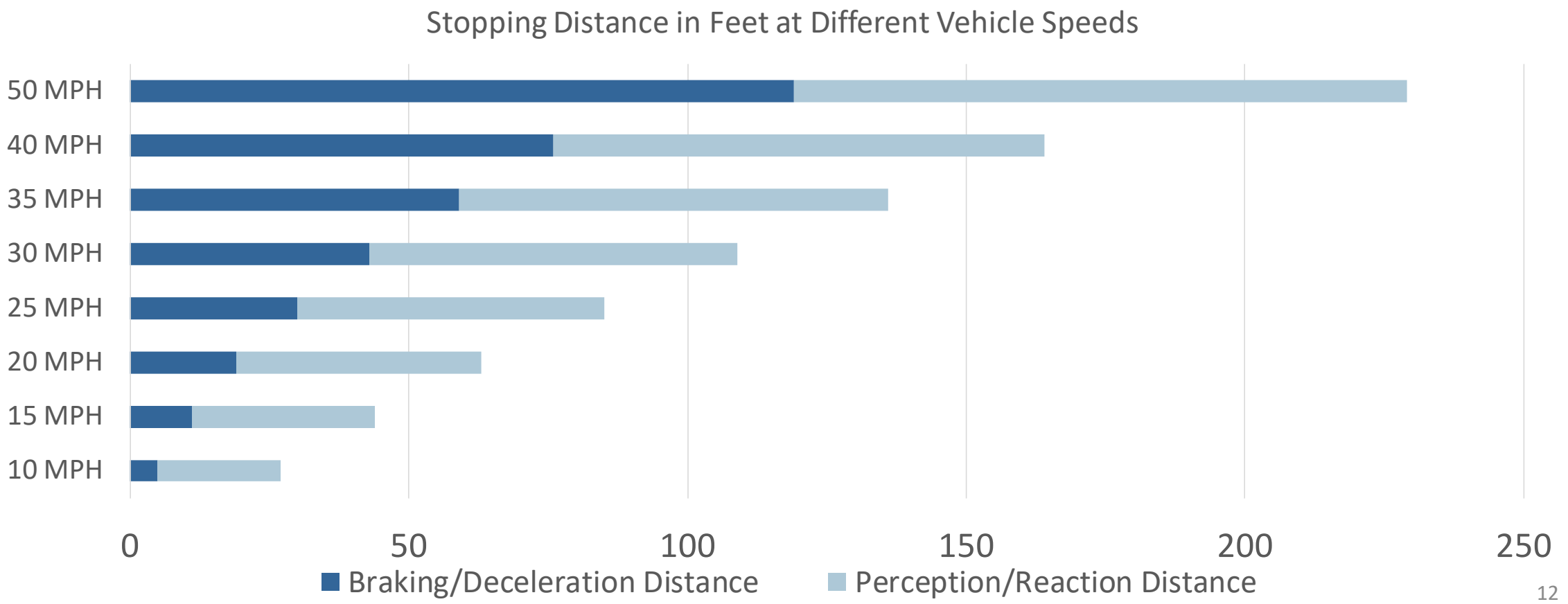


20 MPH

15 MPH

Reducing Crash Frequency

Support successful yielding if a conflict occurs: **Reduce Vehicle Speed**



Reducing Crash Severity

- Risk to vulnerable road users is a function of **mass** and **speed** when a collision occurs
- Since the weight of road different users is relatively fixed, the **key strategy for reducing crash severity is reducing vehicle speed**

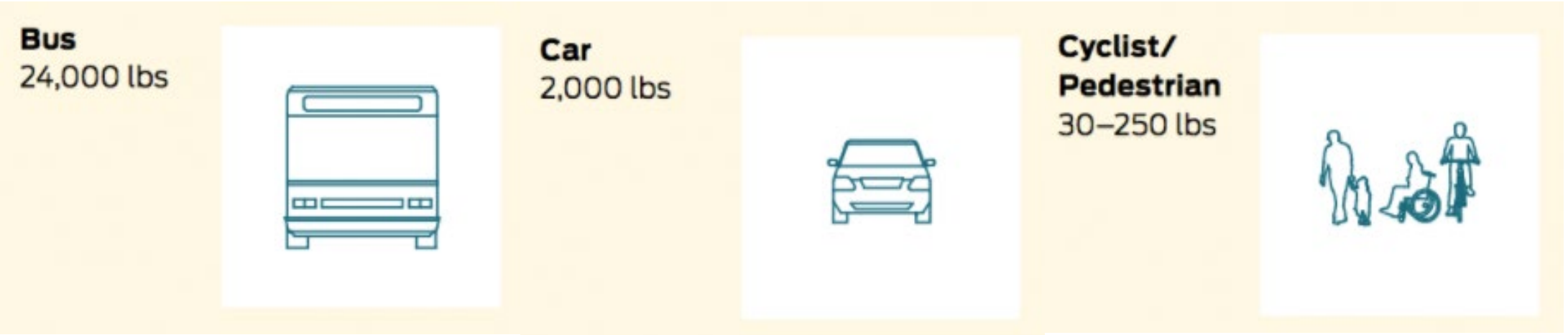
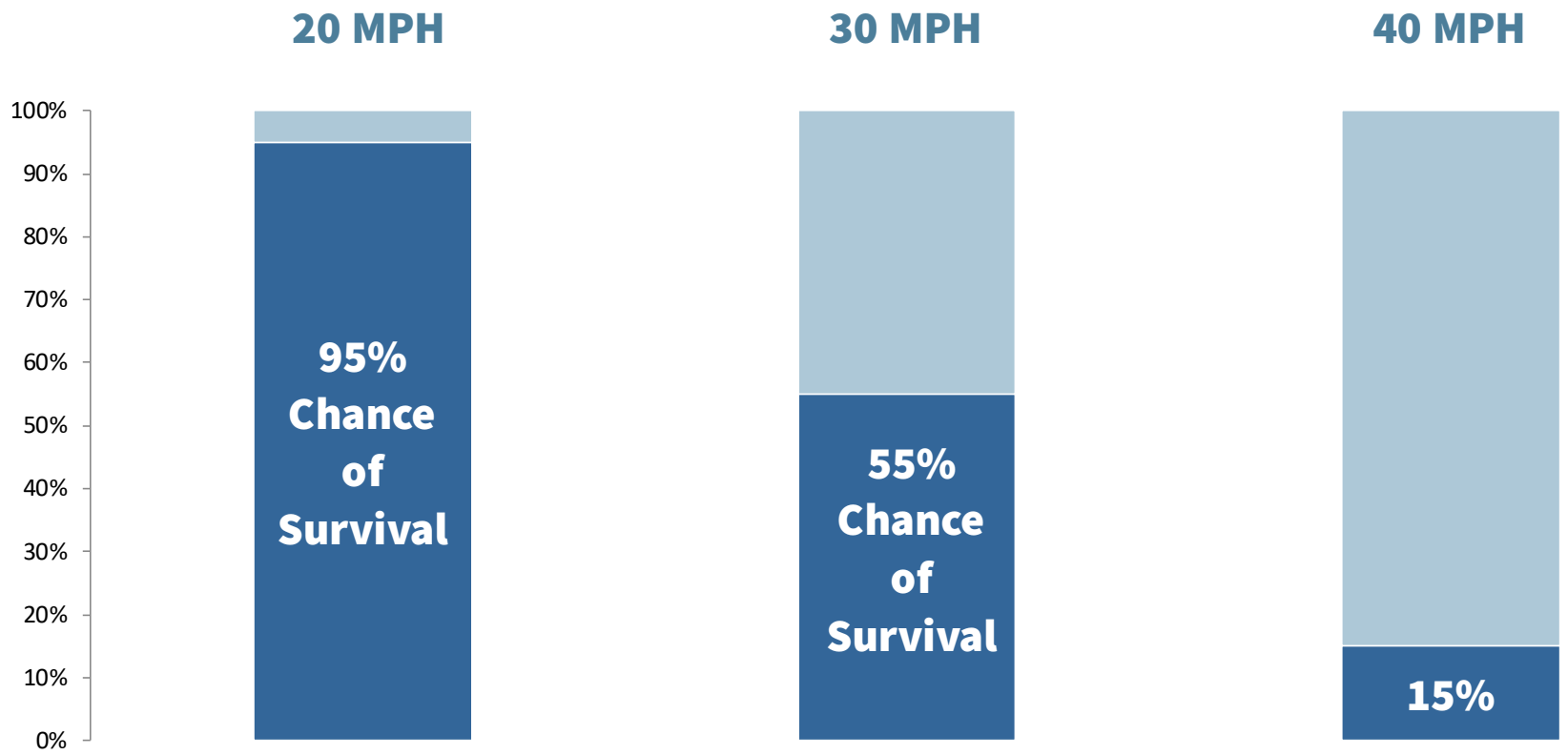


Image credit: NACTO

Reducing Crash Severity

- The key strategy for reducing crash severity is reducing vehicle speed



Pedestrian survival rates when involved in crashes with vehicles at different speeds

Reducing Crash Severity

- If a sudden conflict occurs, lower speed vehicles impact at lower speeds, making a big difference in crash severity

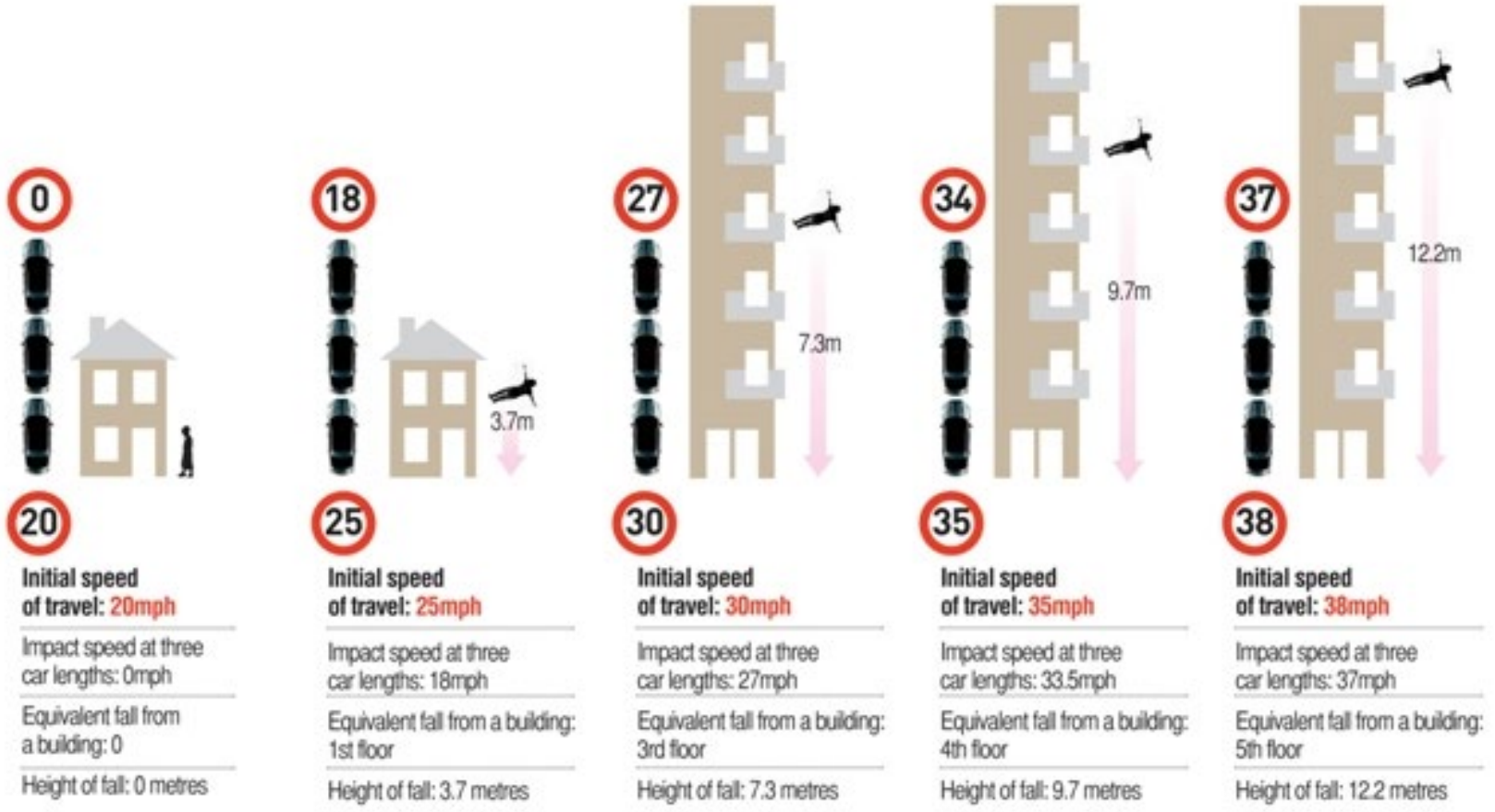
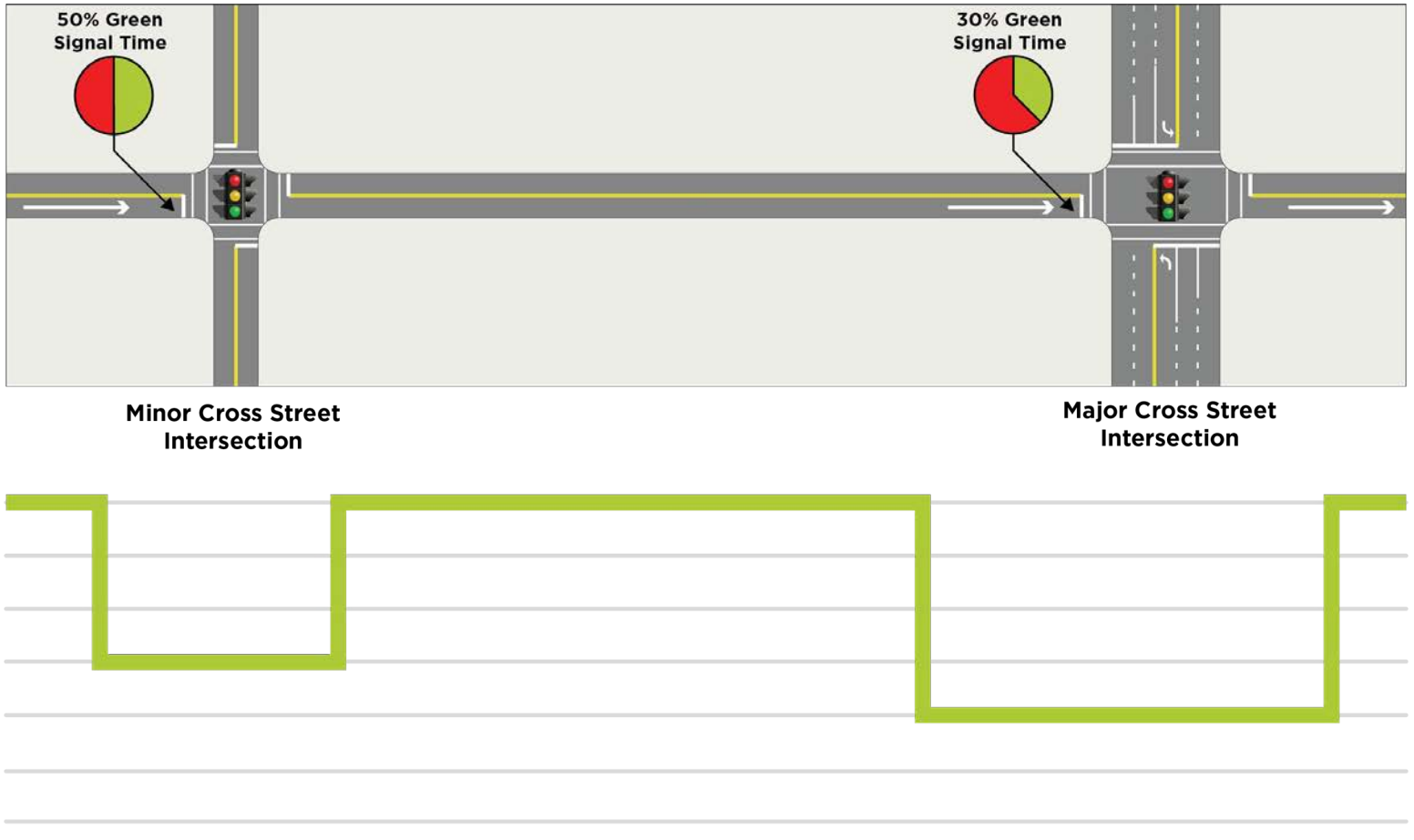


