

2024

Via Appia Restriping Discussion

March 11, 2024

Welcome!

What are We Here to Discuss?

Education – Traffic Laws, Terminology, Perspectives

Data – Observations and Information

Expectations – What are resident expectations?

Future – What does the path forward look like for this corridor?



Welcome!

Rules of Engagement

Emotion – Traffic brings out emotions.

Words – Be constructive not demeaning.

Comment – For, against, unsure, learning, what about this or that?

Bring it Home – Tell us if you prefer to **Prioritize** cars or prefer a **Balanced System**.



Polk/Dahlia

Approximately 60 homes on Polk/Dahlia wanted less cut through traffic and less speeding.

Traffic reduced 3-23%

Speeds reduced 2-3 mph

Review in Fall or Spring with Neighborhood to discuss future or final configurations.

This is a different topic and not up for discussion today.



Colorado Traffic Law (CRS 42-4-802)

(1) When traffic control signals are not in place or not in operation, the driver of a vehicle shall yield the right-of-way, slowing down or stopping if need be to so yield, to a pedestrian crossing the roadway within a crosswalk when the pedestrian is upon the half of the roadway upon which the vehicle is traveling or when the pedestrian is approaching so closely from the opposite half of the roadway as to be in danger.

City Expectation: Drivers stop and wait at crosswalks when pedestrians are present and show intent.

(3) A pedestrian shall not suddenly leave a curb or other place of safety and ride a bicycle, electrical assisted bicycle, or electric scooter, or walk or run into the path of a moving vehicle that is so close as to constitute an immediate hazard.

City Expectation: Pedestrians and Bicyclists be prepared to stop, look both ways and ensure its clear at all stops before crossing.

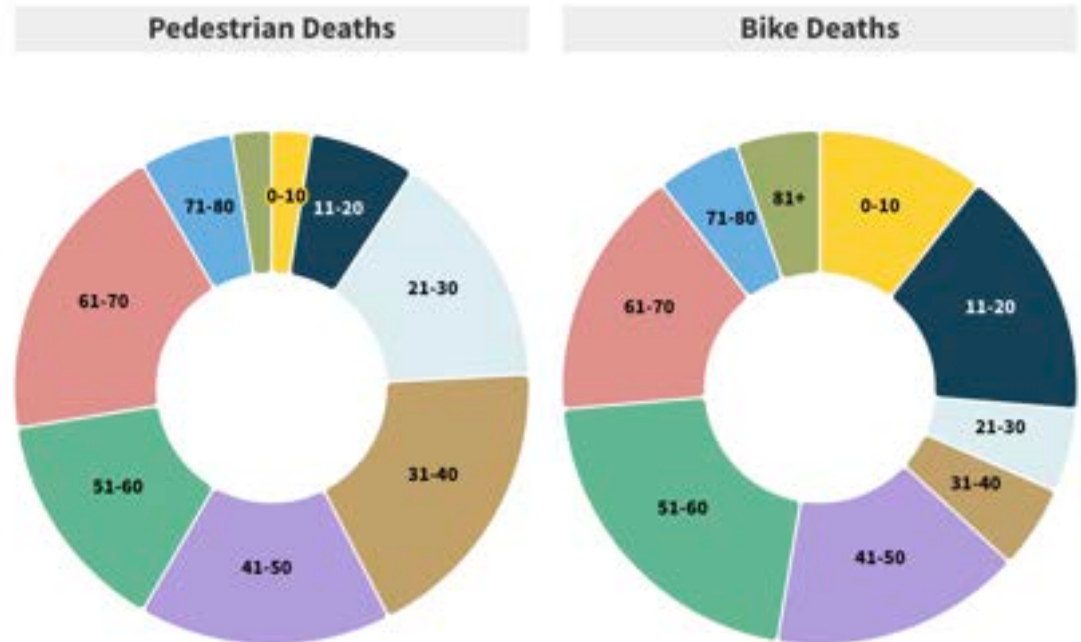
National and Colorado Trends

Pedestrian and Bike Fatalities Rising

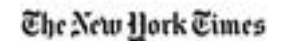


Pedestrian and bike deaths by age

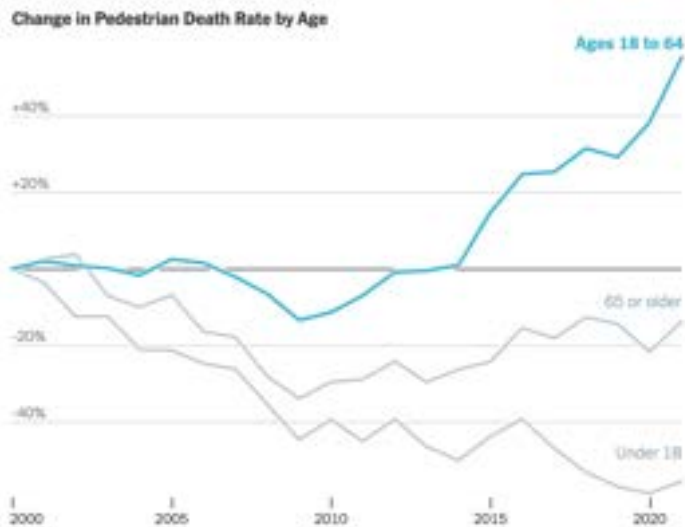
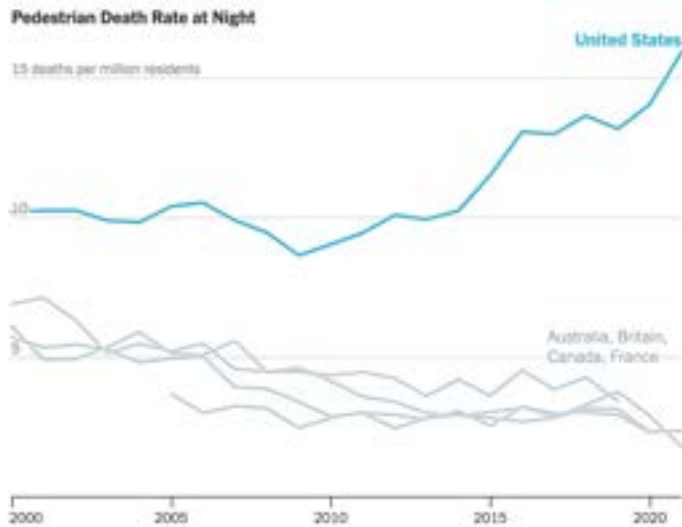
Pedestrians and cyclists killed in traffic crashes last year ranged across all age groups.



Source: Colorado Department of Transportation

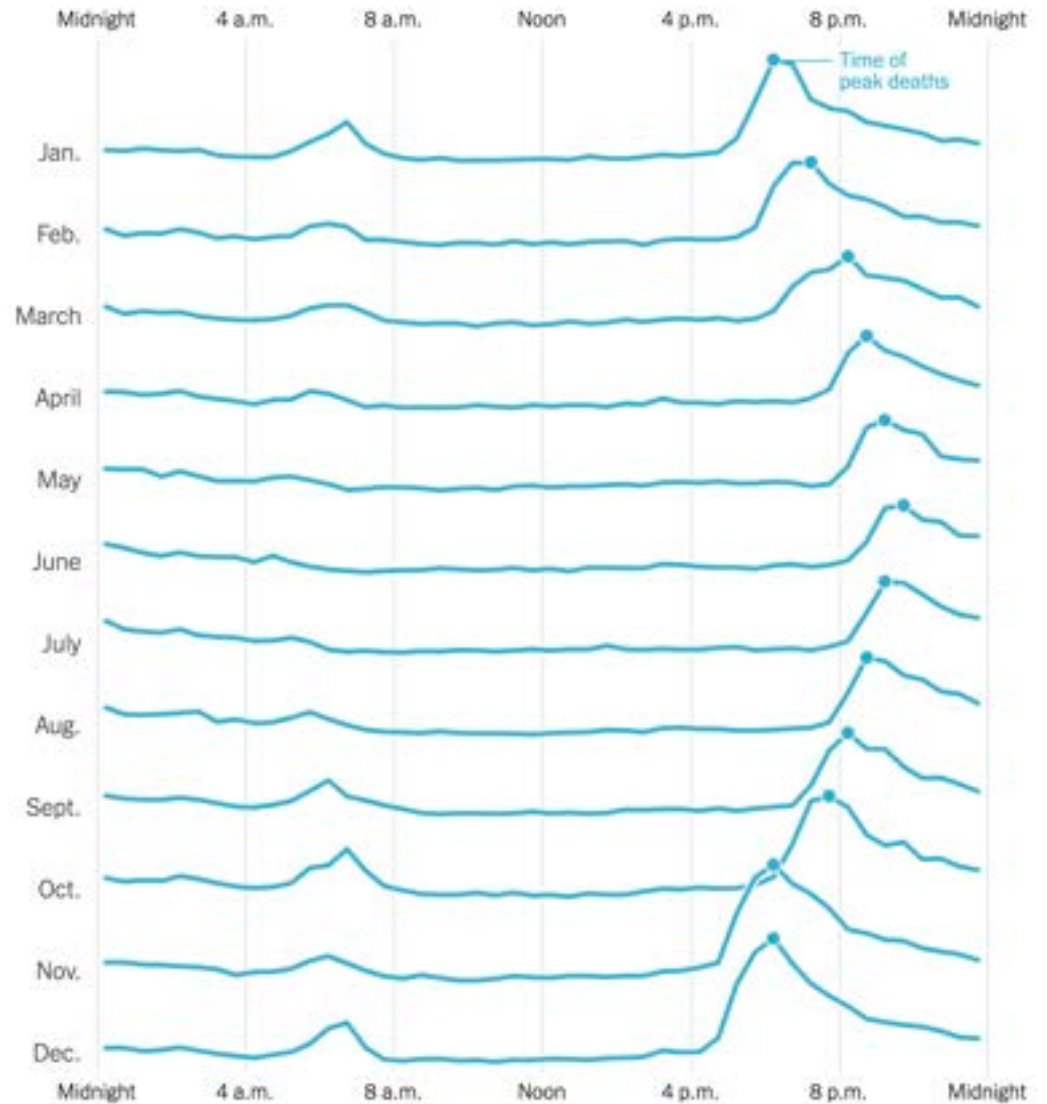


Its Not Just about the Middle of the Day



Source: New York Times analysis of federal road fatality data.

