KSI Analysis on Richmond Highway (aka Rt1), Fairfax, VA

February 2017 – December 2025
Published May 20, 2026

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Introduction

- The following is an analysis of drivers crashing their vehicles into pedestrians/cyclists along the Richmond Highway (aka Rt 1) corridor in Fairfax, Virginia.
- The data in this report is provided by the Virginia Department of Transportation (VDOT) Traffic Engineering Division, in its Traffic Record Electronic Data System (TREDS) system, via the VDOT Crash Analysis Tool. Streetlights, bus stop locations and other relevant information was provided with the cooperation of Fairfax County staff.
- The VDOT dataset used in **this analysis is limited to Killed or Seriously Injured (KSI) crashes** involving vehicles and pedestrians or cyclists. These crashes are limited to those reported to the police; all other incidents, including vehicle-to-vehicle crashes, minor crashes resulting in non-serious injuries or property damage only, and unreported crashes, are excluded from this study.
- The VDOT dataset used for this analysis was last updated on December 31, 2025, and provides a comprehensive record of fatalities and suspected serious injuries (KSI) through that date. To ensure data integrity, more information about pedestrian and bicycle crashes resulting in fatal or life-altering injuries was cross-referenced and obtained from local County officials but we are still not certain that all Serious Injuries have been captured.
- For this analysis, "NOVA" includes the City of Alexandria, and the Counties of Arlington, and Fairfax (Fairfax as shown here includes data for Fairfax County (including the incorporated towns of Clifton, Vienna, and Herndon), City of Fairfax, and City of Falls Church.

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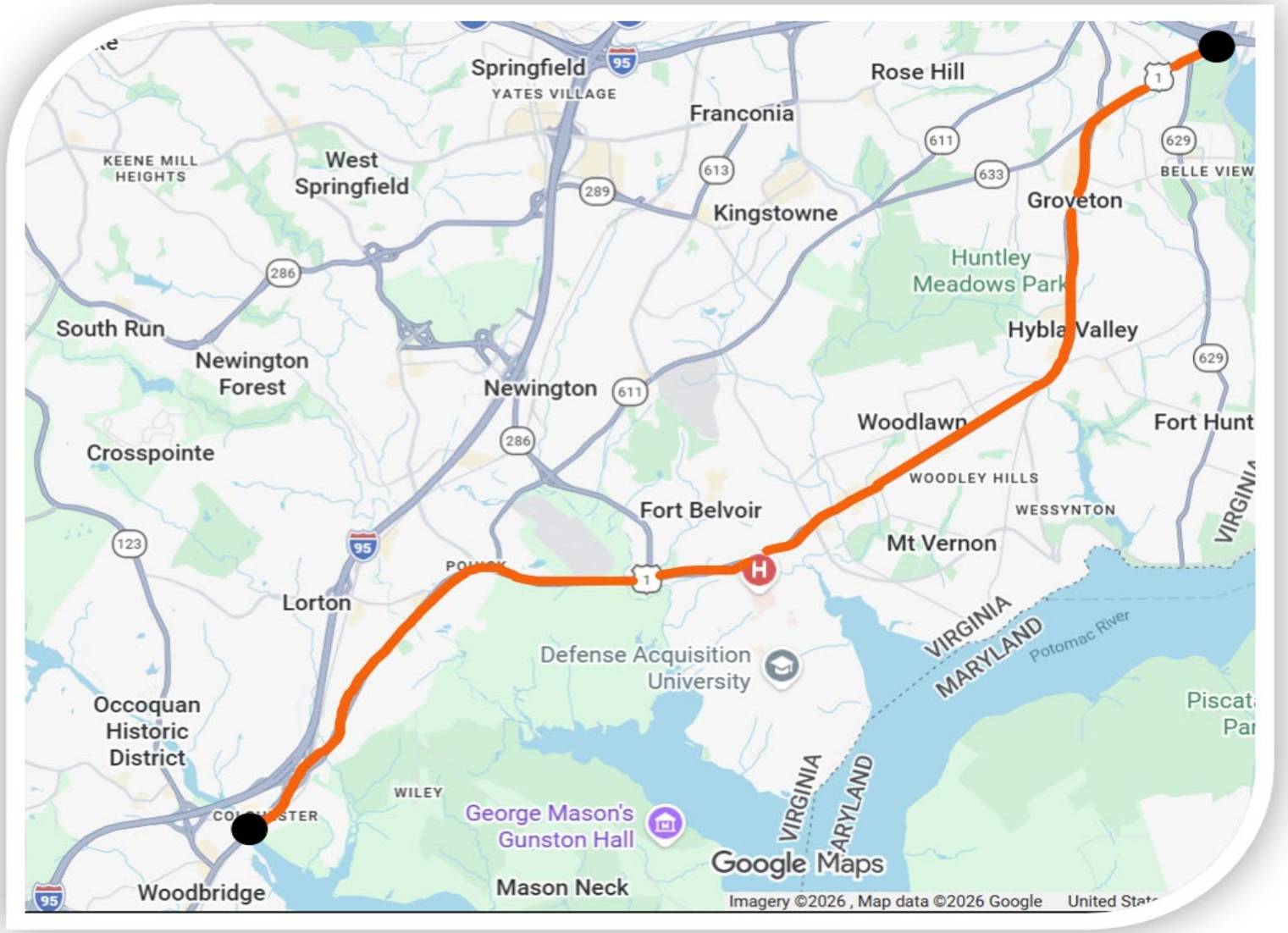
- NoVA FSS is an all-volunteer nonprofit. We do not claim to be social scientist, street engineers, transportation planners or any other transportation related “experts”. Rather, we are a group of concerned citizens and data analytical undergraduate and graduate students who developed the information in this study based on VDOT and other referenced data sources.
- All inquiries should be directed to the individual at NoVA FSS listed below:
    - Mike Doyle, Executive Director, NoVA FSS; email – mike@novafss.org



Our analysis focuses on the Richmond Highway Corridor (~14 miles long) in Fairfax, VA. The KSI data presented in this study includes driver of vehicles crashing into pedestrians / cyclists occurring along the roadway highlighted in orange.

KSI ANALYSIS

Richmond Highway Corridor

62	22	40	9 yrs
Total KSIs	Fatalities	Serious Injuries	Feb 2017 – Dec 2025

Summary & Recommendations · Published May 2026

Data source: VDOT TREDS via VDOT Crash Analysis Tool · Analysis: Fairfax County

EXECUTIVE SUMMARY – 2017-2025

77%	95%	47%	82%
KSIs at Night	Fatalities at Night	Alcohol-Involved KSI	Fatalities Outside Crosswalk

- 62 pedestrian/bicyclist KSI crashes recorded along the ~14-mile corridor, 2017–2025.
- Nighttime conditions are the dominant risk factor — nearly all fatalities occurred in darkness.
- Alcohol involvement is pervasive and worsening: rose from 35% pre-2020 to over 51% post-COVID (2020-2025).
- Mid-block crossing behavior drives fatal outcomes; 65% of KSIs occurred outside marked crosswalks.
- Top crash clusters concentrate near bus stops with incomplete crosswalk coverage and poor lighting.
- Annual KSIs rose from 3 (2018) to 11 (2024) — the trend is worsening, not improving.
- VDOTS' TREDS data under-reports speeding as ~14% of all fatalities but NSHTA attributes driver's speed as a 30% factor in fatal pedestrian crashes.
    - TREDS also has no data on distracted driving, but new technology is now emerging to measure this factor.

KEY STATISTICS AT A GLANCE

Metric	Count	%
Total KSI Crashes (2017–2025)	62	—
Fatalities (K)	22	36%
Serious Injuries (SI)	40	65%
Night KSIs (all crashes)	**48/62**	**77%**
Night Fatalities	**21/22**	**95%**
Alcohol-Involved KSIs	**29/62**	**47%**
Alcohol-Involved Fatalities	**9*/22**	**41% (*36%)**
Outside Crosswalk – KSIs	~40	~65%
Outside Crosswalk – Fatalities	~18	~82%
Hit-and-Run KSIs	9/62	15%
Speed-Related Fatal KSIs	~3/22	~14%

*8 pedestrian fatalities, 1 driver killed a pedestrian

FINDING 1: NIGHTTIME CONDITIONS

The #1 Contributing Factor for Fatal Outcomes

95%

of fatalities
at night

77%

of all KSIs
at night

53%

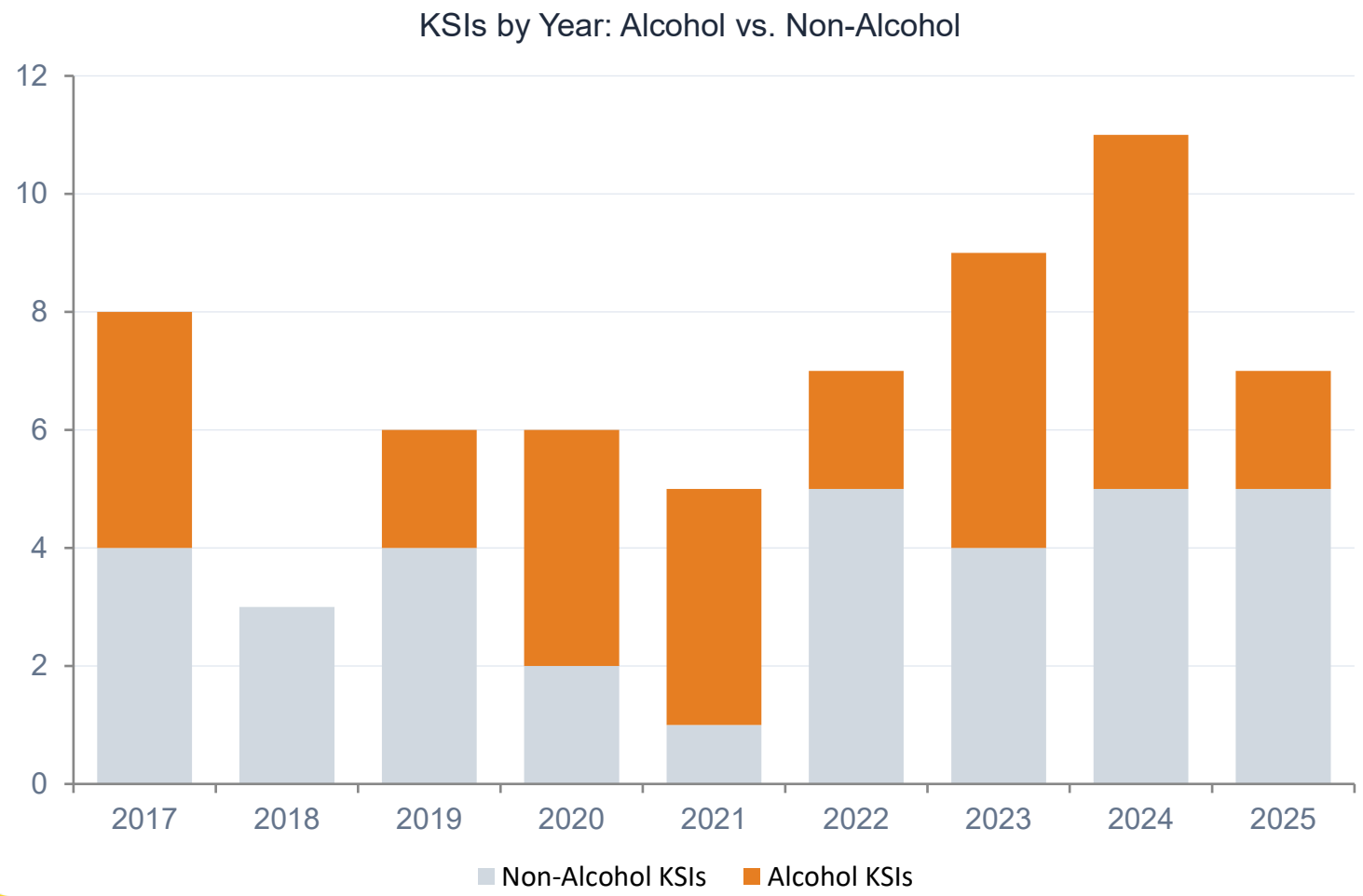
in Darkness –
Road Lighted

TOP SITES

Site 1: 844 ft
Site 2: 405 ft
Site 3: 392 ft
Site 4: 350 ft
Site 5: 203 ft

Key Insight: Existing street lighting is insufficient. Over half of all crashes — and half of fatalities — occurred on lighted roads, pointing to visibility gaps, inadequate light levels, and pedestrian detection failures. All 5 top-priority crash sites are 200–845 ft from the nearest mapped streetlight.

FINDING 2: ALCOHOL INVOLVEMENT



47%

of all corridor KSIs involve alcohol

41% (36% - 8 Ped)

of fatalities involve alcohol

35% → 51%

Pre- to post-2020 COVID alcohol rate increase

Hotspot: Richmond Hwy S & Huntington Ave — 80% alcohol KSI rate (4 of 5 crashes).
Eleanor U. Kennedy Shelter & nearby motels are adjacent to the Backlick/Pohick Rd cluster.

FINDINGS 3 & 4: CROSSWALKS & EQUITY

Crosswalk Infrastructure Gaps

- 65% of KSIs & 82% of fatalities occurred outside a marked crosswalk or intersection.
- 58% of KSIs within 200 ft of a bus stop; 74% within 500 ft.
- KSI median distance to nearest crosswalk: 209 ft.
- Backlick/Pohick, Huntington Ave, Lockheed Blvd & Beacon Hill Rd require 2–3 crossings to reach the other side.
- Fatal events spread across all proximity zones — nighttime is the key severity factor, not crosswalk distance alone.

High Vulnerability Communities

58% of all KSIs · 10 fatalities · 26 serious injuries

concentrated in the 6.6-mile Belvoir Rd – S Kings Hwy segment

- Vulnerability Index score 4.5 — Very High composite.
- High indicators: severe rent burden, no health insurance, low income, limited English proficiency, zero-vehicle households.
- Residents are transit-dependent, increasing pedestrian exposure to corridor hazards.

FINDINGS 5 & 6: SPEED, TOPOGRAPHY & BRT

Speed & Topography

- Driver's speed factor* in 8% of all KSIs but ~14% of fatal KSIs.
- At night, driver's speeding is 2× more common in fatal KSIs vs. injury KSIs.
- All speed-related KSIs occur at night — zero daytime speed KSIs.
- Steep downhill grade: Richmond Hwy 1 SB approaching Backlick Rd — limited lighting, speed-amplifying geometry.
- Curvy downhill: Richmond Hwy 1 NB approaching Jeff Todd Way — no lighting.
- Distracted driving (phone motion) and hard braking & acceleration correlate with KSI hotspot locations.

BRT Safety Integration Gaps

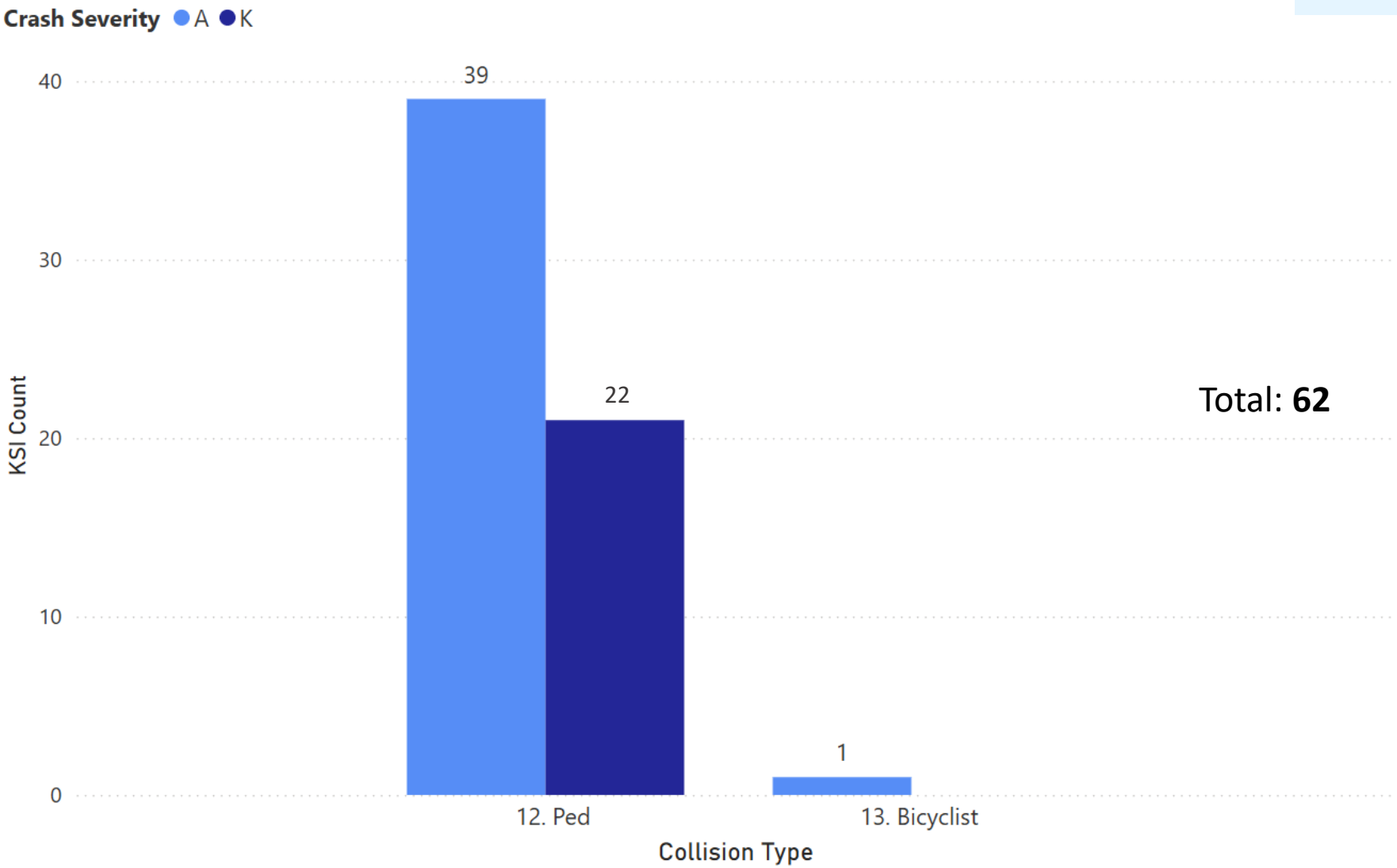
- 2 proposed BRT Section 1 stops are adjacent to existing KSI crash clusters.
- Two new pedestrian underpasses are planned at Dogue Creek and Little Huntington Creek.
- Separated bike lanes and pedestrian sidewalks will provide safer multimodal options.
- BRT design uses landscaped medians — no physical pedestrian barriers planned.
- Median openings at intersections allow uncontrolled pedestrian crossings.
- Beacon Hill Rd stop: incomplete crosswalk coverage already a documented hazard.
- Without targeted safety measures, BRT may not significantly reduce pedestrian exposure.

*Speed factor is underreported because there are no speed cameras on US-1.

Baseline Crash Statistics

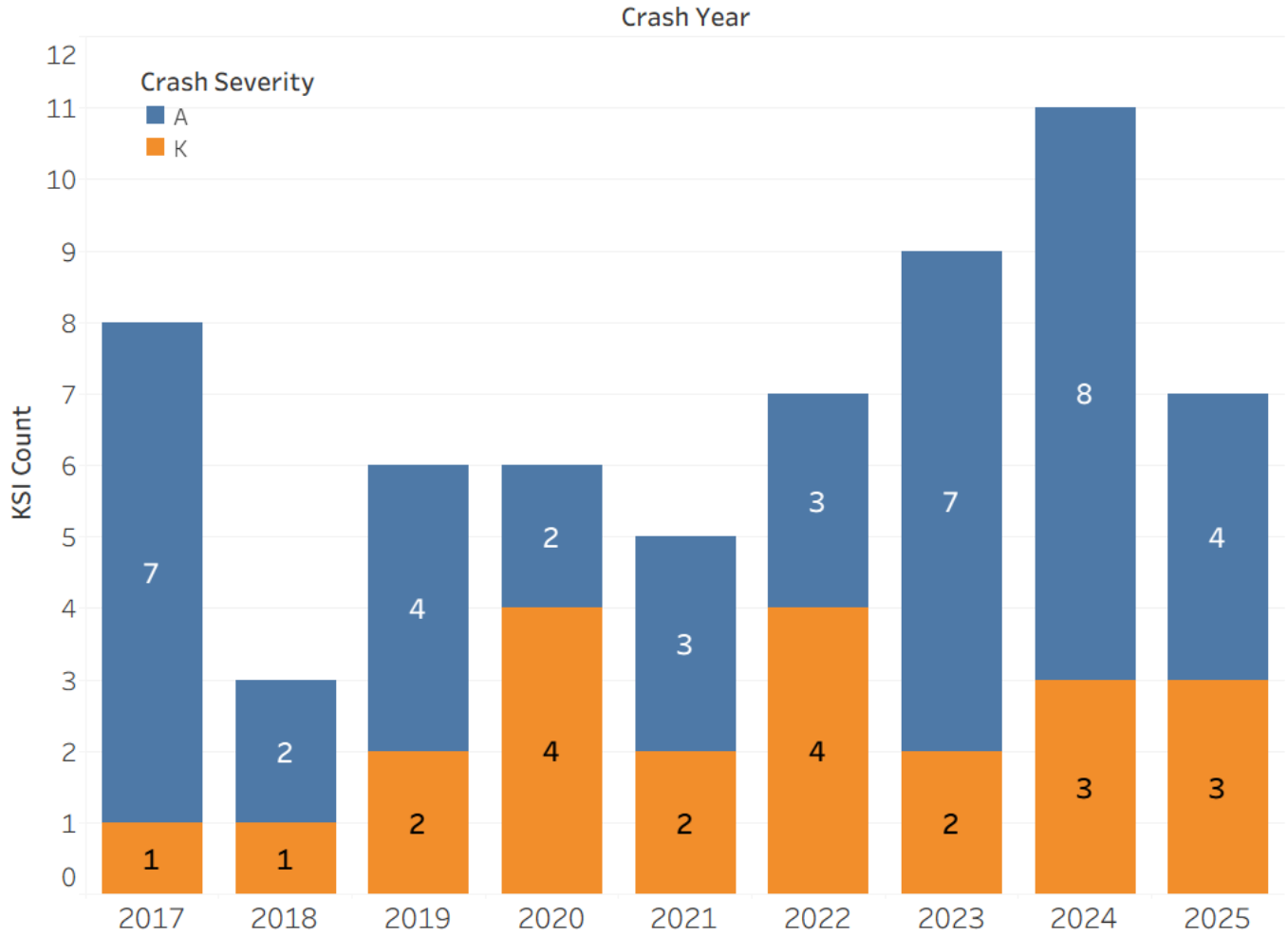
Total Crashes Along Richmond Hwy Corridor

A – Severe Injuries
K – Fatalities



Total: **62**

Pedestrian & Bicycle KSI Crashes by Year

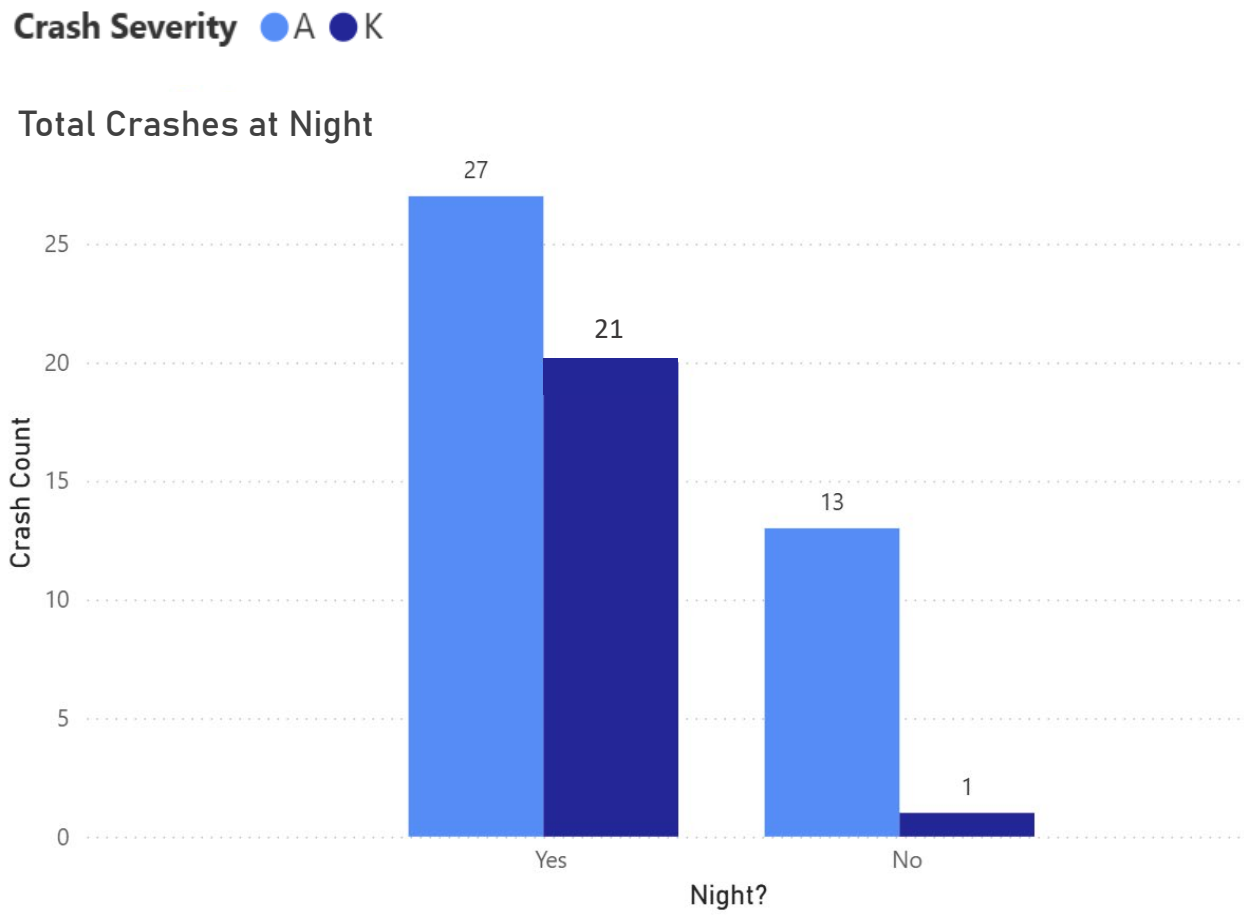


Crash Year	Total KSIs
2017	8
2018	3
2019	6
2020	6
2021	5
2022	7
2023	9
2024	11
2025	7

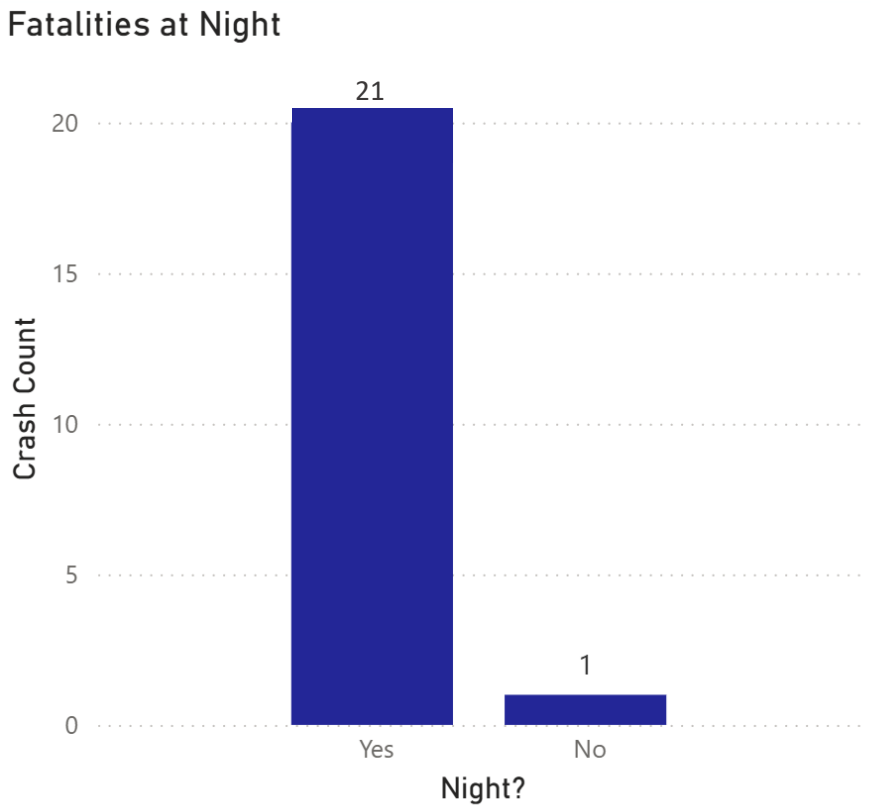
Crashes at Night

Note: According to the most updated 2026 TREDS data, *night* is defined by *"A crash that occurred in darkness."*

A – Severe Injuries
K – Fatalities

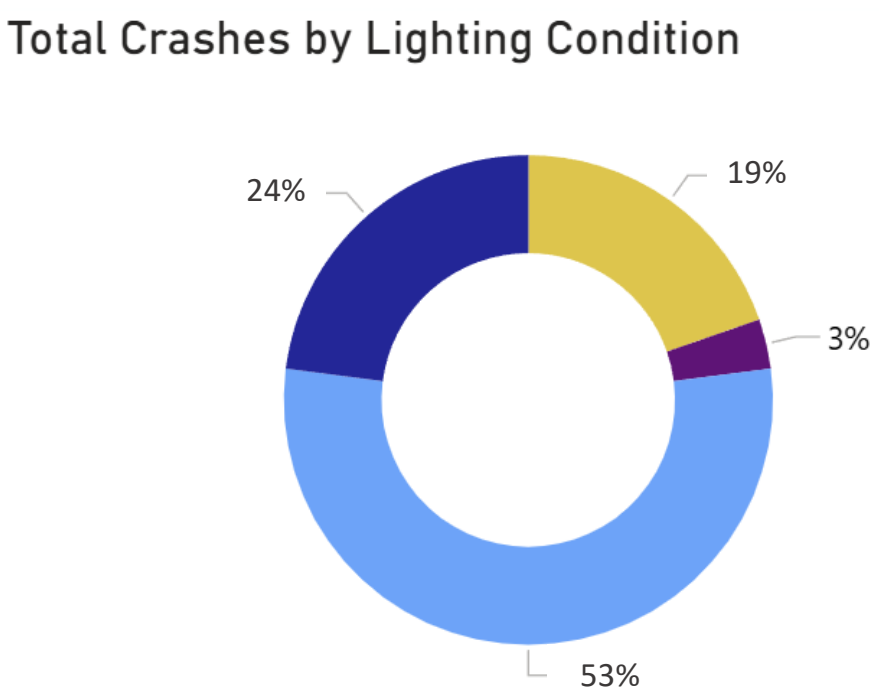


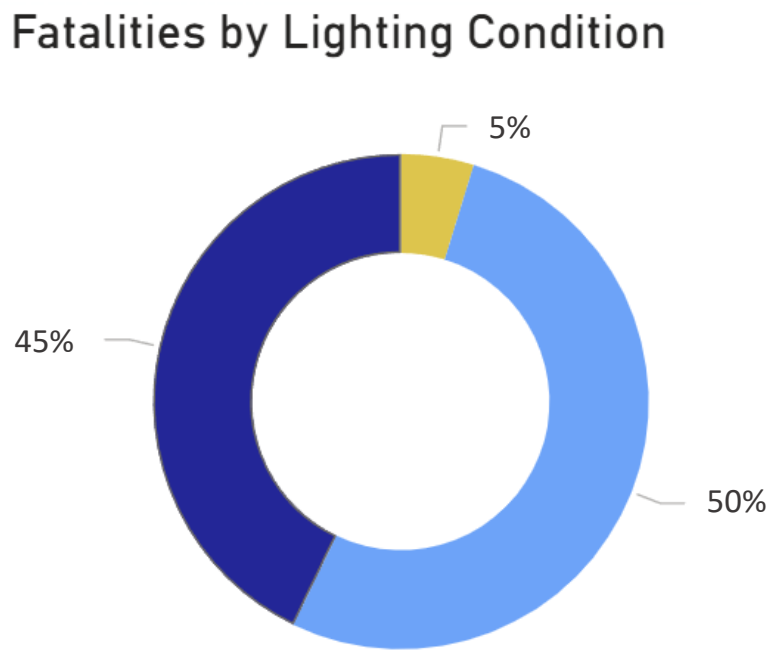
77% of pedestrian/bike crashes happened in the darkness.