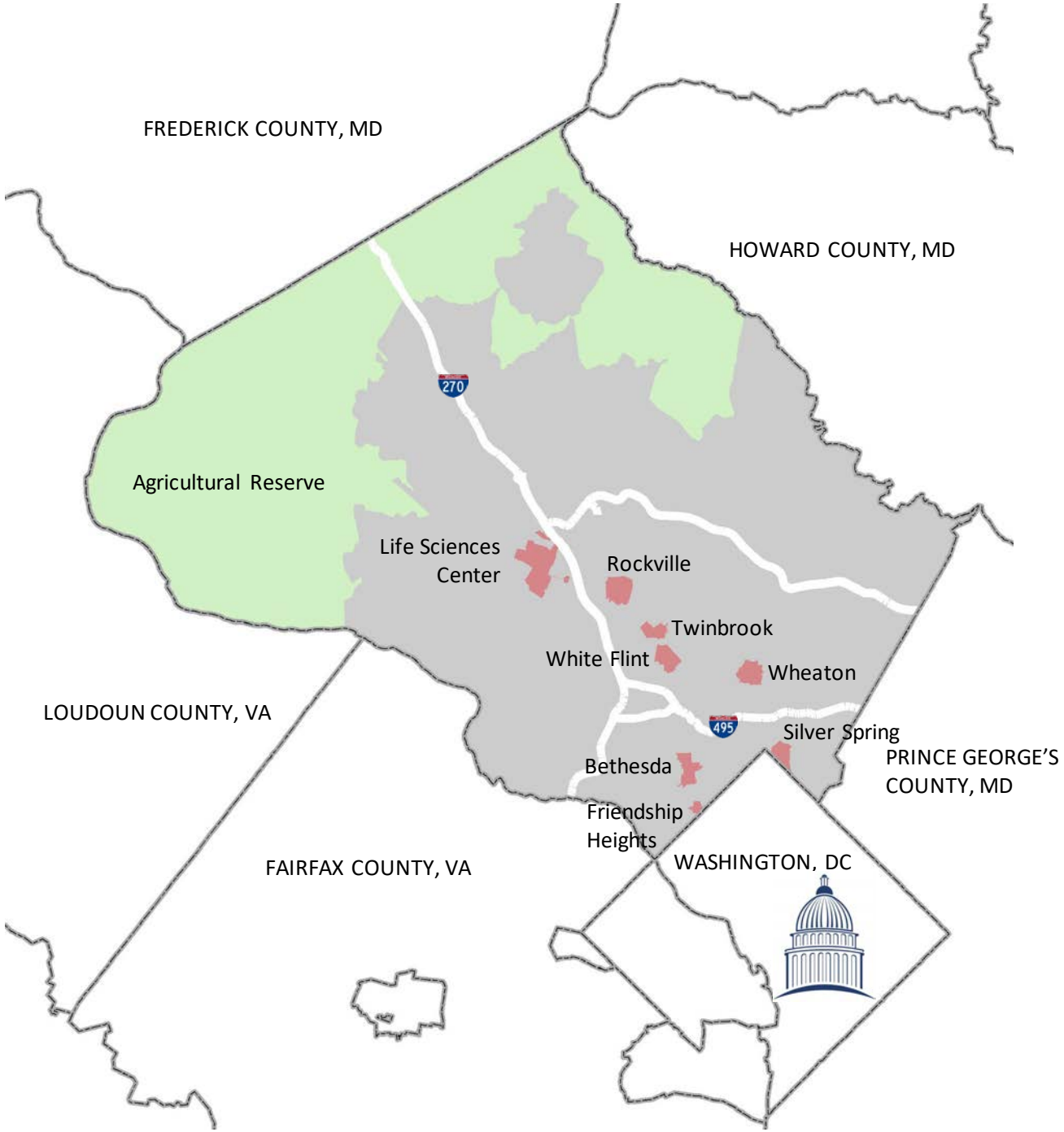
Figure credit: Brake (the road safety charity)

Speed vs Capacity

- Average speed is what dictates the amount of time it takes to get through an area
- The capacity of a corridor is mostly determined by the traffic signals