Pedestrian Deaths by Time of Day



Louisville Incidents

2018 95th Street and Hecla

Death - Dawn

2019 SBR/Eisenhower

Child Hit/Grazed

2020 SBR/Centennial

Death - Night

2021 Via Appia/SBR

Bicyclist Hit in Crosswalk

2022 Polk/Dahlia

Child Hit/Grazed - Sun Glare

2023 Polk/Dahlia

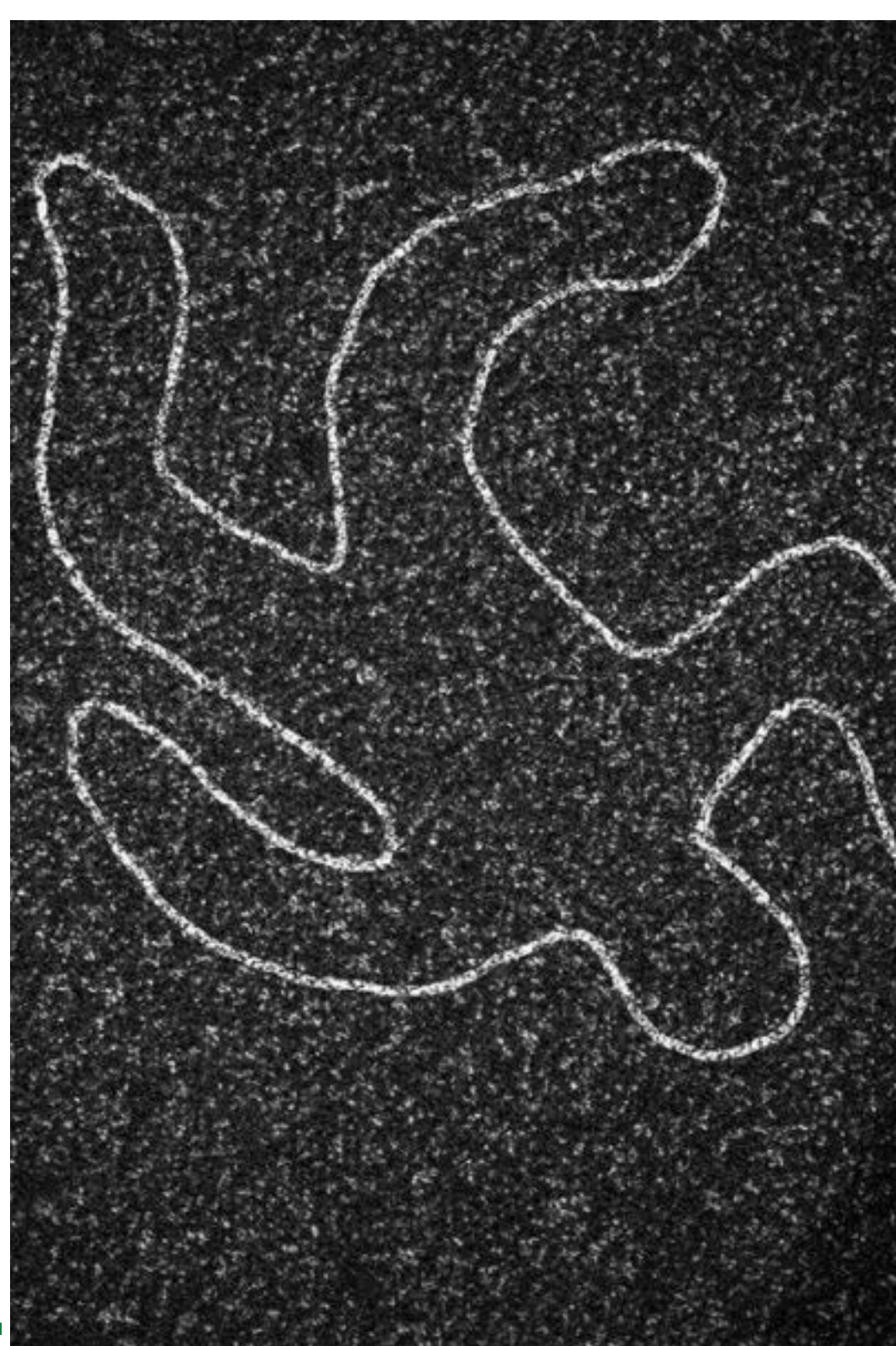
Jogger Hit Serious Injury - Sun Glare

2023 Cherry Street

Death

2023 SBR/Plaza

Pedestrian Serious Injury - Night





Safe System Approach

Focus on **Human Vulnerability**

Design with **Redundancies**

Proactive vs Reactive Improvement

City Council Directive

Improve Safety!

Via Appia
Decision Logic

Type I vs **Type II** Decision

2015 Paved ~ Bike Lanes Added

2022 - 2023 Uptick in Accidents
Community and Council Desired Action

2023 Due for Maintenance Re-striping

2024 - 2026 Pilot Lane Reduction, Iterate Design

2026 Planned for Repaving (Re-evaluate)

Striping only. No curb and gutter or permanent changes.

Published: 2016

How we think about decision making at Amazon

One-way doors (type 1):

Decisions that are **consequential** and nearly **irreversible**; should be made methodically, carefully, slowly, with great **deliberation** and **consultation**

Two-way doors (type 2):

Decisions that are **changeable** and reversible; should be made **quickly** by high judgement individuals or small groups. If you've made a suboptimal decision, you can **reopen the door** and go back through.

"As organizations get larger, there seems to be a tendency to use **type 1** decision-making process on most decisions, including many **type 2** decisions. The end result of this is slowness, unthoughtful risk aversion, failure to experiment sufficiently, and consequently diminished innovation. We'll have to figure out how to **fight that tendency**."

- Jeff Bezos

← This

Via Appia Previous Public Input

2012/2013 Comprehensive Plan

2015 Pavement Program - Add Bike Lanes

2019 Transportation Master Plan

2020 Approved Budget Funding
\$1,500,000

2022 Approved Budget Funding
\$1,300,000

2022 DRCOG TIP Public Input - Highly Supported

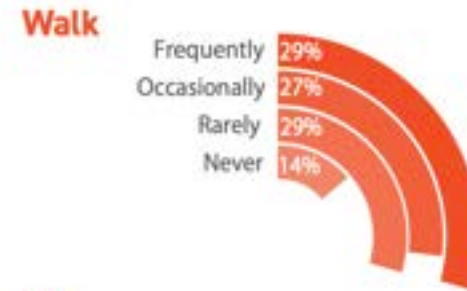
2023 Budget Process
\$2,800,000

2023 DRCOG TIP Public Input - Evacuation/Cost

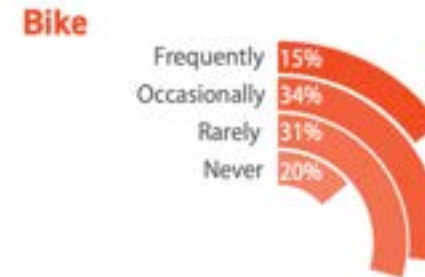
2023 Maintenance Restriping
\$195,000

Ongoing Resident concerns regarding safety, speeding, crosswalks.

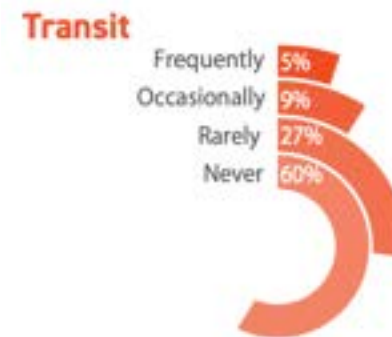
2019 Transportation Master Plan Public Input



70%
Opportunity

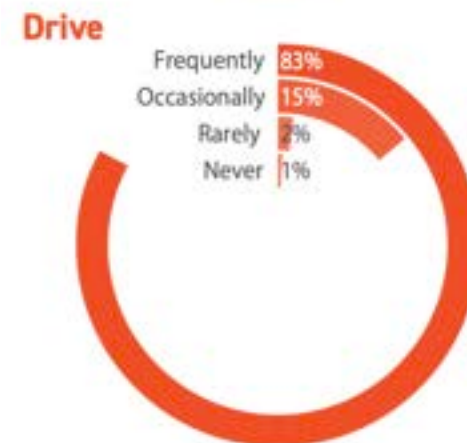


85%
Opportunity



96%
Opportunity

**4-5%
Make Easier**



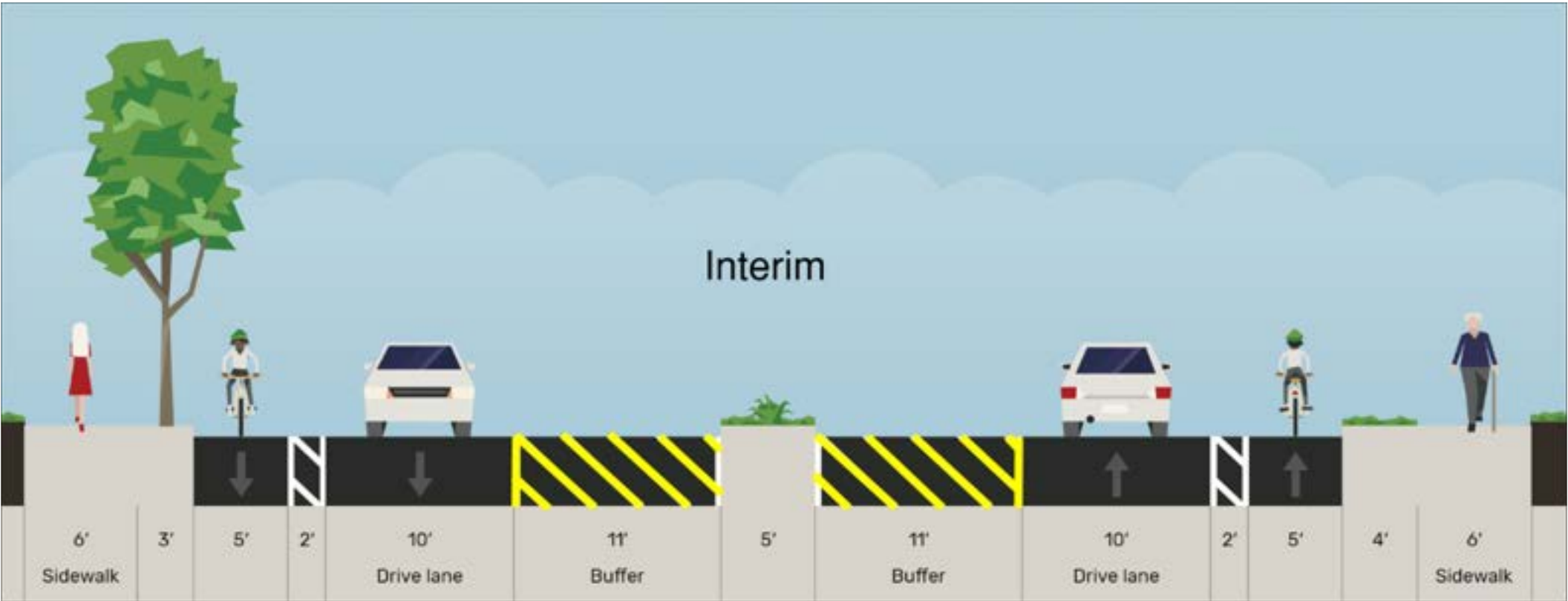
Got It.
It is the Way

We aren't
taking that
away.