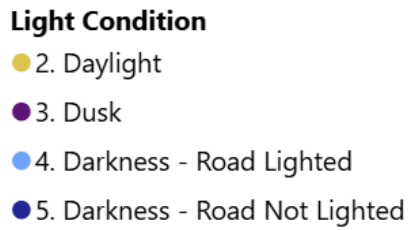


95% of pedestrian fatalities happened in the darkness.

Crashes by Overhead Street Lighting Condition





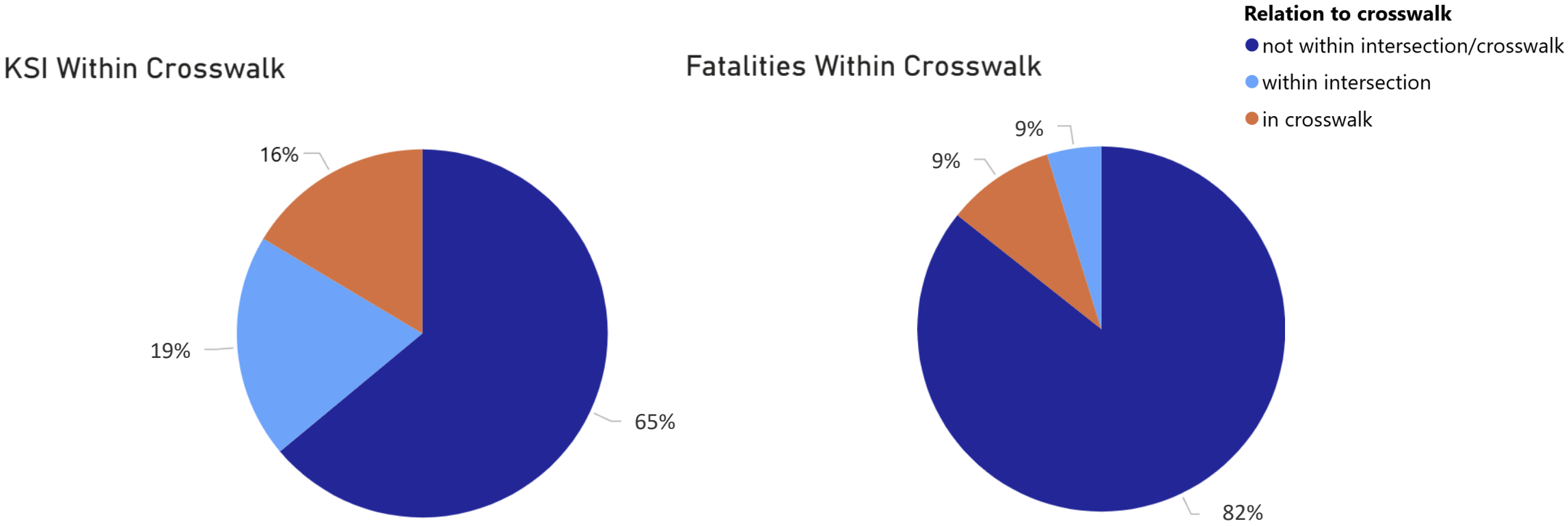


53% of all KSI crashes occur in darkness when the roadway is lighted, while **24% occur in darkness when the roadway is not lighted.**

50% of fatalities occur in darkness when the roadway is lighted, while **45% occur in darkness when the roadway is not lighted.**

Crosswalk Related KSIs

Note: KSIs classified as “within intersection” occurred outside of marked crosswalks but within the intersection area. KSIs classified as “in crosswalk” occurred within marked crosswalk boundaries.

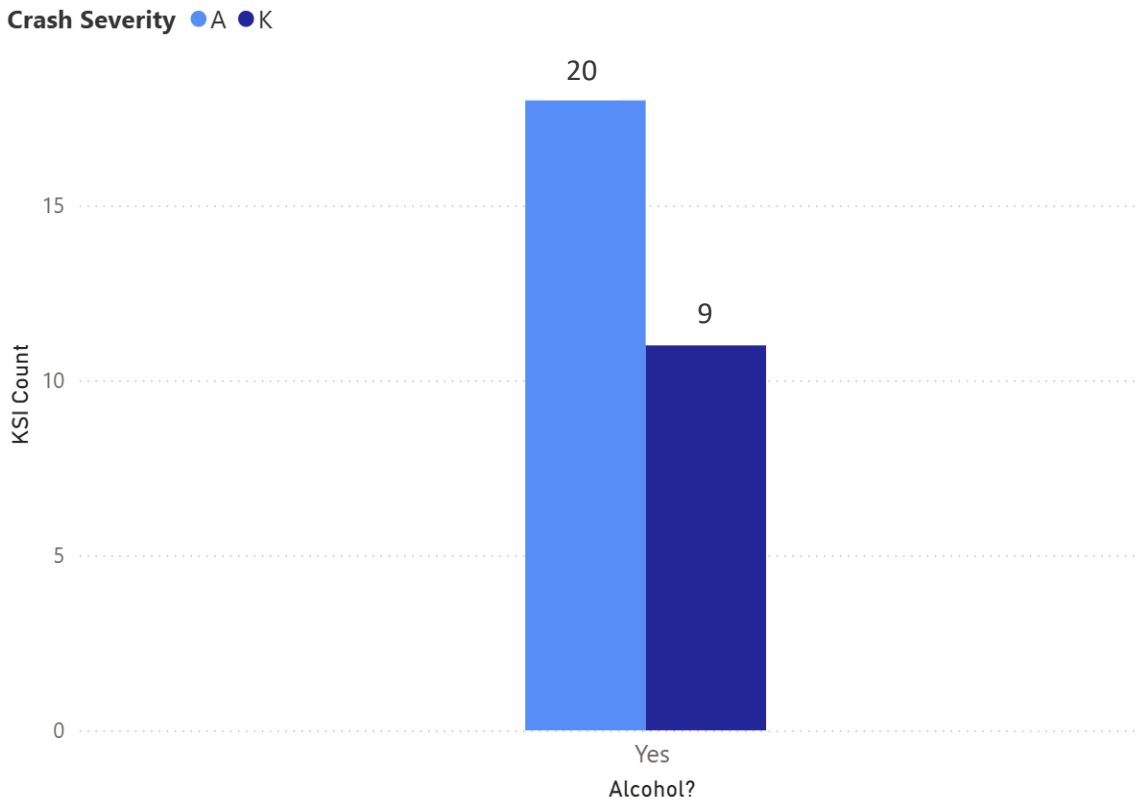


~65% of KSIs and ~82% of fatalities occur outside of a marked crosswalk / outside of an intersection.

Alcohol Related KSI

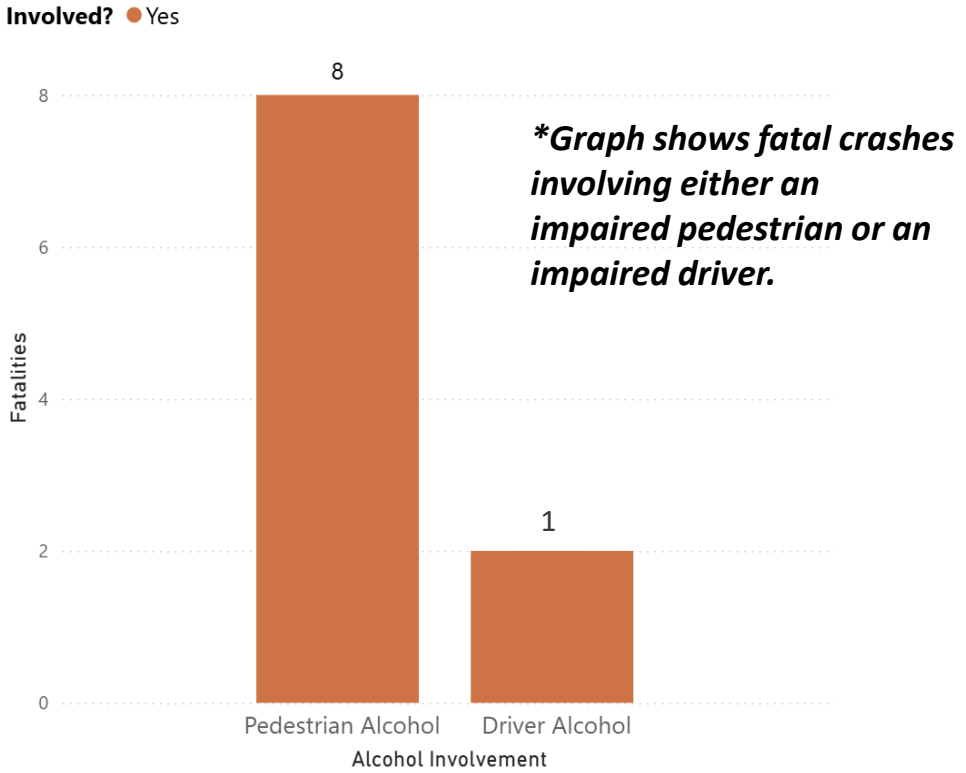
A – Severe Injuries
K – Fatalities

Total Alcohol-Related KSI



~47% of crashes along the Richmond Hwy corridor are alcohol related.

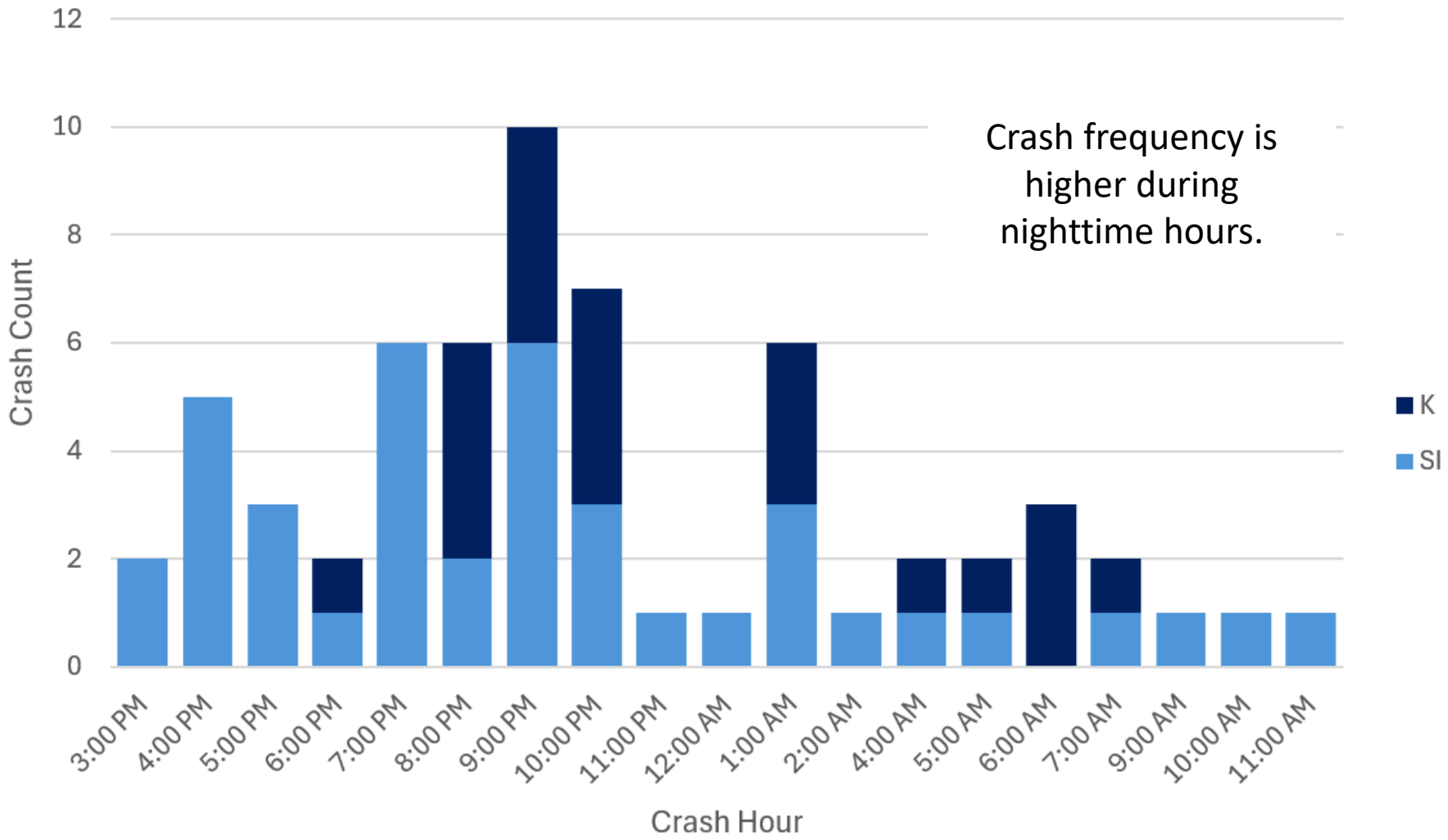
Alcohol Involvement in Fatalities (Pedestrian vs. Driver)



Graph shows fatal crashes involving either an impaired pedestrian or an impaired driver.

41% of fatalities involve alcohol; 36% of alcohol-related fatalities involved impaired pedestrians, 5% involving impaired drivers.

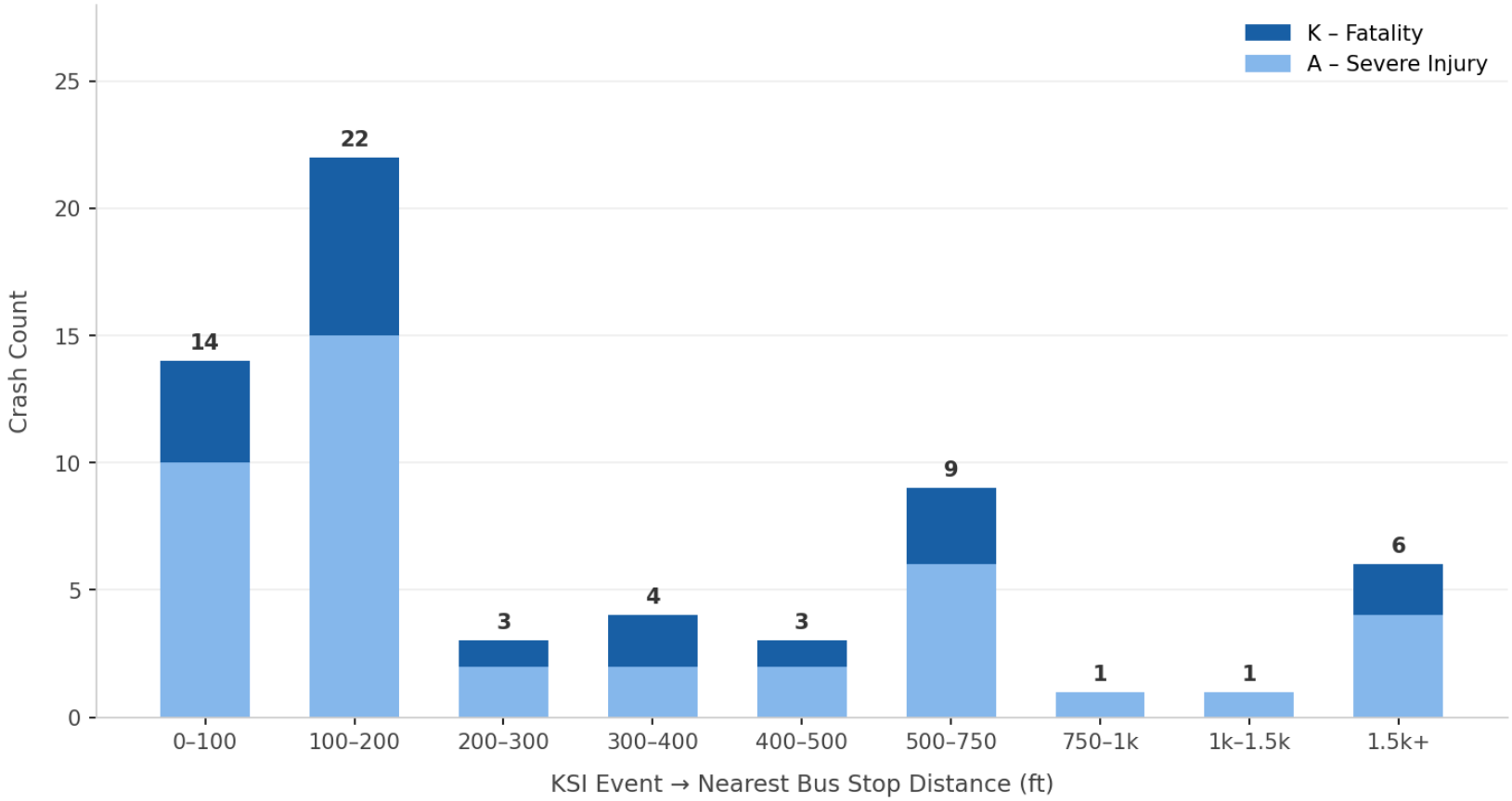
Crashes by Time of Day



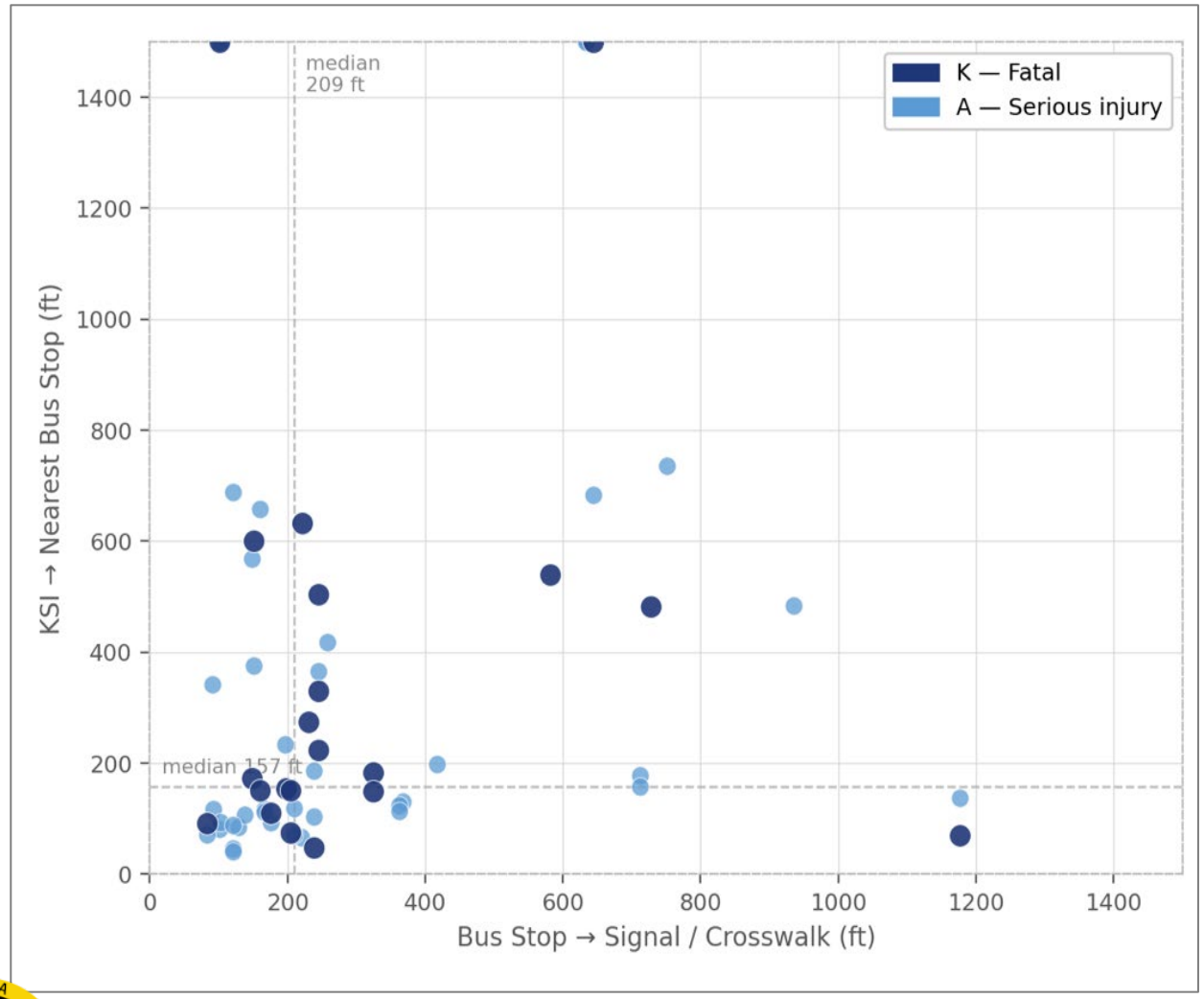
Bus Stop Proximity: Distribution of Distances

Key findings:

- **58%** of KSI crashes (n = 62) happen within 200 ft of a bus stop
- **74%** of KSI events occur within 500 ft of a bus stop
- Most crashes occur **100–200 ft** away, suggesting people are crossing the street right after getting off the bus rather than walking to the nearest crosswalk



Crosswalk Distance vs. Pedestrian Detour: KSI Event Distribution

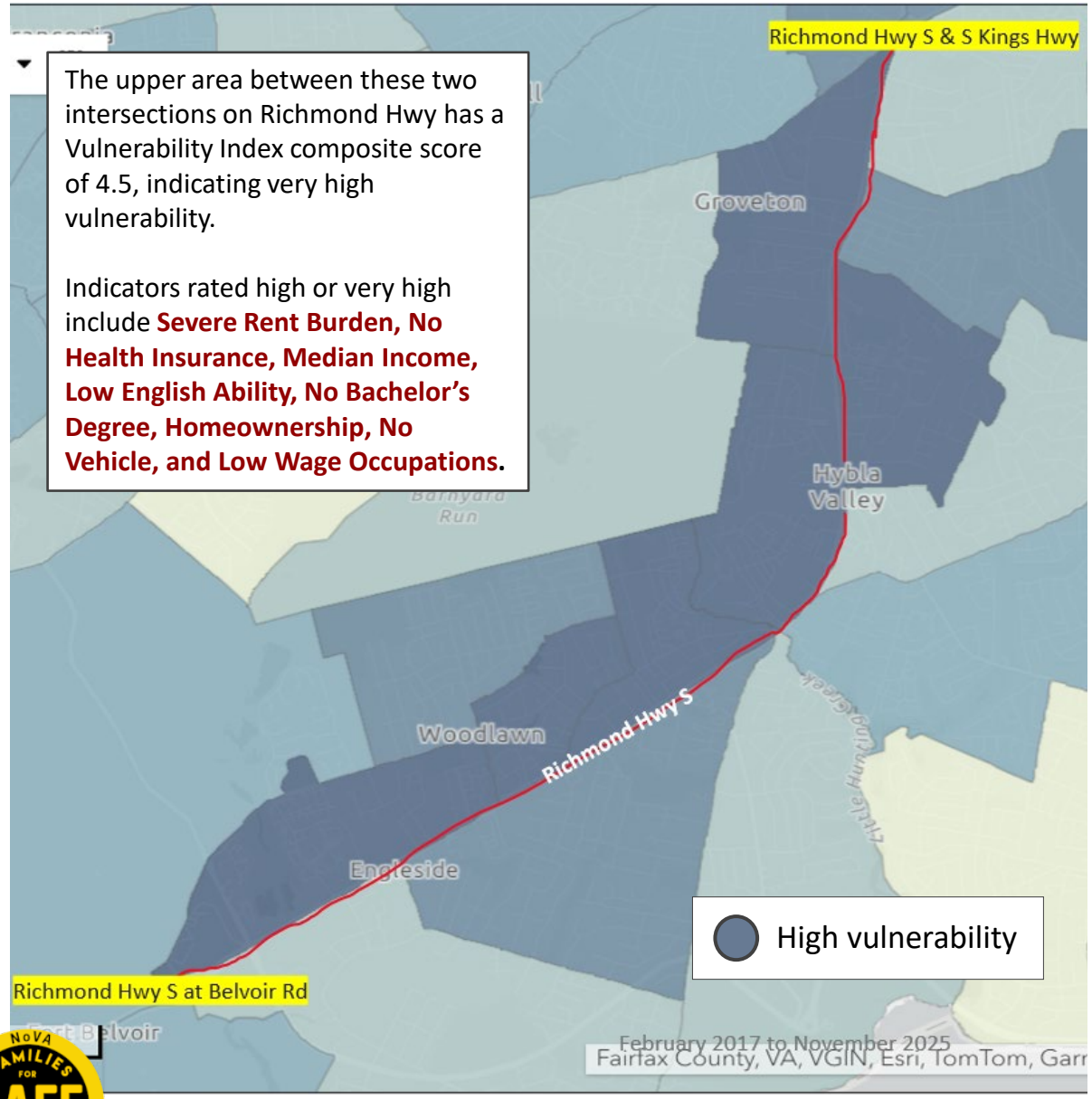


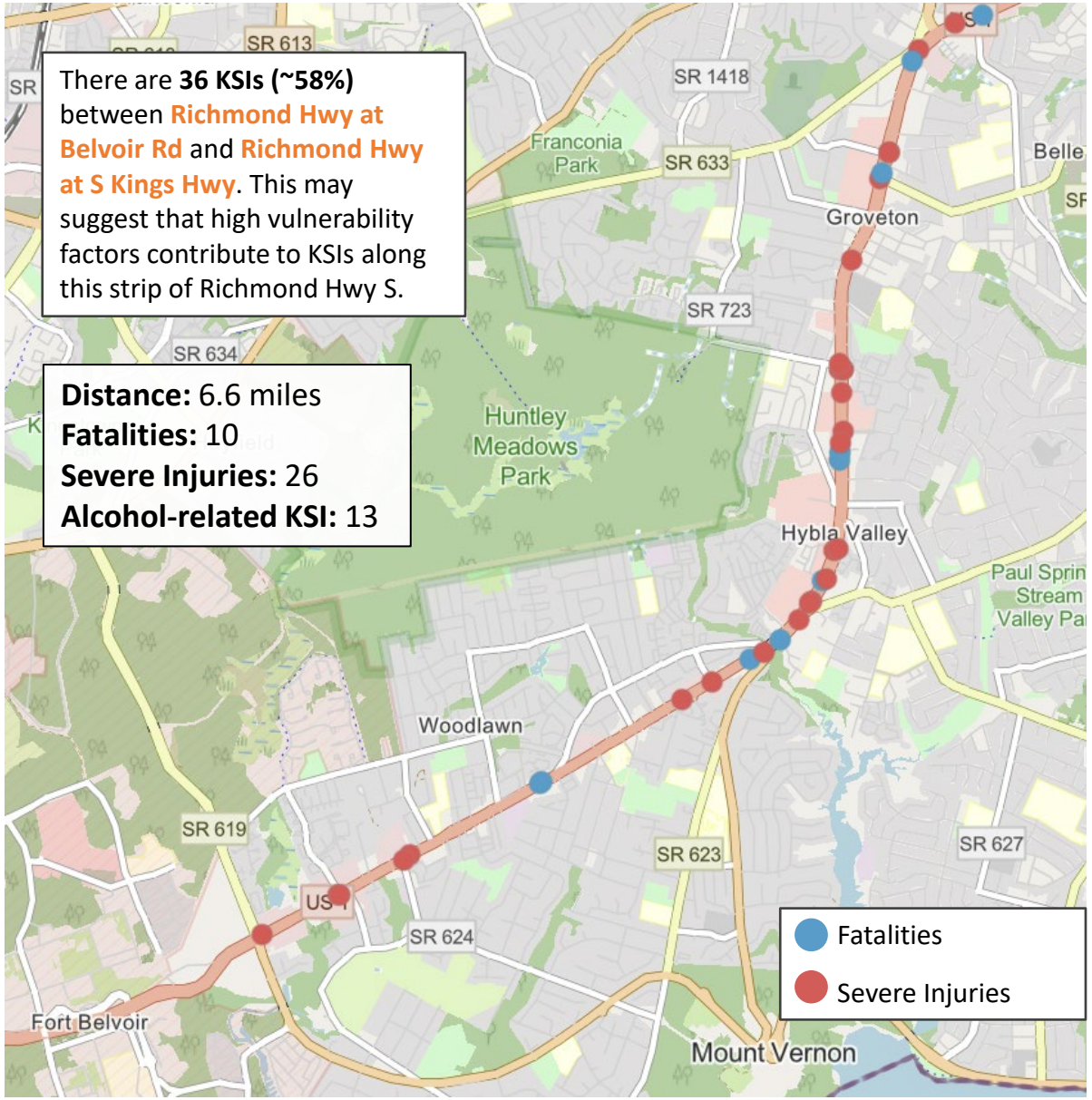
62 Total KSI Events	22 Fatal (K)
209 ft Median Crosswalk Distance	157 ft Median bus stop distance

Interpretation:

- Most events cluster in the lower-left quadrant — close to both a bus stop and a crosswalk. Fatal events (dark blue) are distributed across all quadrants, not concentrated in the "far crosswalk" zone.
- Several events far from bus stops (>1,500 ft) suggest mid-block crossing behavior, independent of crosswalk distance. Distance alone is insufficient to predict KSI severity; nighttime conditions (72%) may be a stronger factor.