Vision Zero:
Montgomery County, Maryland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Agricultural Reserve
Life Sciences Center
Rockville
Twinbrook
White Flint
Wheaton
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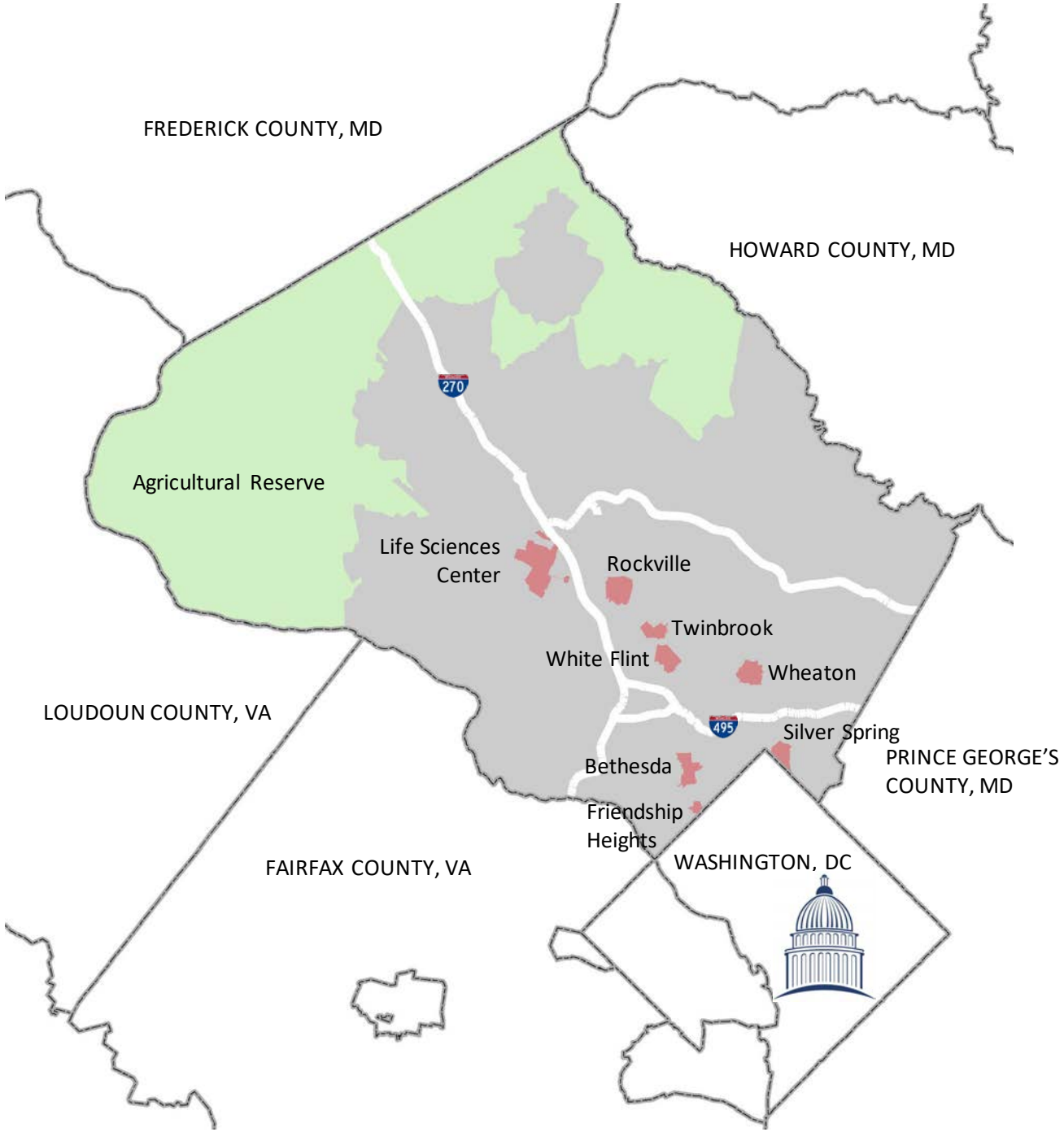
Silver Spring
PRINCE GEORGE'S COUNTY, MD
Bethesda
Friendship Heights
WASHINGTON, DC
FAIRFAX COUNTY, VA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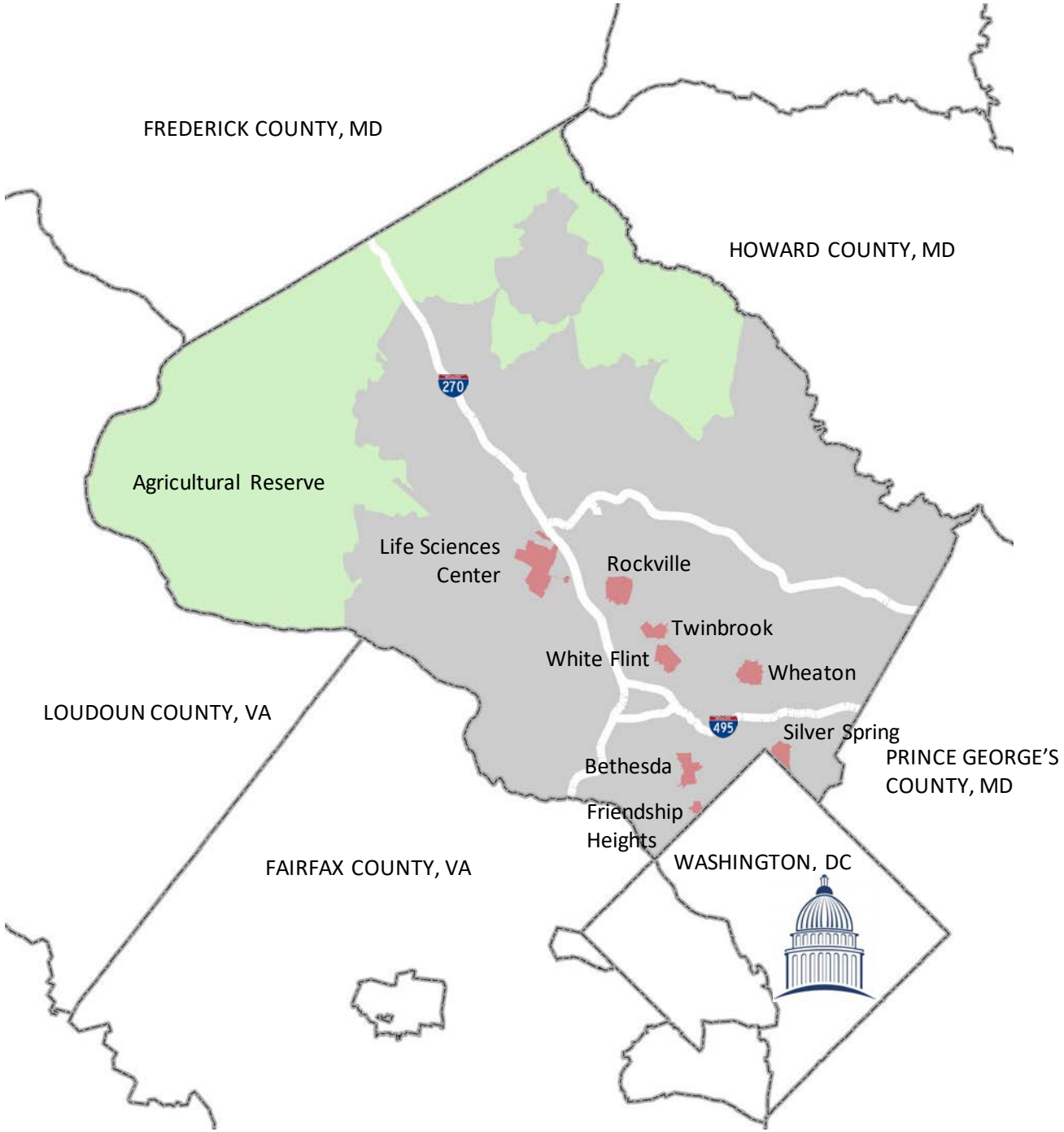
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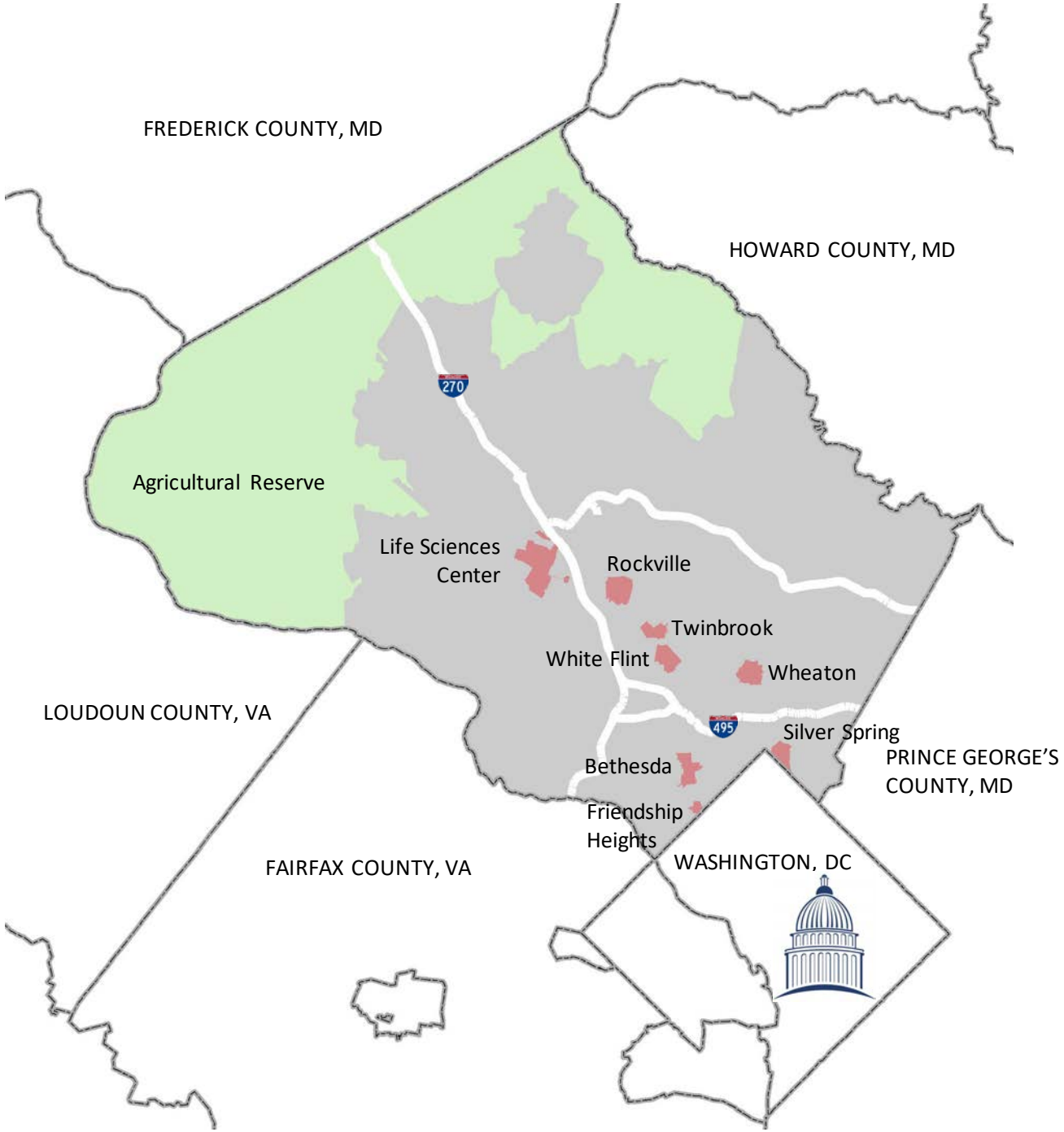
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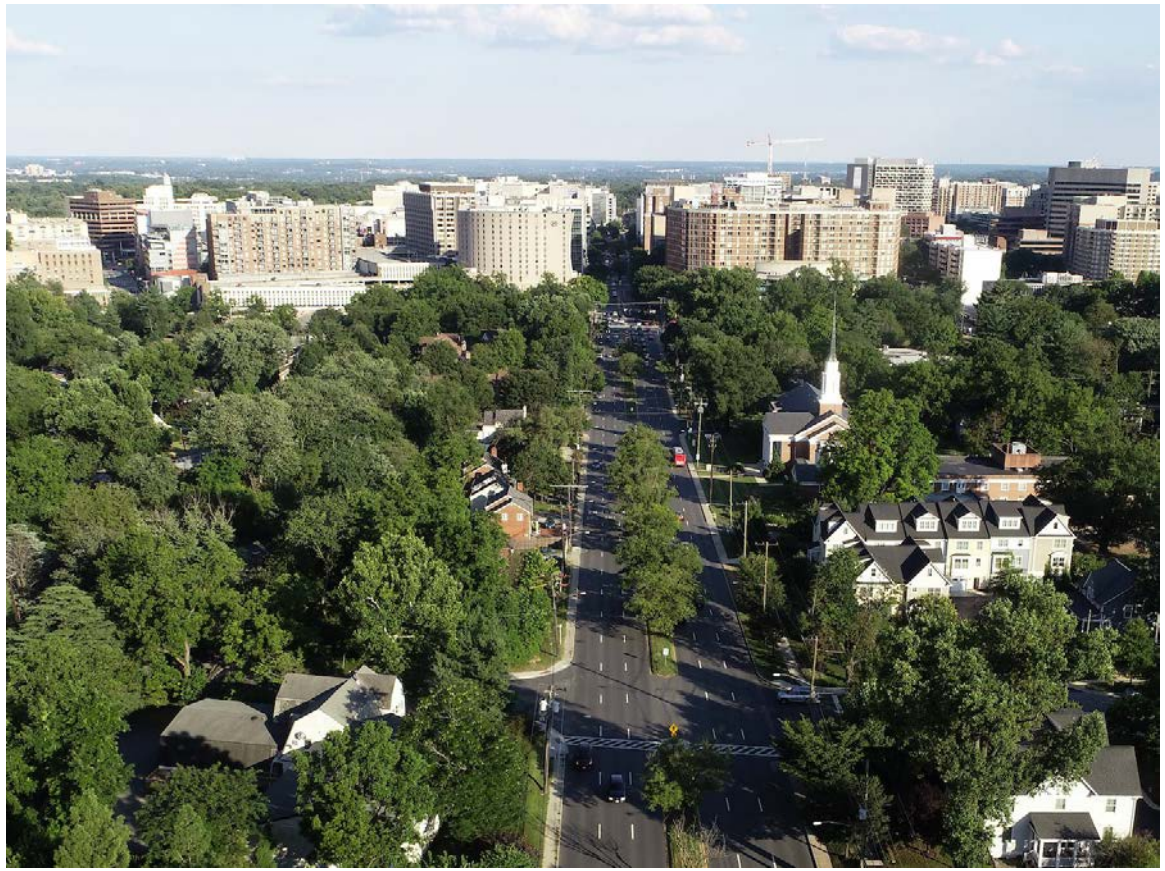
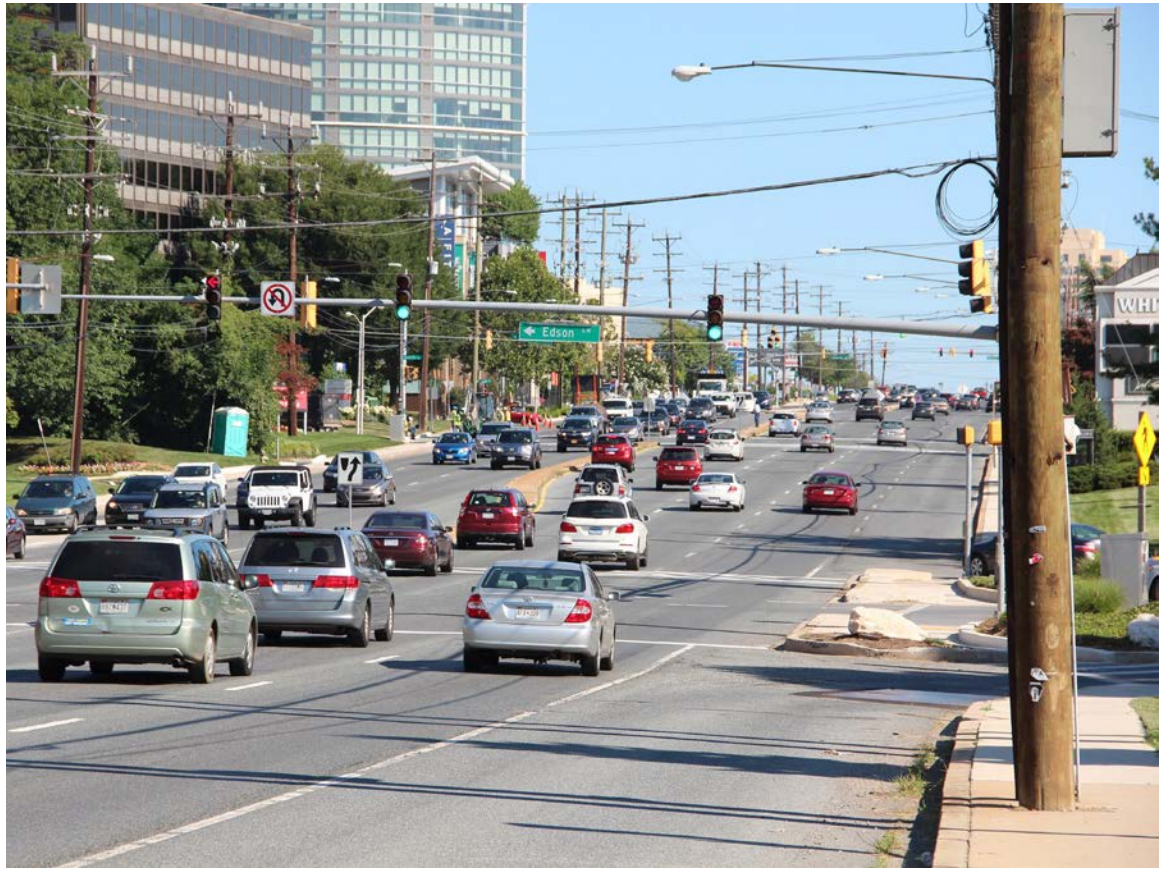
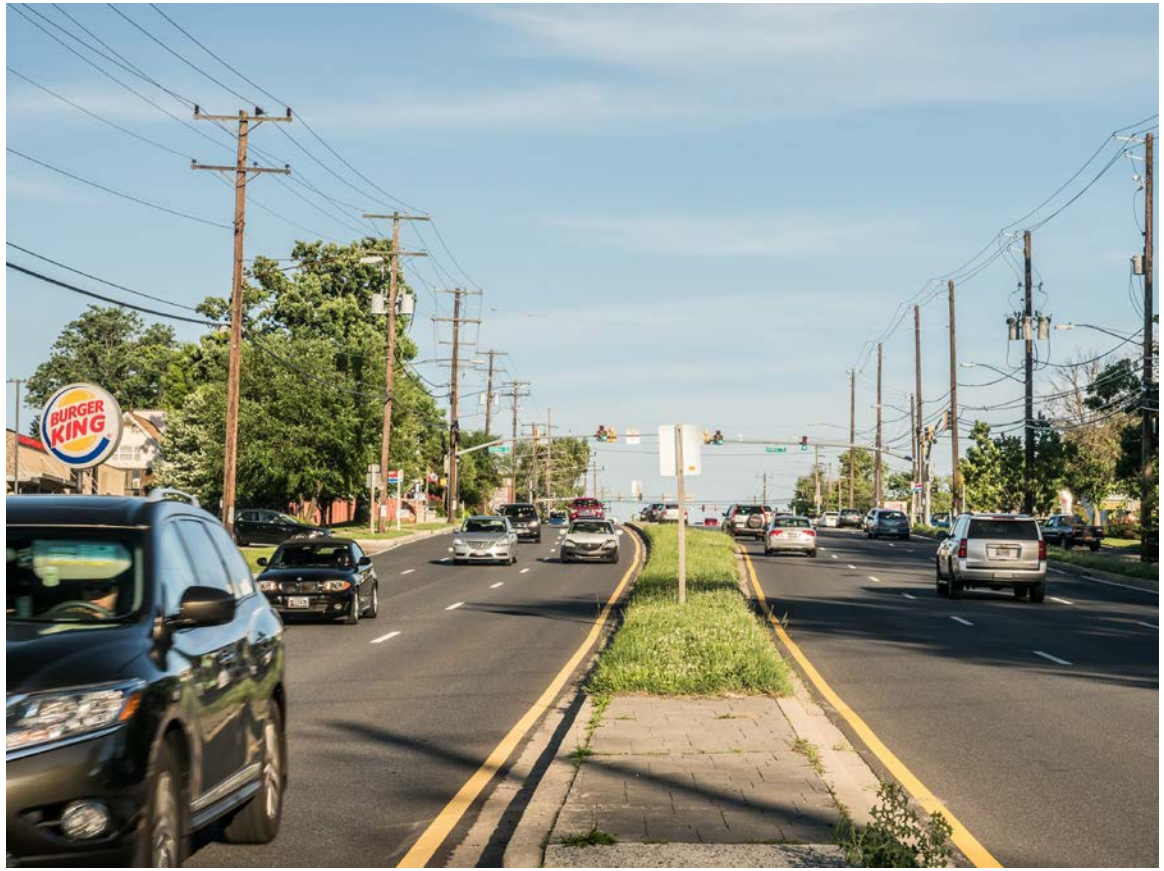
Post World War II Development