Existing Configuration

Bike Lanes added in 2015



Proposed Interim

2023 Maintenance Striping



Revised Interim

2024 Maintenance Striping

Existing



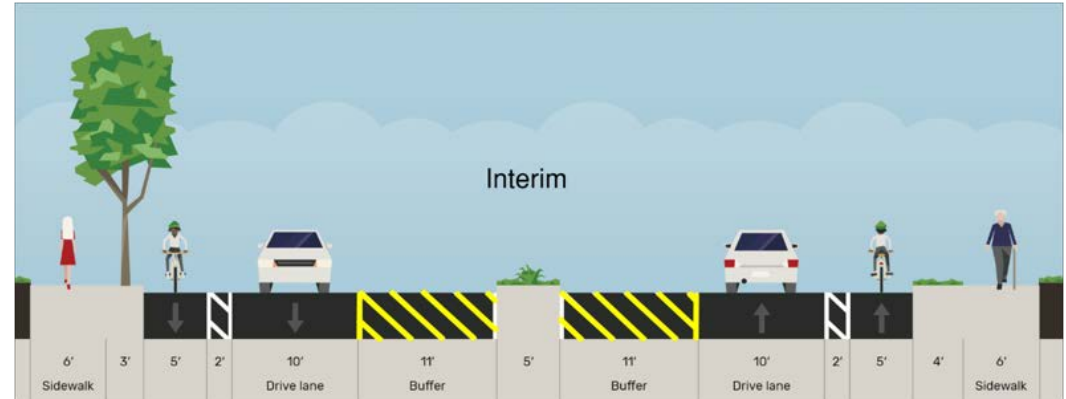
Ultimate



Today

Configuration and Costs

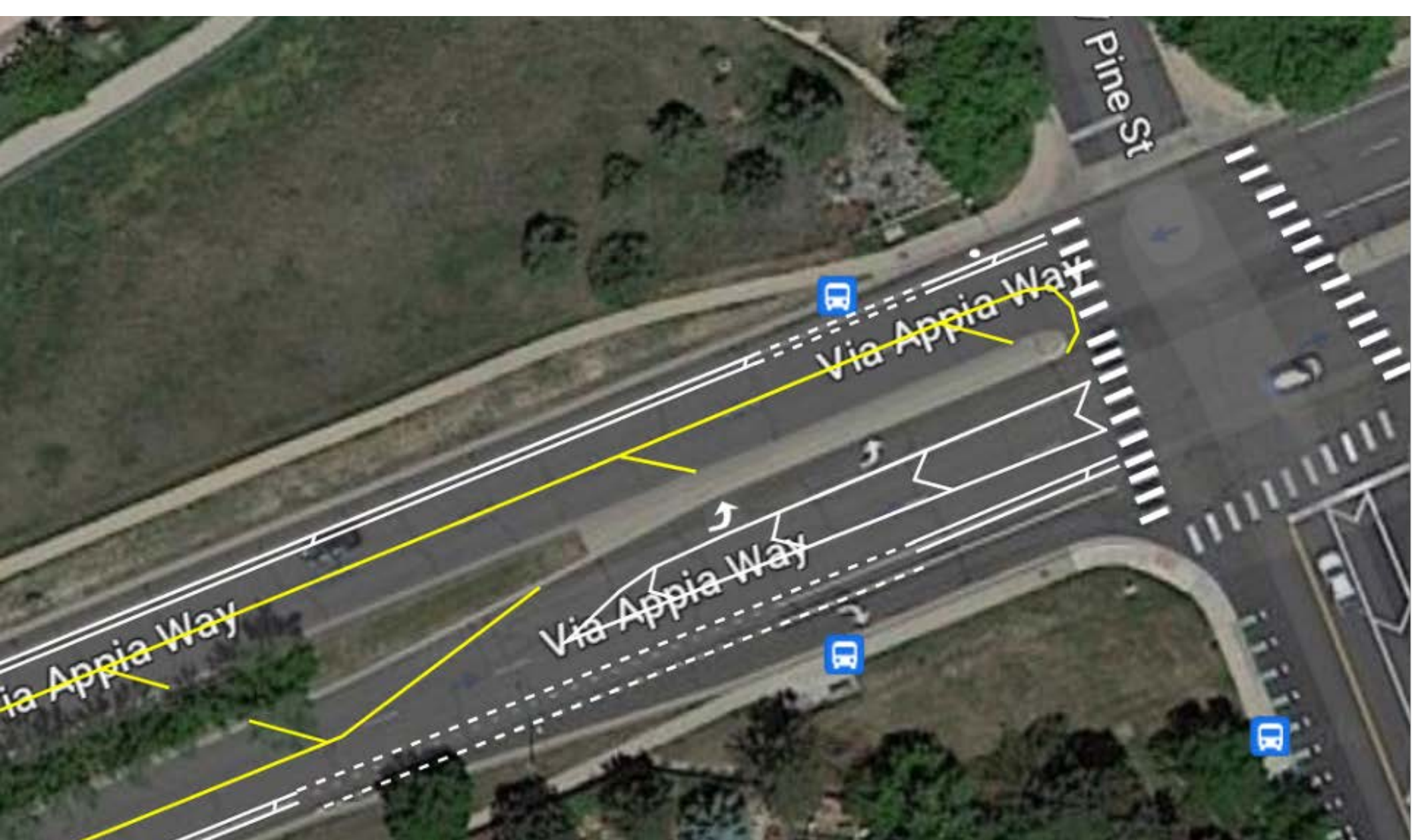
- 2023 Budget for Significant Reduction **\$2,500,000** million
- Existing Restriping **\$30,000**
- Interim - 2 Lane with Buffered Bike Lane Restriping **\$180,000**
- Revised - 2 Lane with additional width and buffering **\$195,000 (+\$15,000)**





Recreation Center

Left Turn Acceleration Lane



Right Turn Lane Preserve Pine Street

Remove

- Tyler ~ 2 Directions
- Church Lane Eastbound

Add 3 Left Turn Lanes

Pine Street Existing

Added Griffith

Added Harper

Added Via Capri



South Boulder Road Intersection Improvements

Maintains Existing Dedicated Left
and Right Turn Lanes

Increased Right Turn Lane Queue

Dedicated Bus Pull Out Area

Add Bike Queue Box



Pedestrian and Bicycle Safety

Reduce Speeds from 6-8 mph over to around 3 mph over the posted speed limits.

Add **Buffered Bike Lanes.**

Shorten Crosswalks or risk areas on average from **30 to 100 feet wide to 20 feet wide.**
Added Harper.



Via Appia Pro's and Con's

Likely Pro's

1. Speeds will be reduced by up to 5 mph and more closely be at posted speed limits. This decreases accident severity for cars, bikes, and pedestrians.
2. Crossing will be shortened for bicycles and pedestrian. Increased comfort, safety, and less stress.
3. Buffered bike lanes will improved safety and open usage to a wider audience.
4. Recreation Center left turn will be significantly safer.
5. Add Left Turn safety for the Harper, Griffith, and Via Capri.
6. Improve bus interaction at South Boulder Road area.
7. Improve right turn queue at South Boulder Road.
8. Improve crossings near transit stops that don't have flashing beacons.

Possible Con's

- The slow car and I can't get around it. Additional 30 seconds the entire corridor when reduced from 40 mph to 30 mph.
- Gaps in traffic. Data shows differently.
- Removal of Tyler and Church right turn lanes. Very small amount of traffic.

I was right!

It didn't work. Fallbacks?

Black out striping and go back to 4 lanes. \$30,000 - \$50,000.

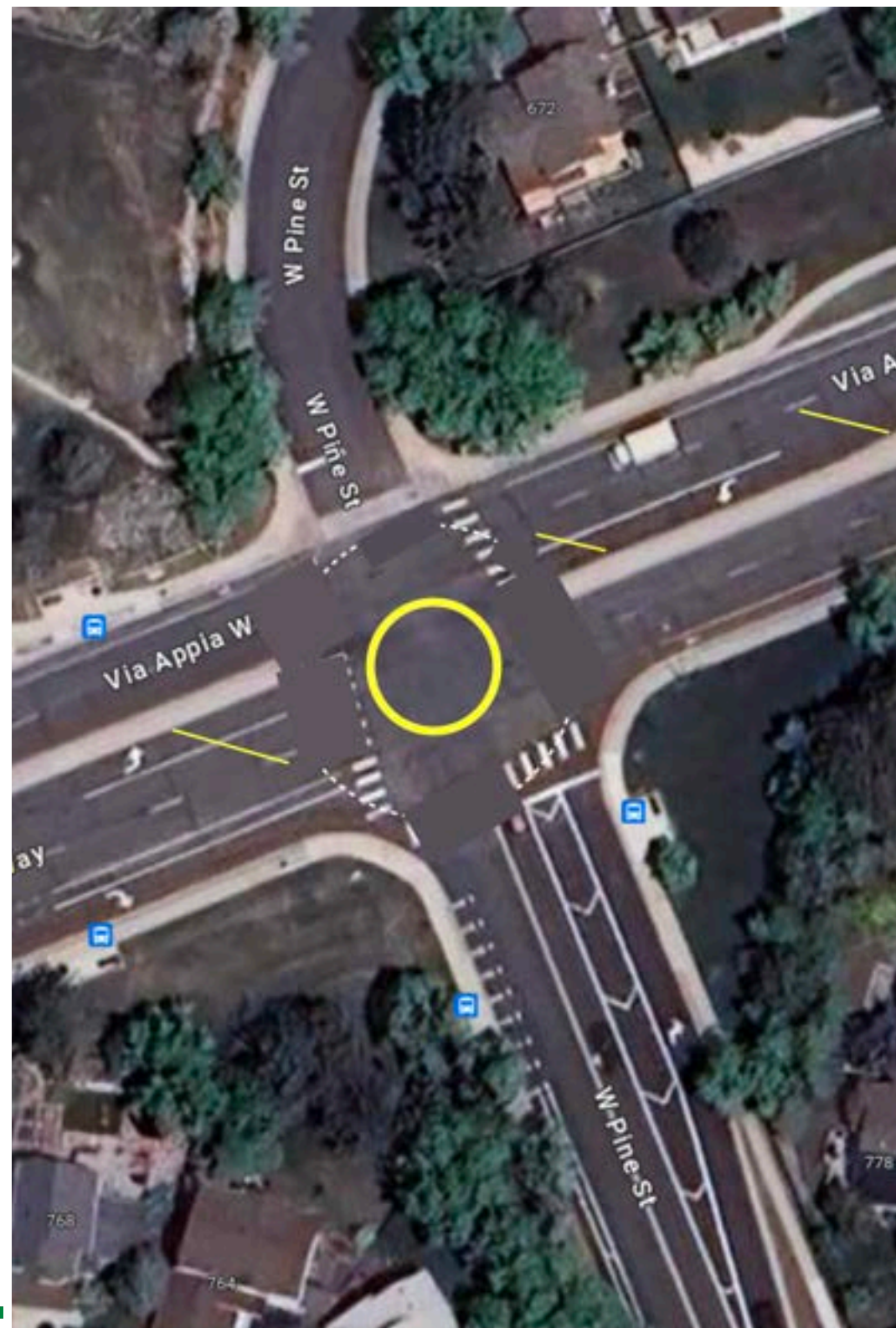
All way stops at key intersections. \$1,000

Lightweight Roundabout \$300,000

HAWK Signal \$400,000

Traffic Signal \$800,000

Roundabout \$1,000,000



Data

- Levels of Service/Comfort/Stress
- Street Context
- Other Factors
- Previous Studies and Public Input
- Past and Present Traffic Speed and Counts
- Design Standards Review
- Field Review
- Drone Review