Vulnerability Index Considerations

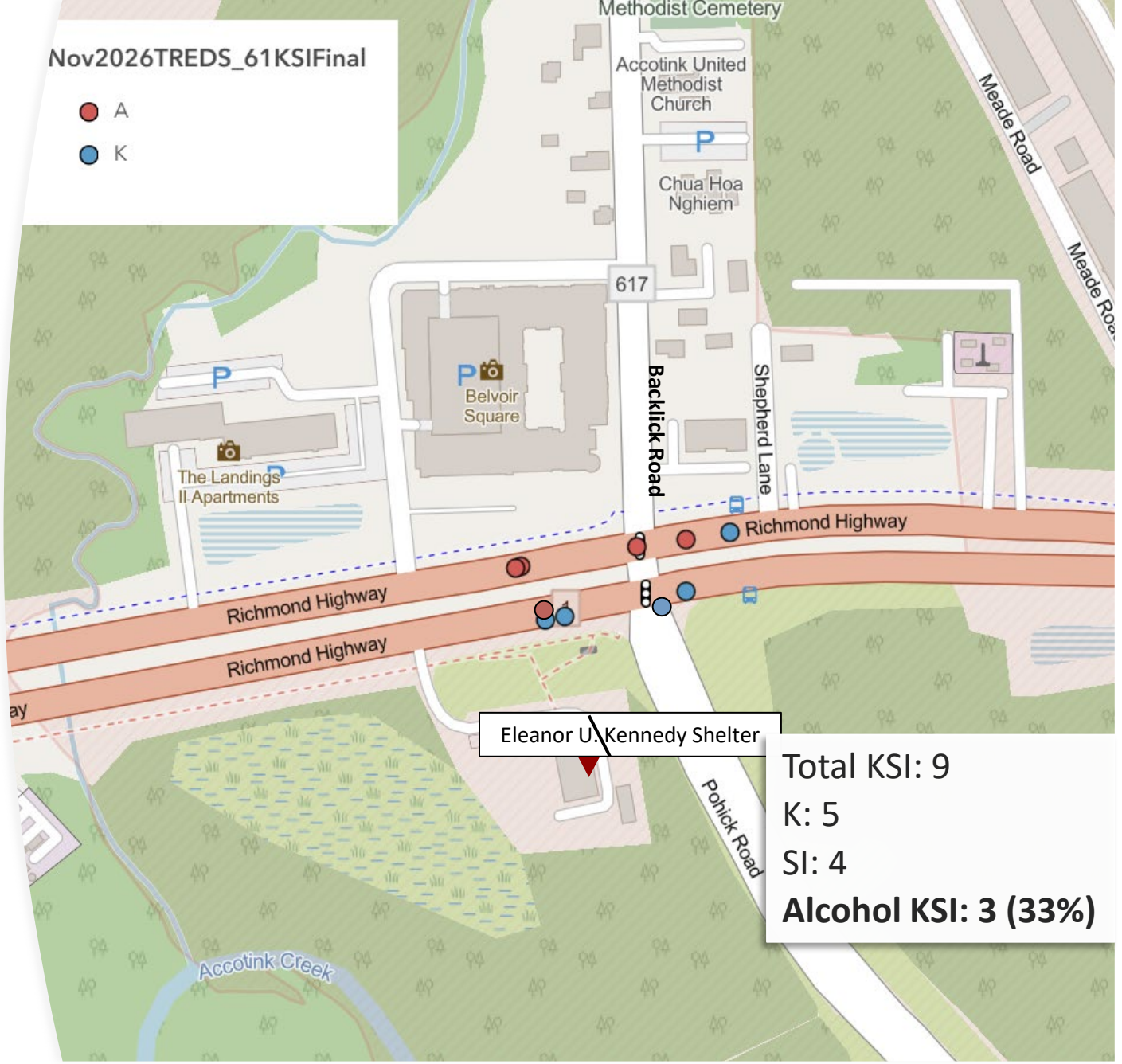




Top 3 Crash Clusters on Richmond Hwy

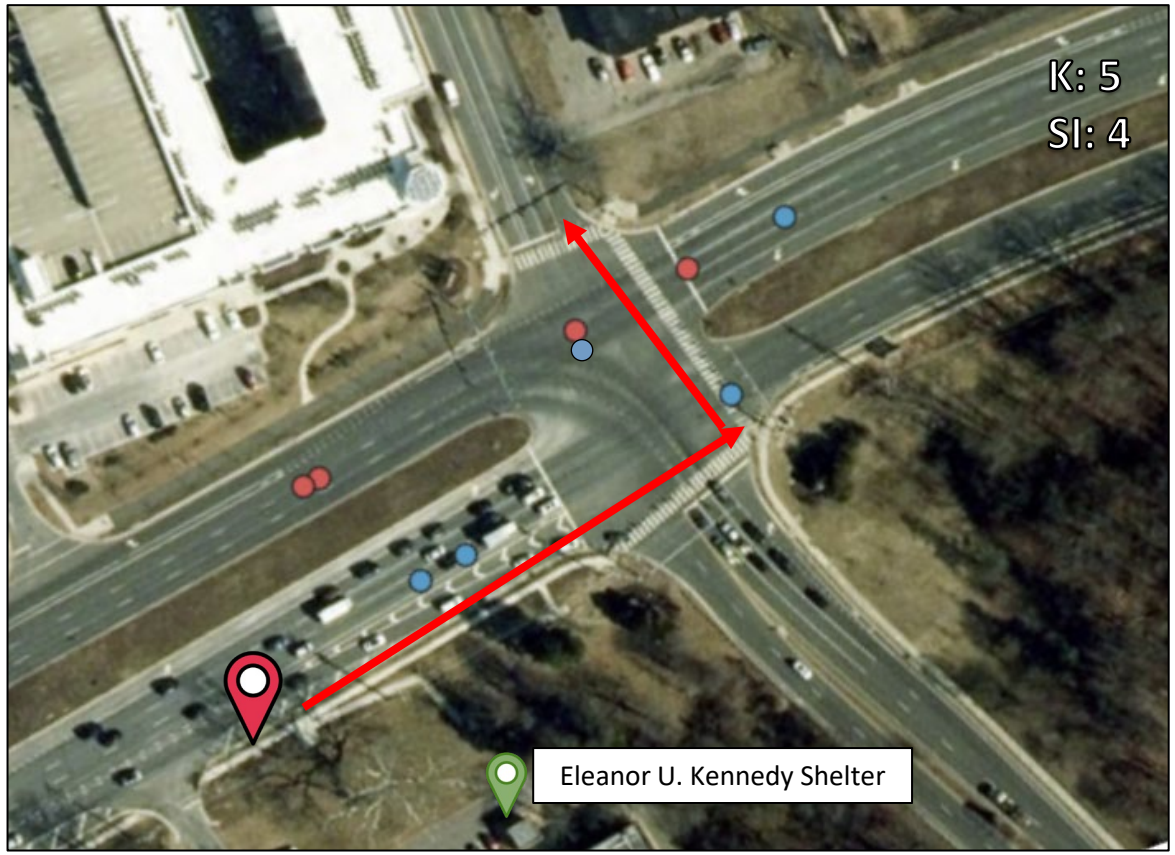
Richmond Hwy & Backlick/Pohick Rd

- No crosswalk on one side → increased crossing outside of a crosswalk risk
- Nearby shelter → recommend street safety and alcohol awareness education programs



Incomplete Crosswalk Coverage at Bus Stop Intersections

Bus Stop



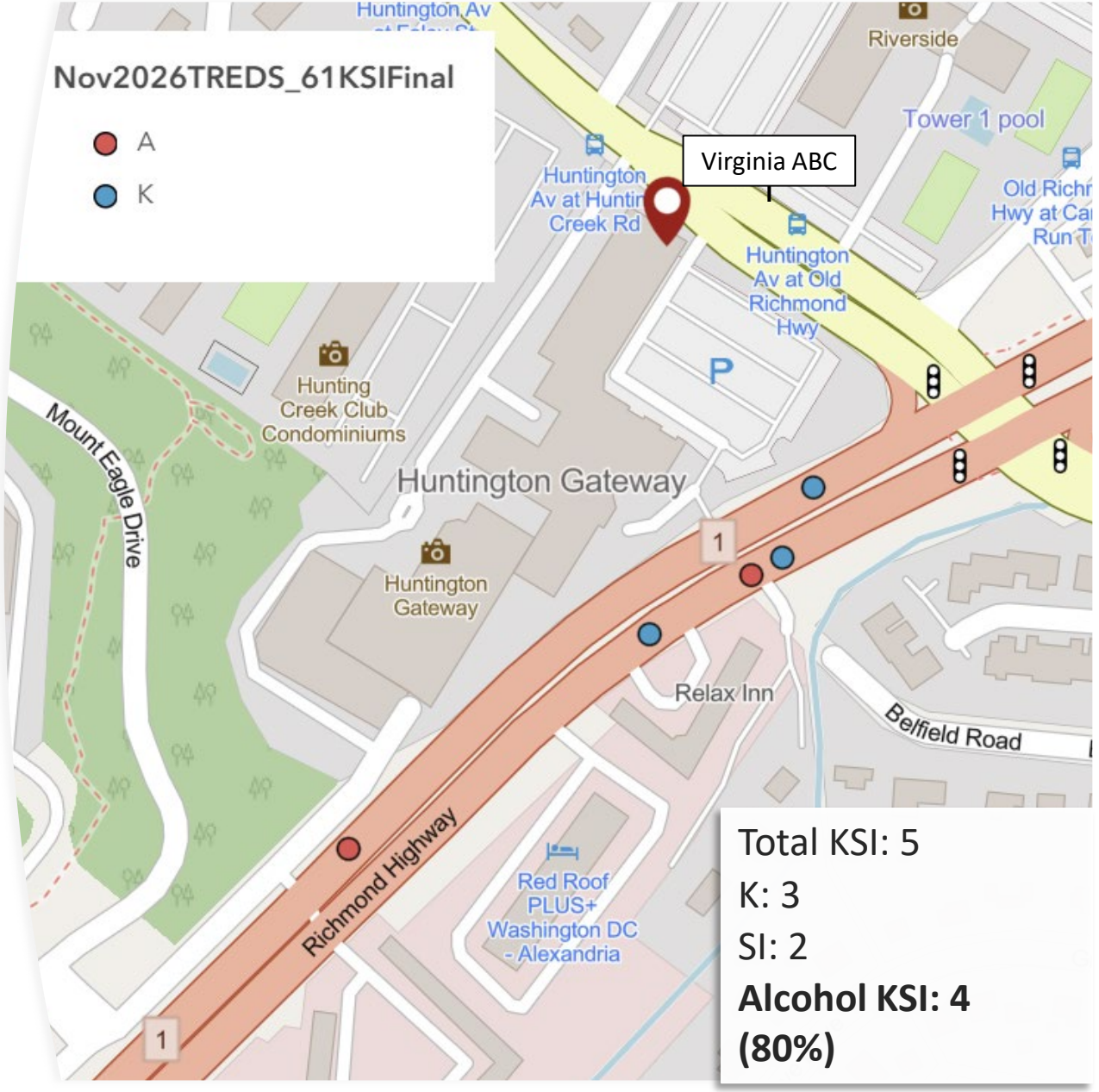
Richmond Hwy S & Backlick/Pohick Rd

Bus stop location where crosswalk design requires 2–3 crossings to access the opposite side.

Top 3 Crash Clusters on Richmond Hwy

Richmond Hwy & Huntington Ave

- Many inns, motels, hotels nearby
- Some inns do not have accessible crosswalks, could increase crossing outside of controlled crosswalks
  - **e.g., Red Roof PLUS+, Relax Inn**
- Virginia ABC (sells alcohol)
- Planet Fitness



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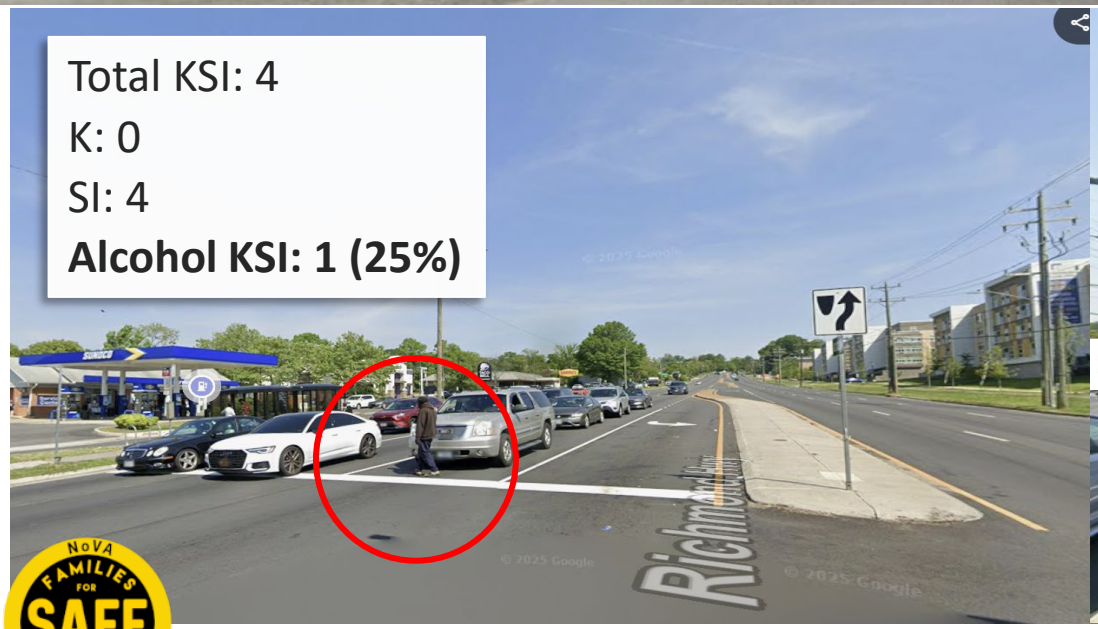
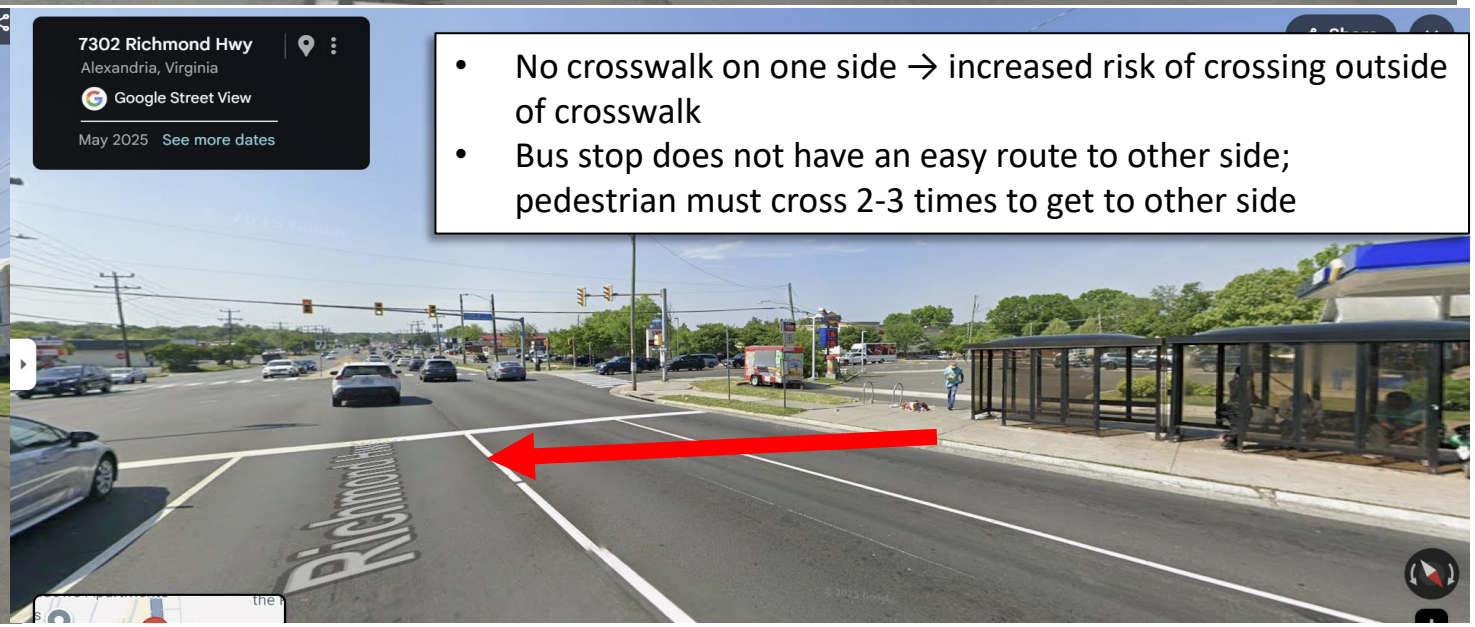
Richmond Hwy & Lockheed Blvd

Top 3 Crash Clusters on Richmond Hwy

Total KSI: 4
K: 0
SI: 4
Alcohol KSI: 1 (25%)

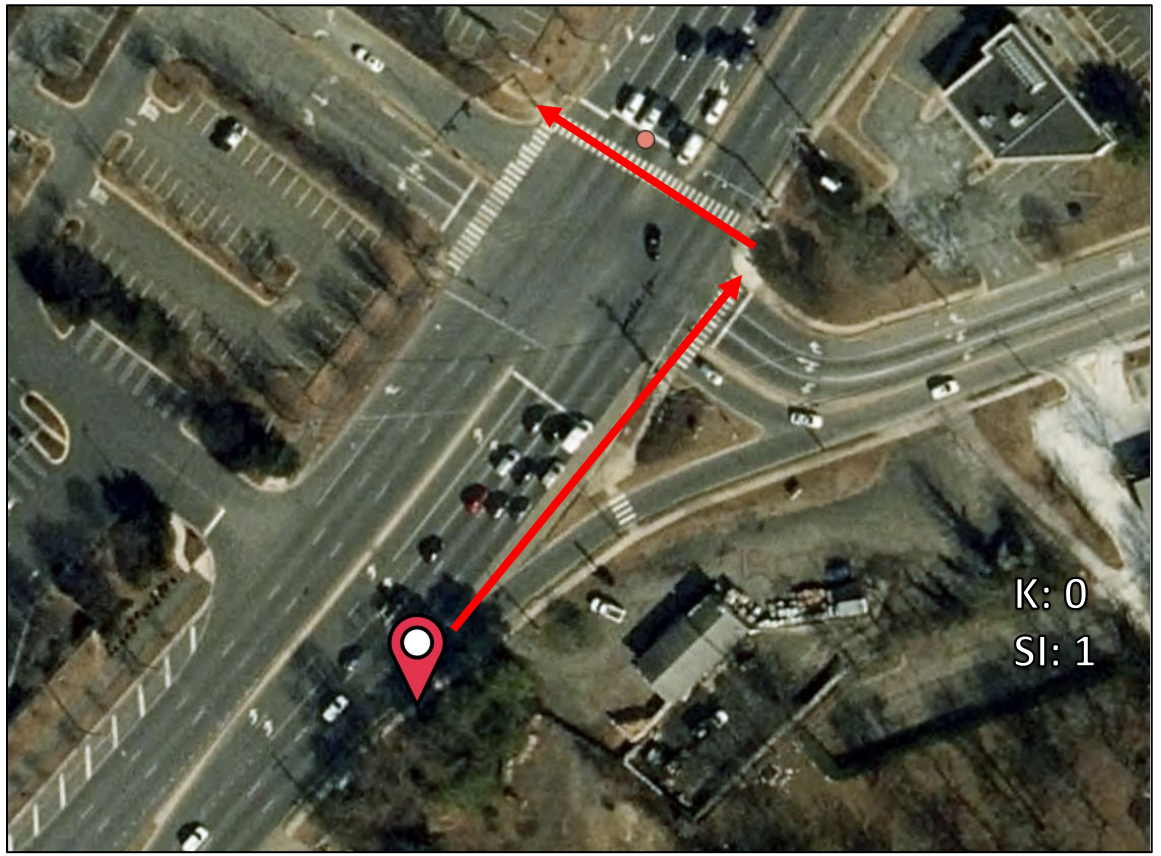


- No crosswalk on one side → increased risk of crossing outside of crosswalk
- Bus stop does not have an easy route to other side; pedestrian must cross 2-3 times to get to other side



Incomplete Crosswalk Coverage at Bus Stop Intersections

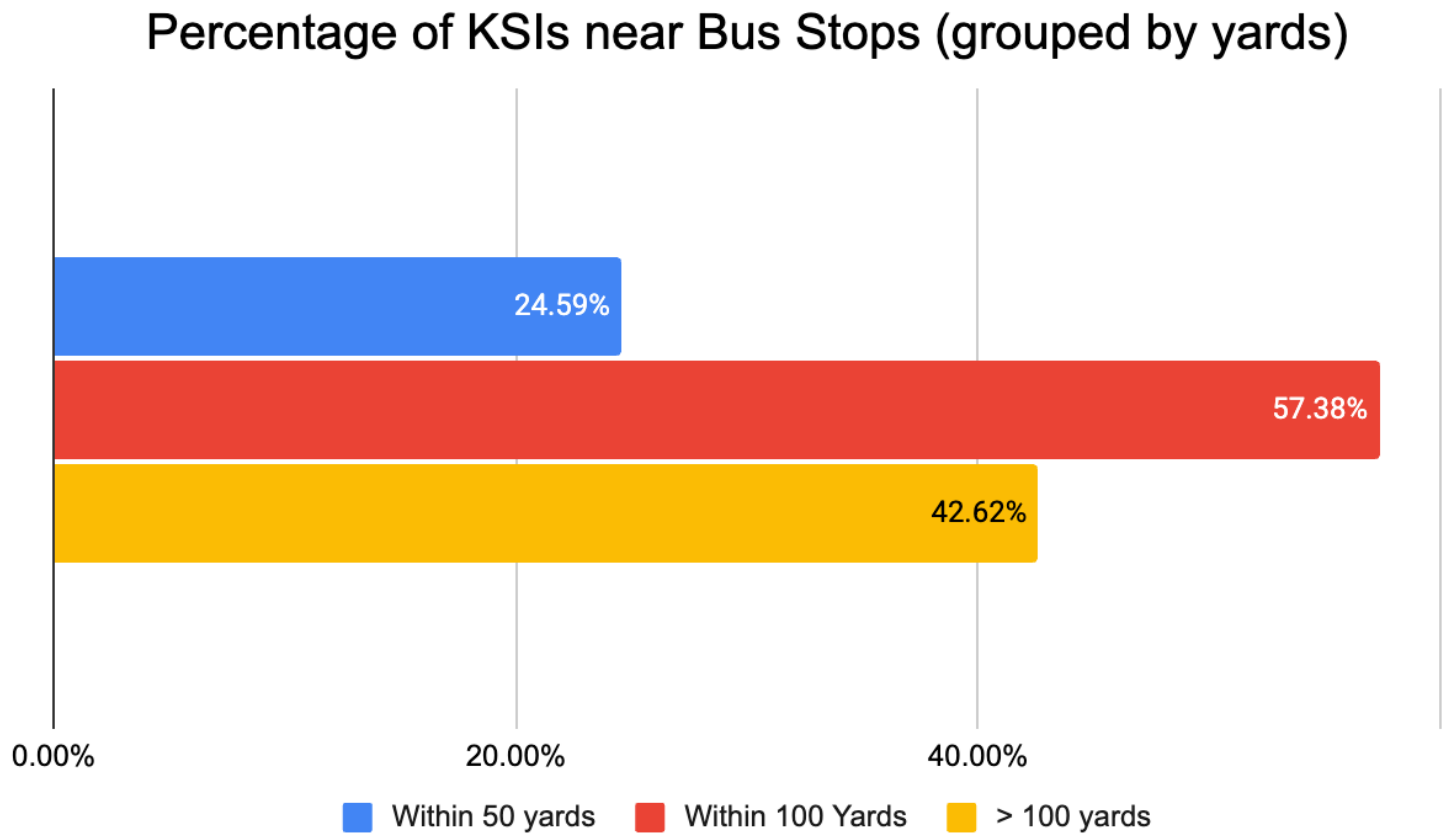
Another bus stop location where crosswalk design requires 2–3 crossings to access the opposite side.



Richmond Hwy & Beacon Hill Rd

Bus Stop & Crossing Proximity Analysis

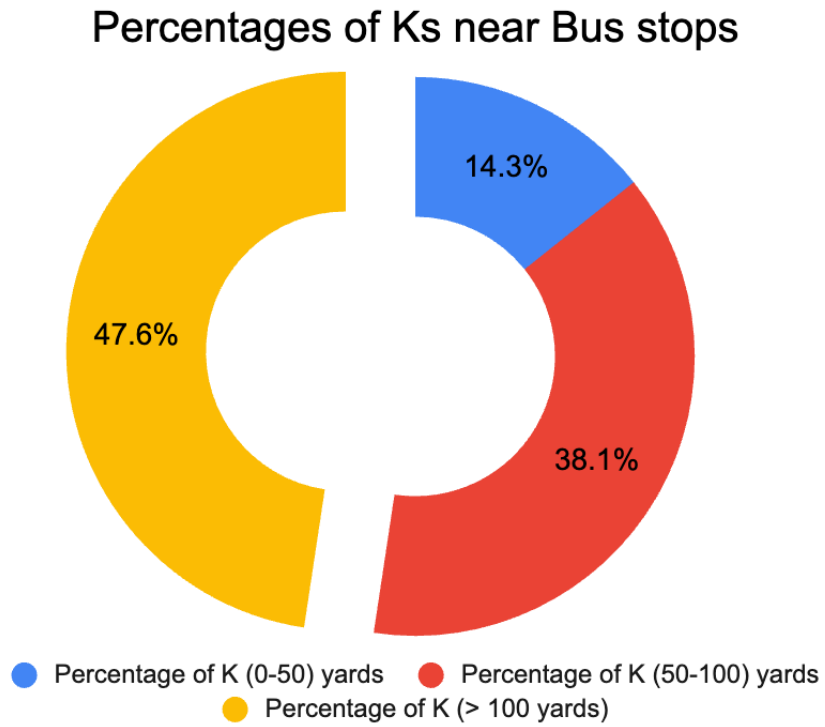
Percentage of Killed, Seriously Injured (KSIs) in vicinity of Bus Stops



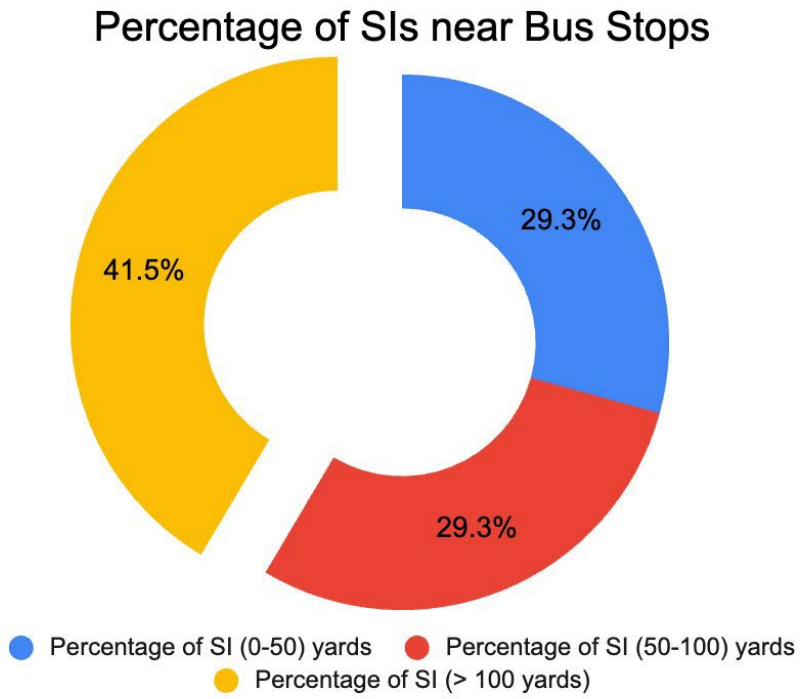
Bus Stops act as high concentration zones for KSIs.