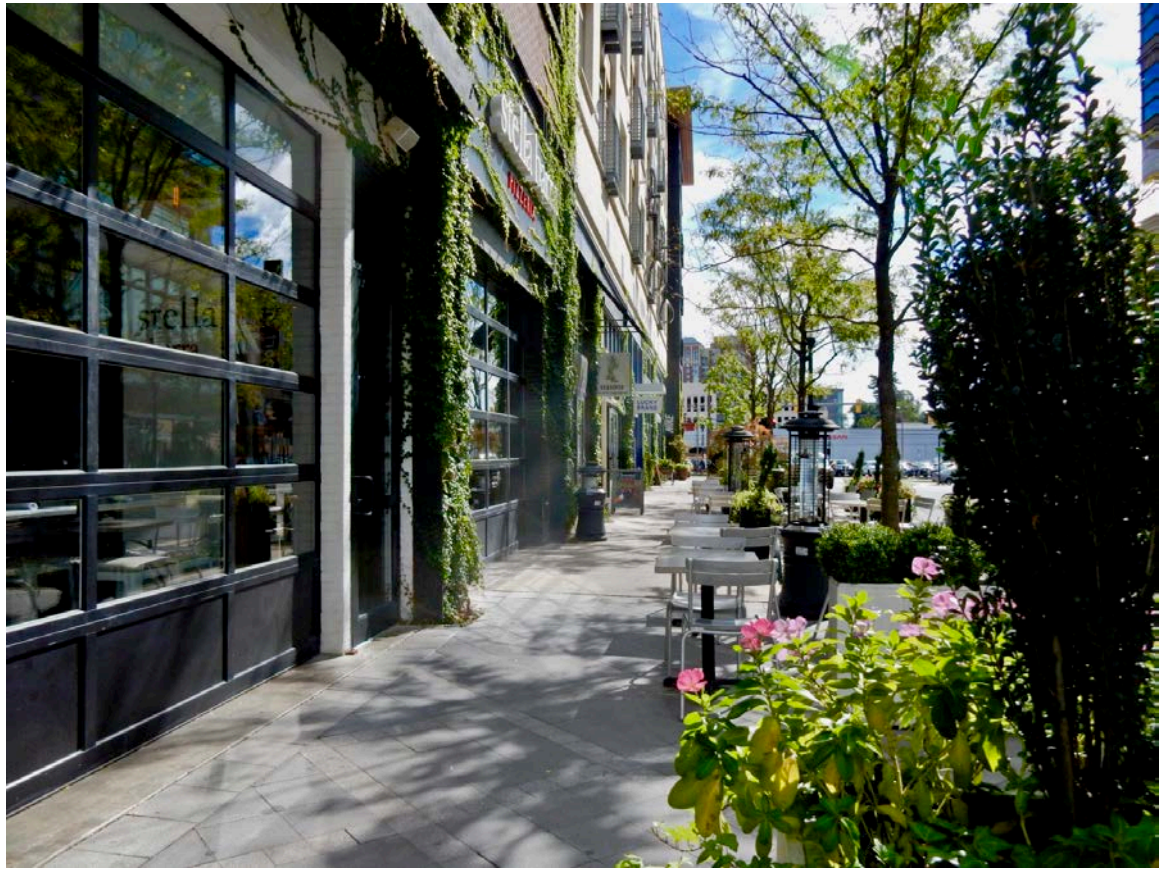
Auto-Centric Development



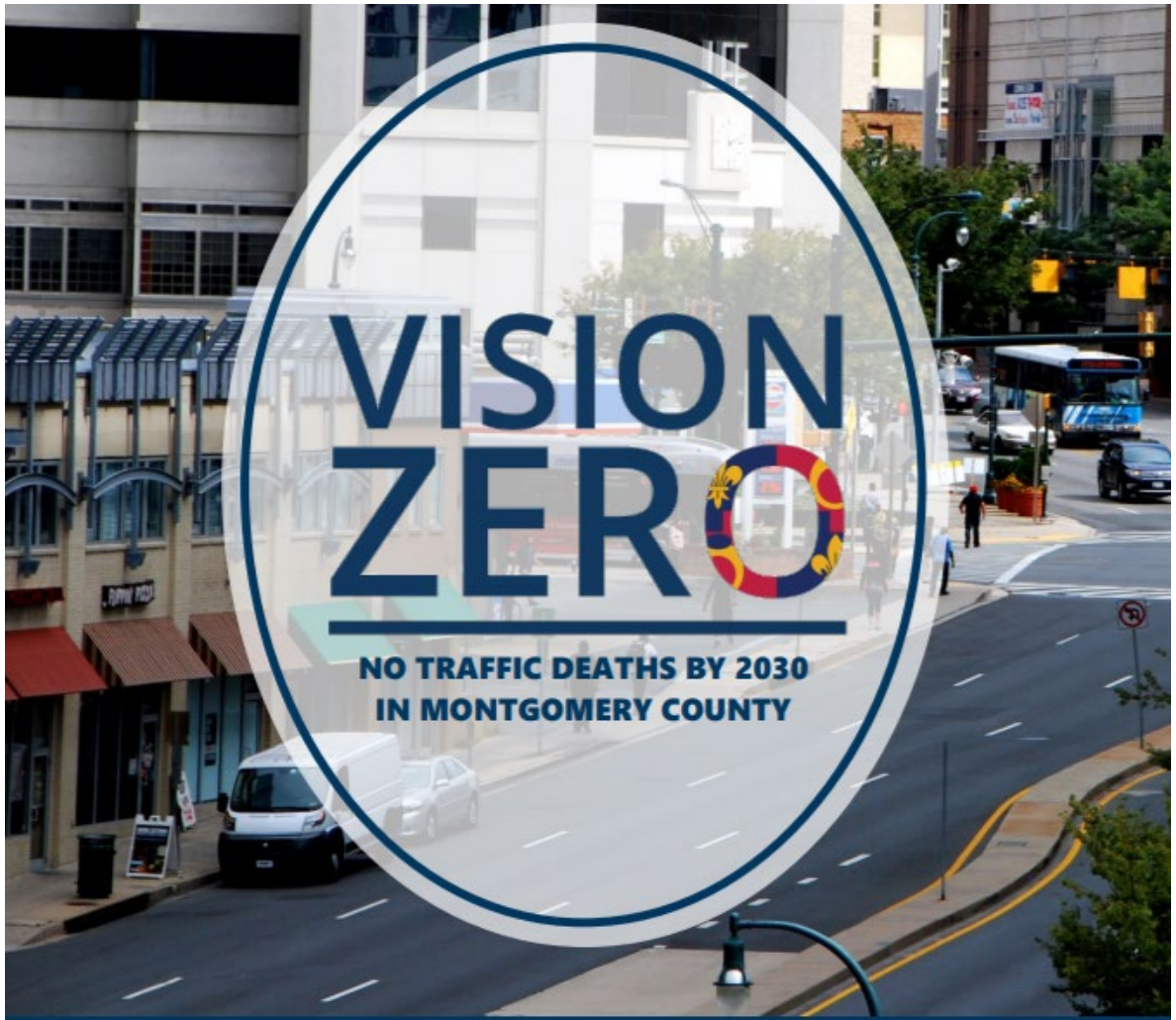


Urbanization

Retrofitting the Suburbs



A New Focus…



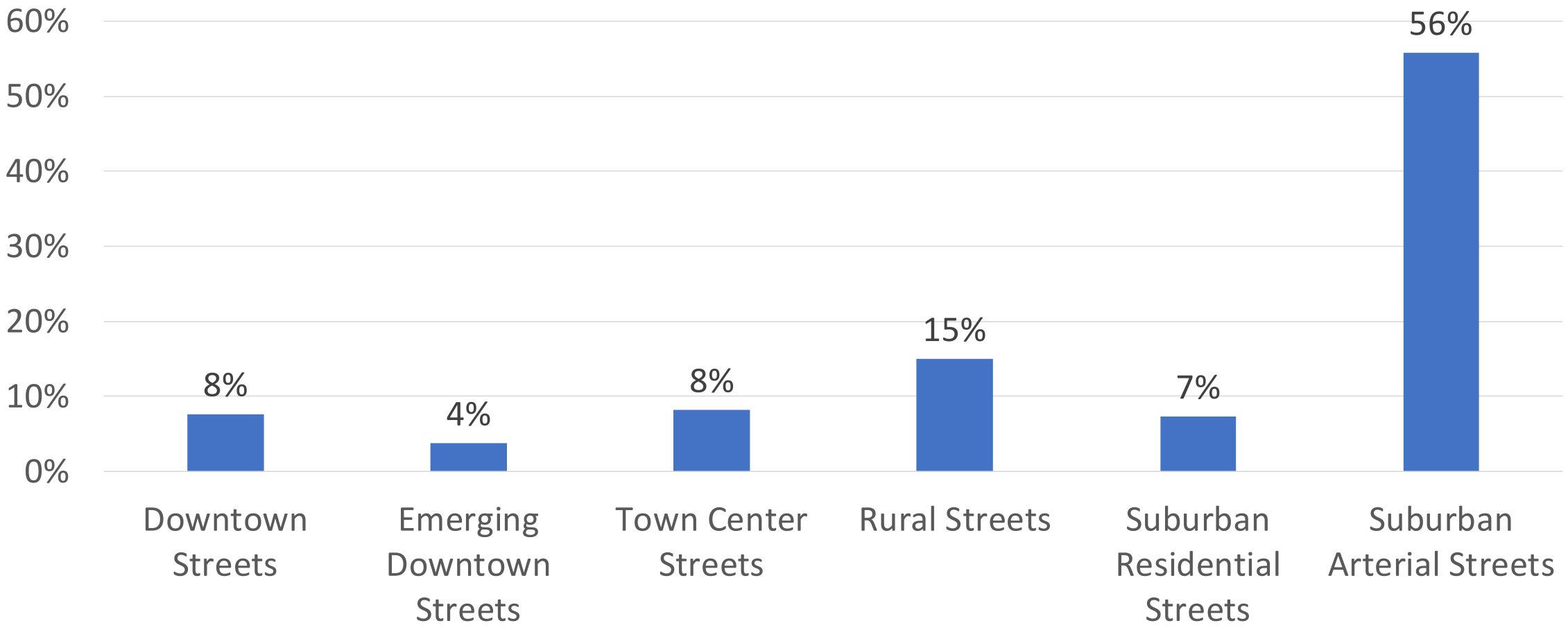
VISION ZERO

NO TRAFFIC DEATHS BY 2030
IN MONTGOMERY COUNTY

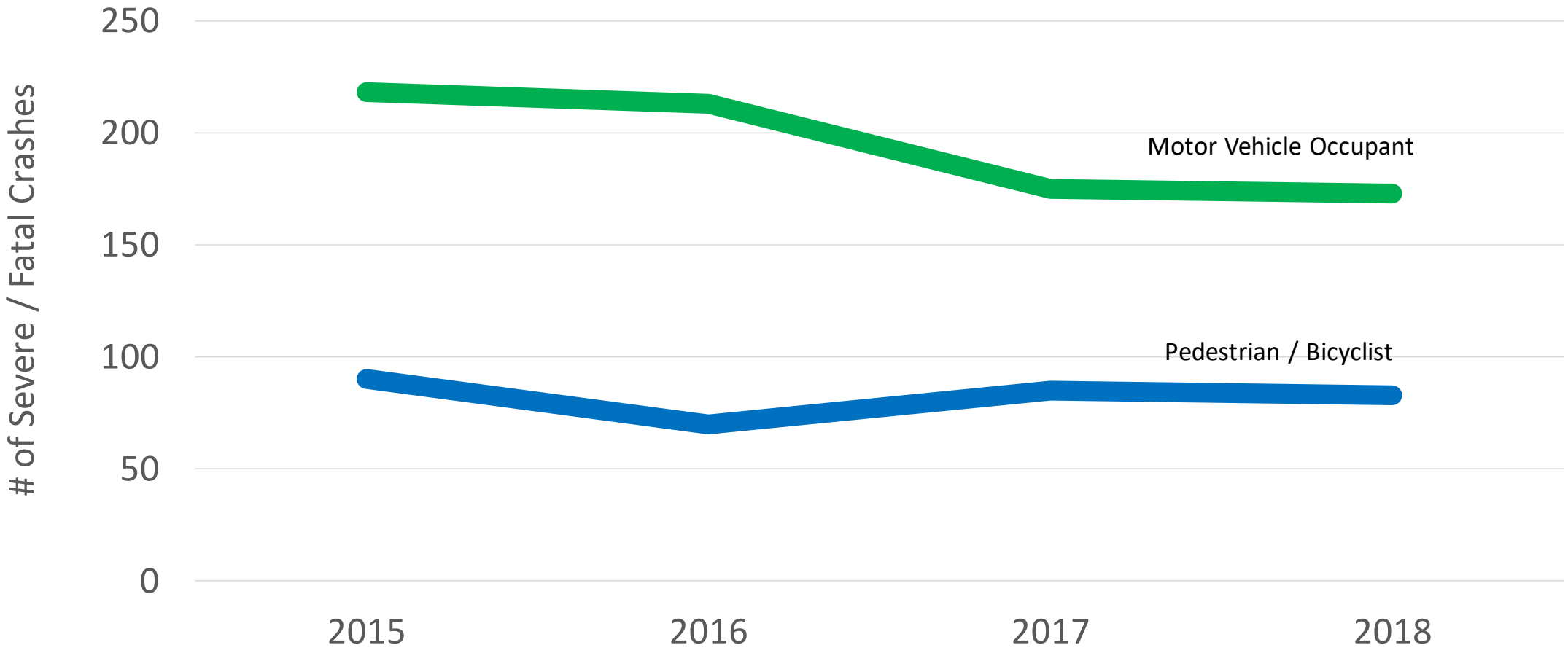