Terminology

All Ages and Abilities
8 - 80 years old

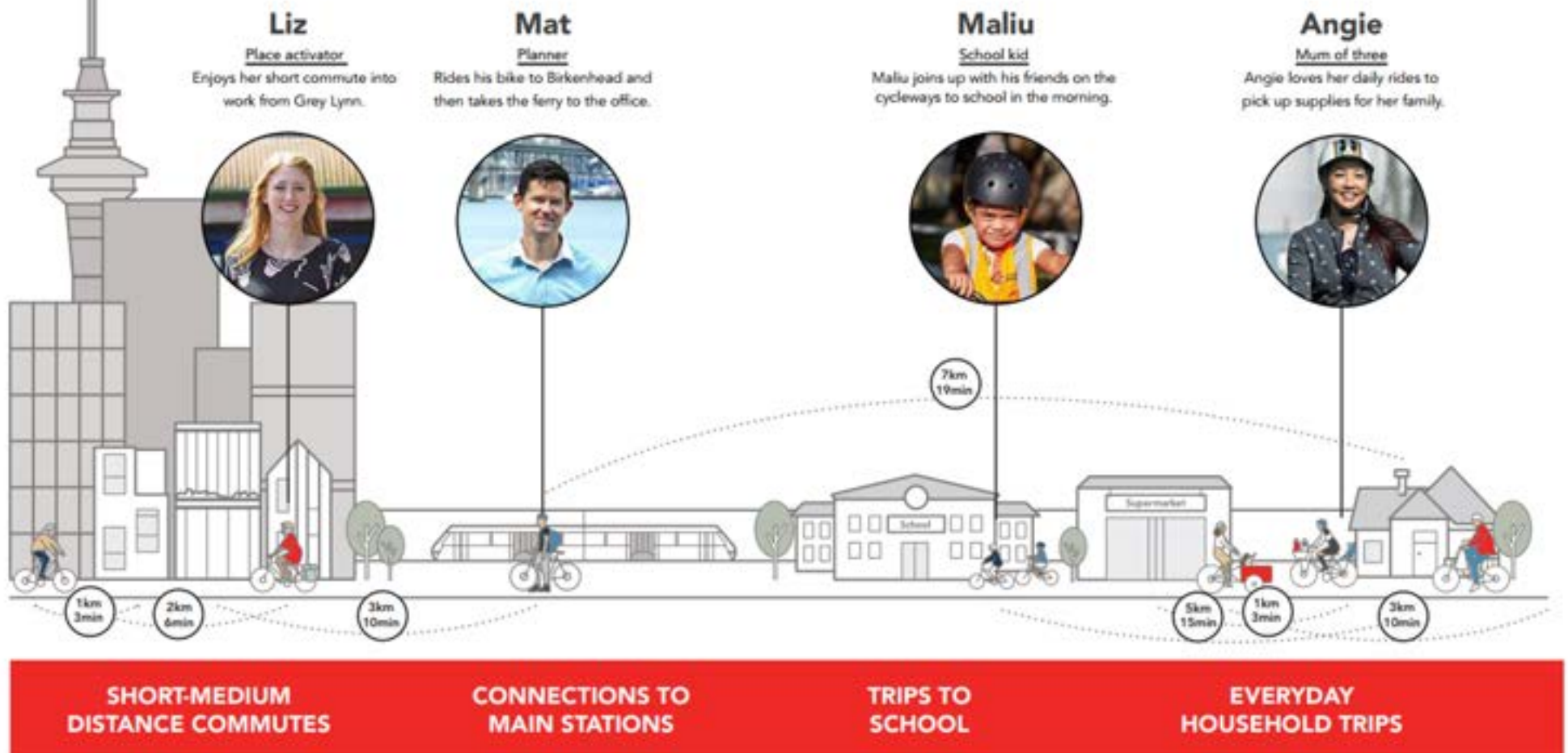
85th Percentile Speed
The speed at which or below 85 percent of drivers are traveling.

Average Daily Traffic (ADT)
Average amount of traffic on a street each day.



Who we are building for

The programme targets practical trips and journeys where mode shift to cycling would benefit the wider transport system. This is about targeting congestion and improving access to jobs and study across Auckland.



Target Audience

Everyday Louisville Residents

DRIVERS



LEVEL OF SERVICE (LOS)

A-C	High Comfort Driving (Most of the Day)
D	Some Traffic (Rush Hour) 15-30 min
E	Growing Traffic
F	Large Delays

BICYCLISTS



LEVEL OF TRAFFIC STRESS (BLTS)

1	High Comfort for All
2	High Comfort for Adults
3	Increasing Stress for Most
4	Strong and Experienced Bicyclists Only

PEDESTRIANS



LEVEL OF TRAFFIC STRESS (PLTS)

1	High Comfort for All
2	High Comfort for Adults
3	Increasing Stress for Most
4	High Stress Experience

Level of Service/Stress Targets

- All Ages and Abilities
- All Modes of Transportation
- Community Values



Street Context

Volume of Traffic and Road Classification (ADT)

Posted Speed vs 85th Percentile (Survey)

School, Regional Trail, Vulnerable Community, Other Factors

Context of Road Uses Residential, Commercial, Industrial

Residential On Street Parking

Police and Fire Delay/Response Times

Evacuation Routes



Design Standards and Existing Conditions



Other Considerations:

Intersection Turn Clearance

Drainage

Adjacent Home Access

Utilities

Surrounding Activities

Number of Complaints

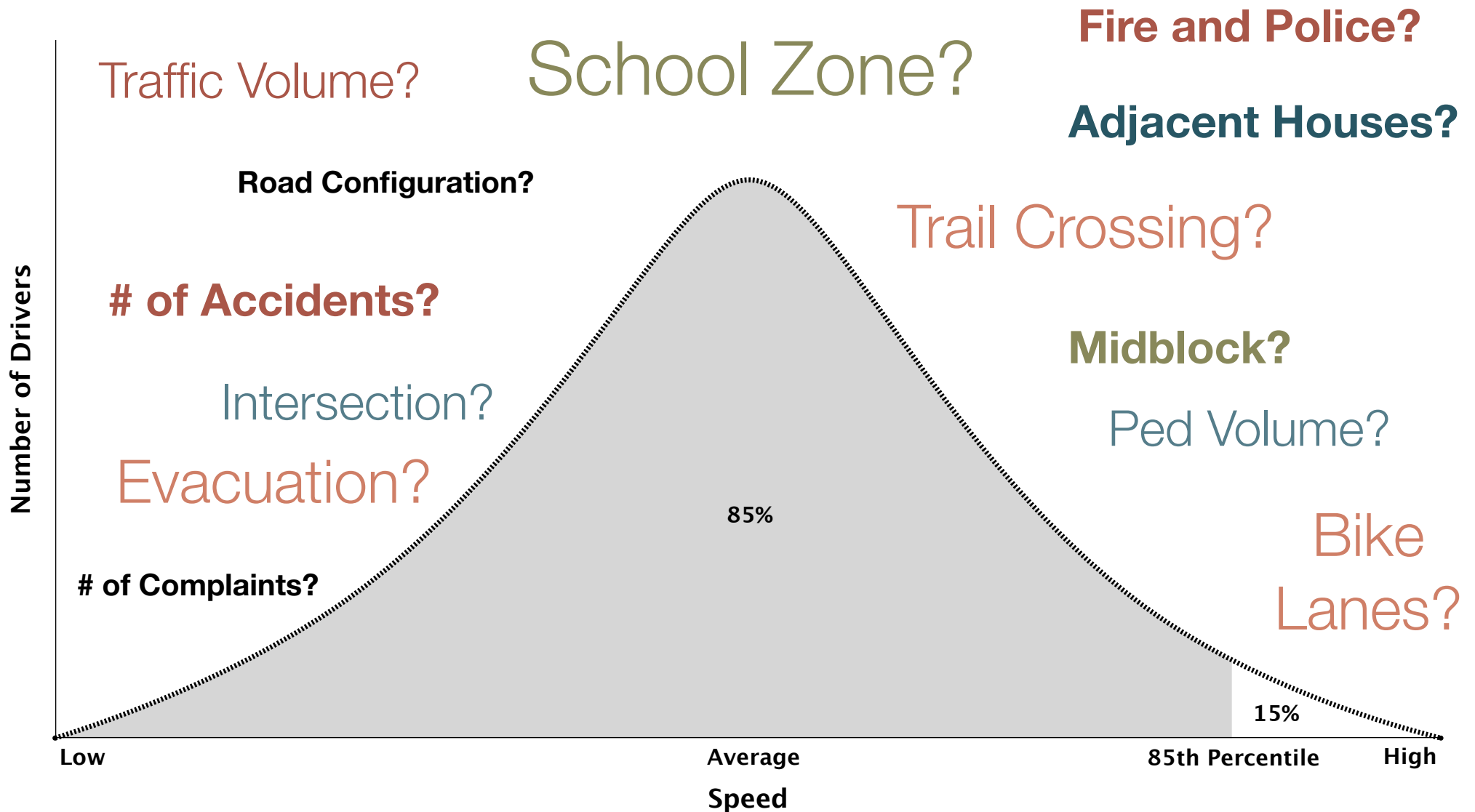
Introduction of Liability

Accident History (if Any)

Existing Speeds/Volume

Speed Data should link **Context** and **Decisions**

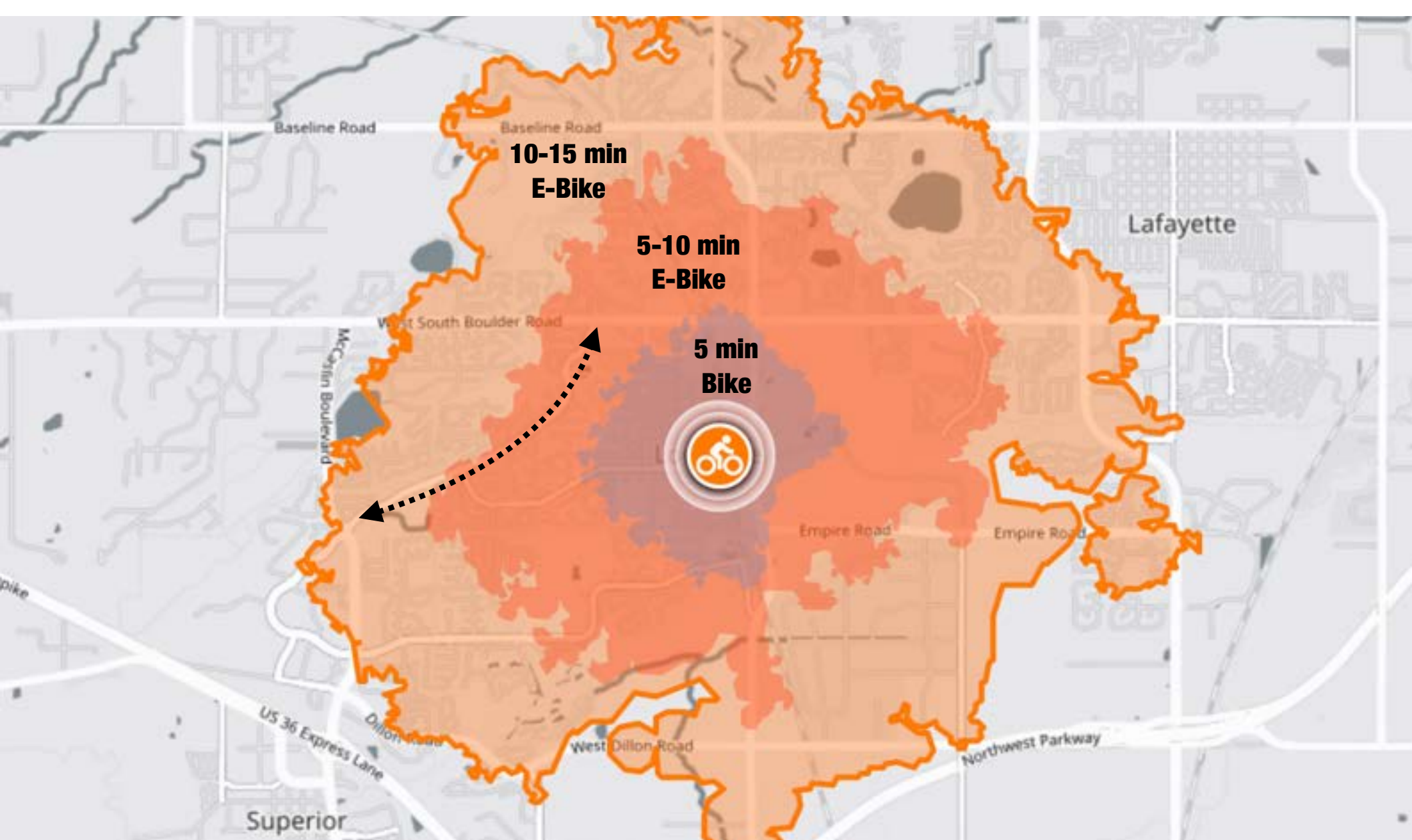
At the end of the day is it worth it to do?