Note: The Data is inclusive (The within 100 yards is 0 – 100 yards of the bus stops)

Percentage of Ks and SIs near Bus Stops (grouped by Yards)



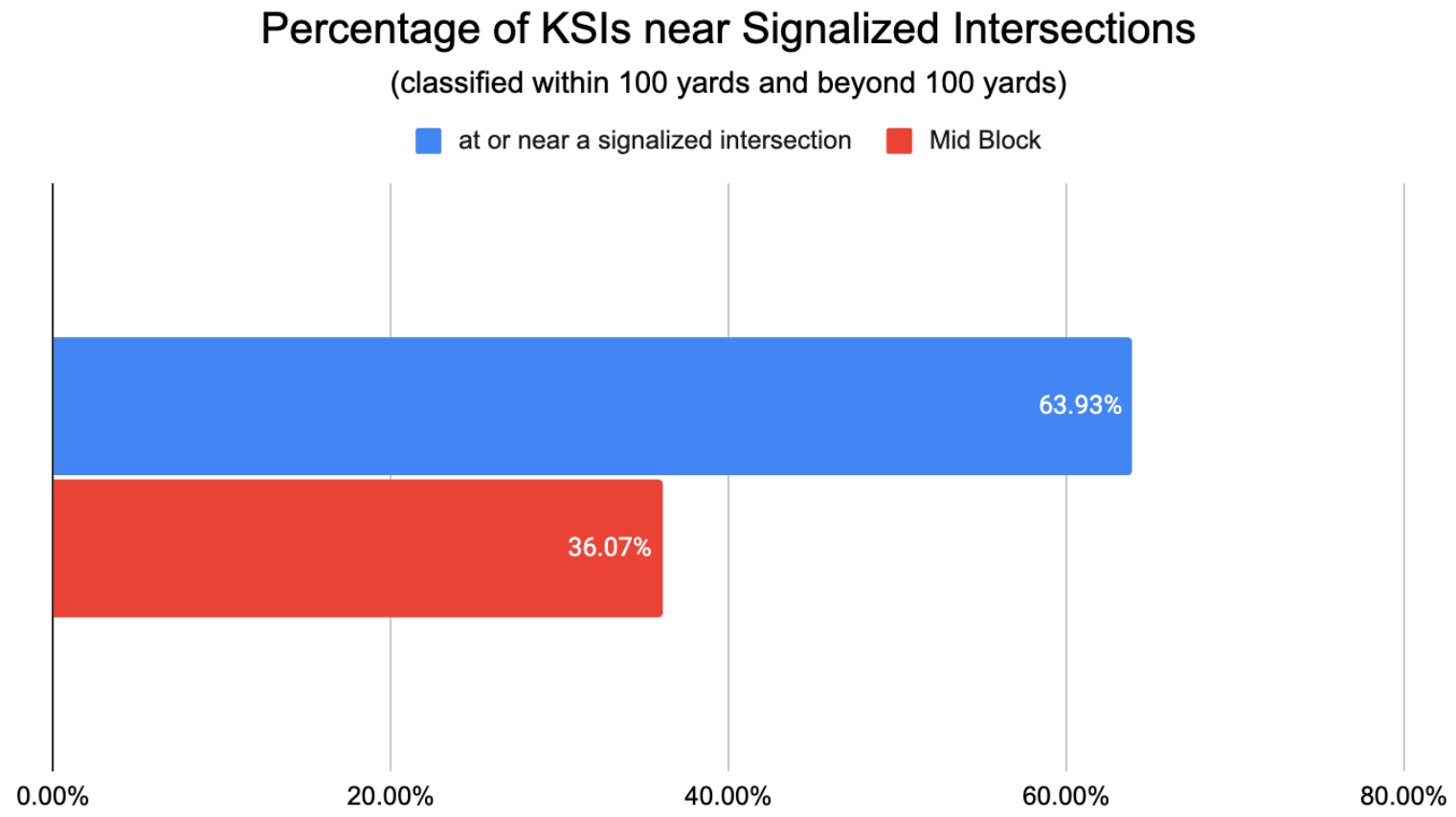
The occurrence of severe incidents (Ks) is slightly higher within 100 yards of bus stops, underscoring their significance as KSI hot spots.



SI incidents are more concentrated near bus stops than away from them.

Note: The Data is exclusive.

Percentage of KSIs in proximity with crossings

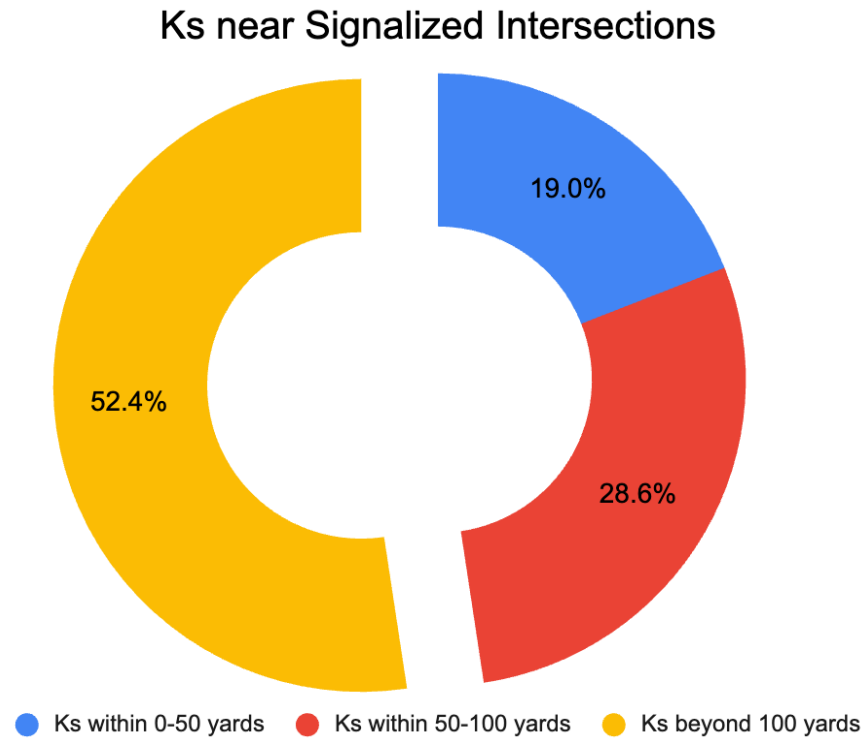


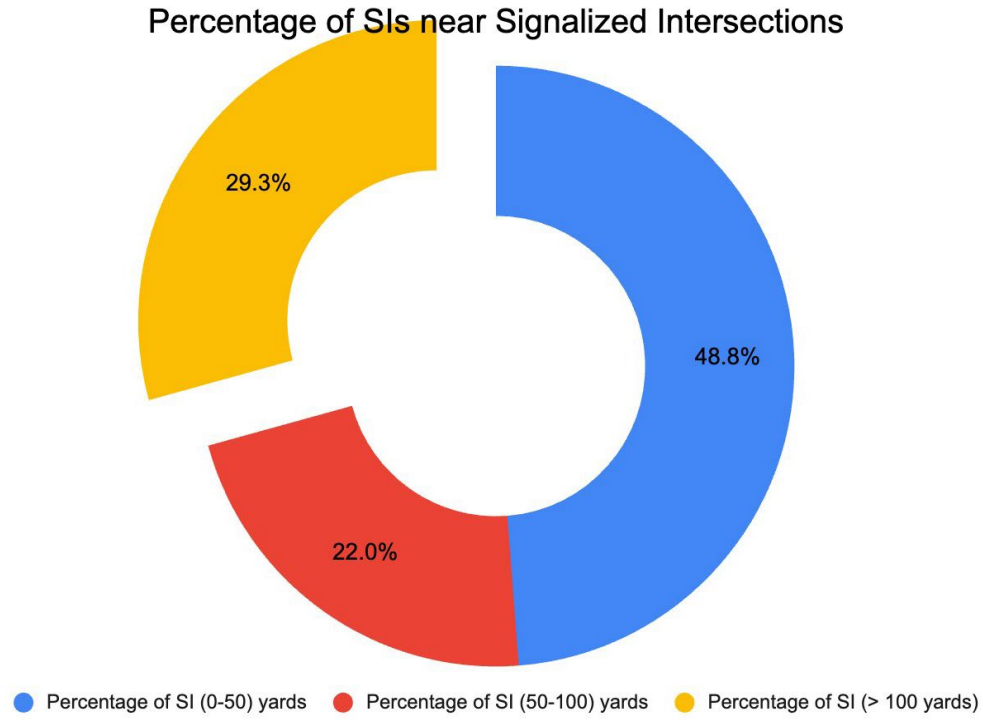
A majority of KSIs occur near (defined as within 300 feet) of a signalized intersection. This is different than “within” an intersection where 35% of Ped KSIs occur.

Note: traffic signals are used as proxies

Percentage of Ks and SIs in proximity with crossings

Crashes occur geographically near intersections but outside of marked crosswalks boundaries





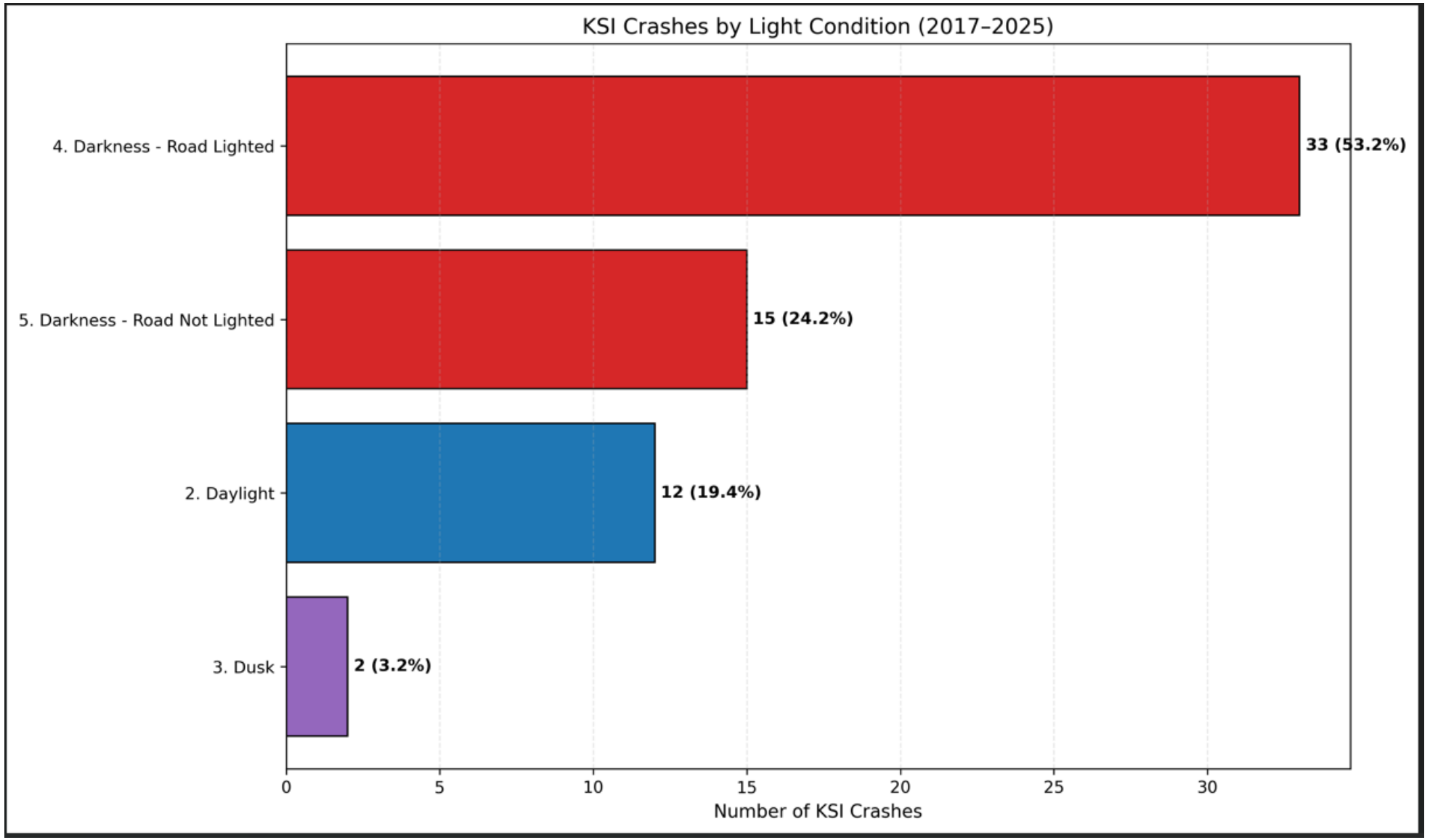
Note: traffic signals are used as proxies

Ks are distributed somewhat evenly across Mid-Block crashes (> 100 yards) and at or near signalized intersections (< 100 yards).

A majority of SIs occur at or near a signalized intersection as defined by < 100 yards.

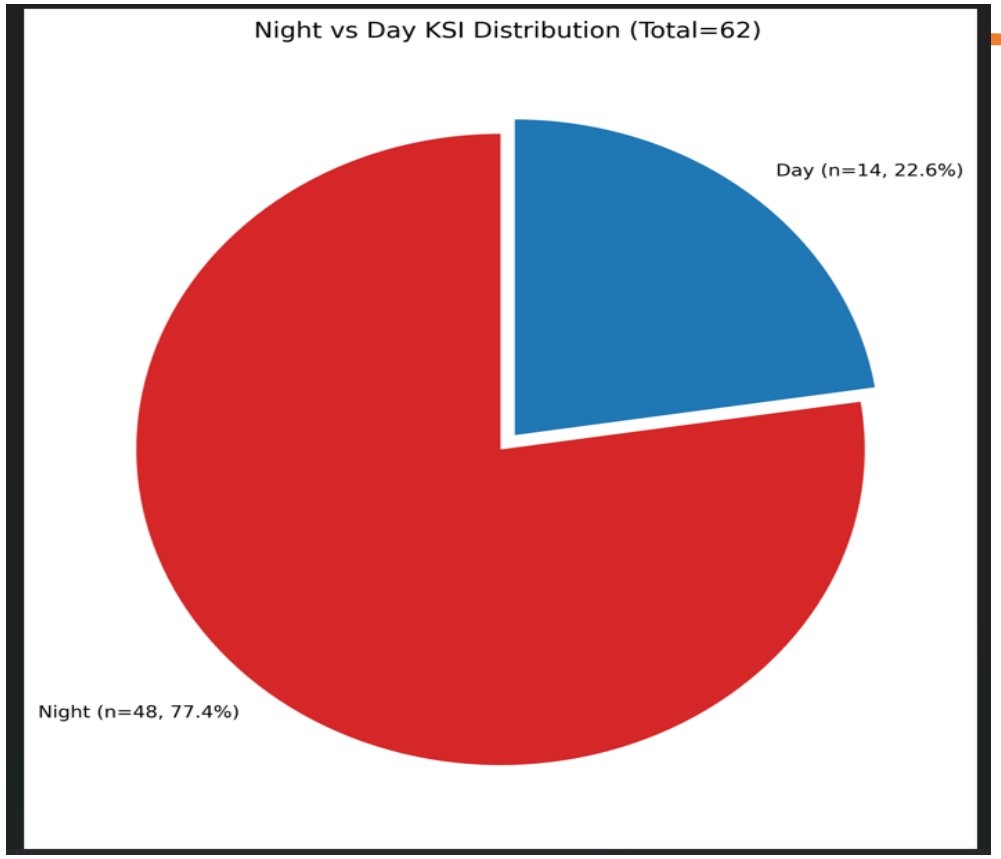
Lighting Analysis

KSI Crashes by Light Condition (Richmond Highway, 2017–2025)

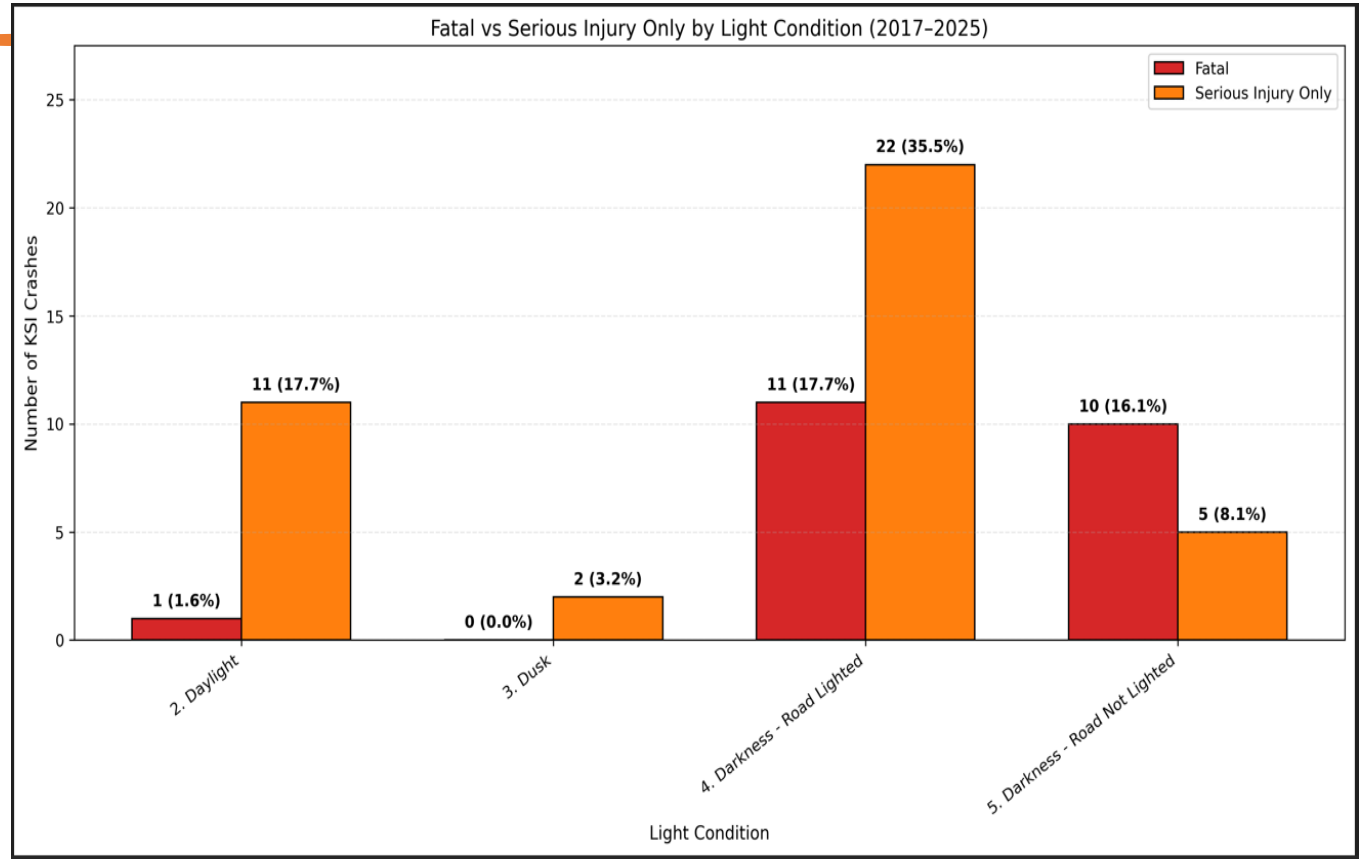


More than half of KSI crashes occurred in Darkness Road Lighted conditions

Night-time Dominates KSI Crashes and Fatal Outcomes

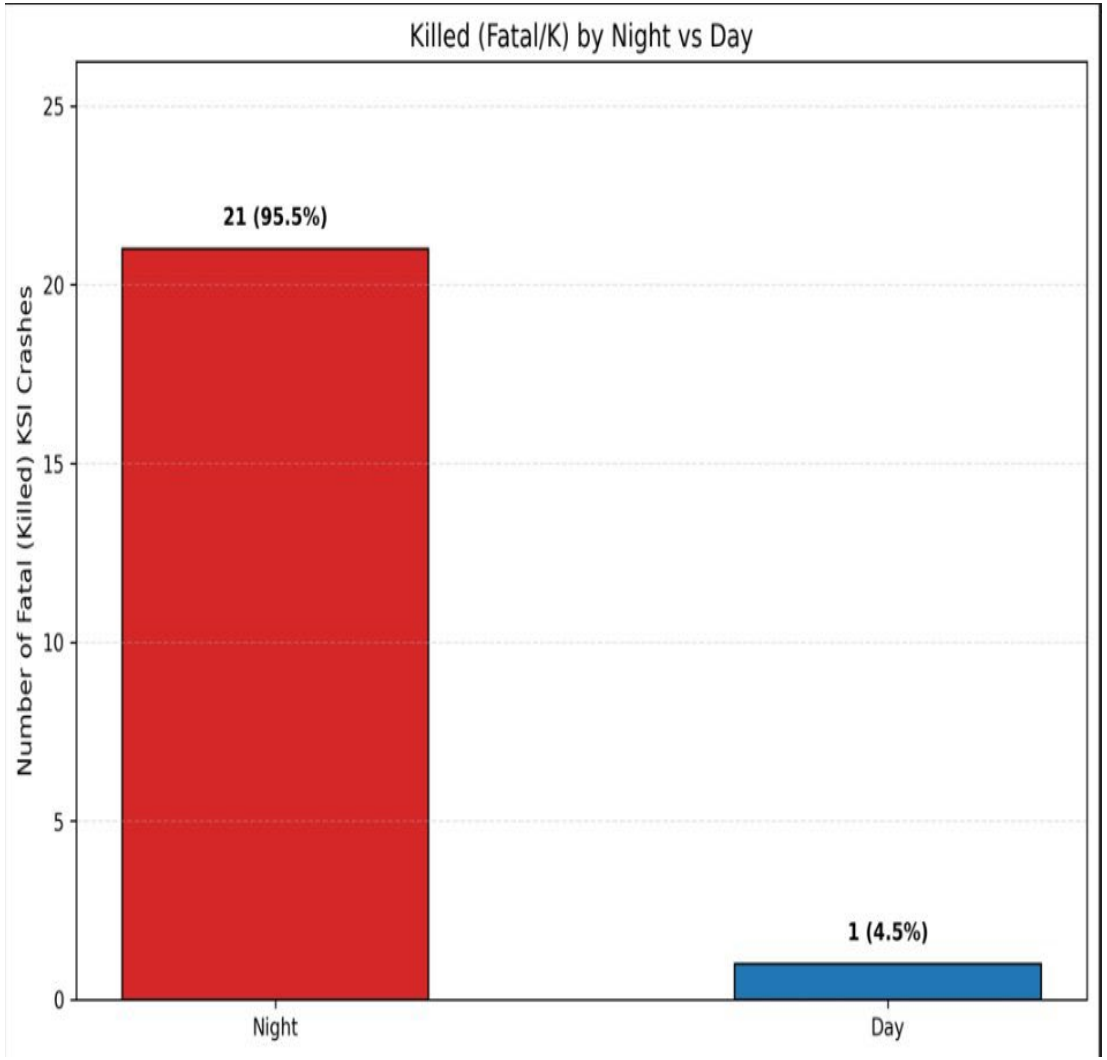


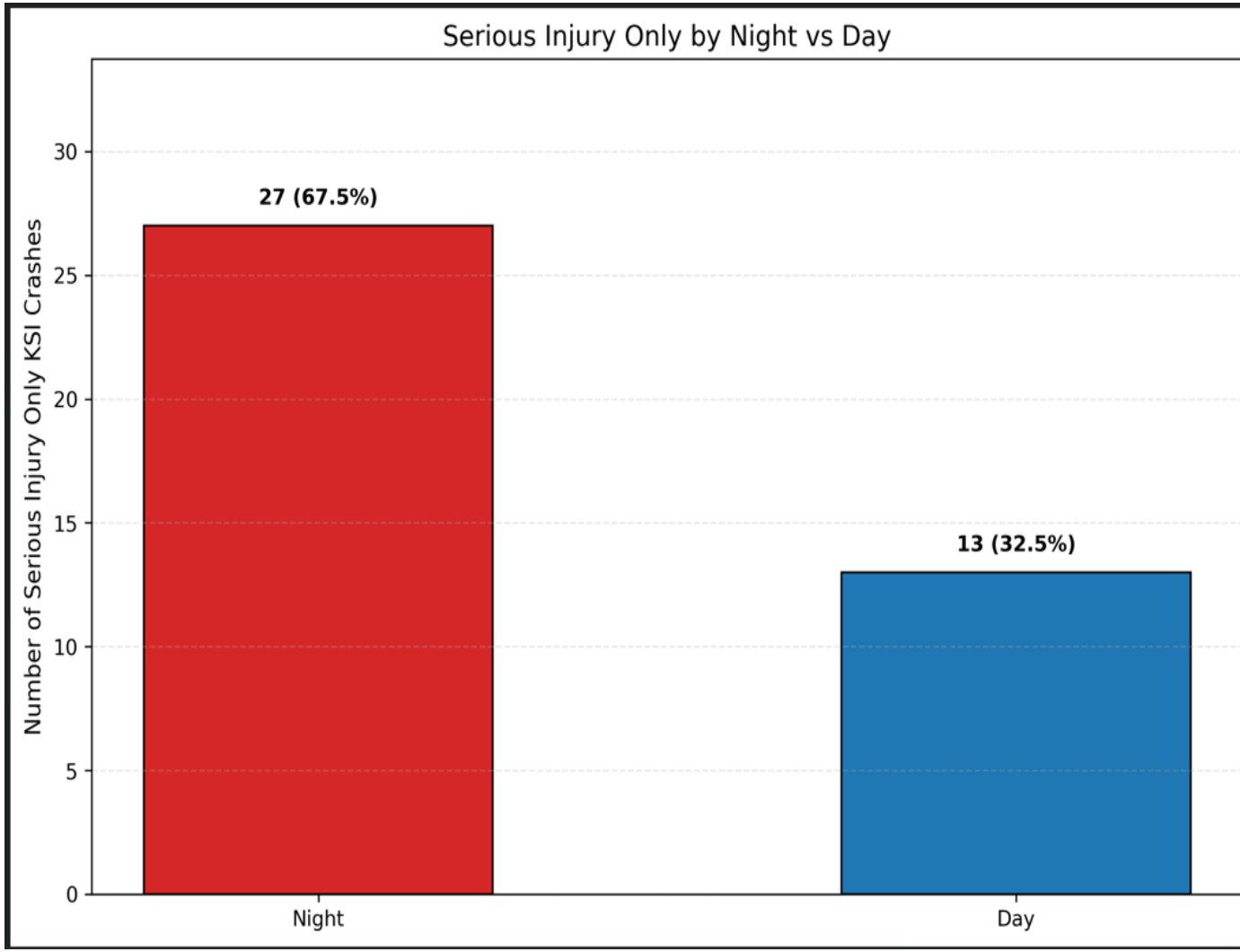
- **Night = red**
- **Day = blue**



- **Fatal = red**
- **Serious Injury Only = orange**

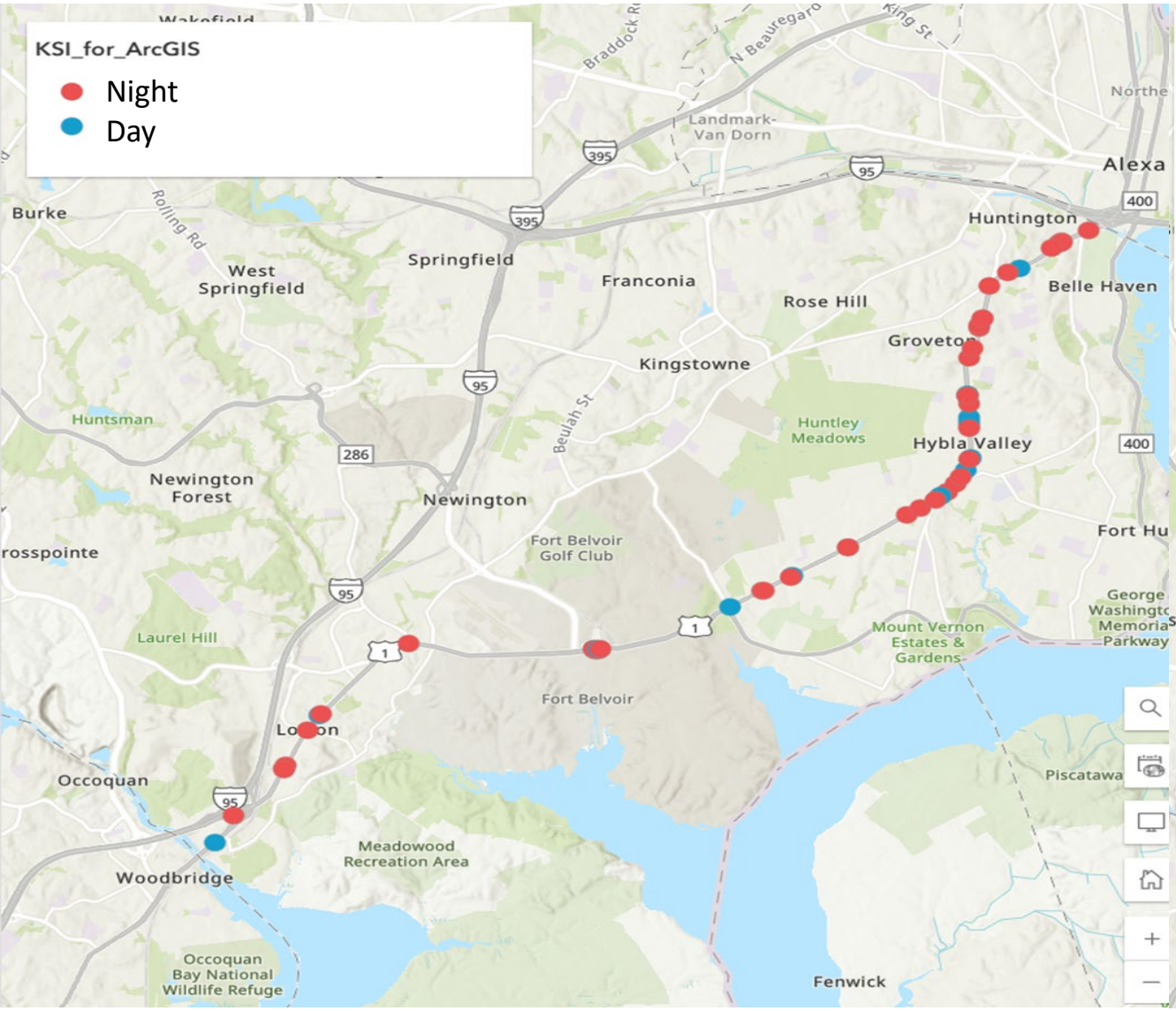
Fatal and Serious Injury KSI Outcomes Are Concentrated at Night