OUR PLAN TO ELIMINATE FATALITIES AND SEVERE INJURIES ON OUR ROADS BY 2030

TWO-YEAR ACTION PLAN • NOV 2017

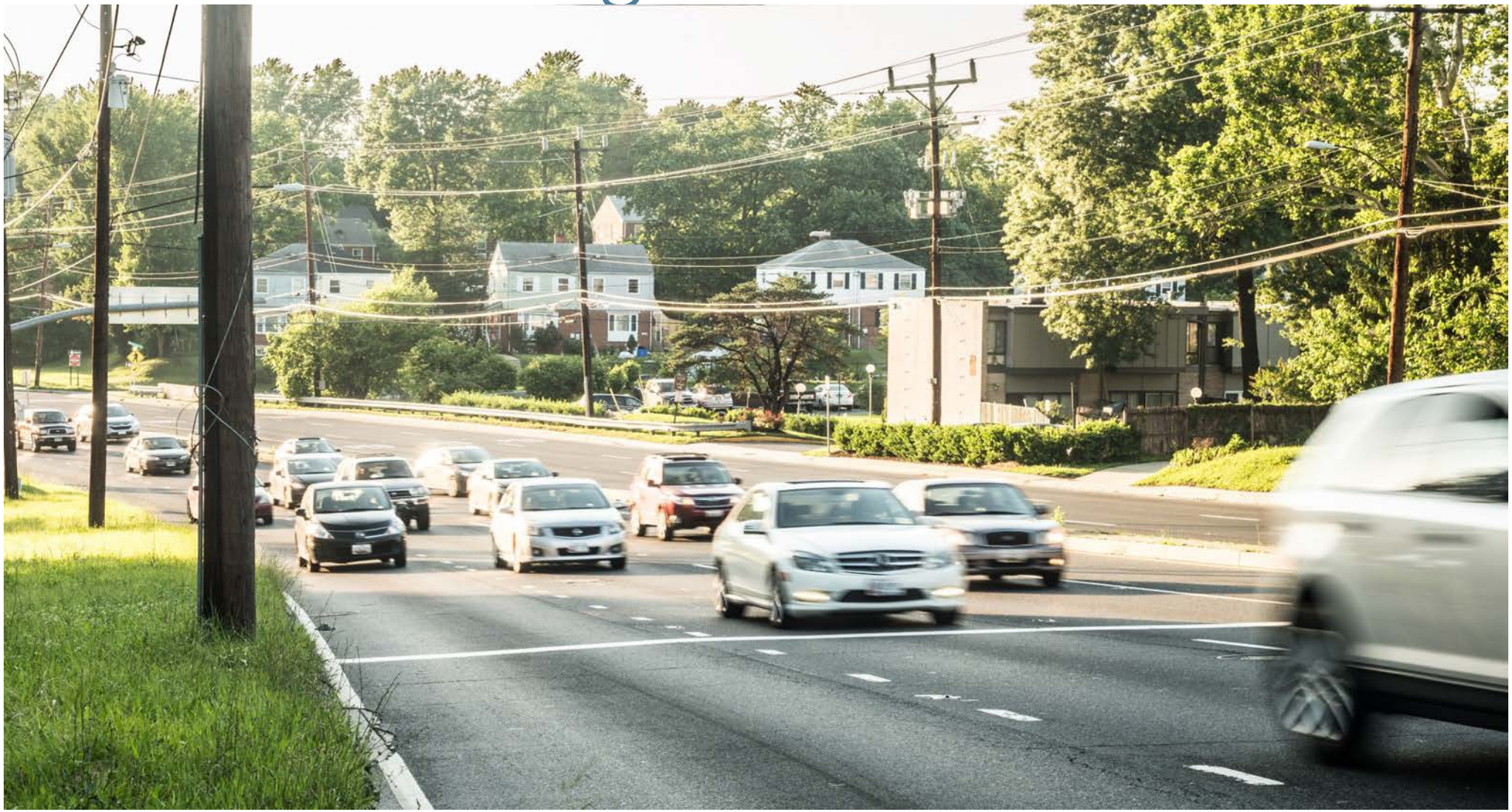
Percent of Severe / Fatal Crashes by Street Type



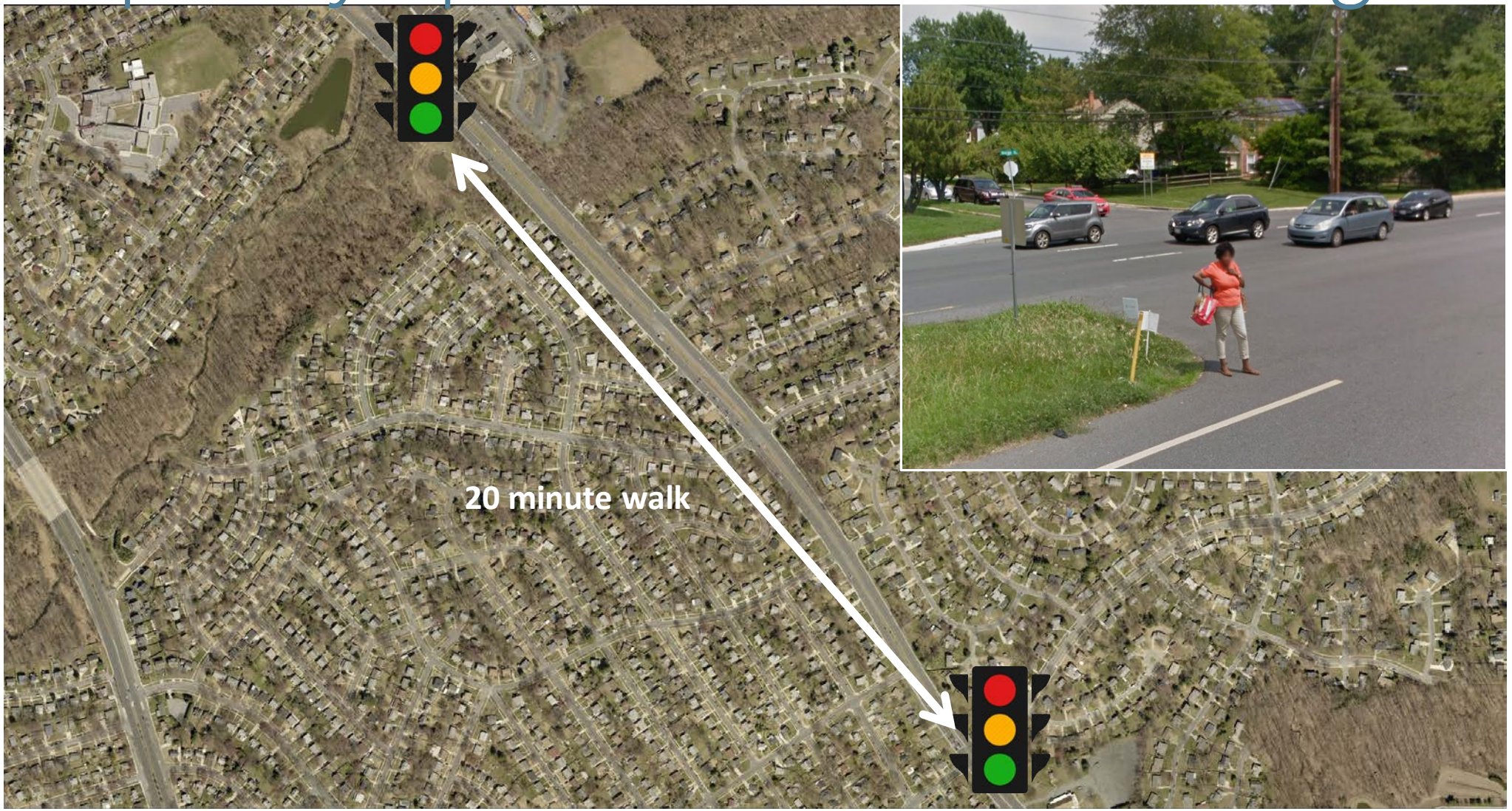
Severe Injuries / Fatalities (2015 – 2018)