Bicyclist and Pedestrian Data

- National Survey of 50 largest metro areas suggests most people are **Interested but Concerned (54%)**
- Arterial Streets (**LTS 3/4**) are generally used by **Somewhat to Highly Confident (12%)**
- 54% Interested but Concerned Individuals prefer **Buffered or Protected Bike Lanes**
- Buffered and Protected bike lanes make the street network **Accessible** to the majority.





eBIKE CLASSES

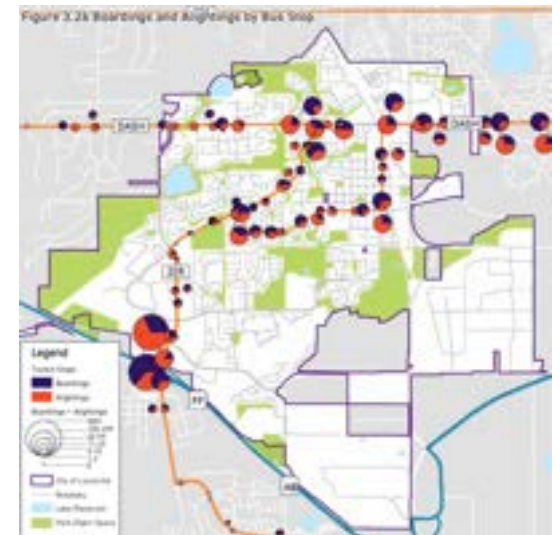
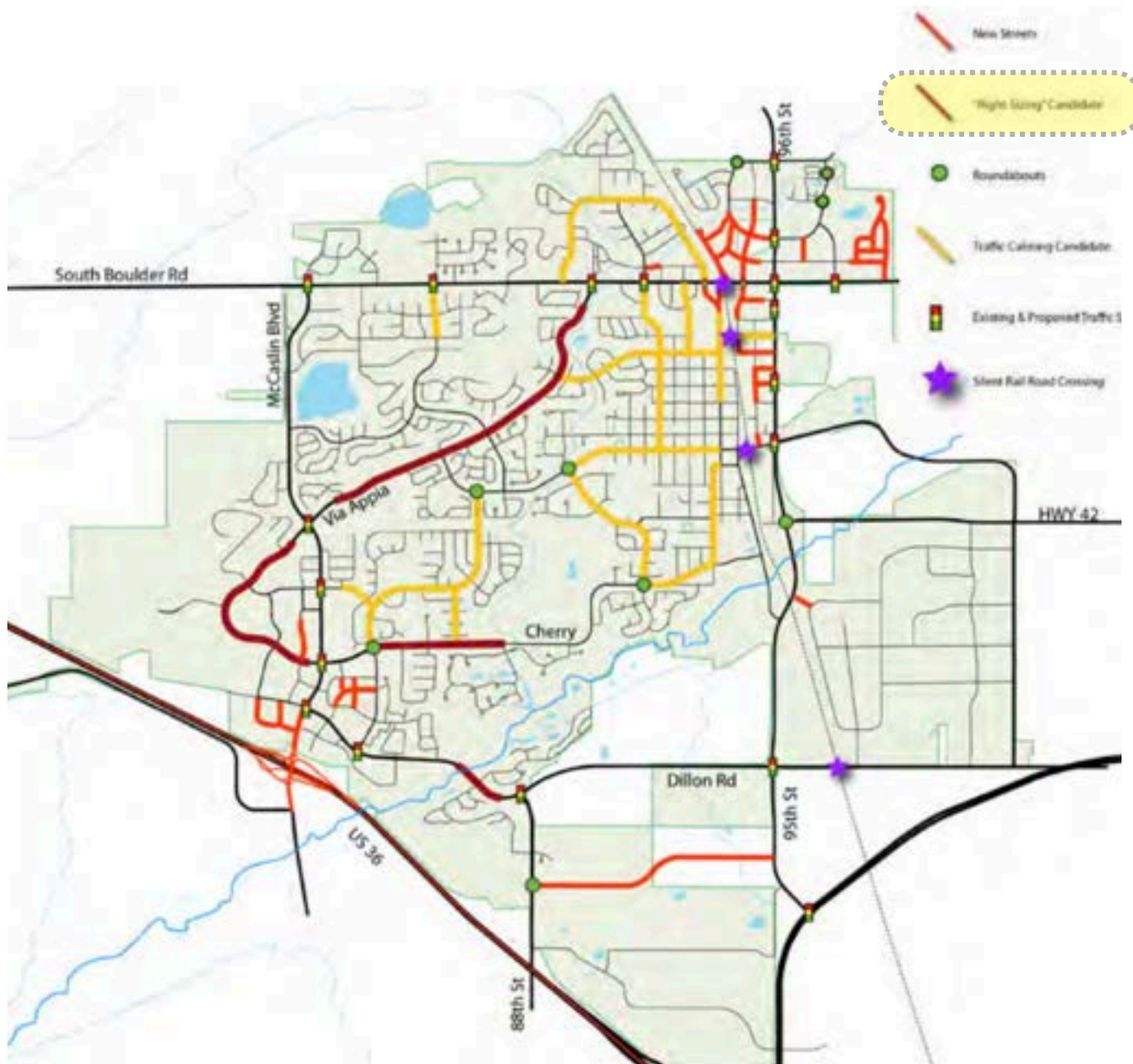


E-Bikes

- Extended Range
- Faster Speeds
- Move Off Trails

85TH PERCENTILE SPEED



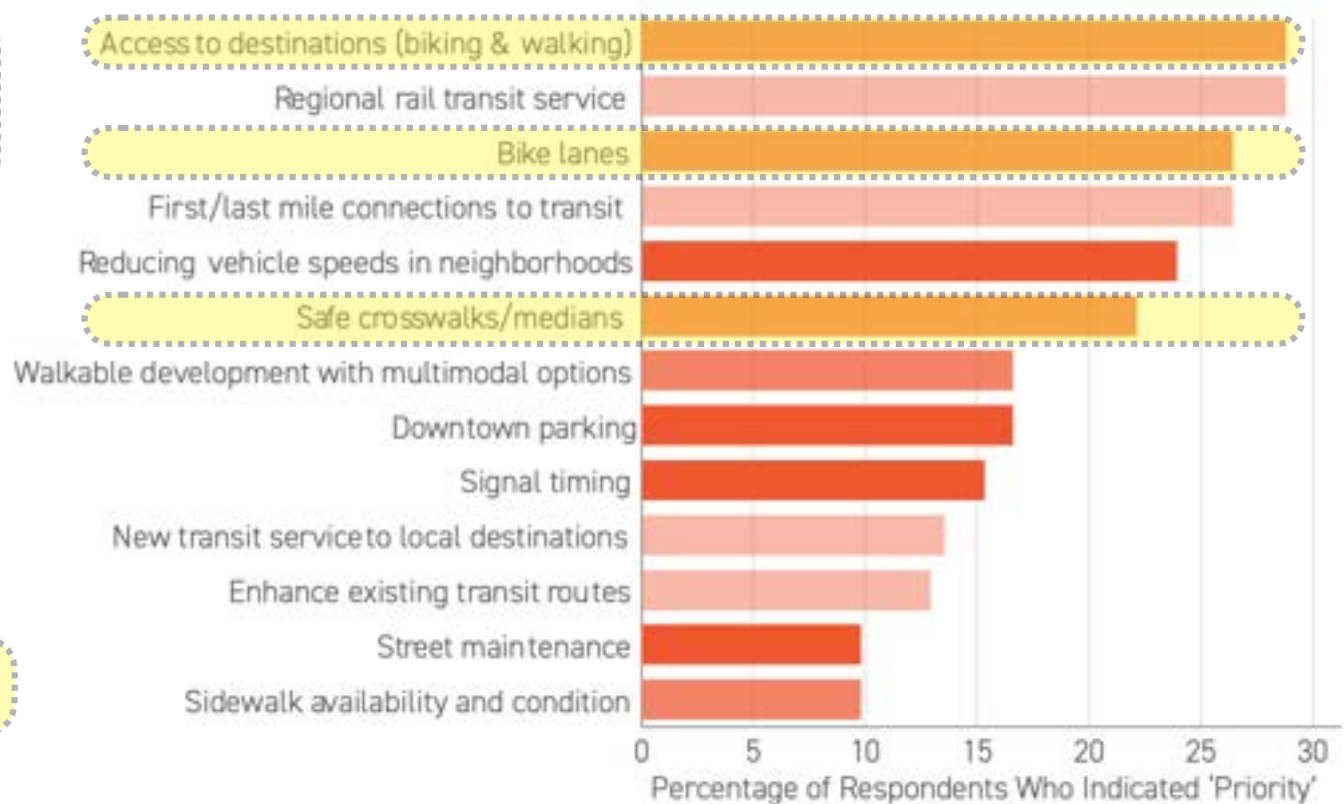


2012/2013 Comprehensive Plan

Via Appia ~ Right Sizing, 37% Cut Through, Heavy Transit Usage (Enhance Safety/Accessibility)

2019 Transportation Master Plan (TMP)

1,500 Comments and 163 Online Surveys



Major themes from the community input included:

- While driving is how most people get around, the participants wanted more investment in multi-modal infrastructure such as underpasses, transit connections, bike lanes, and safer road crossings.
- The City's trails are a great amenity for residents and continued investment in trails is desired.
- Traffic congestion and cut-through regional traffic are getting worse.
- Safety was a key theme. A lack of safe or perceived lack of safe and comfortable facilities is a barrier to walking and biking.

The survey indicated that key barriers to transportation within Louisville included the following:

- Walking - destinations are too far, some intersections don't feel safe, and vehicle speeds may negatively affect feelings of safety and comfort.
- Biking - some roadway crossings don't feel safe or visible, traffic volumes may negatively affect feelings of safety and comfort, and a lack of trails/bikeways connecting to destinations may create barriers to some areas of town.
- Driving - speeding and traffic congestion/travel time are the two most significant issues for driving.

Transportation Master Plan

Goal #1 Operate efficiently and safely for all users.

Goal #2 Be a cohesive and layered system of streets and trails for walking, biking, transit, driving, and recreation.

Goal #5 Increase mobility options and access for people of all ages, abilities, and income.



2019 TMP Project

Improve Signage

Enhance Crosswalks

Remove Right Turn Lanes

Create Median Pedestrian Refuges

Additional Pavement Space for Bike Lanes

PROJECT 1: CORRIDOR IMPROVEMENTS, CONT. CP4: VIA APPIA IMPROVEMENTS

Summary

Via Appia is a collector that connects many neighborhoods to South Boulder Road, McCaslin Boulevard, as well as the Recreation Center, parks, and trails. Via Appia is a wide street, particularly at intersections where there are center and right turn lanes. Data shows many cars traveling well over the posted speed limit. Because the corridor primary serves as a connection to local neighborhoods and includes several trail connections and transit stops, improving safety and crossings along this corridor is recommended. This project includes a series of improvements along the roadway and at key intersections to improve safety and promote multi-modal use of the corridor.