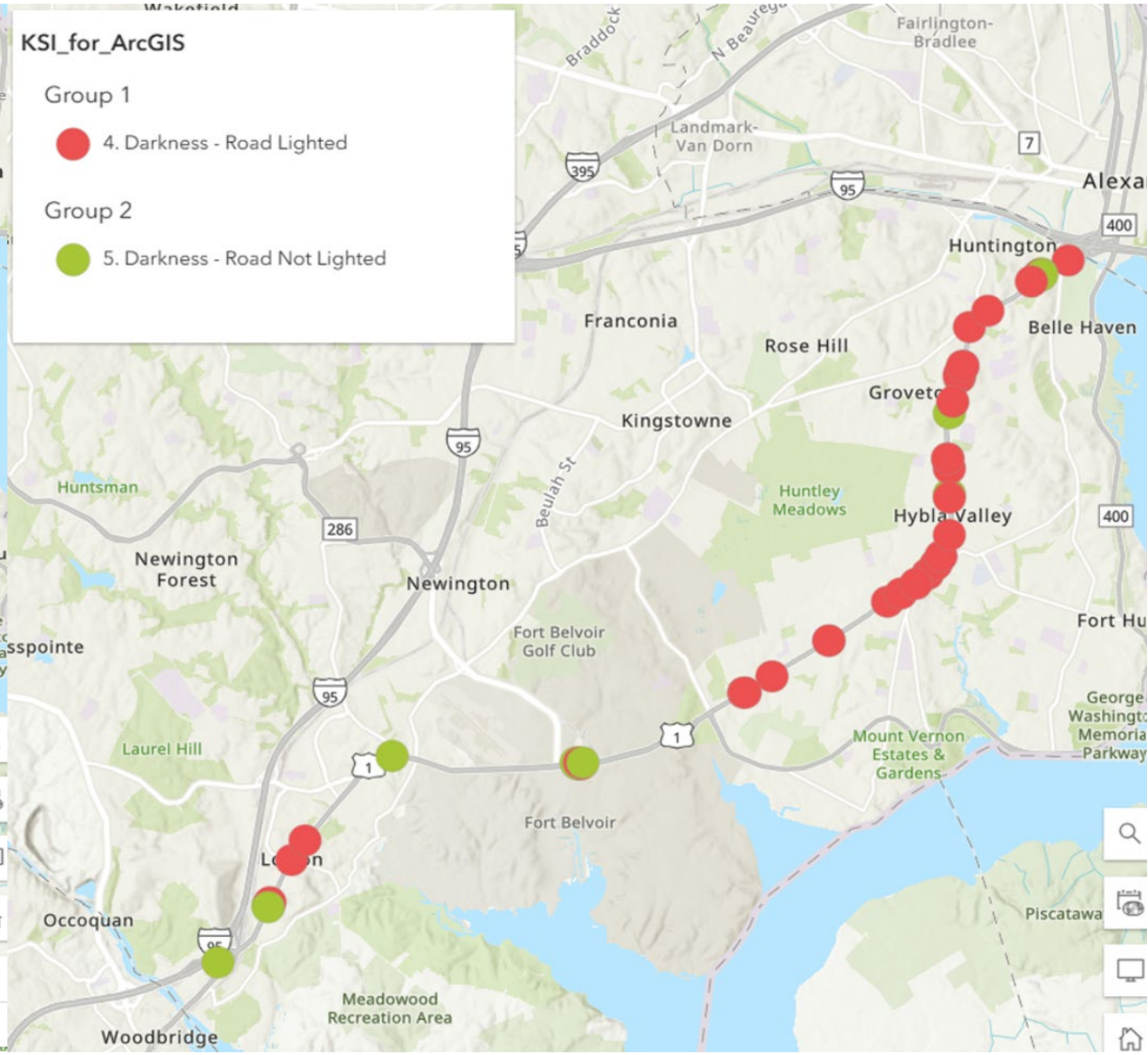




Nearly all fatal KSIs occurred at night, and two-thirds of serious injury only KSIs also occurred at night.

Nighttime KSI Crashes Cluster Along the Corridor and Occur Mostly on Lighted Segments





Most corridor KSIs occurred at night, and the largest nighttime cluster is in Darkness – Road Lighted conditions.

Nearest Light Asset Context at Priority Crash Locations

Rank	Crash ID	Nearest Light Distance (ft)	Light Address
1	31	844.8	10229 Furnace Rd
2	12	405.4	5902 Richmond Hwy
3	20	392.0	10014 Richmond Hwy
4	45	349.6	10014 Richmond Hwy
5	38	202.9	10110 Giles Run Rd

- **Some nearby streetlights show notes that they were changed or upgraded.**
- **Those notes do not tell us whether the crash location had enough light.**
- **The main finding is that several top-priority crash sites are still far from the nearest mapped streetlight.**

Pedestrian KSI Crashes Relative to Mapped Streetlights

Buffer Threshold	Inside Buffer	Outside Buffer	Total KSI Crashes
100 ft	47 (75.8%)	15 (24.2%)	62
150 ft	52 (83.9%)	10 (16.1%)	62

Definitions
Inside buffer = crash occurred within the stated distance of the nearest mapped streetlight
Outside buffer = crash occurred beyond the stated distance of the nearest mapped streetlight

Key takeaway
Most pedestrian KSI crashes occurred within 100 ft of a mapped streetlight, but some still occurred farther away. This shows crash proximity relative to mapped streetlights, not whether lighting caused or prevented crashes.

Top 5 Priority Crash Locations for Field Inspection

Rank	Location	Crash Year	Severity	Light Condition	Nearest Streetlight Distance (ft)	Inside 100 ft	Inside 150 ft	Priority	Appendix Slide
1	RH-SB near Giles Run Rd ramp area (RMP 177.00B)*	2022	Fatal	Darkness – Road Not Lighted	844.8	No	No	Very High	83
2	RH-SB near RMP 191.62	2019	Fatal	Darkness – Road Lighted	405.4	No	No	Very High	84
3	RH-NB near RMP 178.48	2020	Fatal	Darkness – Road Not Lighted	392.0	No	No	Very High	84
4	RH-SB near RMP 178.51	2024	Serious Injury	Darkness – Road Not Lighted	349.6	No	No	Very High	84
5	RH-SB near RMP 178.56	2023	Serious Injury	Darkness – Road Lighted	202.9	No	No	High	85

* Note: The location of this pedestrian fatality is not at a normal pedestrian pathway but rather an exit ramp off 95 going towards Rt 1. We kept this crash in our study to flag its screening location that needs additional context review, rather than as a straightforward pedestrian lighting gap

Definitions

- Hotspots = top 5 priority crash locations from the crash dataset
- RH = Richmond Highway; SB/NB = Southbound/Northbound
- Distance = crash location to nearest mapped streetlight

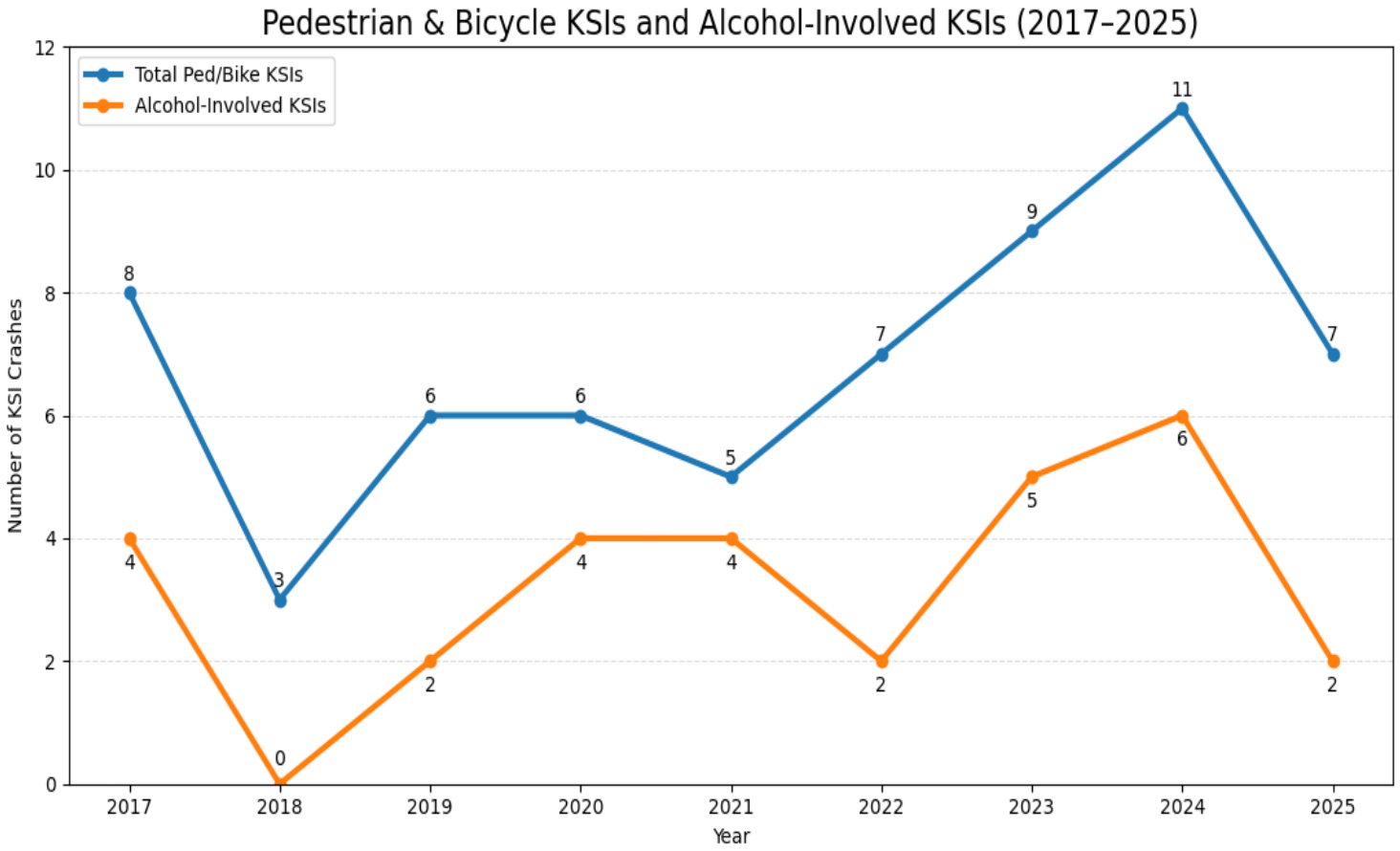
Key Findings

- All **5 ranked hotspots** are outside both the **100-ft** and **150-ft** streetlight buffers.
- All 5 locations are **KSI crashes**: **3 Fatal** and **2 Serious Injury**.
- The top **3 ranked** sites are all **Fatal** crashes.
- Distances to the nearest mapped streetlight range from **202.9 ft to 844.8 ft**.
- **4 of 5** sites are **Very High** priority; **1 of 5** is **High** priority.
- Detailed site maps are provided in the appendix slides listed in the final column.
- Priority #1 is more of an anomaly location in an entrance/exit ramp context, not a typical pedestrian travel lane, but it should still be investigated.

Alcohol-Related Pedestrian Crashes

Pedestrian KSIs and Alcohol Involvement by Year

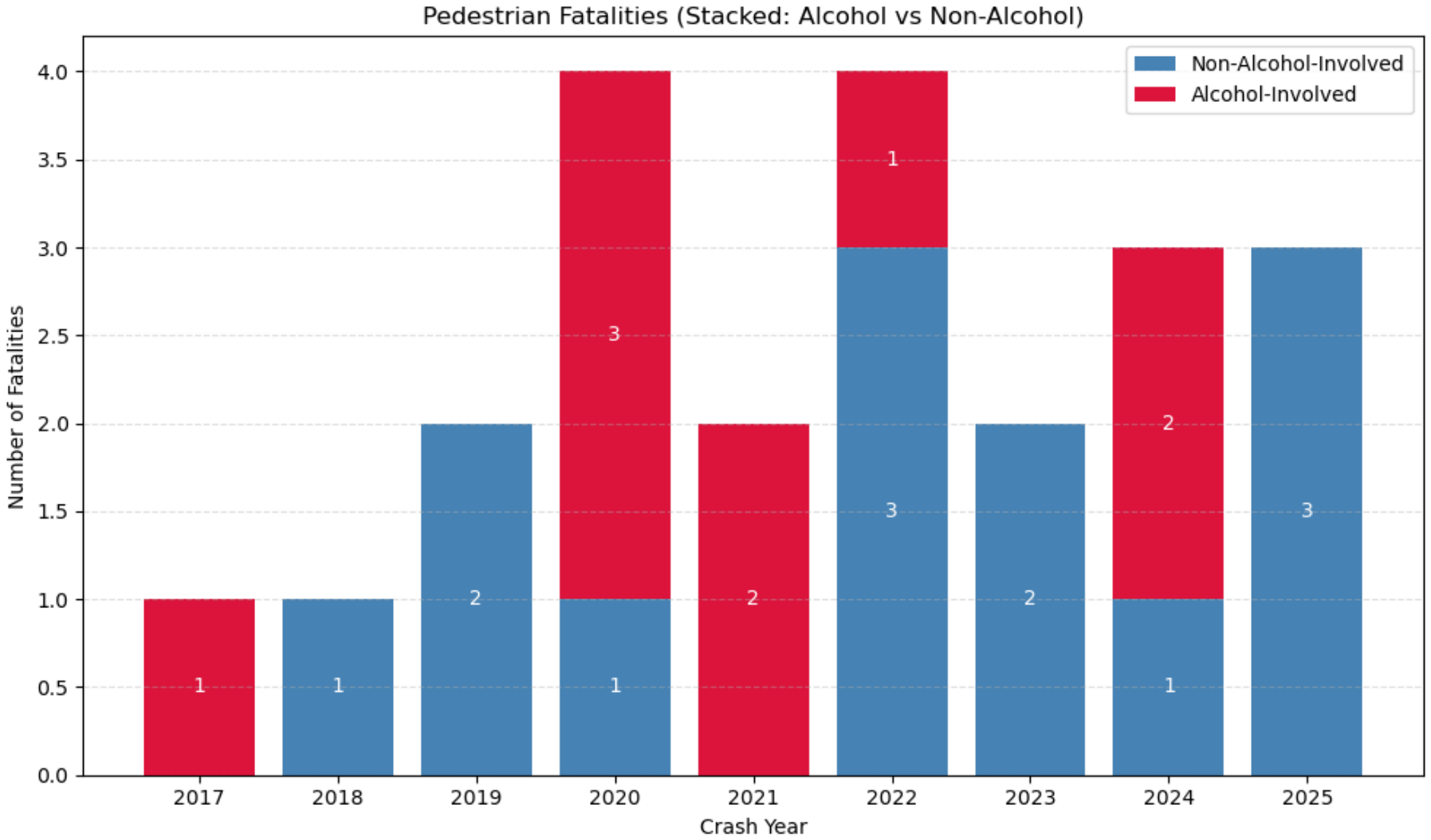
Crash Year	Total Ped / Bike KSIs	Alcohol Ped / Bike KSIs	% Alcohol
2017	8	4	50.0
2018	3	0	0.0
2019	6	2	33.3
2020	6	4	66.7
2021	5	4	80.0
2022	7	2	28.6
2023	9	5*	55.6
2024	11	6	54.5
2025	7	2	28.6



* There's one bicyclist involved with alcohol in 2023.

A total of **62** pedestrian and bicyclist KSIs occurred between 2017 and 2025. On an annual basis, alcohol was involved in a substantial share of these crashes in some years, **peaking at 80% in 2021**, while only one bicycle-related KSI (in 2023) was identified.

Alcohol Involvement in Pedestrian & Bicycle Fatalities Over Time (2017–2025)

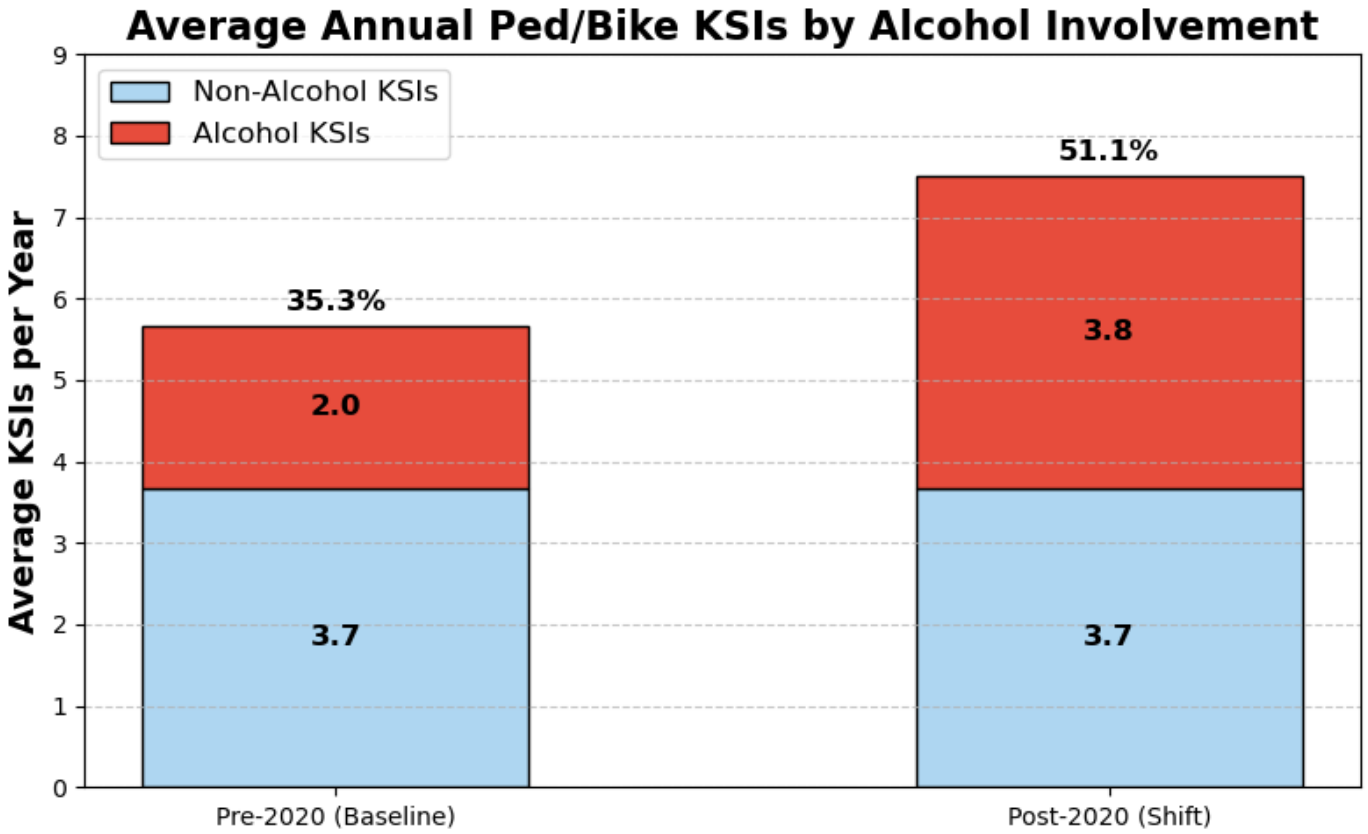


Crash Year	Total Ped Fatalities	Alcohol-Involved Fatalities
2017	1	1
2018	1	0
2019	2	0
2020	4	3
2021	2	2
2022	4	1
2023	2	0
2024	3	2
2025	3	0

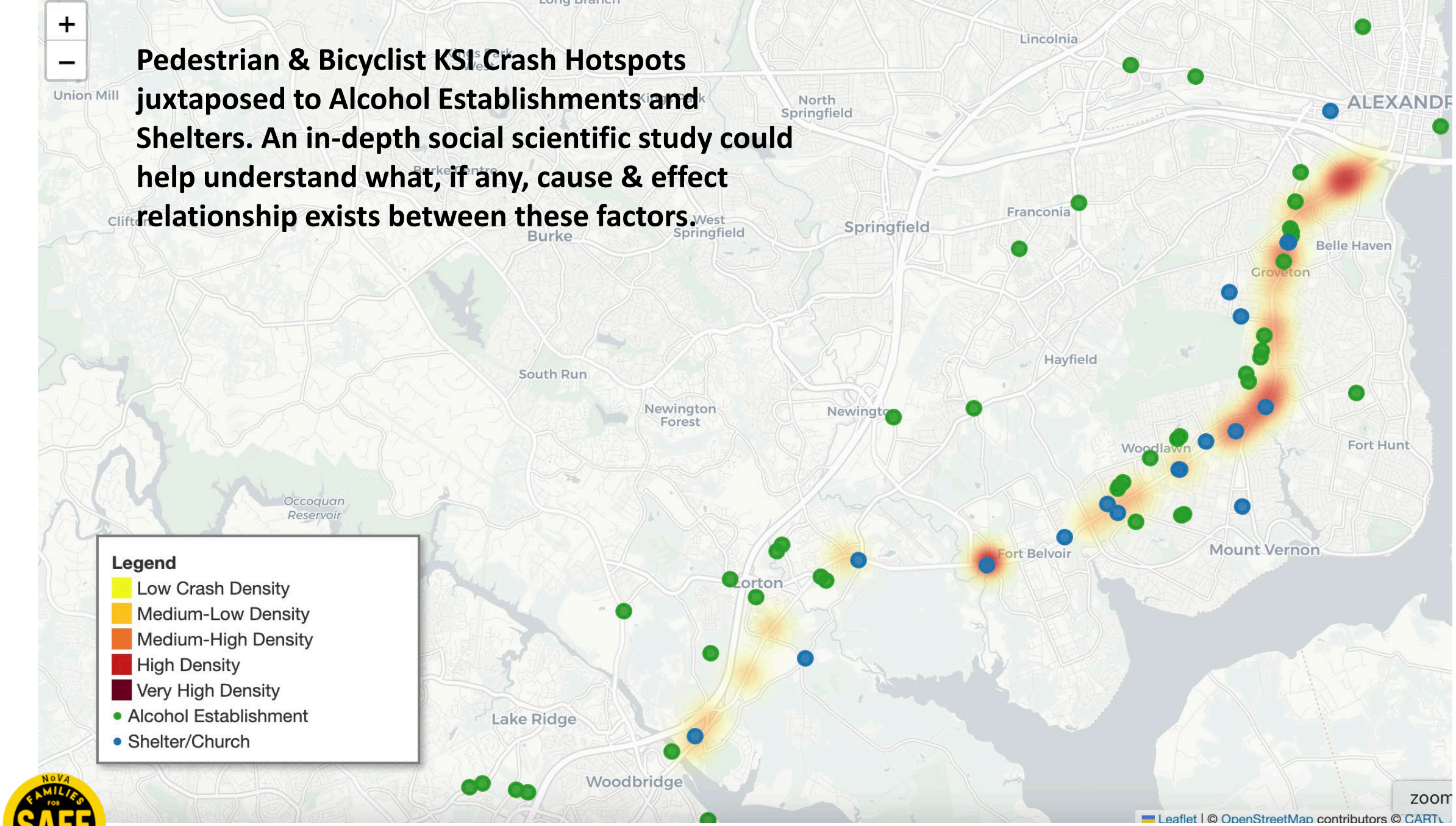
Alcohol contributes to many pedestrian fatalities, with the largest shares occurring in 2020, 2021 and 2024.