Fast Roads with High Traffic Volumes



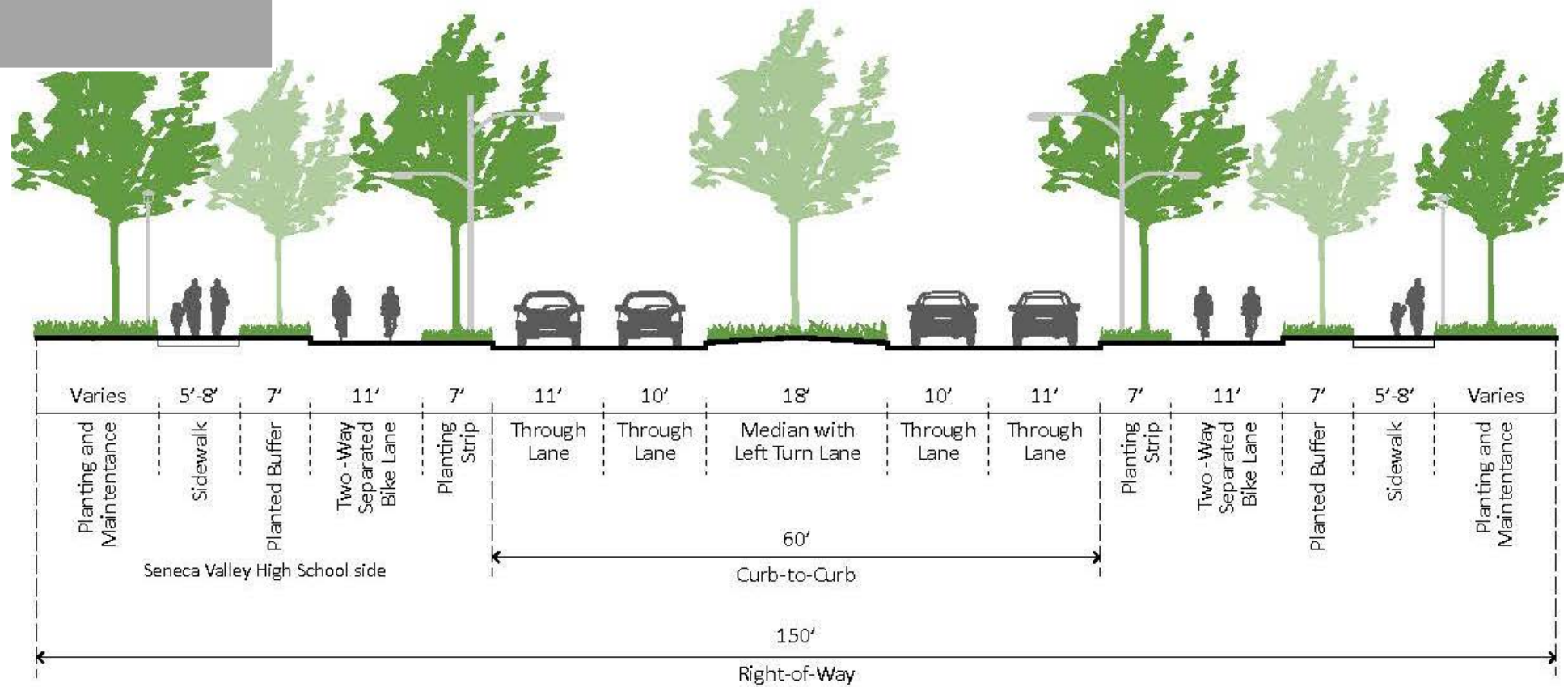
Infrequently Spaced Protected Crossings



Inadequate Walking and Bicycling Infrastructure

Land Uses that Encourage Speed

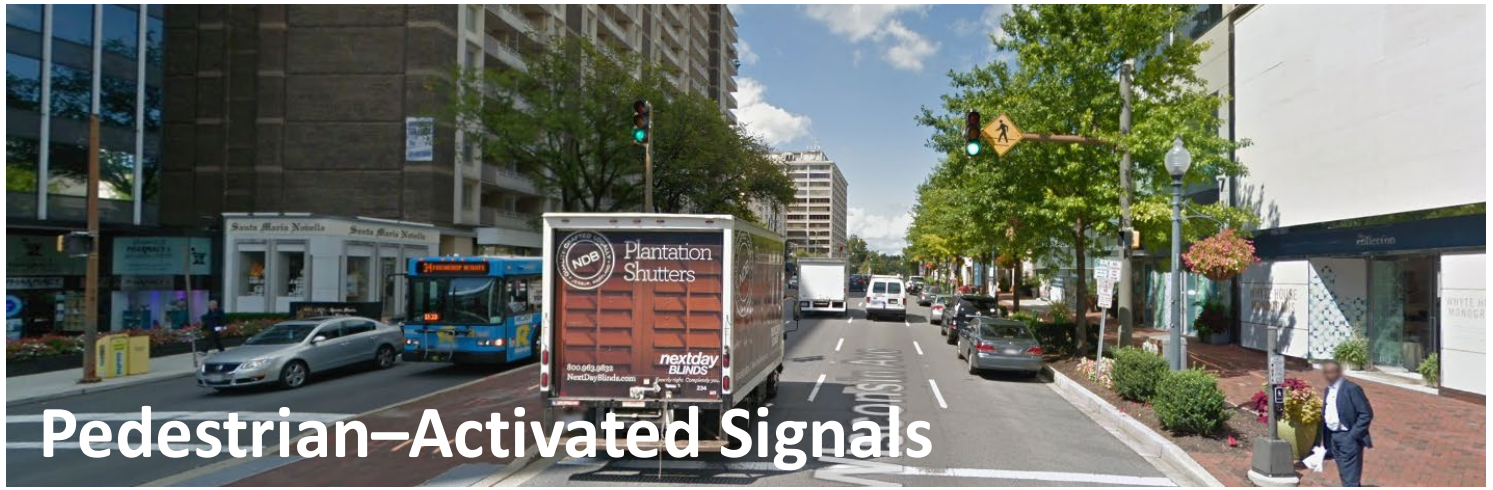
Slower Speeds



Protected Crossings

HAWK Signals

Rapid Flashing Beacon



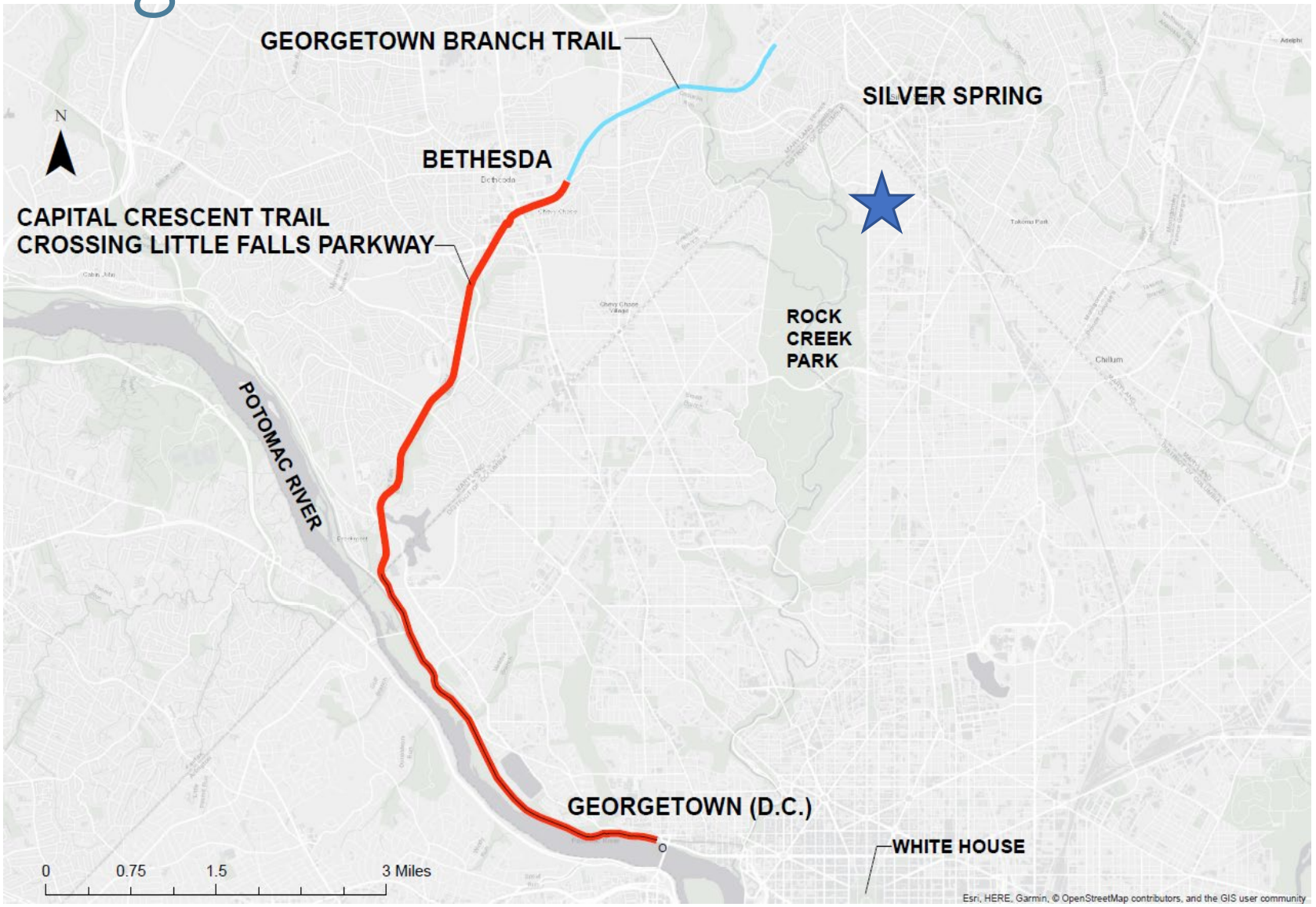
Pedestrian–Activated Signals

Dedicated Space


Woodside/16th St
station
Woodside
St

Case Study: Capital Crescent Trail Crossing

Trail Background



Trail Background

Little Falls Parkway

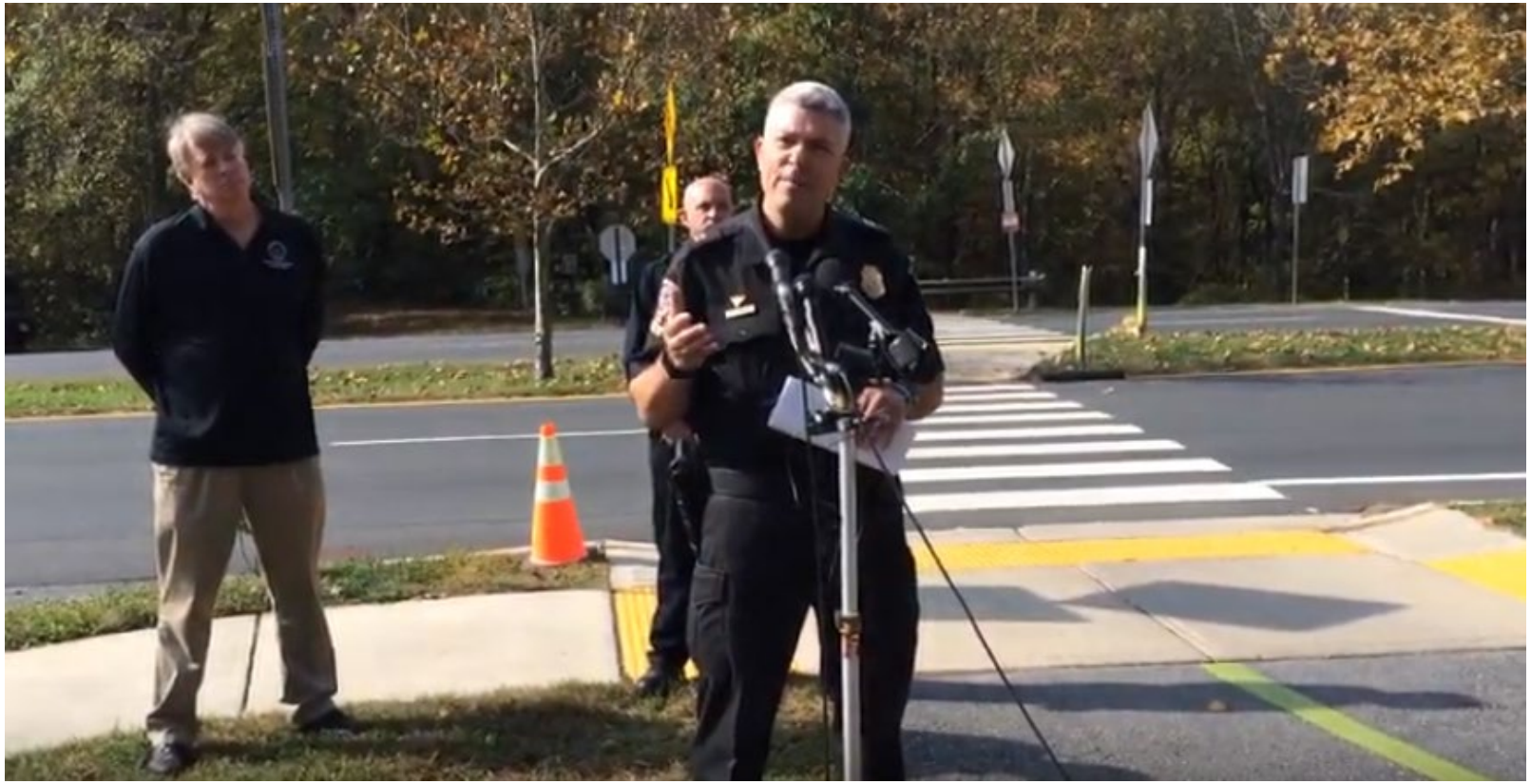
- At-grade, mid-block crossing
- (4) lane road, 35 mph speed limit

Little Falls Parkway

Google Street View July 2014 – Courtesy Google Maps

Little Falls Parkway

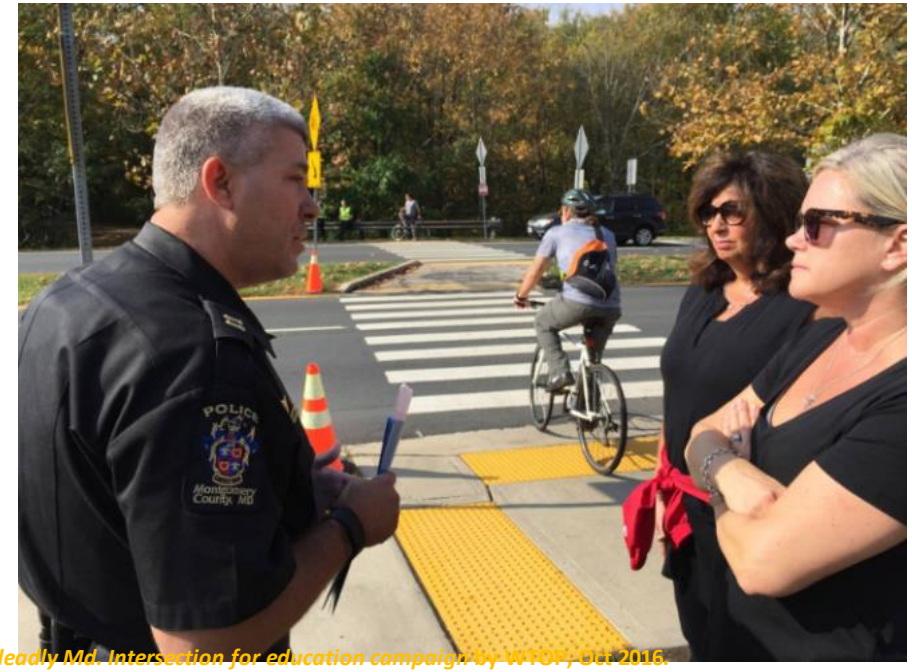
- 2014-2016: 12 incidents
- Fatality October 2016 –bicyclist hit while crossing



Capt. Tom Didone (Montgomery County Police) W/ Park Police and County DOT Press Conference

“Safety Blitz”

- Engineering, education, enforcement
- Increased Police presence throughout Fall 2016
- Police / Media outreach: Everyone needs to do their part to ensure safety



Police return to deadly Md. Intersection for education campaign by WTOP, Oct 2016.
Retrieved from https://wtop.com/montgomery-county/2016/10/police-return-deadly-intersection-education-campaign/slide/1/

Police return to deadly Md. Intersection for education campaign by WTOP, Oct 2016.
Retrieved from https://wtop.com/montgomery-county/2016/10/police-return-deadly-intersection-education-campaign/slide/4/

Road Diet

- Engineering goals:
  - Eliminate “multi-lane” threat
  - Slow speeds
  - Increase awareness
- Installed interim road diet January 2017
- ~1 month public notification

Road Diet

Public Response (or Outcry?`

Andy Clarke
@Andybikes

Now we're talking. Thanks @mncppc for start of CCT/Little Falls safety improvement. Big difference.

♡ 32 9:27 AM - Jan 5, 2017

Thanks to Montgomery Parks for Swift Action to Fix the Capital Crescent Trail Crossing at Little Falls Parkway

Collected by the Washigton Area Bicyclist Association

WASHINGTON AREA BICYCLIST ASSOCIATION

Michael Riley, Director of Parks, Montgomery Parks
Casey Anderson, Chair, Montgomery County Planning Board

Thank you for taking fast and decisive action to make the Capital Crescent Trail at Little Falls Parkway safe for everyone. You and your staff deserve enormous credit for your quick work to prevent future crashes at this intersection with this road diet and speed reduction.

Montgomery County Resident Signatures = 256
Other Washington Area Signatures (VA, DC, MD) = 35
Total = **291**

*In addition to their signature, some signers included recommendations to study similar treatments at other intersections in the county. While many are not under the Parks Department or Planning Board's jurisdiction, they are included unamended in case it is helpful in future analysis.

Montgomery County Signatures

#	First Name	Last Name	City	State		Comments / other intersections to consider for low-cost changes like these
1	Carol	Linden	Bethesda	MD		
2	Mollyann	March	Bethesda	MD		Metropolitan branch crossing at Connecticut avenue.
3	Linda	Blackman	Bethesda	MD		Thank you for making this intersection safer. My husband and I use it quite frequently and I was always worried that no matter what we did we would not be visible to the second lane of traffic. I am so sorry that this older gentleman on his usual fun and healthy ride met with such a tragic end.
4	Mark	Flugge	Bethesda	MD		
5	Jim	Kohlenberger	Bethesda	MD		
6	Ranjit	Teja	Bethesda	MD		
7	David	Sokolower	Bethesda	MD		
8	Sophia	Molina	Bethesda	MD		
9	robin	truitt	Bethesda	MD		
10	Donald	Cuming	Bethesda	MD		
11	Richard	Fisher	Bethesda	MD		
12	Murray	Sacks	Bethesda	MD		
13	Geane	Schubert	Bethesda	MD		
14	Christopher	Gilson	Bethesda	MD		
15	Jan	Bove	Bethesda	MD		
16	Jeremy	Rider	Bethesda	MD		Very dangerous where the Cabin John Trail crosses Tuckerman. Seems like a low cost solution could make it much, much safer. Thanks!
17	Norma	Dugger	Bethesda	MD		
18	Steven	Hockman	Bethesda	MD		
						The point where the Bethesda Trolley Trail crosses Tuckerman Lane (at the Brighton Gardens care facility)

After fatal bike crash, sign part of safety blitz vandalized on trail by WTOP, Oct 2016.
Retrieved from https://wtop.com/montgomery-county/2016/10/after-fatal-bike-crash-sign-part-of-safety-blitz-vandalized-on-trail/

Road Diet Observations

- From January 2017 to March 2019:
  - Reduction in incidents from 12 (2014-2016) to 5 (2017-2019+)
  - Less severity due to decreased vehicle speeds
  - 17 mph average vehicle speeds
  - Average vehicle travel time increase: +7 seconds