Implementation

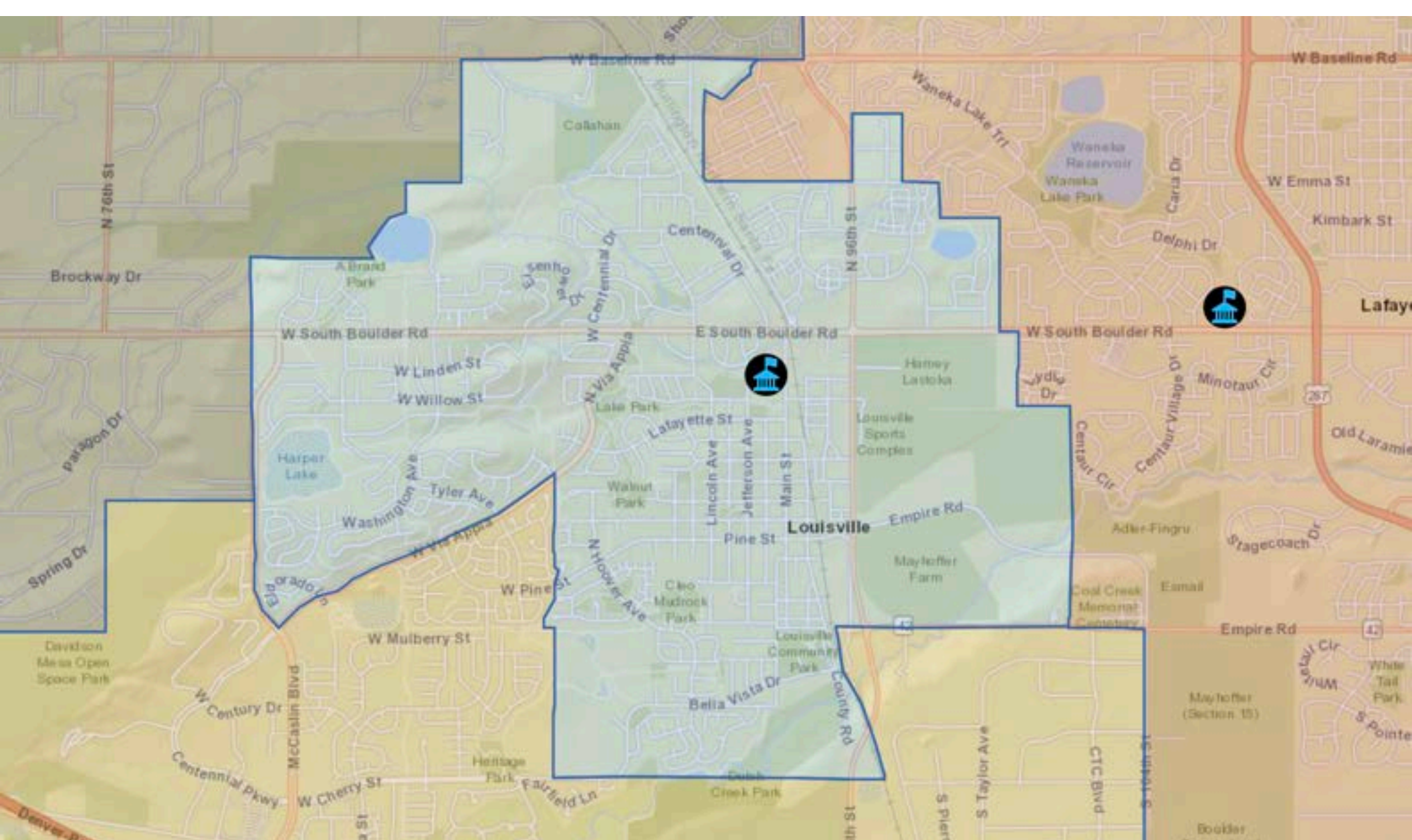
The City could construct the recommended improvements as one project, or at individual locations over time as determined by budget and prioritization. When the corridor is complete, the improvements should be consistent to provide predictability for users along the corridor.

Key Considerations

- Right-turn lanes are not needed for vehicular traffic and can be removed to shorten pedestrian crossing distances.
- Road width would allow for incorporation of pedestrian refuges in the median and additional pavement space for bicycle lanes.
- Pine Street and Via Appia intersection has poor visibility due to both elevation change and curvature of the roadway and should be a priority.



- A** Underpass at South Boulder Road connecting to existing trails
- B** Provide advanced signage to address poor visibility at trail crossing.
- C** Additional crosswalk markings, remove turn lane, evaluate for Rectangular Rapid Flashing Beacons (RRFB).
- D** Remove turn lanes, evaluate for RRFB at Tyler Ave.
- E** Remove turn lanes, evaluate for RRFB.
- F** Additional advanced signage and add pedestrian signal at Powertine Trail.



School Crossing

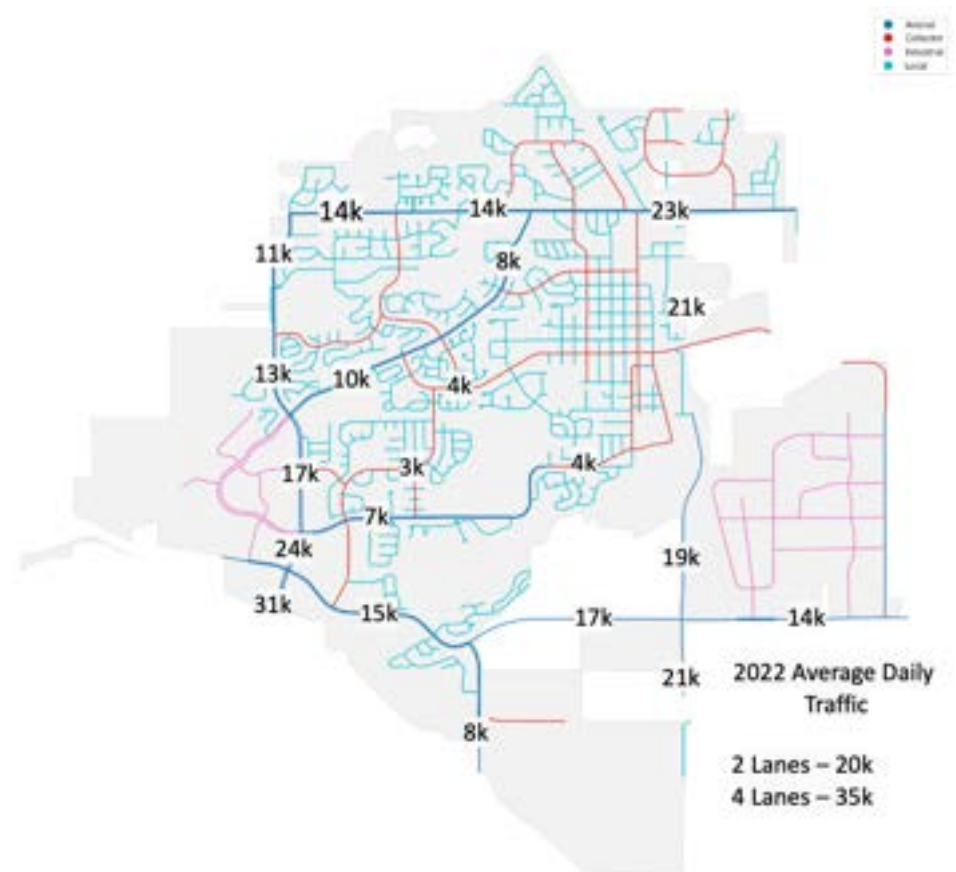
Louisville Middle School

Street Classification

Via Appia on Lower End. More Like a Minor Arterial

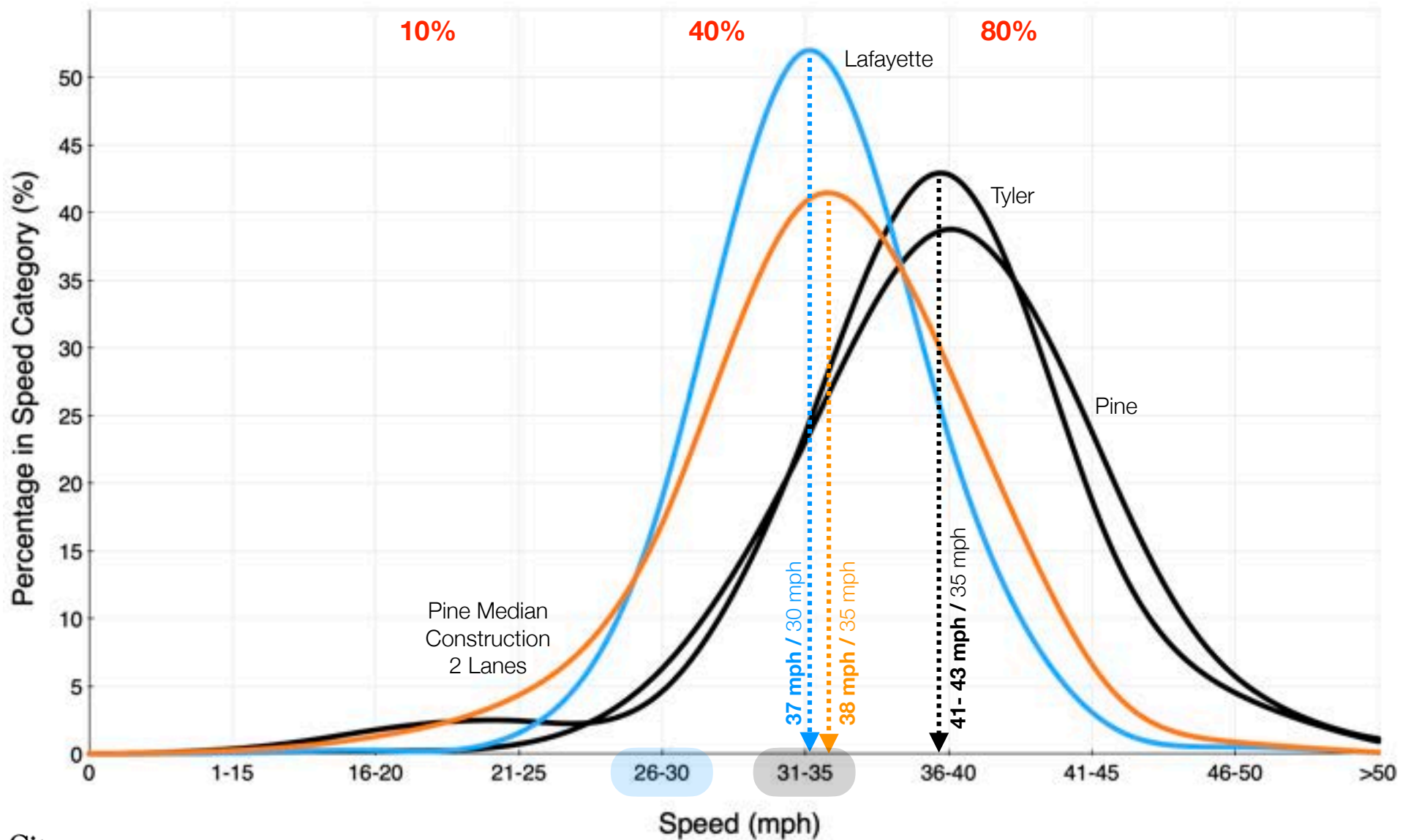
Classification	Average Daily Traffic (ADT)
Arterial	5,000 - 30,000
Collector	1,500 - 5,000
Local	0 - 1,500
Industrial	0 - 1,500

Via Appia Average ~ 9,000 ADT
4 Lanes ~ 35,000 ADT ~ 26%
2 Lanes ~ 20,000 ADT ~ 45%