Alcohol Involvement in Pedestrian KSIs: Pre- vs Post-2020 COVID

Post-2020, alcohol-involved **Pedestrian** KSIs rose from **35.3% to over 50%**, alongside an increase in total KSIs



Period	Avg Total Ped/Bike KSIs	Avg Alcohol KSIs	Avg Non-Alcohol KSIs	% Alcohol
Pre-2020 (Baseline)	5.7	2.0	3.7	35.3%
Post-2020 (Shift)	7.5	3.8	3.7	51.1%

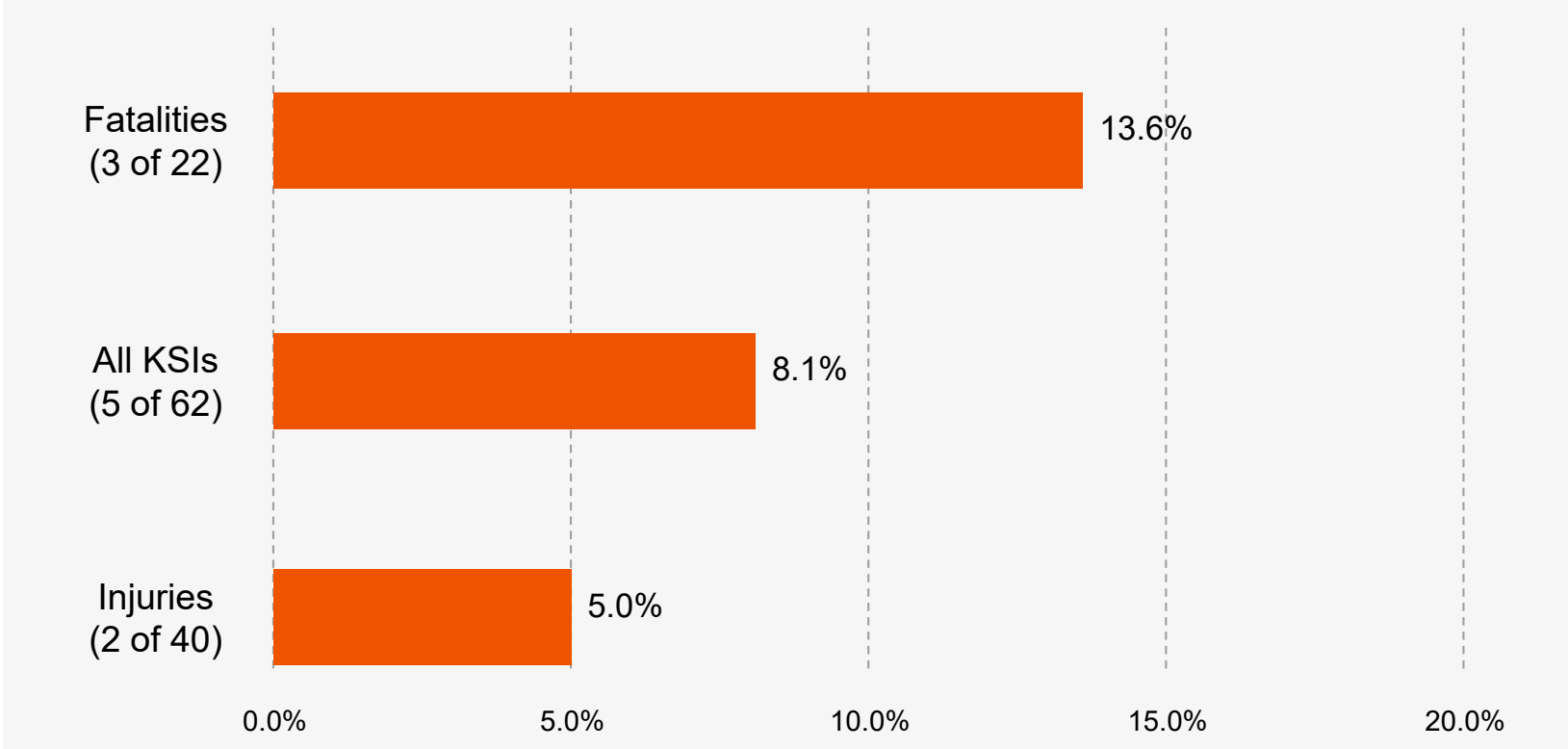

Pedestrian & Bicyclist KSI Crash Hotspots juxtaposed to Alcohol Establishments and Shelters. An in-depth social scientific study could help understand what, if any, cause & effect relationship exists between these factors.
Legend
Low Crash Density
Medium-Low Density
Medium-High Density
High Density
Very High Density
Alcohol Establishment
Shelter/Church
Union Mill
North Springfield
Lincolnia
ALEXANDR
Springfield
Franconia
West Springfield
Burke
Belle Haven
Groveton
Hayfield
South Run
Newington Forest
Woodlawn
Fort Hunt
Occoquan Reservoir
Fort Belvoir
Mount Vernon
Lorton
Lake Ridge
Woodbridge
zoom
Leaflet | © OpenStreetMap contributors © CARTO

Speed and Topography

Speed as an Overall Factor

TREDS data indicate driver's speed was a factor in only 8% of all KSIs but ~14% of fatalities

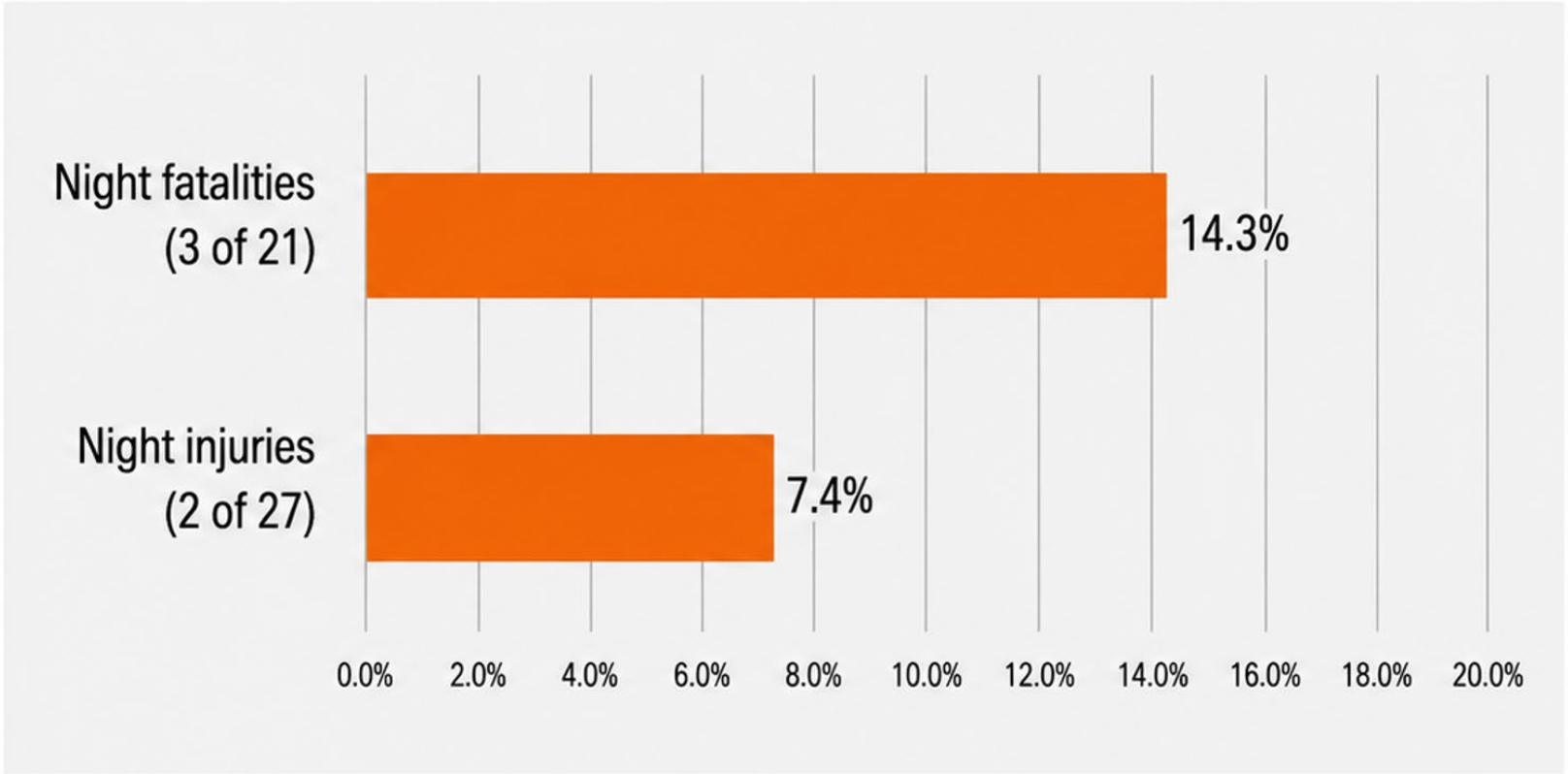
Note: Speed is under-reported in the TREDS' report because there are no speed cameras or devices accurately and consistently recording speed of vehicles traveling on this road.



Percentages are calculated from the displayed yes/no counts on the source slide.

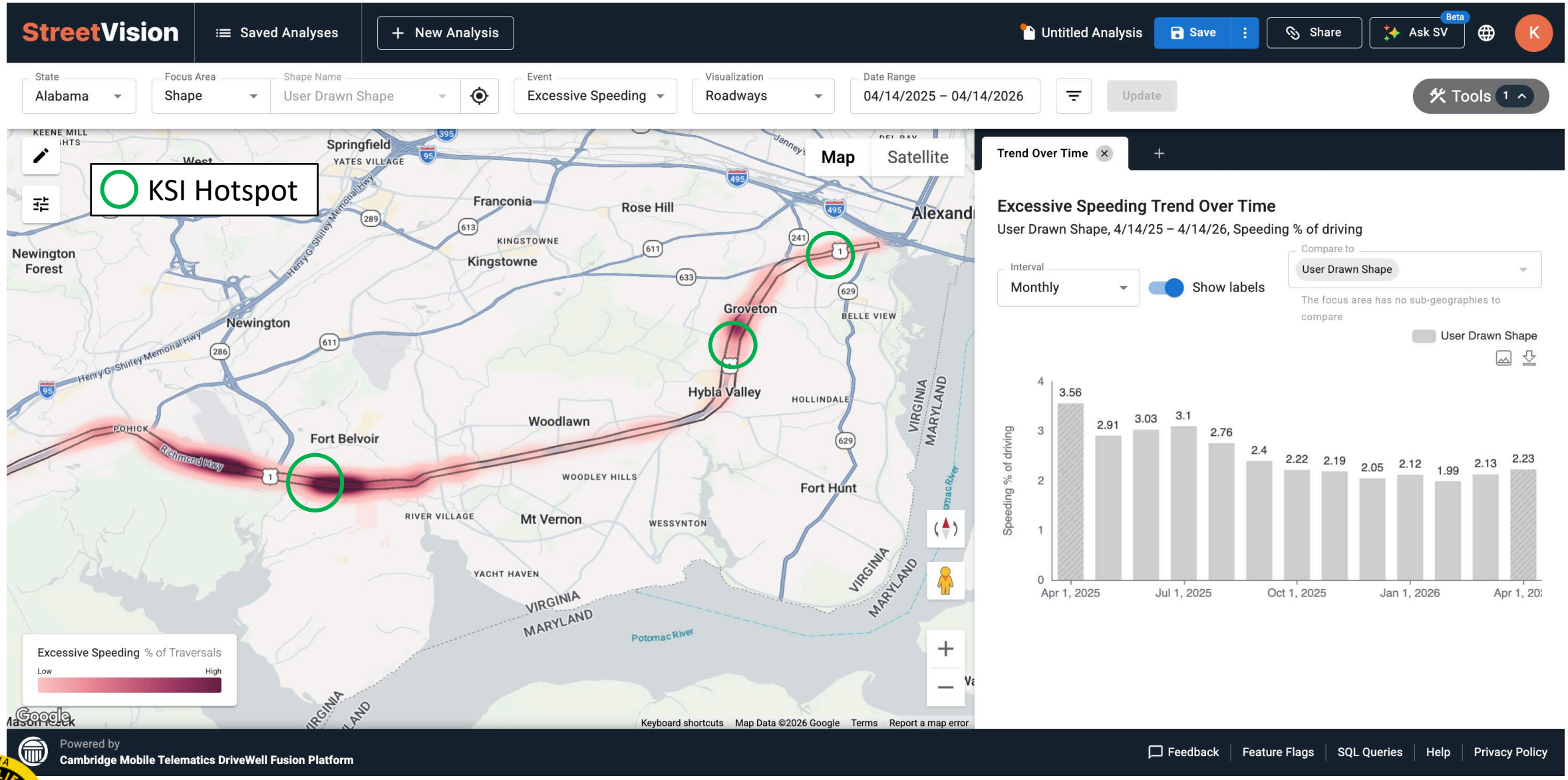
Evaluating Speed with Time

At night, speeding is about twice as common in fatalities as in injuries.

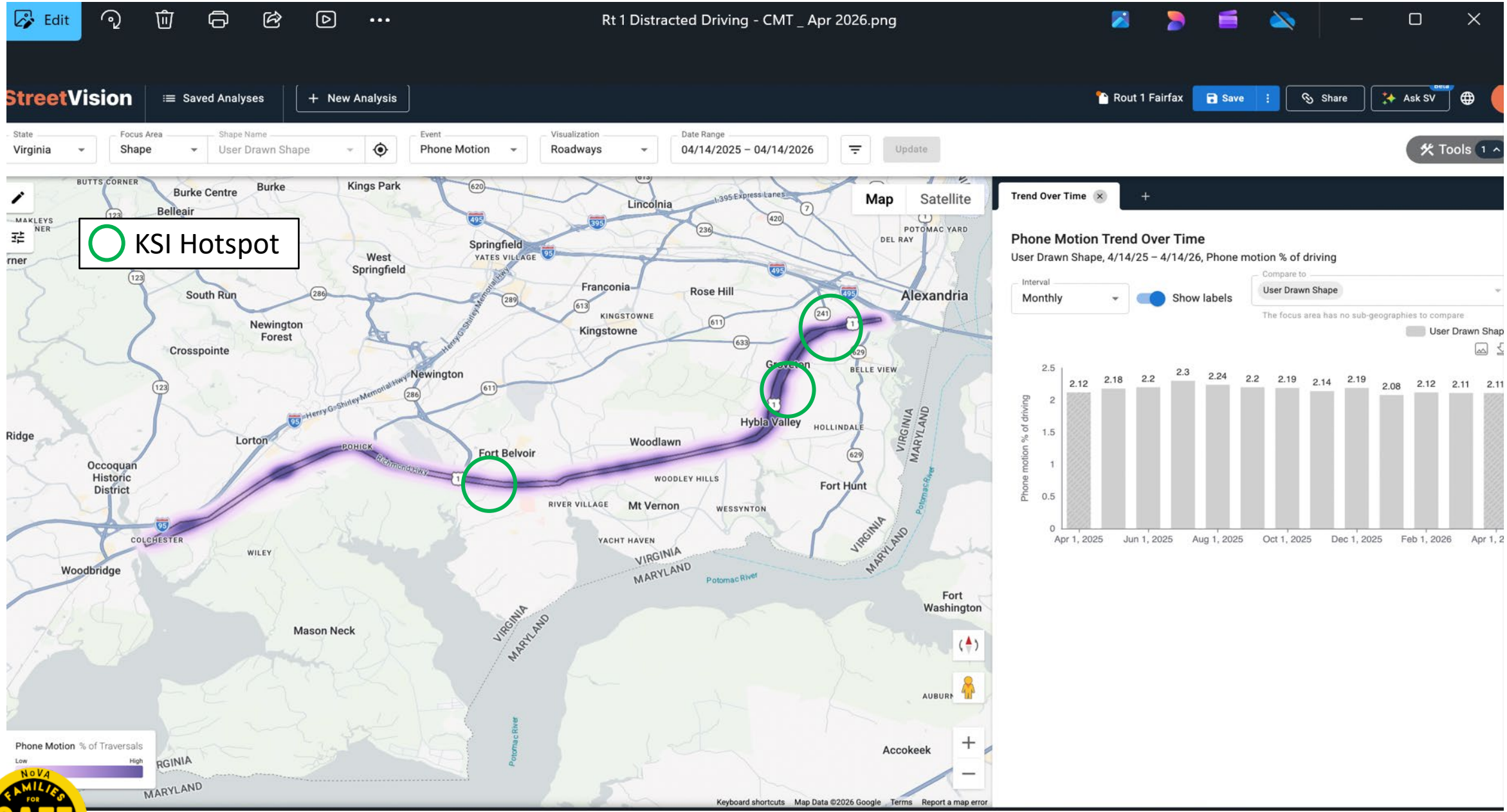


Daytime speed-related KSIs: 0

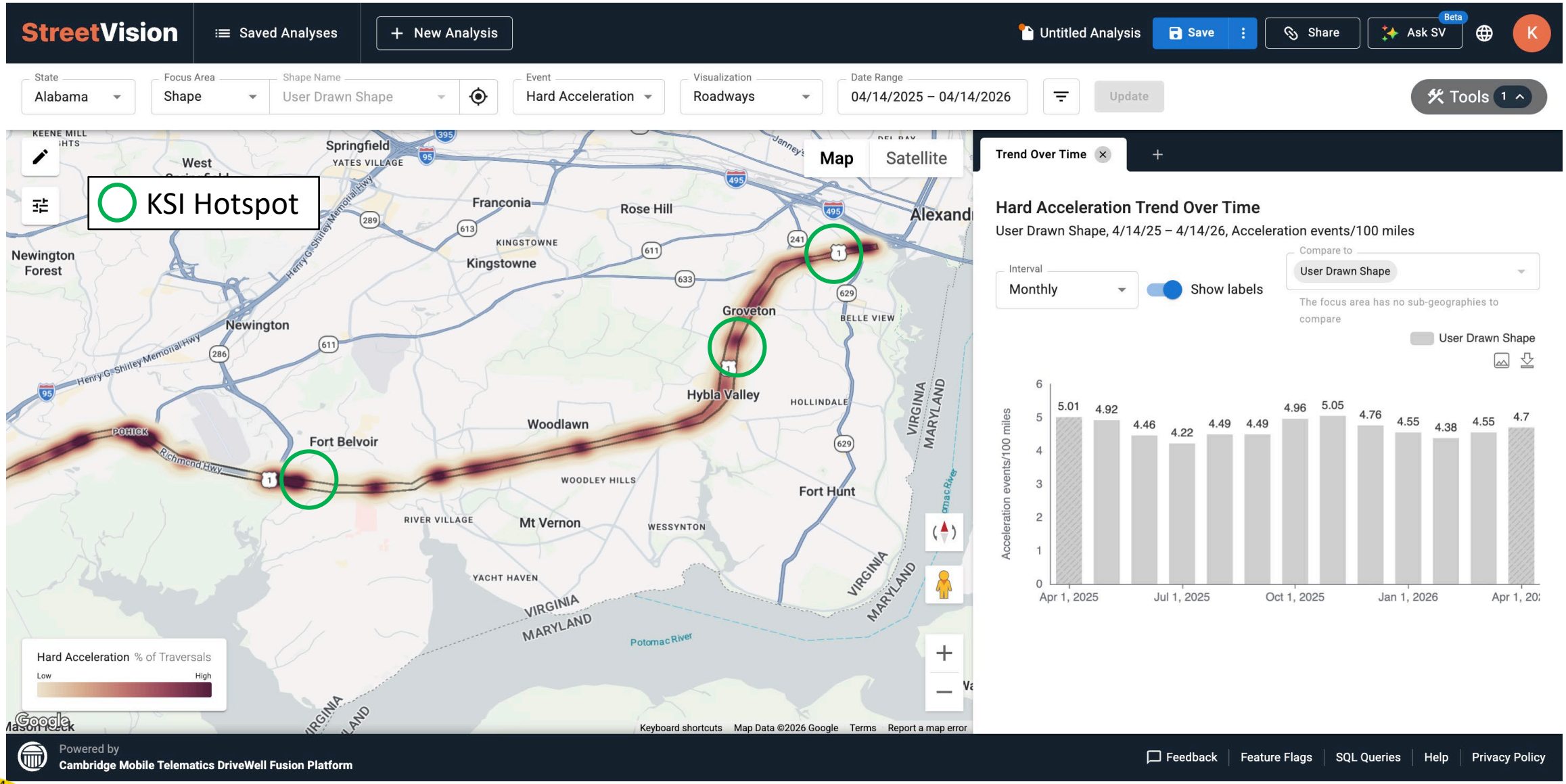
Speeding Hot Spots with KSI Hotspots



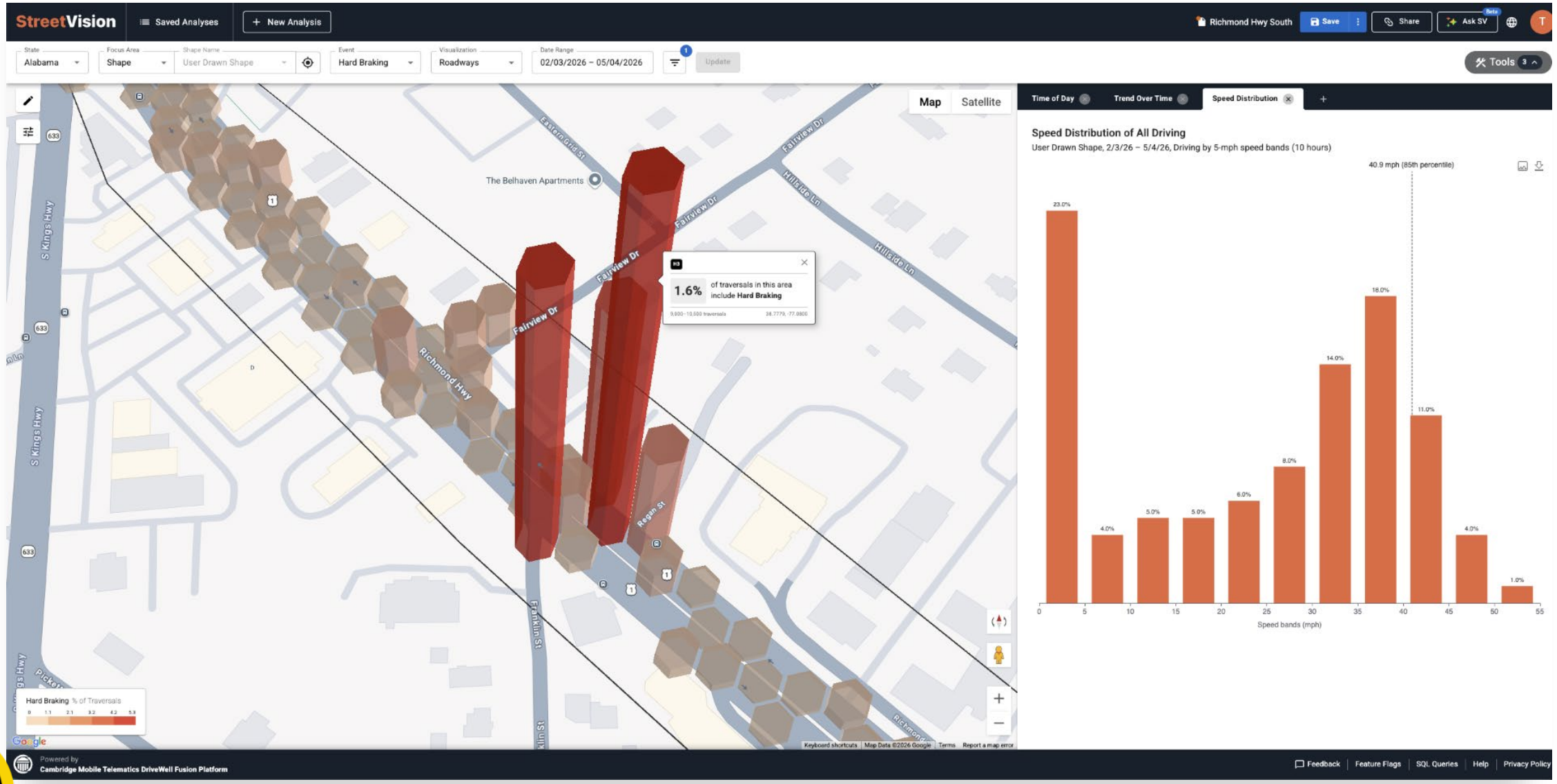
Distracted Driving – Phone Motion



Hard Acceleration Trend

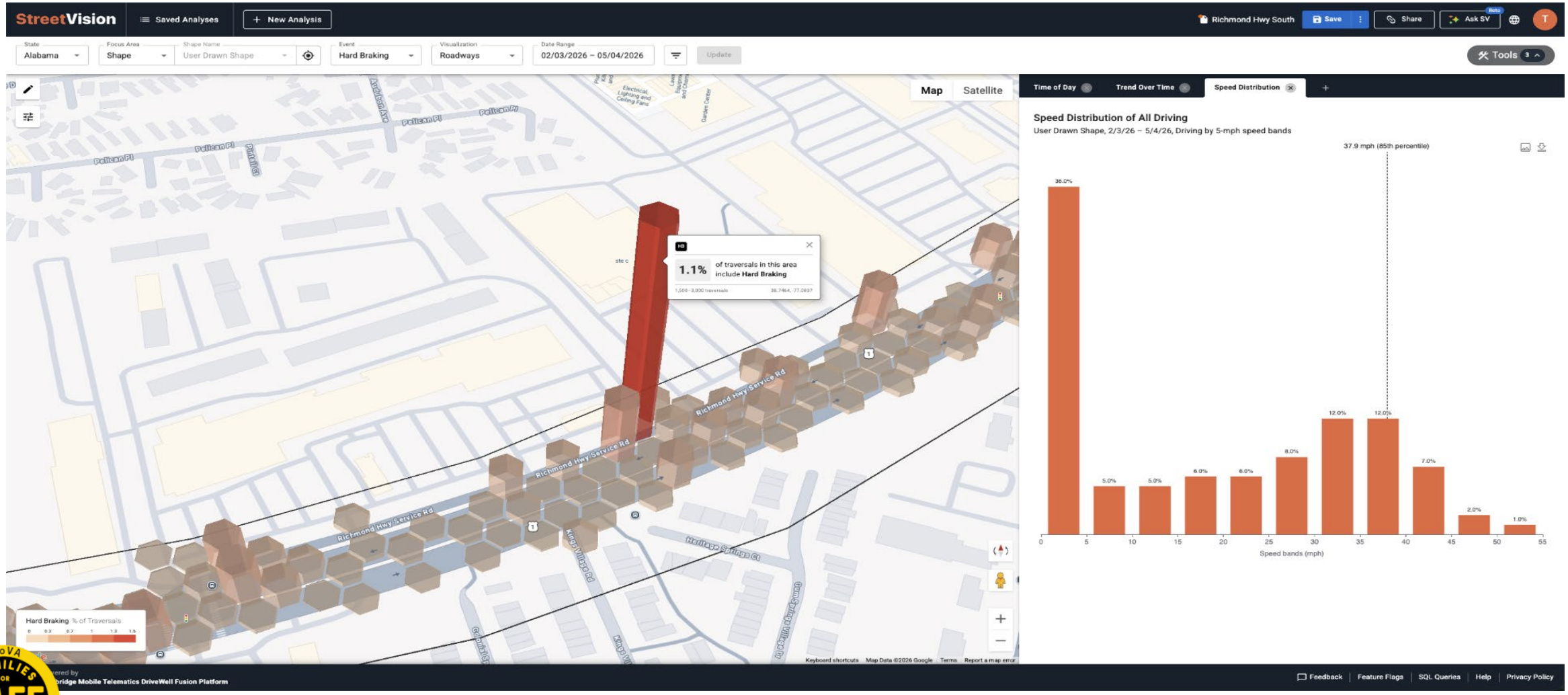


Hard Braking – Rt & Franklin Dr - Every 60th vehicle slamming on its brakes (overnight period). Specific issues in the northbound lanes and on Franklin Dr approaching the intersection.



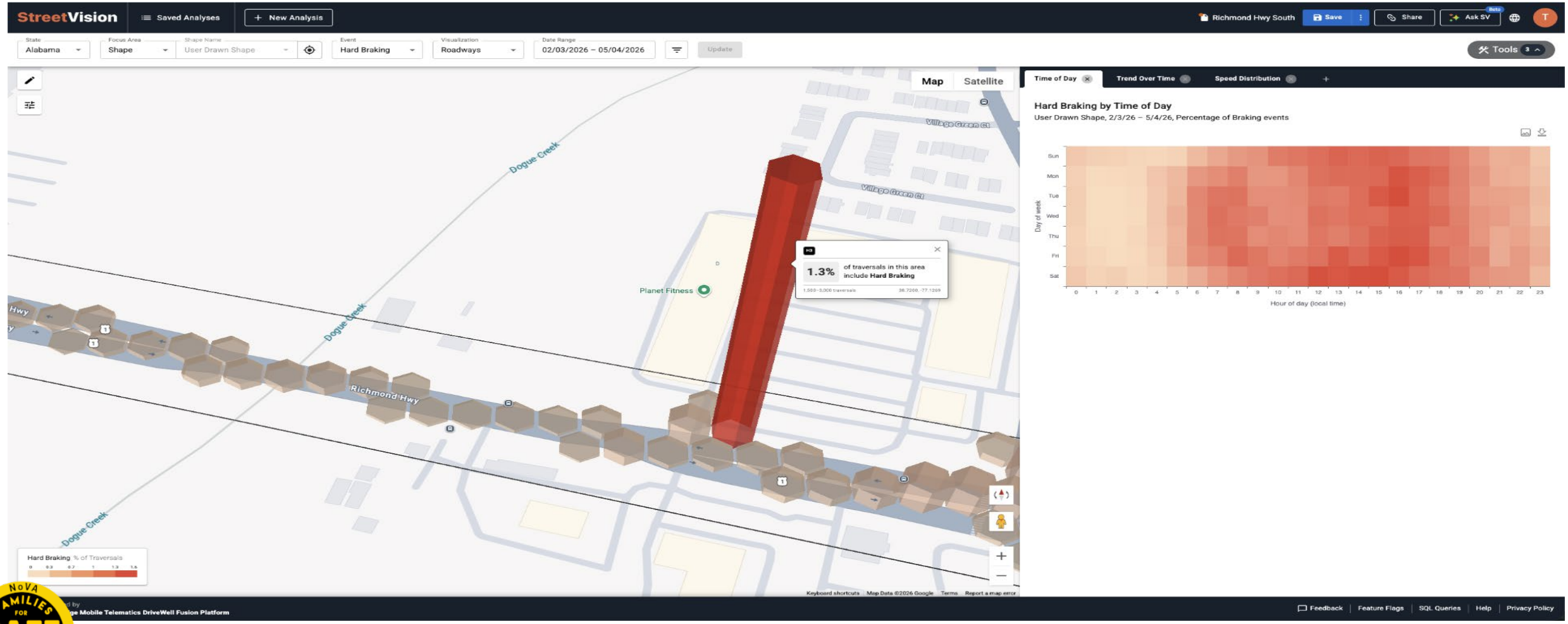
Hard Braking – Rt 1 & Mount Vernon Center

1 in every 100 vehicles hard braking near the driveway to the retail parking lot



Hard Braking – Rt 1 & Sacramento Center just before Ft. Belvoir

Every 75th vehicle hard braking while attempting to merge from the retail parking lot onto the highway

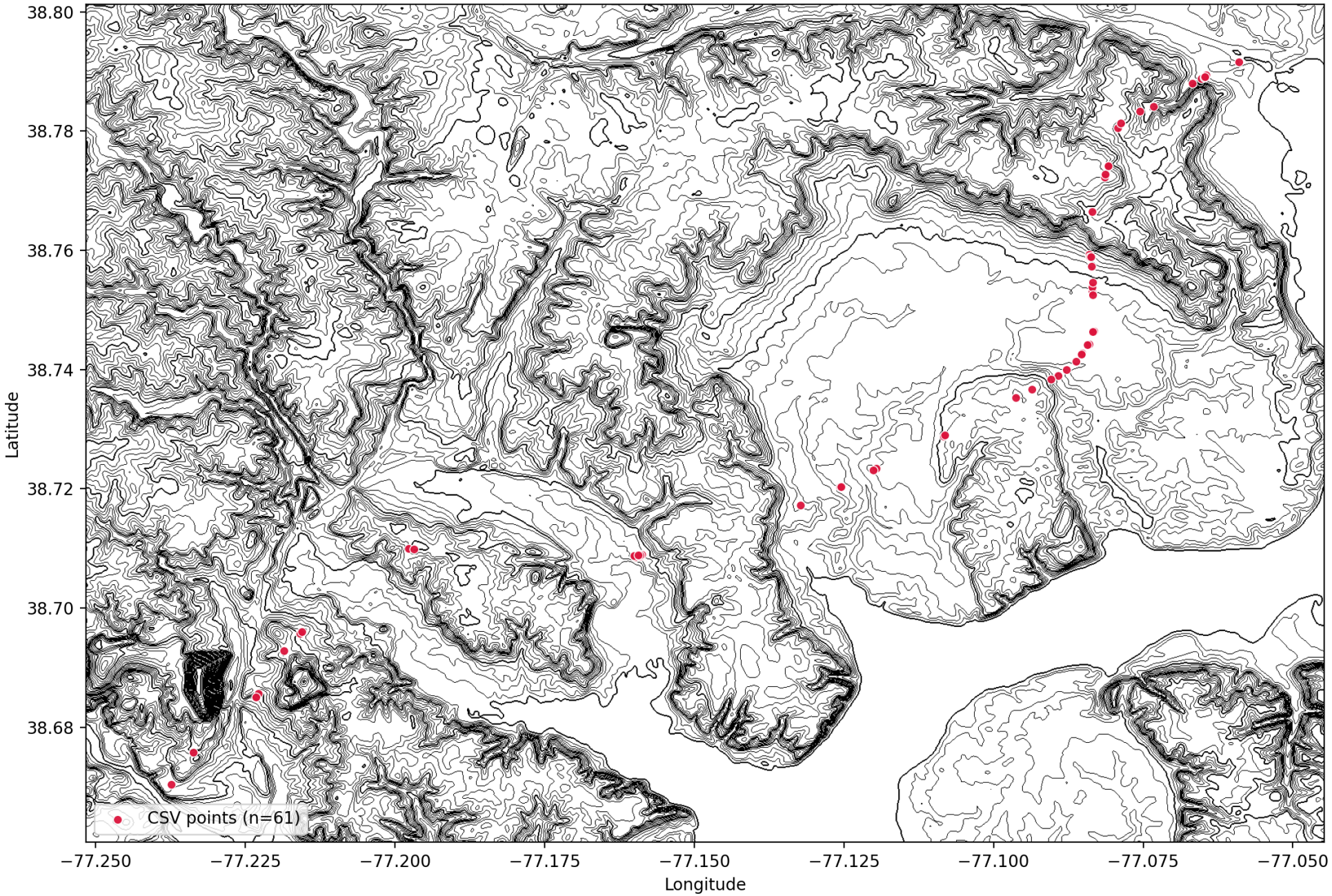


Topography

- As shown in the photo, a steep downhill slope leads up to the intersection of Richmond Hwy 1 Southbound and Backlick Rd, which could cause KSIs combining with other factors such as lack of lighting and speed.