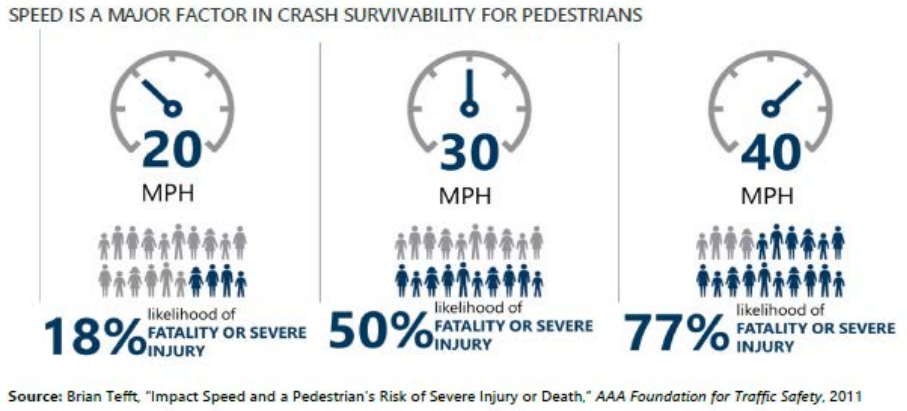
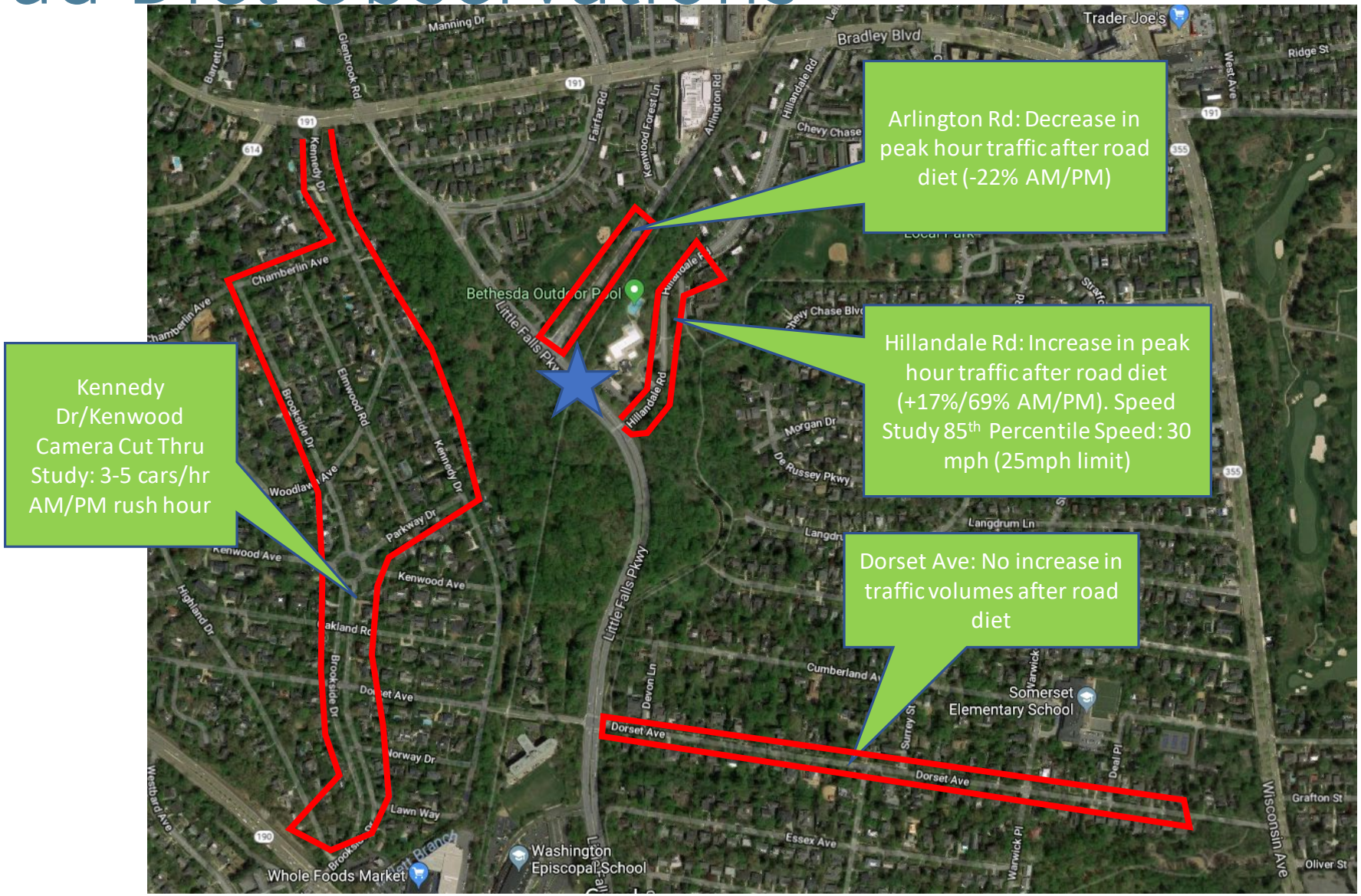


Table: Before and After Interim Road Diet Traffic Counts Little Falls Parkway

Direction	Before Road Diet		After Road Diet		Change in Traffic	
	AM	PM	AM	PM	AM	PM
Southbound	835	1045	840	923	5	-122
Northbound	783	863	713	932	-70	69
Total	*1618*	*1908*	*1553*	*1855*	*-65*	*-53*
					-4.0%	*-2.8%*

Road Diet Observations



Permanent Improvements Project

- Initiated long term study project to develop permanent improvements
- Community meetings Summer 2018 and Fall 2018
- 12 concepts down to 3

Permanent Improvements Project

- Alternate A: Permanent road diet w/ speed table crossing

Permanent Improvements Project

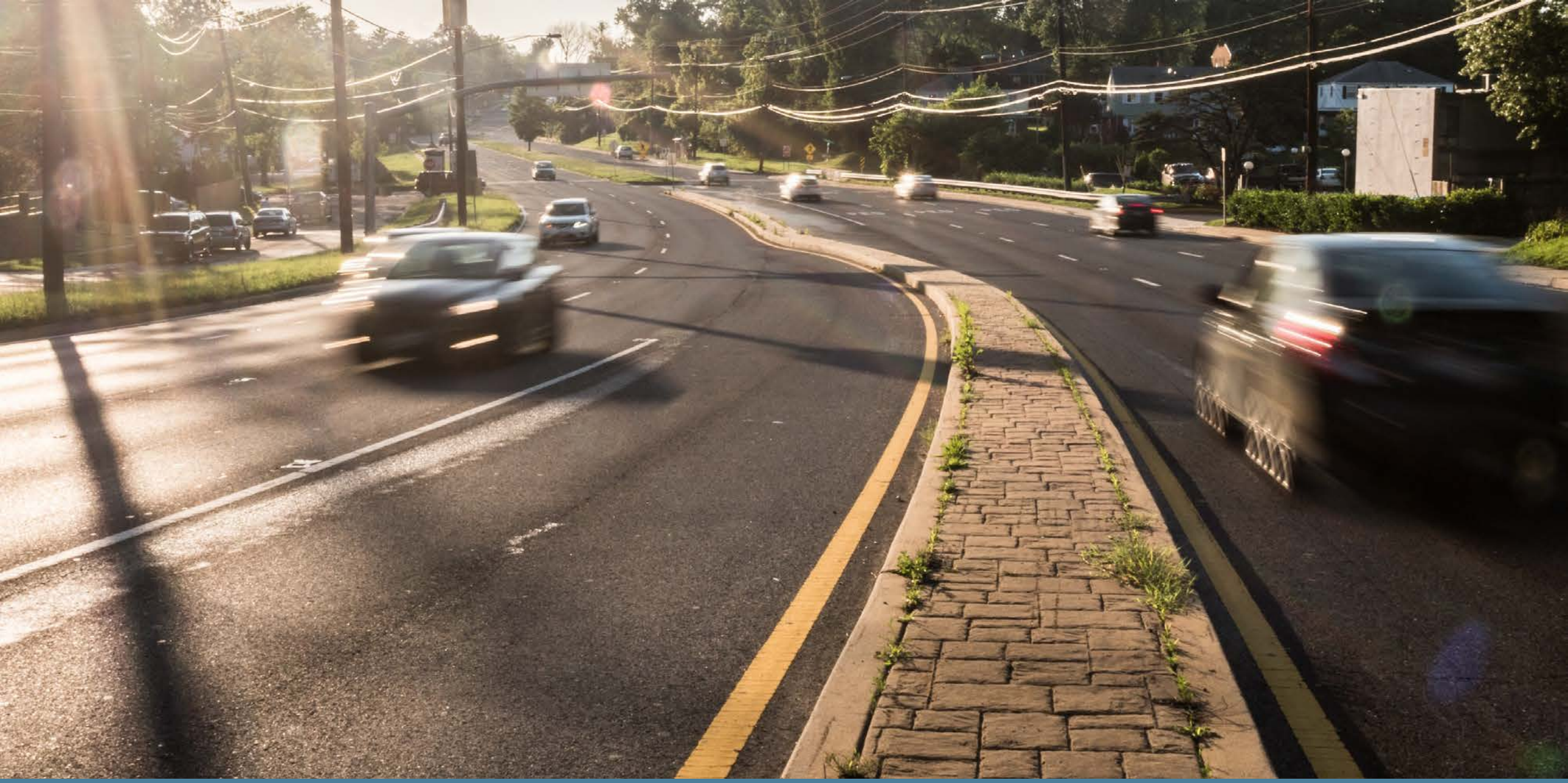
- Alternate B: Shift trail to nearby intersection with traffic signal, (2) lane road

Permanent Improvements Project

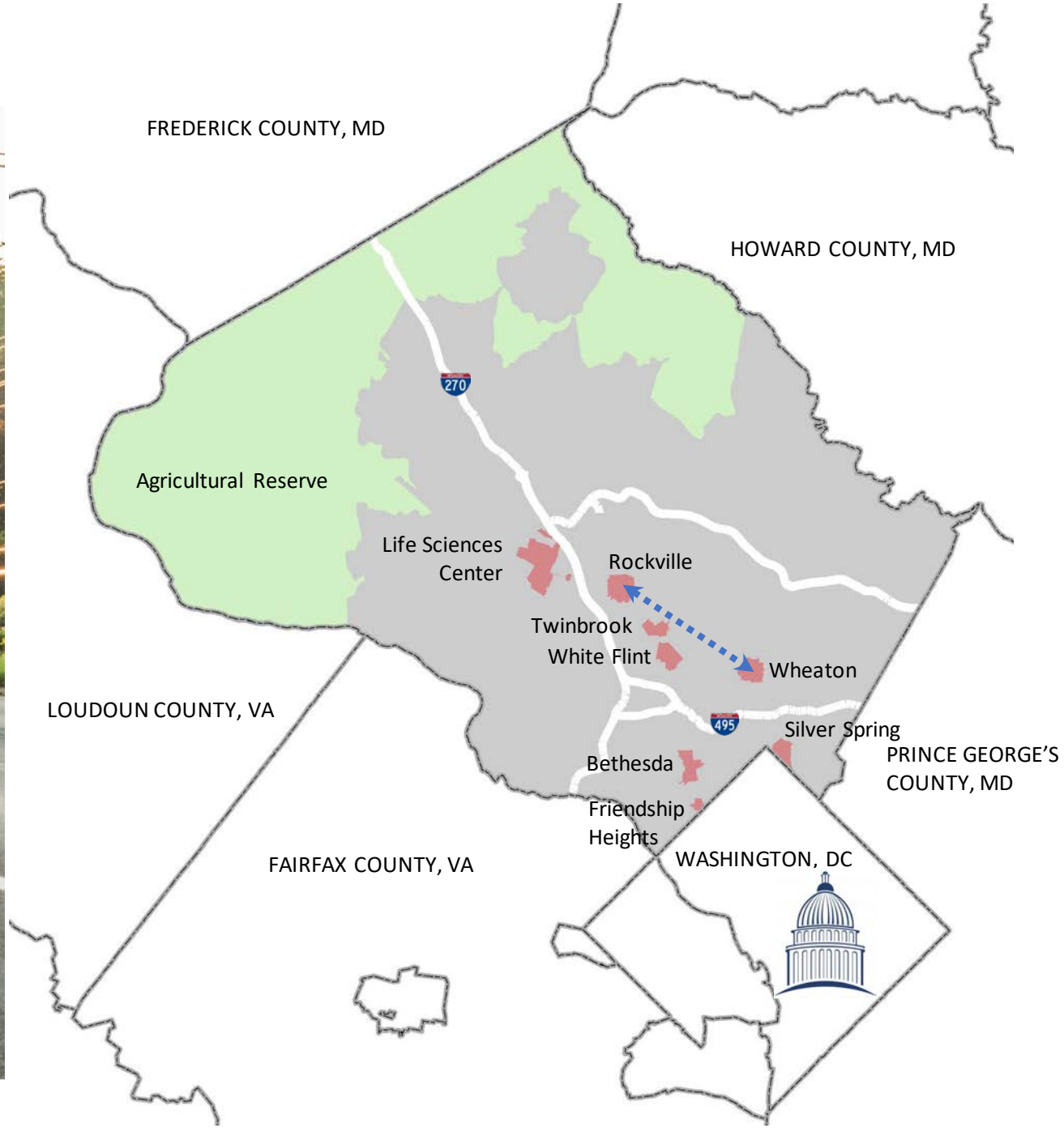
- Alternate C: Trail Bridge

Case Study Conclusions

- Push for action highest immediately after tragedy
- “Safety Blitz” – education, enforcement, and engineered interim road diet on Little Falls Parkway
- Interim road diet measured effectiveness