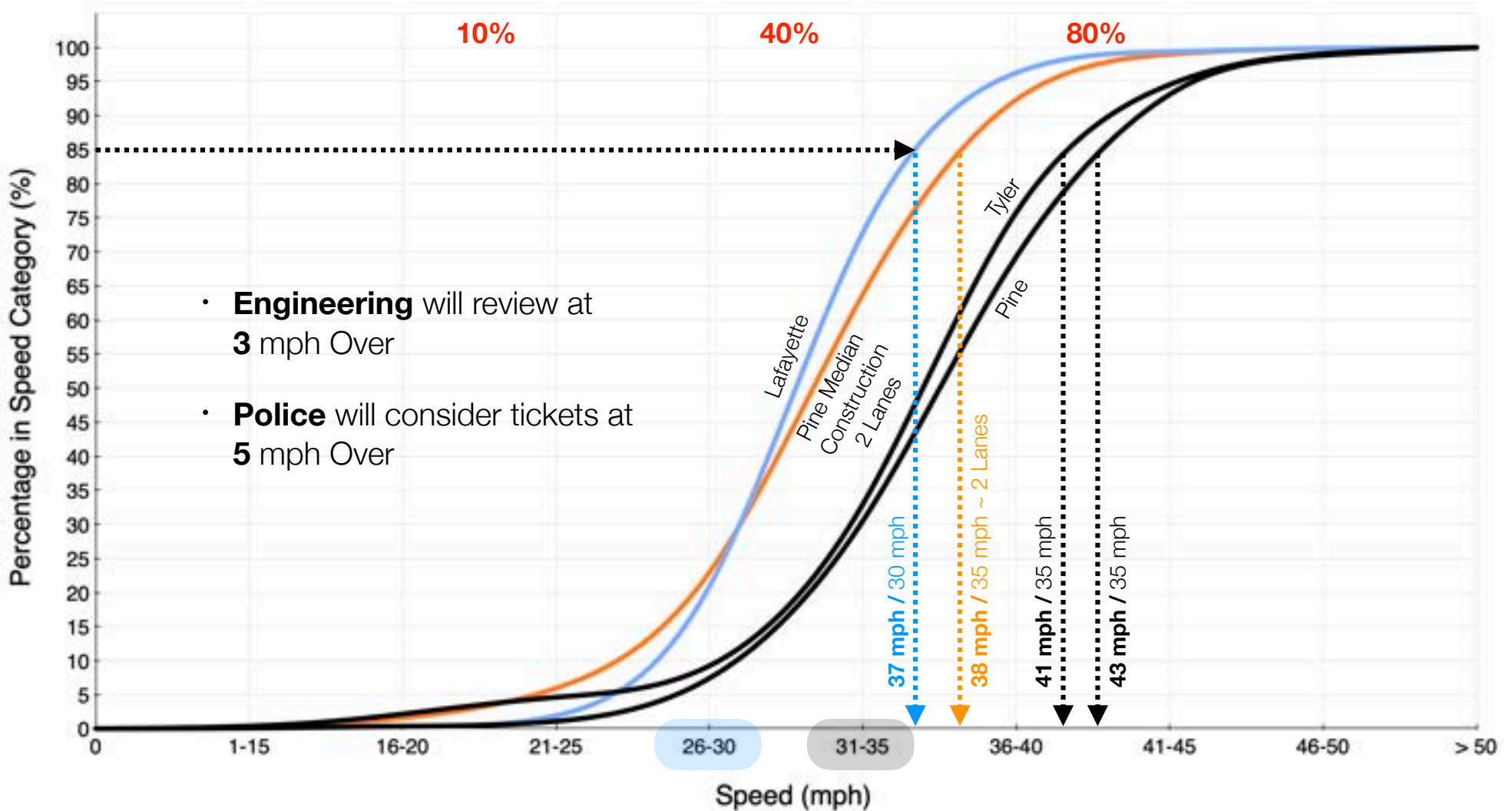
Via Appia

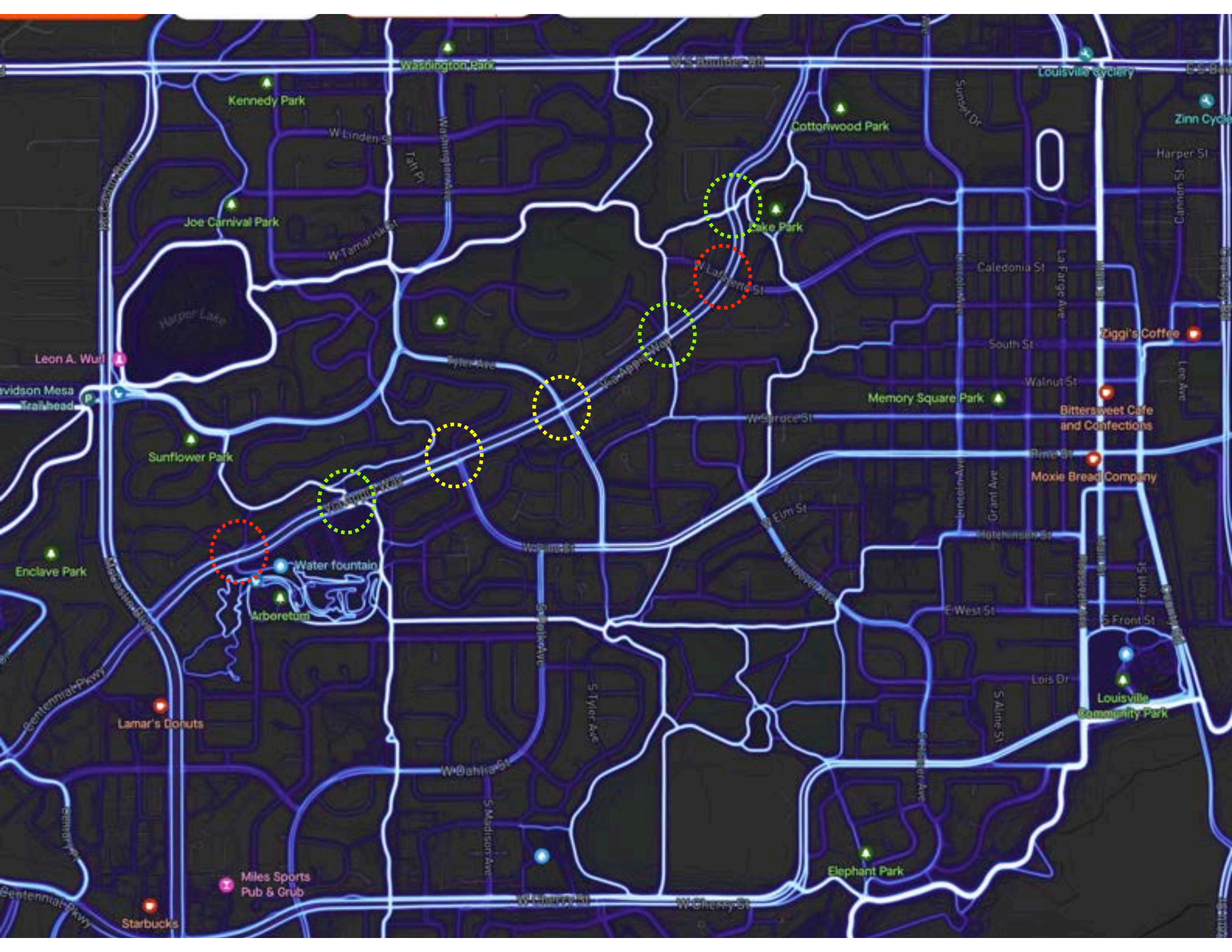
Speed Distribution. **6-8 mph** over Speed Limit.



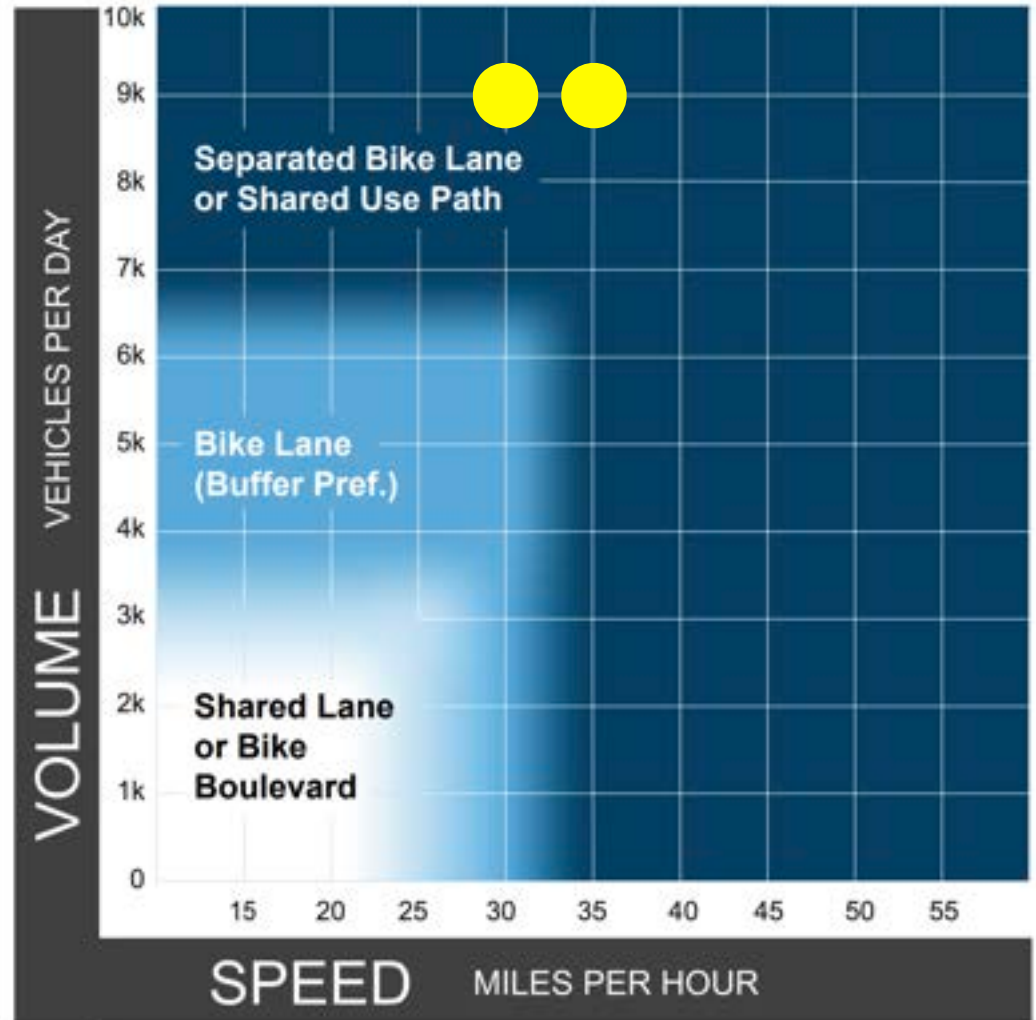
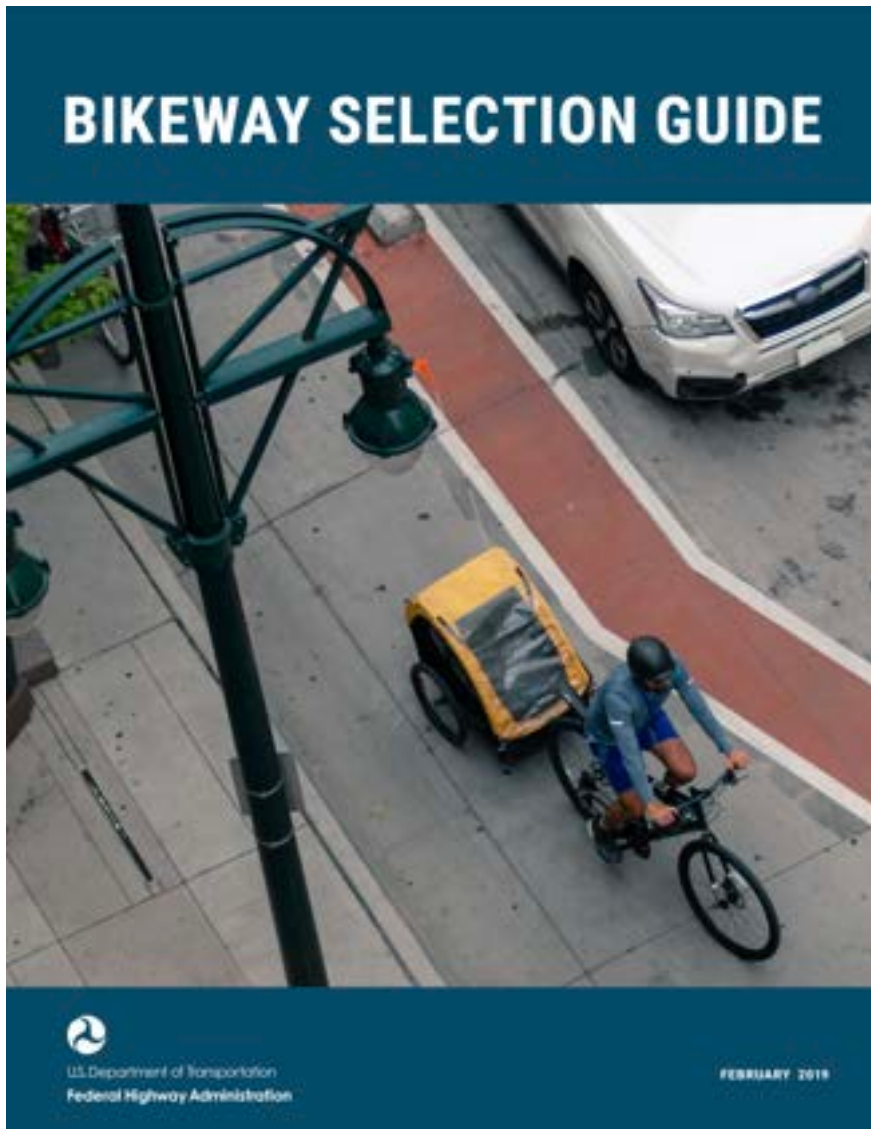
Via Appia - 85th Percentile