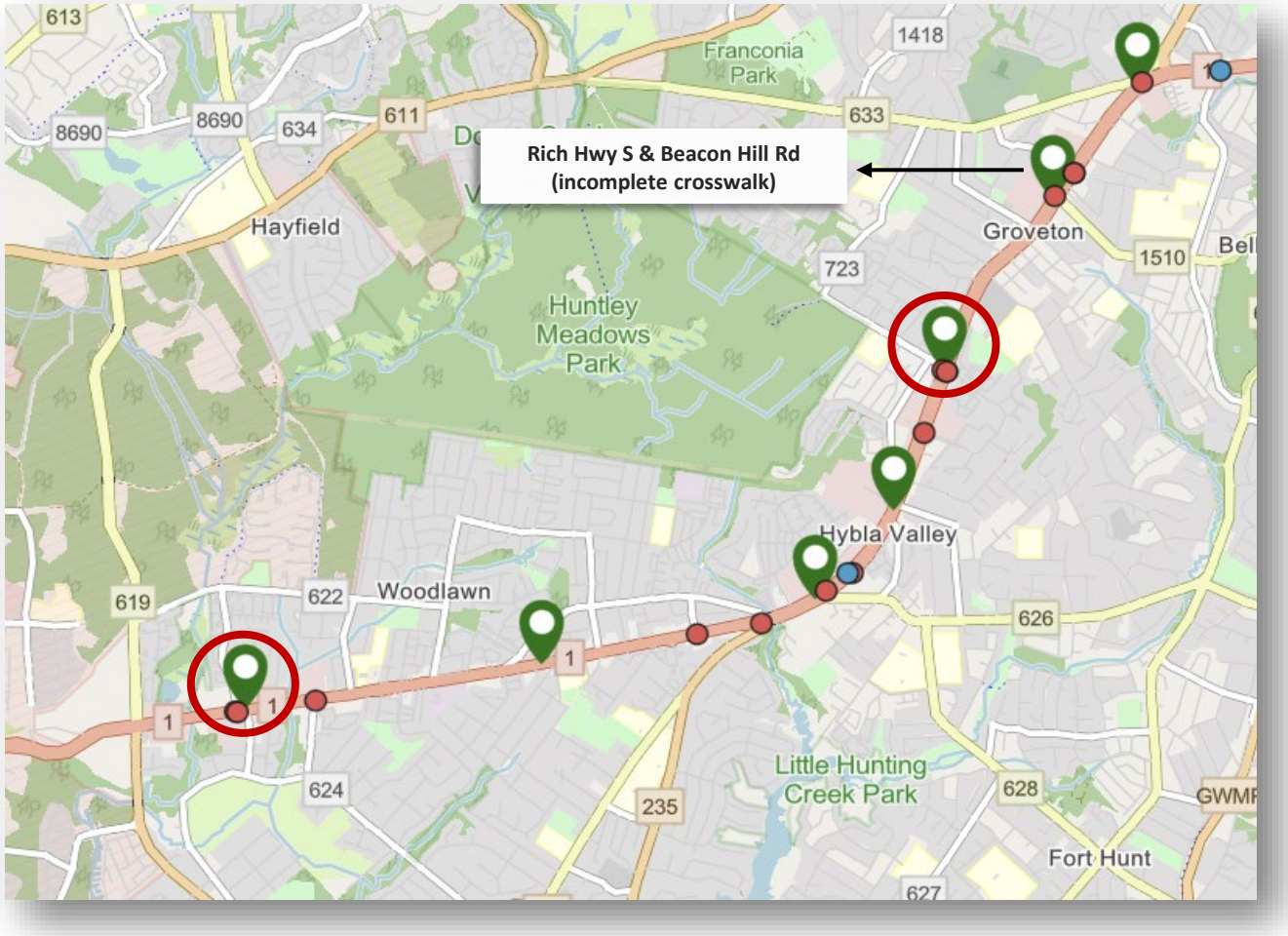
Topography

- Another topography worth noting is the steep downhill slope on Richmond Hwy 1 northbound leading up to Jeff Todd Way. Also has no lighting and curvy slopes.


CSV Data Points over USGS 3DEP 10-ft Elevation Contours
38.80
38.78
38.76
38.74
38.72
38.70
38.68
Latitude
−77.250
−77.225
−77.200
−77.175
−77.150
−77.125
−77.100
−77.075
−77.050
Longitude
CSV points (n=61)

Proposed BRT on Richmond Hwy

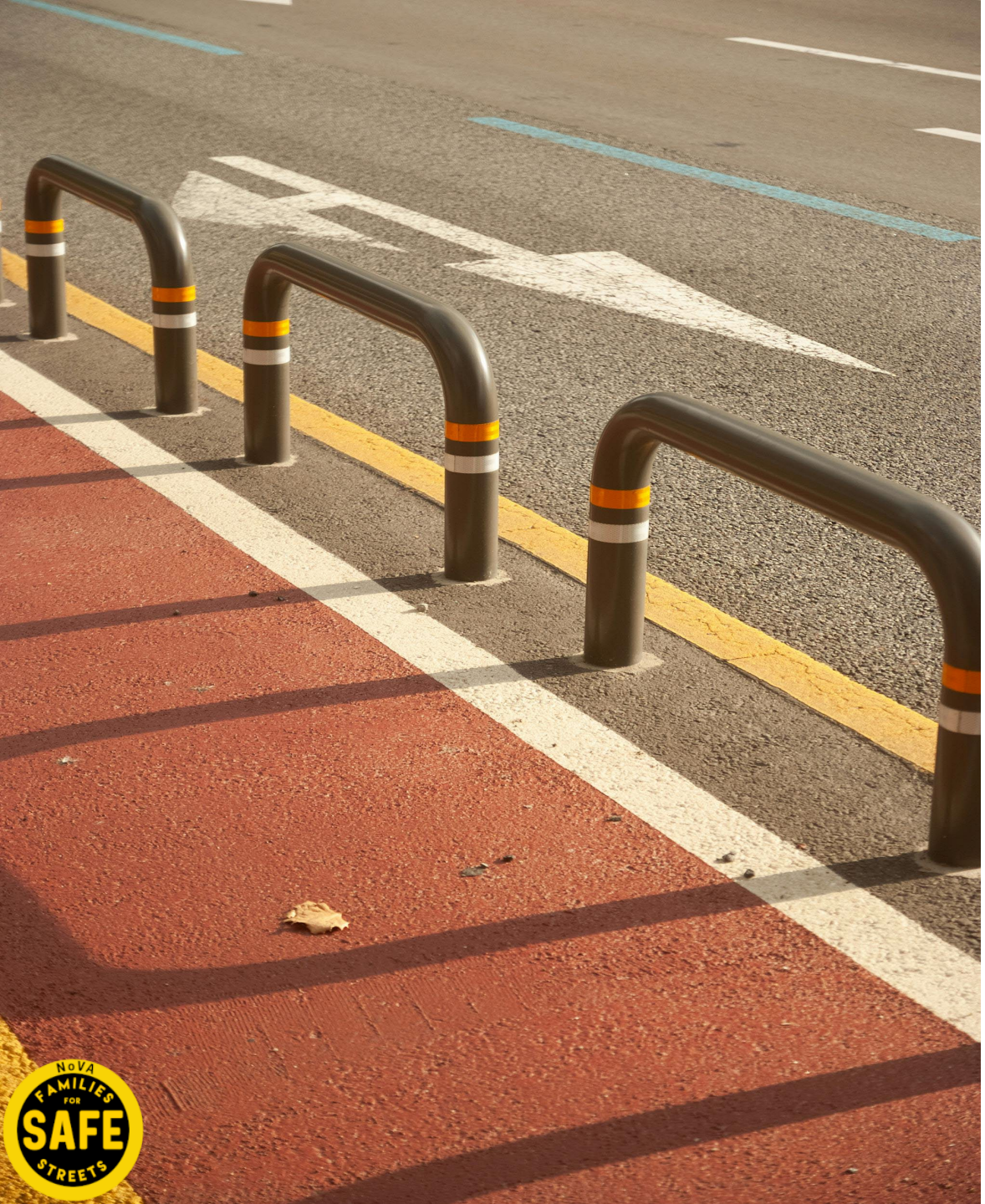
BRT Stop Alignment vs. KSI Crash Hotspots



Source: [NVTA BRT Action Plan - Potential Network] & [Fairfax County Project Area Map for Richmond Hwy BRT]

BRT Section 1 Proposed Stops

Proposed Stops in KSI Cluster Areas



BRT Plan for Physical Barriers to Prevent Unsafe Crossings

Key Findings

- Two new pedestrian underpasses are planned at Dogue Creek and Little Huntington Creek
- Separated bike lanes & sidewalks provide safer multimodal options
- BRT design uses landscaped medians rather than restrictive walls or barriers
- No pedestrian fencing or continuous barrier walls are currently planned along the BRT corridor
- Median openings at intersections may still allow mid-block or uncontrolled pedestrian movement

FCDOT Richmond Highway Bus Rapid Transit Project
VDOT Richmond Hwy Improvements

What This Means for Pedestrian Safety

- Pedestrians prioritize **shortest path to bus stops**, not signalized crossings
- Wide roadway + median stations → **increased crossing demand**
- Without barriers, **mid-block crossings remain easy and likely**

BRT Plan for Physical Barriers to Prevent Unsafe Crossings Cont'd

Source: FCDOT Richmond Highway Bus Rapid Transit Project

Figure 3-2: Typical Section – Richmond Highway from Shields Avenue to Sherwood Hall Lane

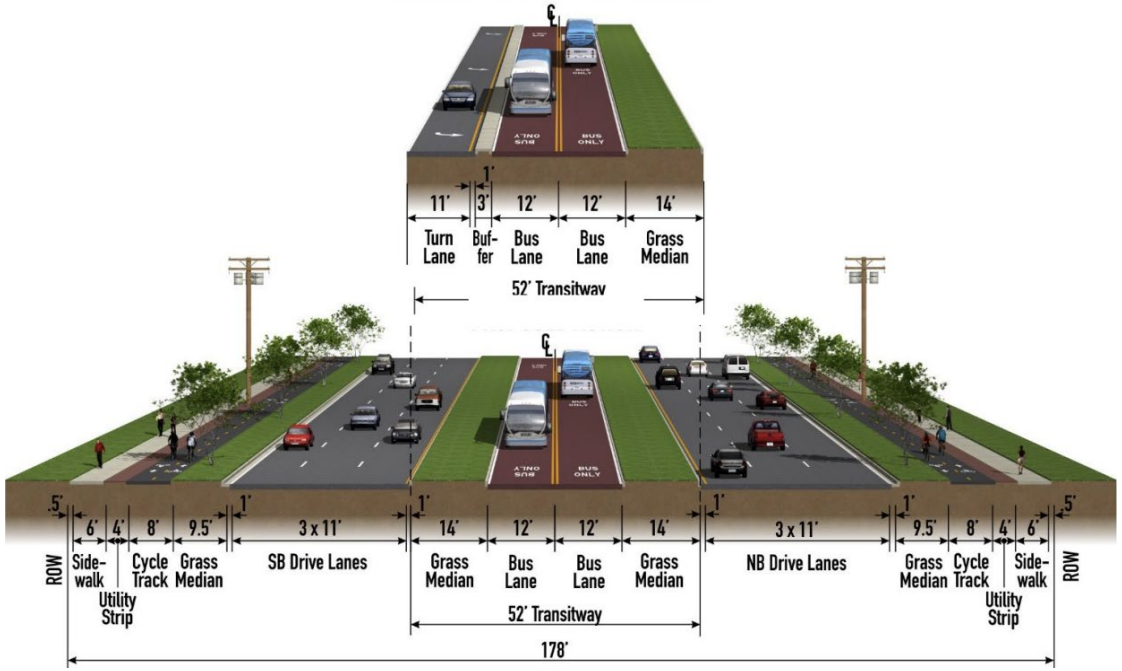
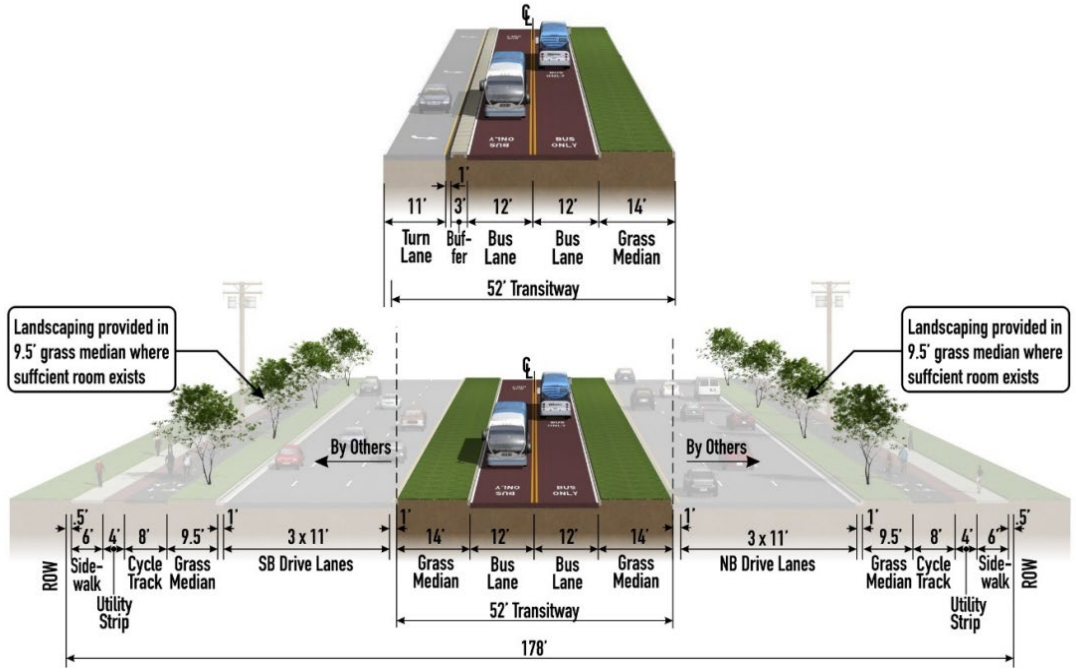


Figure 3-3: Typical Section – Richmond Highway from Sherwood Hall Lane to Jeff Todd Way



BRT Plan for Physical Barriers to Prevent Unsafe Crossings Cont'd

Source: FCDOT Richmond Highway Bus Rapid Transit Project

Figure 3-5: Conceptual Rendering of Richmond Highway BRT Station

THE SAFETY CRISIS

Deadly Gaps Between Crosswalks

Pedestrians are dying because crosswalks on Richmond Highway are too far apart

2,600

ft -- longest gap (N. Kings Hwy to Southgate)

Nearly half a mile with no place to cross safely. The recommended max is 600 ft.

19/21

Gaps exceed 600 ft recommended max

Over 90% of crosswalk gaps along the corridor exceed pedestrian safety standards.

MEASURED DISTANCES

Crosswalk Gaps -- North to South

Richmond Highway (US Route 1) -- All 21 crossing gaps, measured in feet

Under 600 ft | 600-1,320 ft | Over 1,320 ft (1/4 mi)

Shields → Penn Daw 500	N. Kings Hwy → Southgate 2,600	Southgate → Beacon Hill 500	Beacon Hill → Memorial 800	Memorial → Collard/Popkins 1,200
Collard/Popkins → Lockheed/Dart 2,550	Lockheed/Dart → Arlington 1,500	Arlington → Boswell/Fordson 1,700	Boswell/Fordson → Glenn Springs 1,900	Glenn Springs → Gum Springs BRT 650
Gum Springs BRT → Ladson 800	Ladson → Mt. Vernon Hwy 1,000	Mt. Vernon Hwy → Janna Lee 1,200	Janna → Russell/Reddick 2,150	Russell → Mohawk/SoCo Station 900
Mohawk → Radford 1,050	Radford → Frye 1,500	Frye → Wyngate 1,450	Wyngate → Lukens 1,100	Lukens → Sacramento 1,350	Sacramento → Jeff Todd Way 2,400

1,326 ft average gap

10 gaps over 1/4 mile (1,320 ft)

2 gaps meet the 600 ft standard

Recommended max: **600 ft**

CORRIDOR DETAIL

Pedestrian Improvements by Segment

Segment A

Sherwood Hall Ln → Frye Rd

1.5 miles

+ Two-way cycle tracks + sidewalks both sides
+ Intersection improvements at 3 locations
+ Bridge replacement at Little Hunting Creek

Segment B

Frye Rd → Sacramento Dr

1.0 miles

+ Two-way cycle tracks + sidewalks both sides
+ Intersection improvements at 2 locations
+ Bridge replacement at N. Fork Dogue Creek

Segment C

Sacramento Dr → Jeff Todd Way

0.5 miles

+ Cycle tracks + sidewalks (north of bridge)
+ Shared-use paths (south of bridge)
+ Bridge replacement at Dogue Creek

Segment D

Jeff Todd Way → Belvoir Rd

1.2 miles

+ BRT extension by FCDOT
+ Road widening into Fort Belvoir
+ BRT stations + pedestrian facilities

Key finding: All segments mention sidewalks, cycle tracks, and intersection improvements -- but none explicitly mention adding new intersections. All intersections will have four-way crosswalks constructed.

Key Takeaways: BRT Stops vs. Safety & Access

Proposed Stops vs. KSIs

- 2 proposed stop locations are adjacent to clusters of KSI crashes.
- Separated bike lanes & sidewalks improve multimodal options.
- At certain locations, stop placement does not clearly align with safe or complete crossing infrastructure.
    - **Rich Hwy & Beacon Hill Rd** show incomplete crosswalk access near a proposed stop.

Accessibility & Affordability

- BRT fares expected to be comparable to current bus fares (REX)
- Focus is on improving access and reliability, not reducing fares
- Corridor includes lower-income communities, but **no targeted fare policies identified**
- Affordability is addressed indirectly through **service improvements** rather than cost reductions

Source: Fairfax County - Richmond Highway BRT FAQs

Current BRT stop placement along Richmond Hwy corridor does not consistently align with safe pedestrian access needs.

Current plans prioritize service improvements over fare policy, leaving affordability challenges for riders largely unaddressed.

Recommendations & Summary

RECOMMENDATIONS — IMMEDIATE ACTIONS

Lighting: Field Inspections

Conduct immediate field inspection at all 5 Very High / High priority sites. Install upgraded streetlights within 150 ft of each location, prioritizing Sites 1–3 (Darkness – Road Not Lighted).

Lead: VDOT / Fairfax County DOT / FC PW&ES

Lighting: Corridor Audit

Audit all non-intersection segments more than 200 ft from mapped streetlights along the full corridor. Prioritize KSI segments for emergency lighting upgrades.

Lead: VDOT / FC PW%ES / Dominion Energy

Crosswalk Redesigns

Redesign Backlick/Pohick Rd, Huntington Ave, Lockheed Blvd & Beacon Hill Rd bus stop intersections to provide direct, single-crossing access to the opposite side of the road.

Lead: FCDOT / WMATA / VDOT

Alcohol Outreach

Conduct a proper social scientific study on the cause & effect of alcohol related KSI clusters. If appropriate, deploy street safety and alcohol awareness programs near Eleanor U. Kennedy Shelter, Virginia ABC at Huntington Ave, and motel corridors adjacent to crash hotspots.

Lead: Fairfax County Health Dept. / Community Services

RECOMMENDATIONS — NEAR-TERM ACTIONS

Pedestrian Refuge Islands / HAWK Signals

Install pedestrian refuge islands or HAWK beacons at high-volume mid-block crossing locations identified in the bus stop proximity analysis.

Lead: VDOT / FCDOT

ABC Enforcement Coordination

Coordinate with Virginia ABC to increase late-night compliance checks and limit alcohol sales at establishments within 500 ft of top crash clusters.

Lead: Virginia ABC / Fairfax County Police

BRT Stop Safety Redesign

Revise BRT stop designs adjacent to KSI clusters to incorporate physical barriers, controlled crossing access, and NACTO-compliant high-visibility lighting.

Lead: VDOT / FCDOT / WMATA

Speed Feedback Signs & Speed Safety Cameras

Install dynamic speed feedback signs and advance pedestrian warning signage on downhill approaches to Backlick Rd and Jeff Todd Way.

Once Fairfax County approves, install speed safety cameras along crash hot spots on Richmond Hwy South

Lead: VDOT / FC DOT

RECOMMENDATIONS — LONG-TERM ACTIONS

Equity-Focused Pedestrian Safety Investment

Develop a targeted pedestrian safety investment plan for the Belvoir Rd–S Kings Hwy segment, integrating safe routes to transit, improved bus stop shelters, lighting, and wayfinding infrastructure for zero-vehicle households and transit-dependent residents.

Lead: Fairfax County / FCDOT

Annual KSI Monitoring & Public Reporting

Establish an annual KSI review process with updated VDOT TREDS data to track the effectiveness of safety interventions along the corridor, incorporate Near Miss crowdsourcing data and develop public-facing reporting to the community and County Board of Supervisors.

Lead: Fairfax County / VDOT

CONCLUSION

The Richmond Highway corridor is a concentrated and consistent pedestrian safety crisis. The 62 KSI crashes recorded between 2017 and 2025 — including 22 fatalities — are not randomly distributed. They cluster in predictable locations shaped by inadequate lighting, incomplete crosswalk infrastructure, alcohol exposure, and high pedestrian activity among vulnerable populations.

Incremental improvements are insufficient. Effective intervention requires a coordinated, multi-agency response addressing lighting, crosswalk design & distances between controlled crossing, alcohol-related risk, and BRT integration simultaneously. In addition, the TREDS data should incorporate information on speeding and distracted driving in light of emerging technology that can measure these factors

Field inspections at the 5 priority sites should begin immediately.

The corridor's most vulnerable communities depend on decisive action.

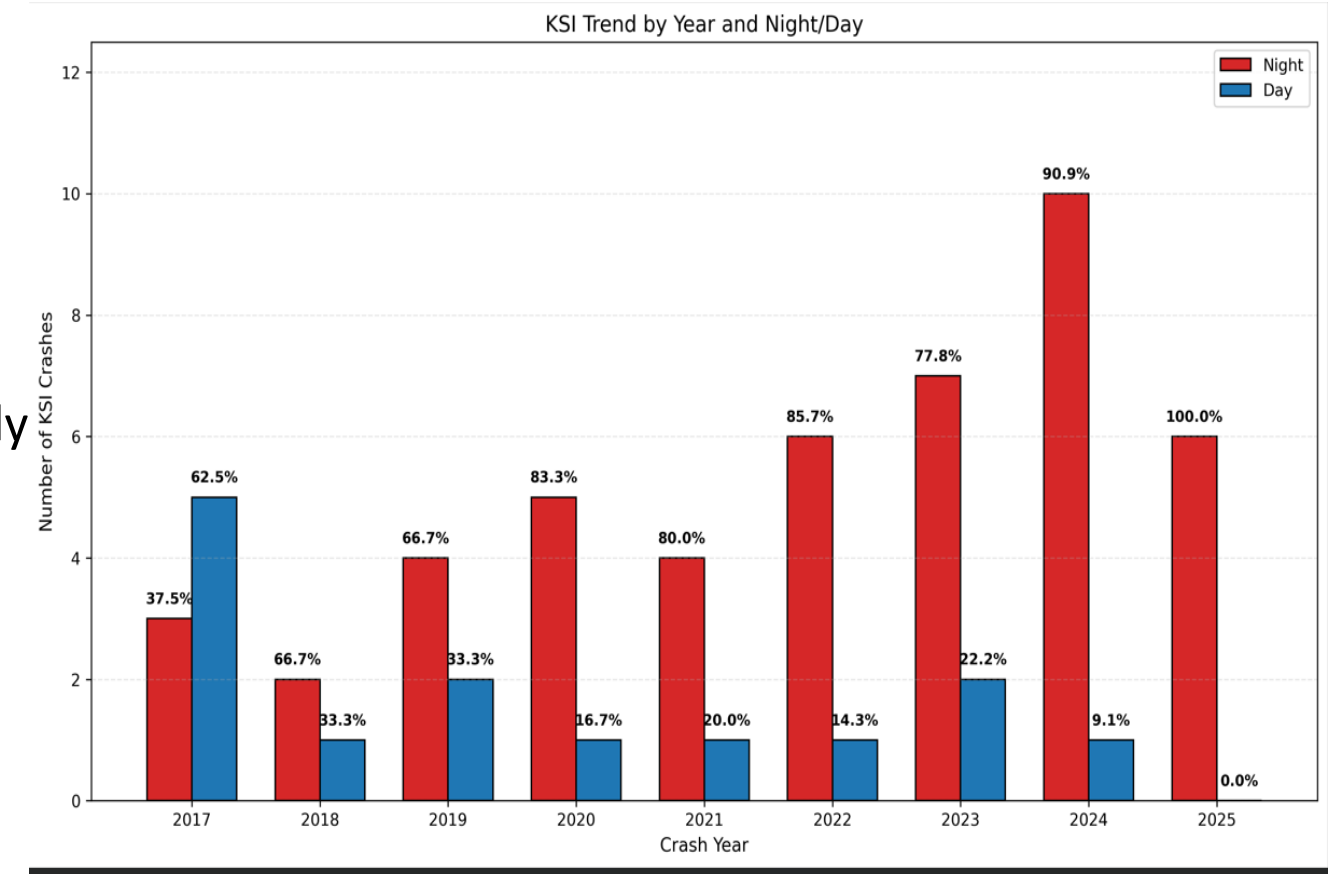
Data: VDOT TREDS · Analysis period: Feb 2017–Dec 2025, May 2026