Case Study: Veirs Mill Corridor Master Plan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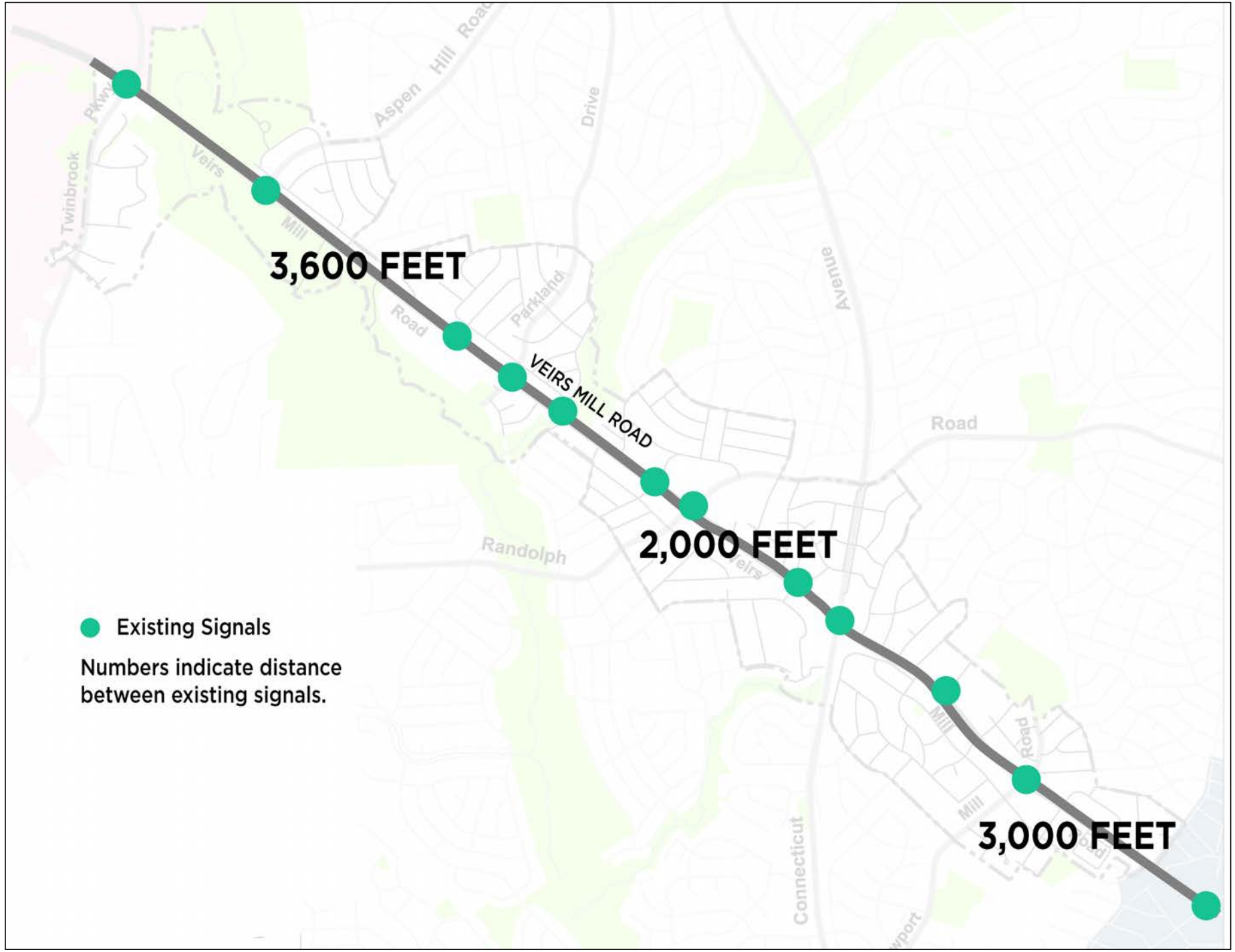
Evolution From Cars to Buses

Inadequate Infrastructure

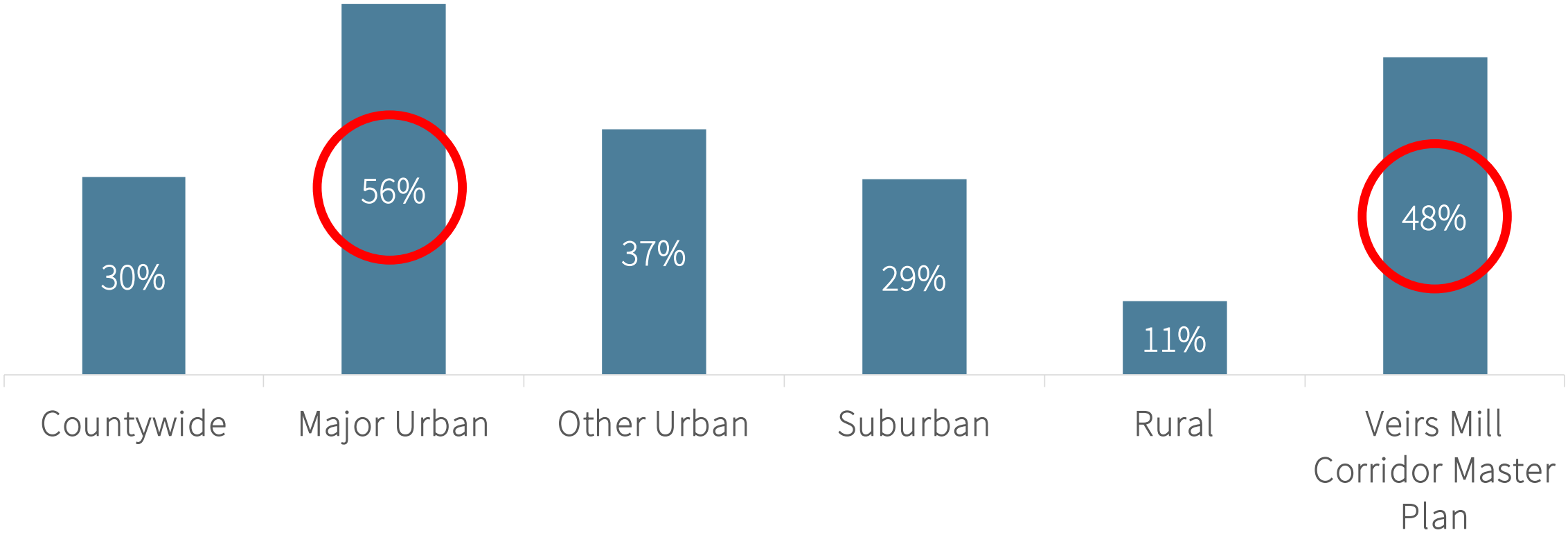

3,600 FEET
VEIRS MILL ROAD
2,000 FEET
3,000 FEET
Existing Signals
Numbers indicate distance between existing signals.
Aspen Hill Road
Drive
Twinbrook
Veirs
Mill
Road
Parkland
Avenue
Randolph
Connecticut

Increased Walking, Biking and Transit

Severe and Fatal Crashes

- Between 2015 and 2018, there were **21 severe and fatal crashes** in the plan area, including 15 severe injuries and 6 fatalities.

Pedestrian and Bicycle Crashes



Solutions

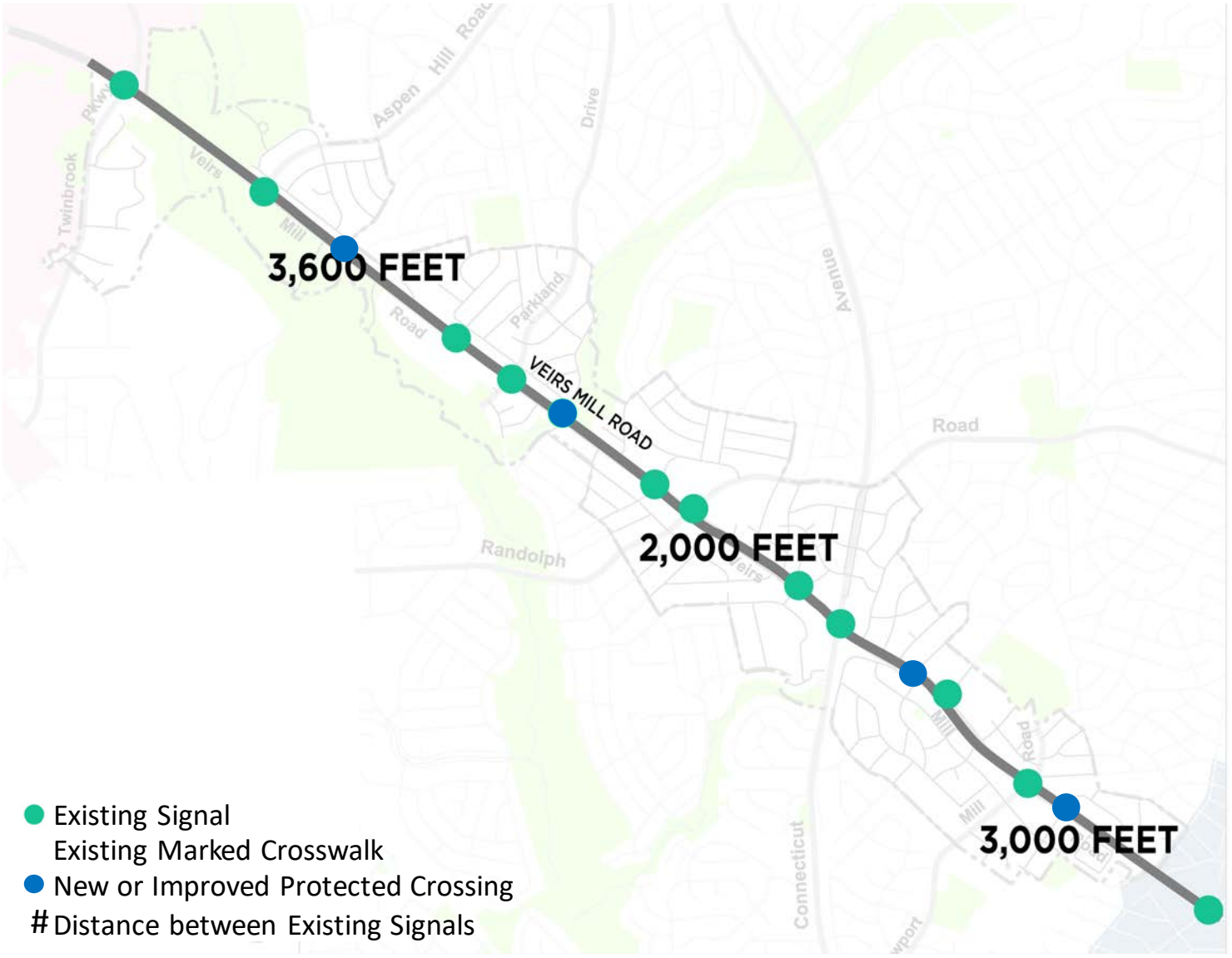
- Short-term safety recommendations
- Long-term vision for transformation to a multimodal complete street

Short-Term Recommendation

- Improve pedestrian and bicycle infrastructure on Veirs Mill Road and streets that connect transit and community uses.

Short-Term Recommendation

- Introduce additional protected crossings.



Short-Term Recommendation

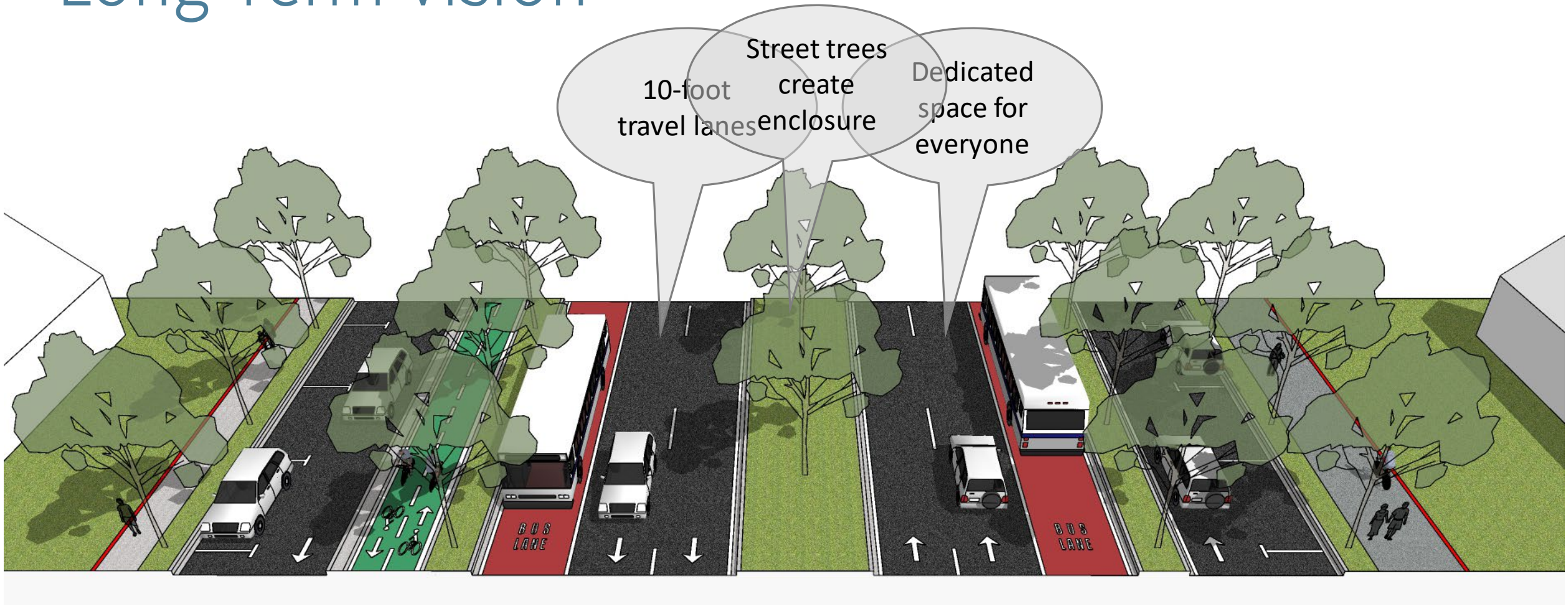
- Implement school speed zone to reduce speeds.

Short-Term Recommendation

- Improve compliance with existing bus- and right-turn lanes.

Image Courtesy of Google Maps, October 2018

Long-Term Vision



Building a Constituency

Building a Constituency

Questions?

Questions | Comments | Connect

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- Andrew Tsai, Montgomery County Parks Department
  - andrew.tsai@montgomeryparks.org

American Planning Association

Creating Great Communities for All