Cumulative Speed Distribution (85th %/Posted Speed)





Federal Highway Bike Selection Guide



Driver Level of Service

FFS Along Via Appia ~ **A**, Intersection LOS **Improved 13% to A-C** from D-E

A ~ **+3%**

B ~ **+7%**

C ~ Same

D ~ **-10%**

E ~ **-3%**

DRIVERS



LEVEL OF SERVICE (LOS)



Adopted minimum acceptable planning threshold for Arterials. No adopted threshold for Collectors and Local roads

	I	II	III	IV
Range of free-flow speeds (FFS)	55–45 mph	45–35 mph	35–30 mph	35–25 mph
Typical FFS	50 mph	40 mph	35 mph	30 mph
LOS				
A	>42	>35	>30	>25
B	>34–42	>28–35	>24–30	>19–25
C	>27–34	>22–28	>18–24	>13–19
D	>21–27	>17–22	>14–18	>9–13
E	>16–21	>13–17	>10–14	>7–9
F	≤16	≤13	≤10	≤7

	12/1/23				11/17/23			
Total (Cars)	4 Lane				2 Lane			
Average Delay (sec)	42				43			
	19				17			
LOS	Delay (sec)	Count (cars)	%	Cum %	Count (cars)	%	Cum %	
A	< 10	14	33%	33%	16	37%	37%	
B	10-15	8	19%	52%	12	28%	65%	
C	15-25	5	12%	64%	5	12%	77%	
D	25-35	8	19%	83%	4	9%	86%	
E	35-50	7	17%	100%	6	14%	100%	
F	> 50	0	0%	100%	0	0%	100%	

BICYCLISTS



LEVEL OF TRAFFIC STRESS (BLTS)

- 1 High Comfort for All
- 2 High Comfort for Adults
- 3 Increasing Stress for Most
- 4 Strong and Experienced Bicyclists Only

Desired facility level for an All Ages and Abilities network. May not be feasible in some land use contexts.

BIKE LANE AND BUFFERED BIKE LANES

Used in situations where there is a dedicated bike lane with or without a painted buffer. Bike lane width is measured exclusive of the gutter pan.

# of Auto Lanes	Bike Lane Width (Includes Buffer)	Posted Speed (Actuals When Available)						
		20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50+ mph
2-3	6'+	LTS 1	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
	4' or 5'	LTS 2	LTS 2	LTS 2	LTS 2	LTS 3	LTS 4	LTS 4
4-5	6'+	LTS 2	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
	4' or 5'	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4
6+	Any Width	LTS 3	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4

Adjustment Factors

- Heavily Utilized Parking Adjacent to a 4' or 5' Bike Lane – Add 1 LTS
- Roadway Pavement Condition Index Rating Below 70 – Add 1 LTS
- Frequent Commercial Driveway Crossings – Add 1 LTS

RAISED/PROTECTED LANES AND MULTI-USE PATHS

Used in situations where there are protected bike lanes or multi-use paths. For all segments (between intersections), these would be considered LTS 1.

Adjustment Factors

- Raised Bike Lanes At >35 MPH – Add 1 LTS
- Frequent Commercial Driveways – Add 1 LTS
- Bike lanes using only candles – Add 1 LTS

Bicycle Lane LTS

Improve from LTS 3/4 to LTS 2

BICYCLISTS



LEVEL OF TRAFFIC STRESS (BLTS)

- 1 High Comfort for All
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- 3 Increasing Stress for Most
- 4 Strong and Experienced Bicyclists Only

Desired facility level for an All Ages and Abilities network. May not be feasible in some land use contexts.

UNSIGNALIZED INTERSECTIONS

Used in situations where there is no signal. To rank, the highest stress score of any leg would be utilized.

Posted Speed	Total Auto Lanes Crossed		
	1-3 Lanes	4-5 Lanes	6+ Lanes
20-25	LTS 1	LTS 2	LTS 4
30	LTS 1	LTS 2	LTS 4
35	LTS 3	LTS 3	LTS 4
40+	LTS 3	LTS 4	LTS 4

Adjustment Factors

- Adding a Rectangular Rapid Flashing Beacon (RRFB) – Lower 1 LTS
- Refuge medians of at least 8' with a vertical element would reduce the total number of lanes crossed at one time to the distance from curb to median.
- Intersections with a Bike Lane and Right Turn Lane – Add 1 LTS

ROUNDBABOUTS

Used in situations with a roundabout to describe the experience when bicyclists take the lane. For those mixing with pedestrians, the pedestrian table would be used.

Circulating Lanes	Total Entry Leg ADT (VPD)	LTS
1	<6000	LTS 2
1	>6000	LTS 3
2+ (Partial or Full)	Any	LTS 4

Adjustment Factors

- Slip lane present – Add 1 LTS

Bicycle Crossing LTS

Improve from LTS 3/4 to LTS 1/2

PEDESTRIANS



LEVEL OF TRAFFIC STRESS (PLTS)



Desired facility level for an All Ages and Abilities network. May not be feasible in some land use contexts.

SIDEWALK WIDTH AND CONDITION

Actual Sidewalk Width	Sidewalk Condition			
	Very Good	Good	Fair	Poor
<4'	LTS 4	LTS 4	LTS 4	LTS 4
4'	LTS 3	LTS 3	LTS 3	LTS 4
5'	LTS 2	LTS 2	LTS 2	LTS 4
6'+	LTS 1	LTS 1	LTS 2	LTS 3

Adjustment Factors

- Low volume residential streets with 4'-5' sidewalk – Lower 1 LTS
- 5' detached sidewalk in very good or good condition – Lower 1 LTS

UNSIGNALIZED CROSSINGS

Speed Limit	Total Auto Lanes Crossed At One Time		
	1-3 Lanes	4-5 Lanes	6+ Lanes
20-25	LTS 1	LTS 2	LTS 4
30	LTS 1	LTS 2	LTS 4
35	LTS 2	LTS 3	LTS 4
40+	LTS 3	LTS 4	LTS 4

Adjustment Factors

- No Illumination Present – Add 1 LTS
- Ramps Inaccessible per Inventory – Add 1 LTS
- Add a Rectangular Rapid Flashing Beacon (Median required when over 3 lanes) – Lower 1 LTS
- Pedestrian refuge medians of at least 8' with a vertical element would reduce the total number of lanes crossed at one time to the distance from curb to median.

Pedestrian LTS

Improve from LTS 3/4 to LTS 1/2

DRIVERS



LEVEL OF SERVICE (LOS)

A-C	High Comfort Driving
D	Some Traffic
E	Growing Traffic
F	Large Delays

BICYCLISTS



LEVEL OF TRAFFIC STRESS (BLTS)

1	High Comfort for All
2	High Comfort for Adults
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4	Strong and Experienced Bicyclists Only

PEDESTRIANS



LEVEL OF TRAFFIC STRESS (PLTS)

1	High Comfort for All
2	High Comfort for Adults
3	Increasing Stress for Most
4	High Stress Experience

Via Appia Improvement Metrics

Description	Vehicle LOS 4 Lanes	Bicycle LTS 4 Lanes	Pedestrian LTS 4 Lanes	Vehicle LOS 2 Lanes	Bicycle LTS 2 Lanes	Pedestrian LTS 2 Lanes
Along Corridor	A	3-4	1	A	2	1
Eldorado Lane	A - E	4	4	A - E	1	2
Recreation Center	A - E	3	3	A - C	2	1
Pine Street	A - E	4	4	A - E	3	2
Church Lane	A - E	-	-	A - E	-	-
Tyler Avenue	A - E	4	4	A - E	2	2
Sagebrush Way	A - E	3	3	A - E	1	1
Lafayette Street	A - E	3	3	A - E	1	1
Lake Park	-	2	2	-	1	1
Griffith/Harper	A - E	3	3	A - E	1	1
Via Capri	A - E	3	3	A - E	1	1

ChatGPT

Bike and pedestrian comfort is more important than vehicle level of service for several reasons:

Health and Well-being: Encouraging biking and walking promotes physical activity, leading to improved health and well-being for individuals. Providing comfortable and safe facilities for cyclists and pedestrians can help reduce the risk of sedentary lifestyle-related diseases such as obesity, heart disease, and diabetes.

Environmental Impact: Biking and walking are sustainable modes of transportation that have minimal environmental impact compared to vehicle use. By prioritizing bike and pedestrian comfort, cities can reduce air pollution, greenhouse gas emissions, and noise pollution, contributing to a cleaner and healthier environment.

Equity and Accessibility: Improving bike and pedestrian infrastructure can enhance accessibility for all members of the community, including those who cannot afford or are unable to drive. By prioritizing comfort for cyclists and pedestrians, cities can promote equity and ensure that transportation options are accessible to everyone, regardless of income or ability.

Community Connection: Biking and walking facilities can help create vibrant and connected communities by encouraging social interaction and active transportation. Providing comfortable and safe spaces for cyclists and pedestrians can enhance the overall quality of life in neighborhoods and foster a sense of community.

Economic Benefits: Investing in bike and pedestrian infrastructure can lead to economic benefits for local businesses and neighborhoods. By creating attractive and comfortable spaces for cyclists and pedestrians, cities can attract more foot traffic, support local businesses, and enhance property values.

Overall, prioritizing bike and pedestrian comfort over vehicle level of service can lead to a healthier, more sustainable, equitable, and connected community for all residents.



How can I help you today?

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E N D