Appendix

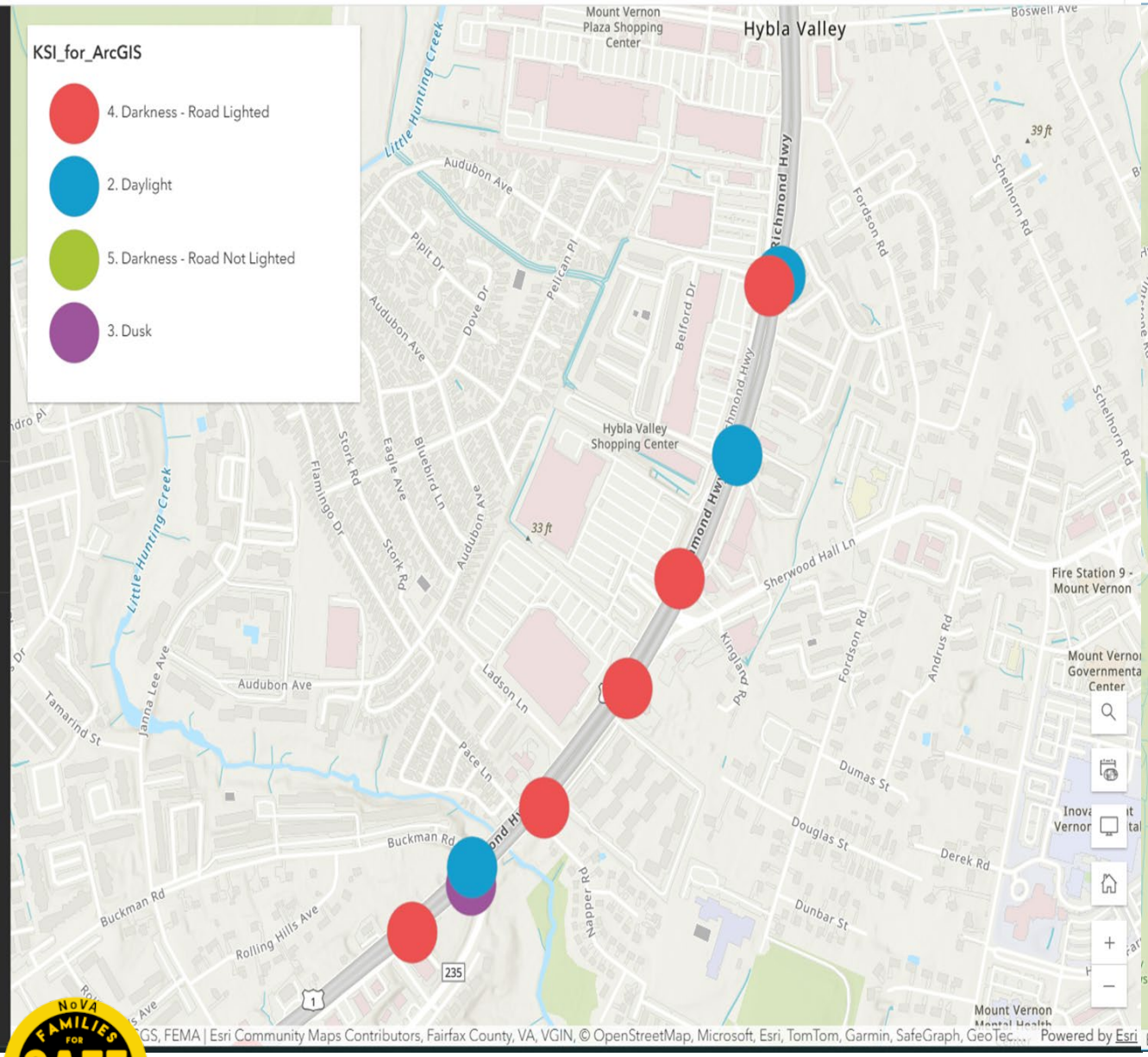
Lighting Condition

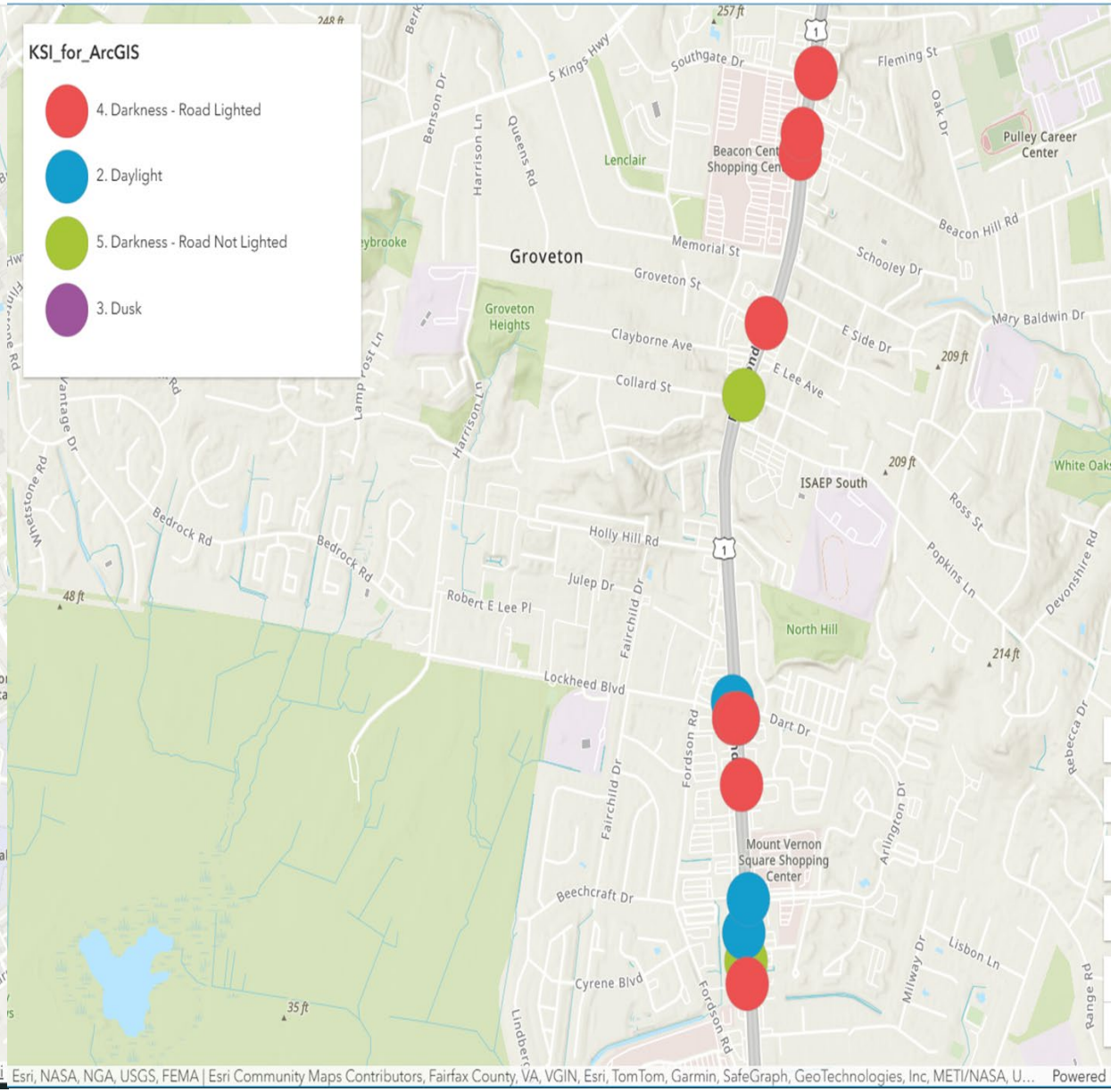
KSI TREND BY YEAR and Night / Day

- Nighttime KSI counts rise over time and dominate recent years.
- Daytime KSI remains low and relatively stable.



Points represent crash records; colors show reported light condition at time of crash

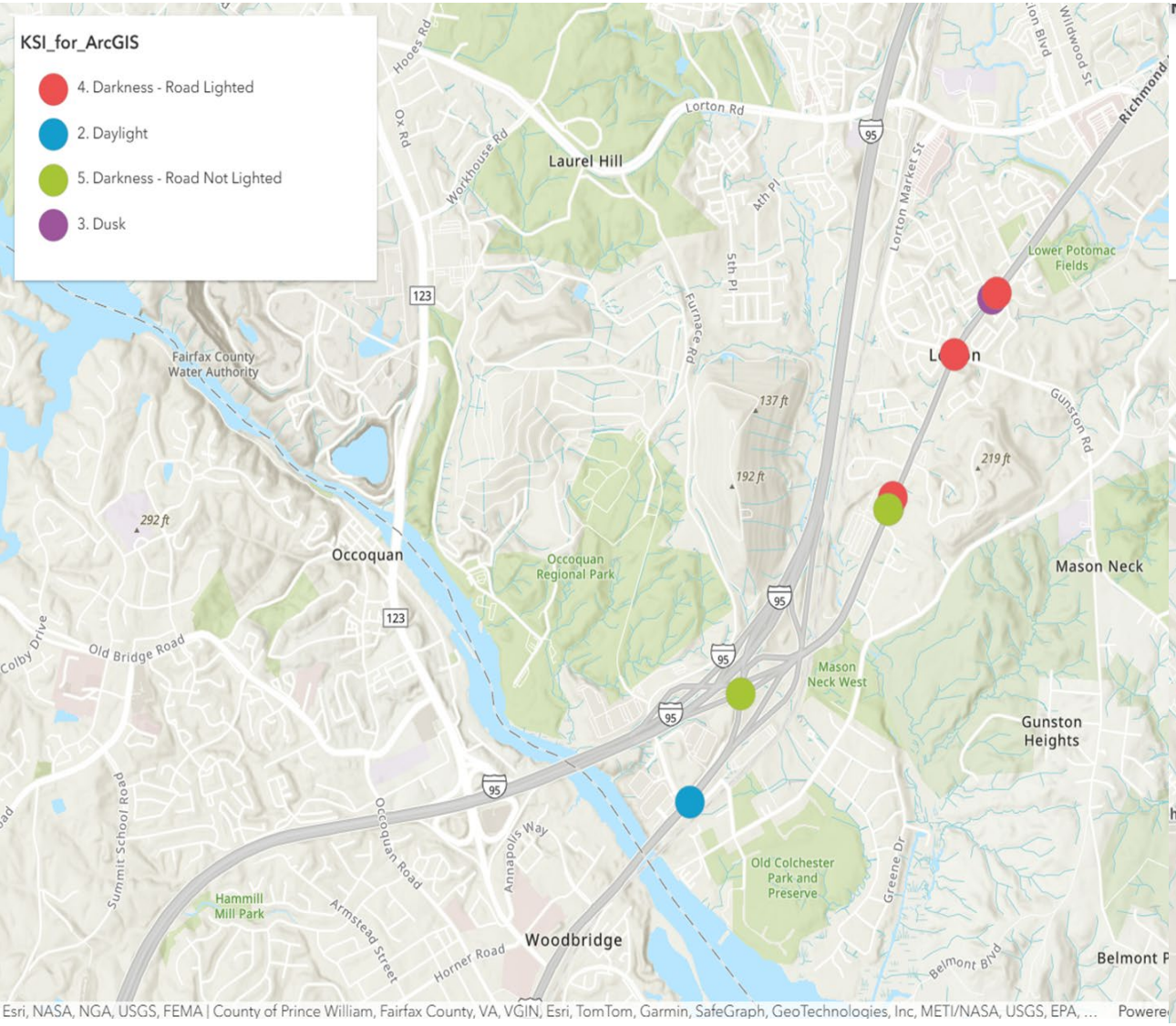


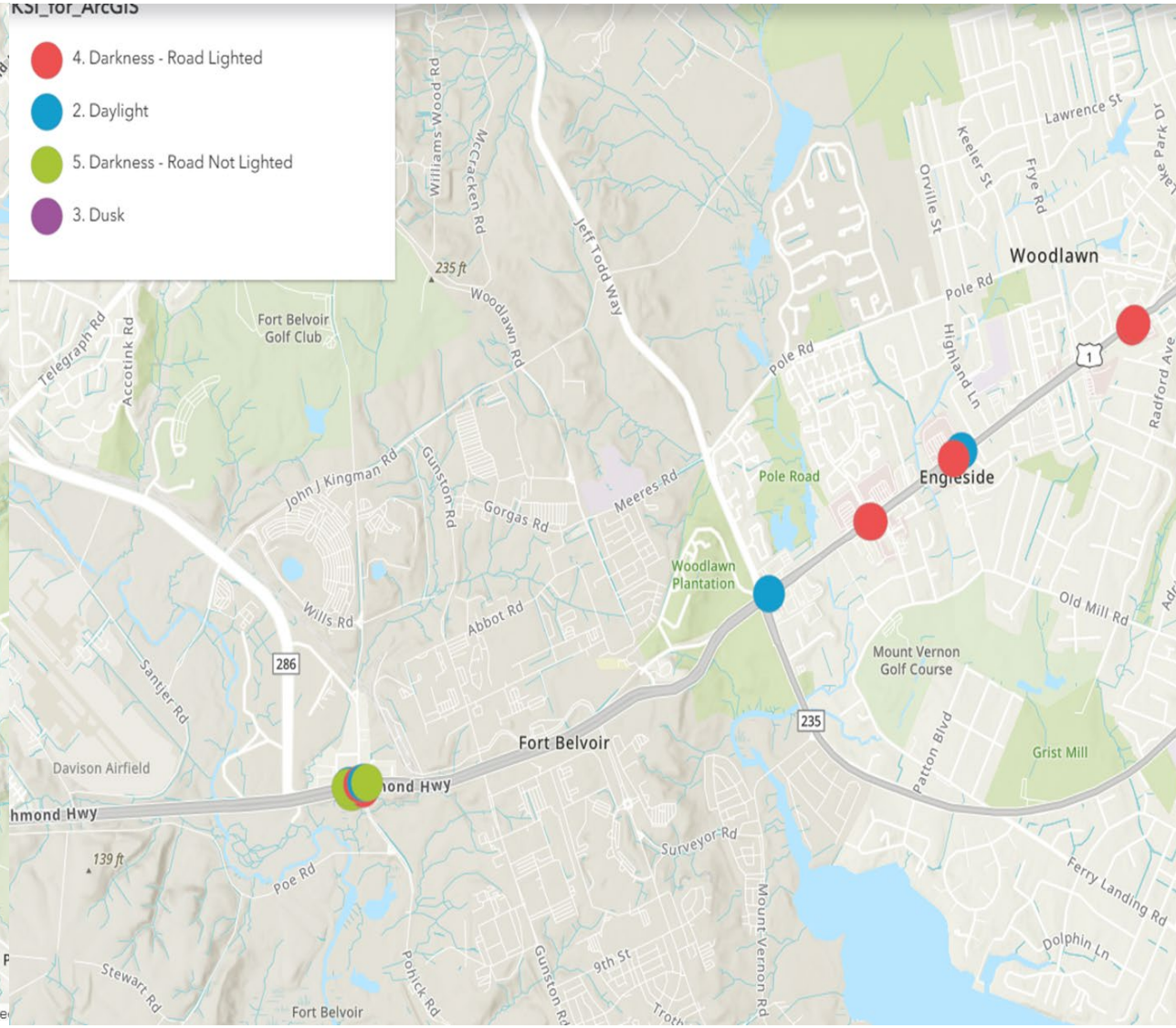


Hybla Valley

Groveton

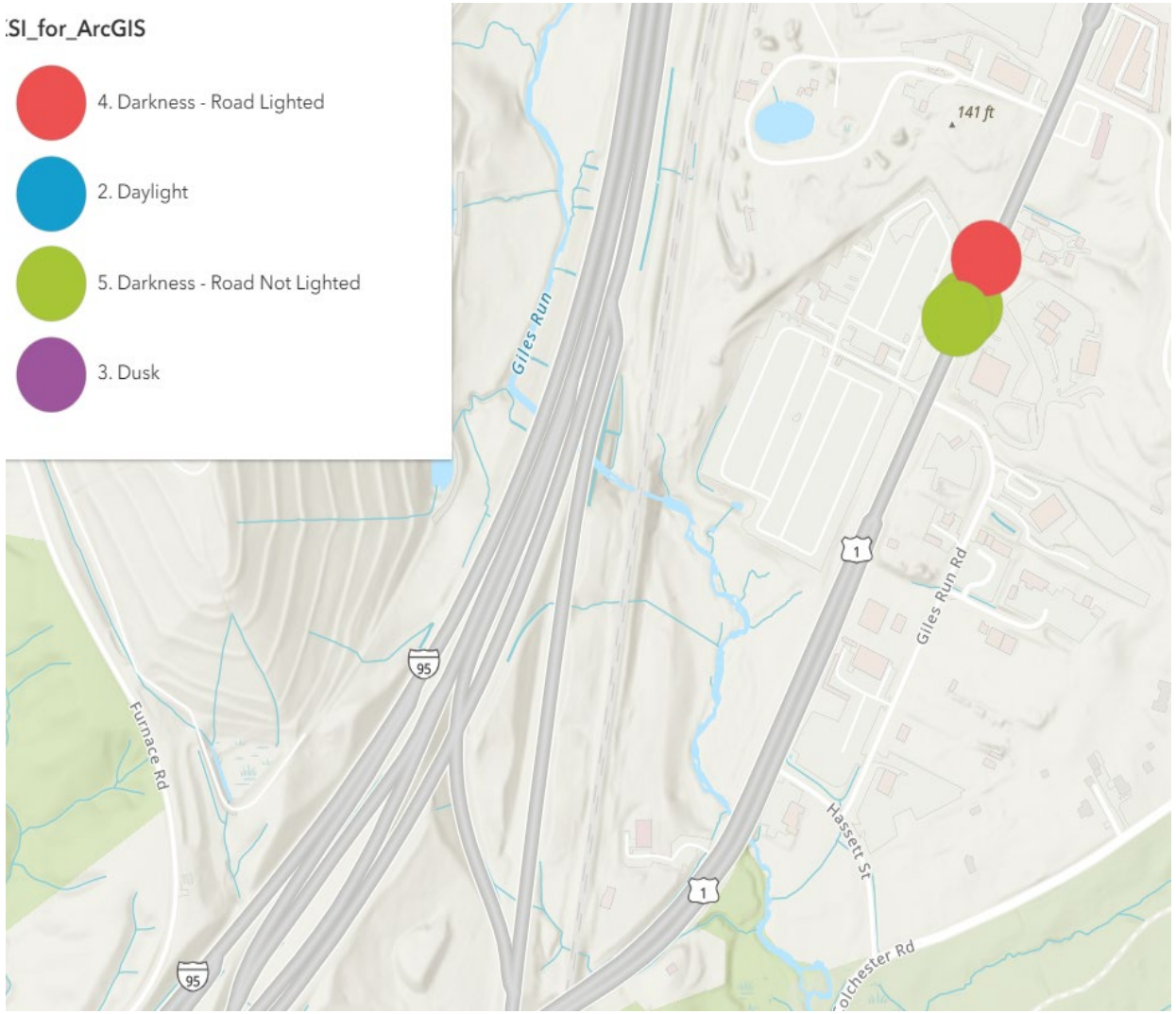
Points represent crash records; colors show reported light condition at time of crash



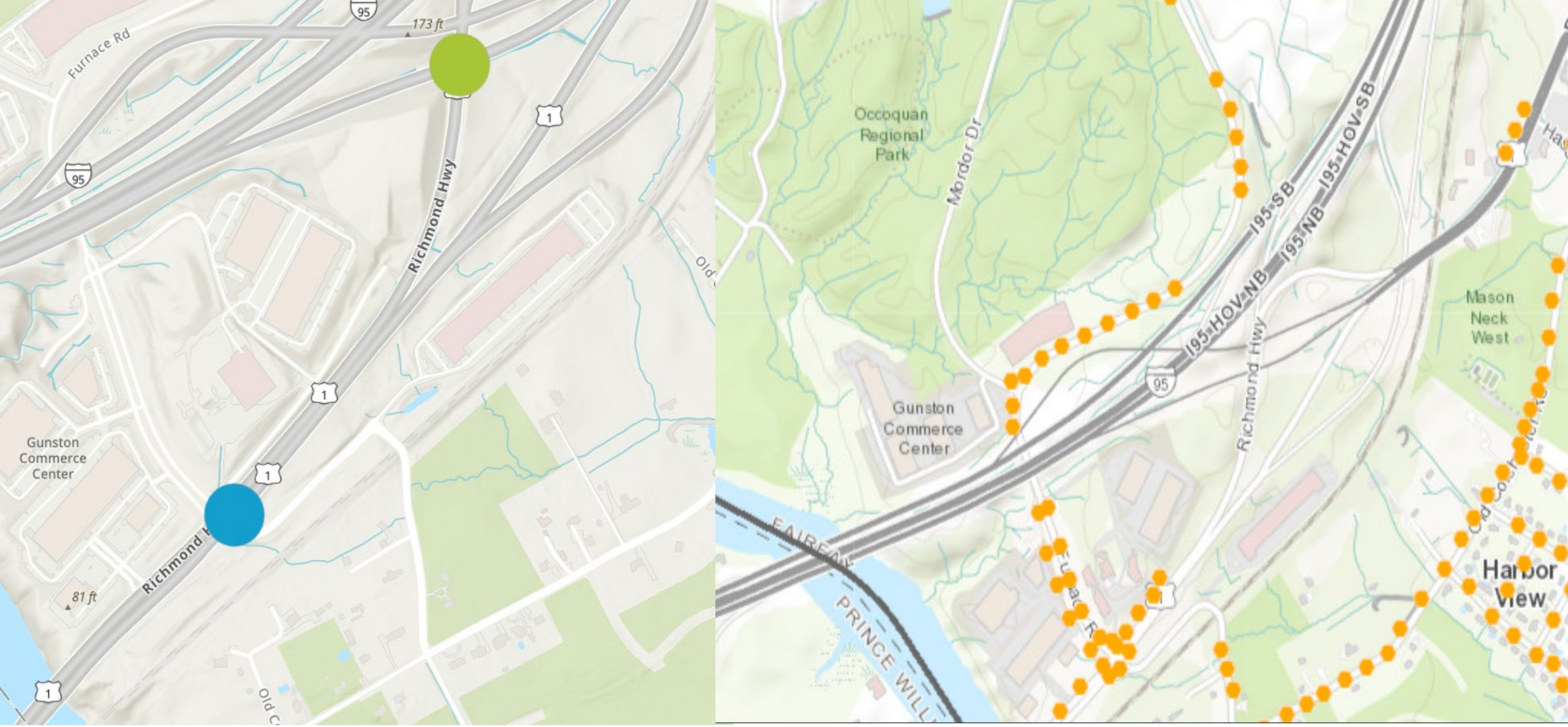


Mason Neck West

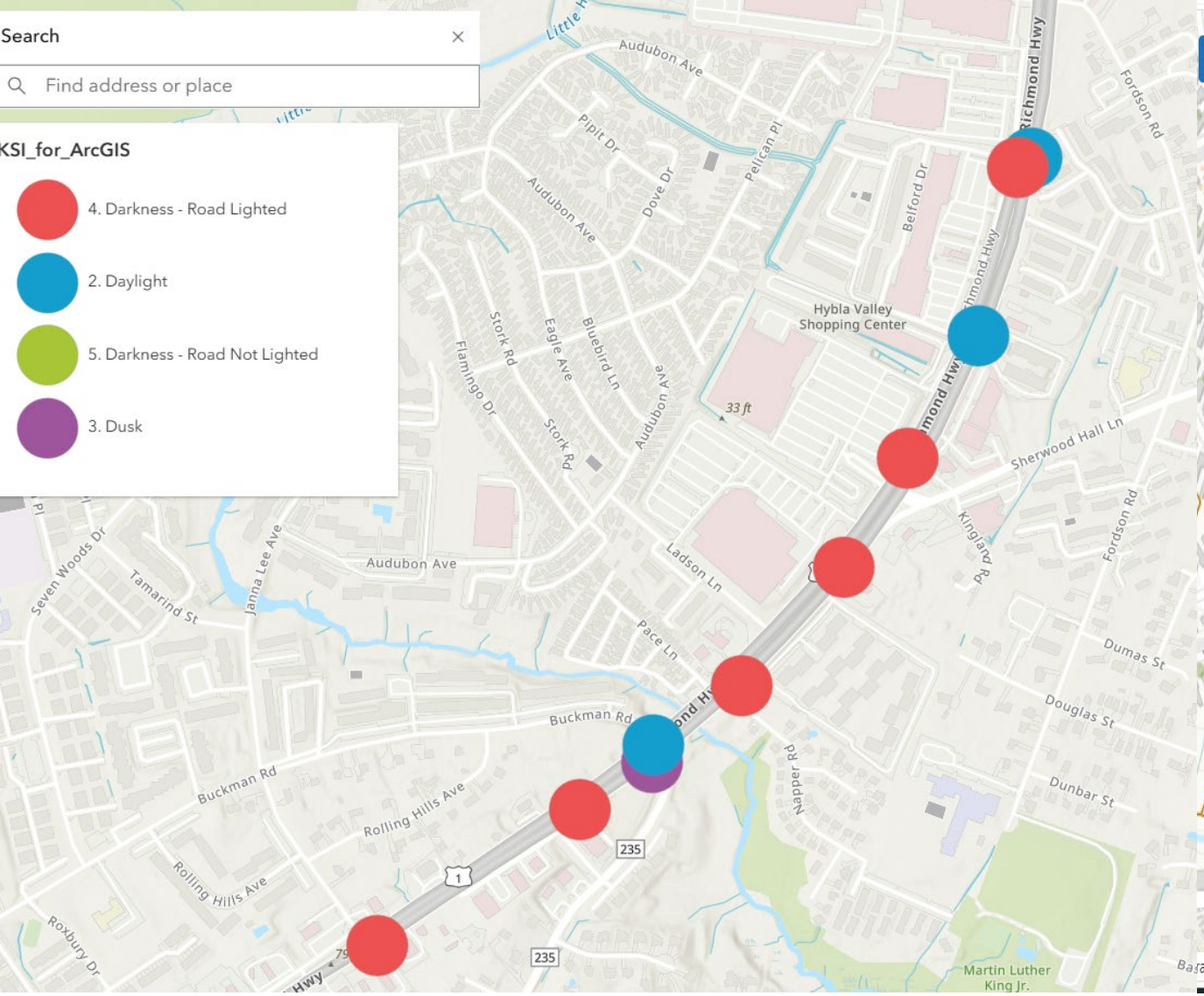
Fort Belvoir

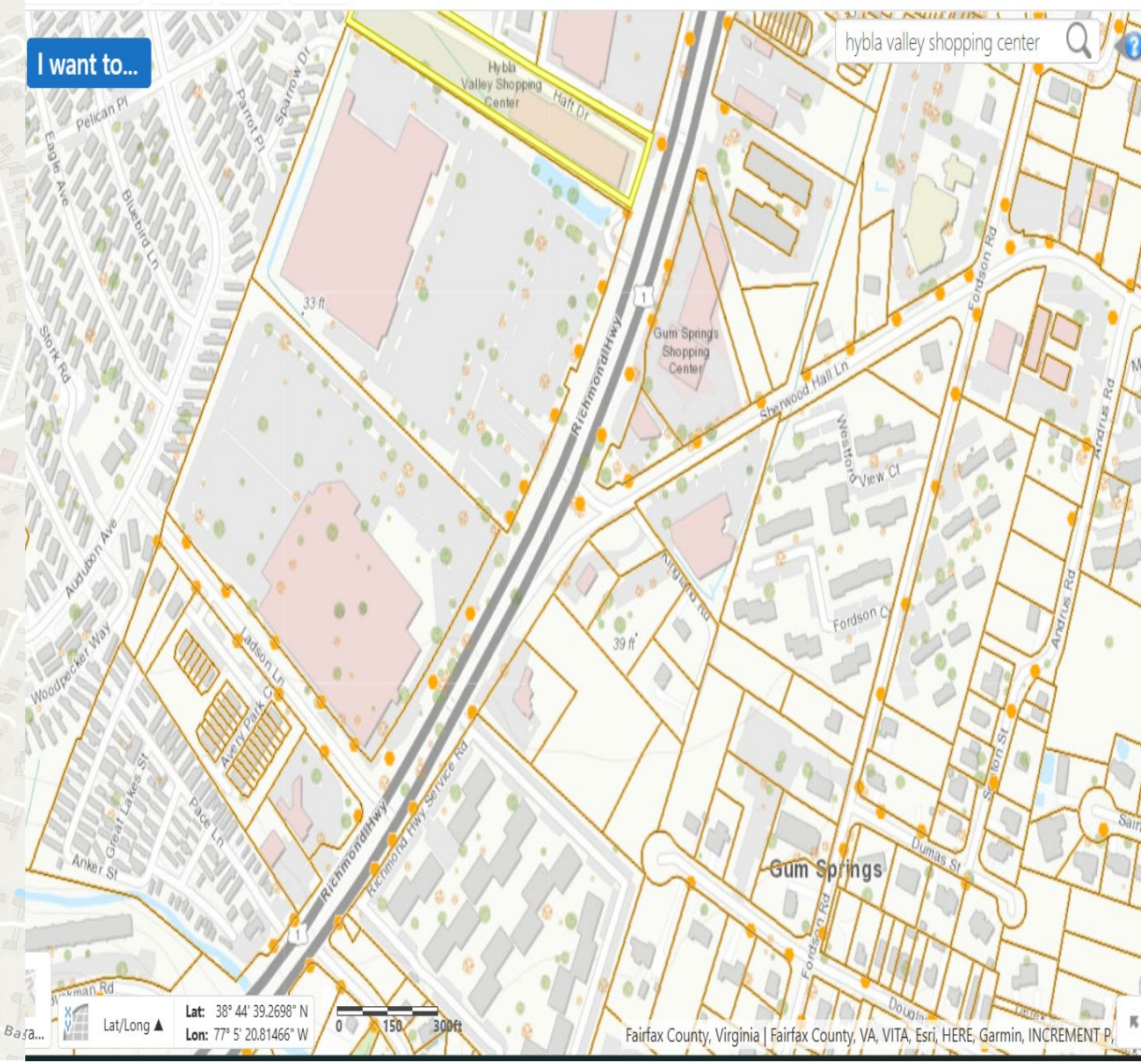


- Severe crashes cluster along major/high-volume segments of Richmond Highway.
- Clusters are more pronounced at night, aligning with higher darkness exposure and complex traffic movements.

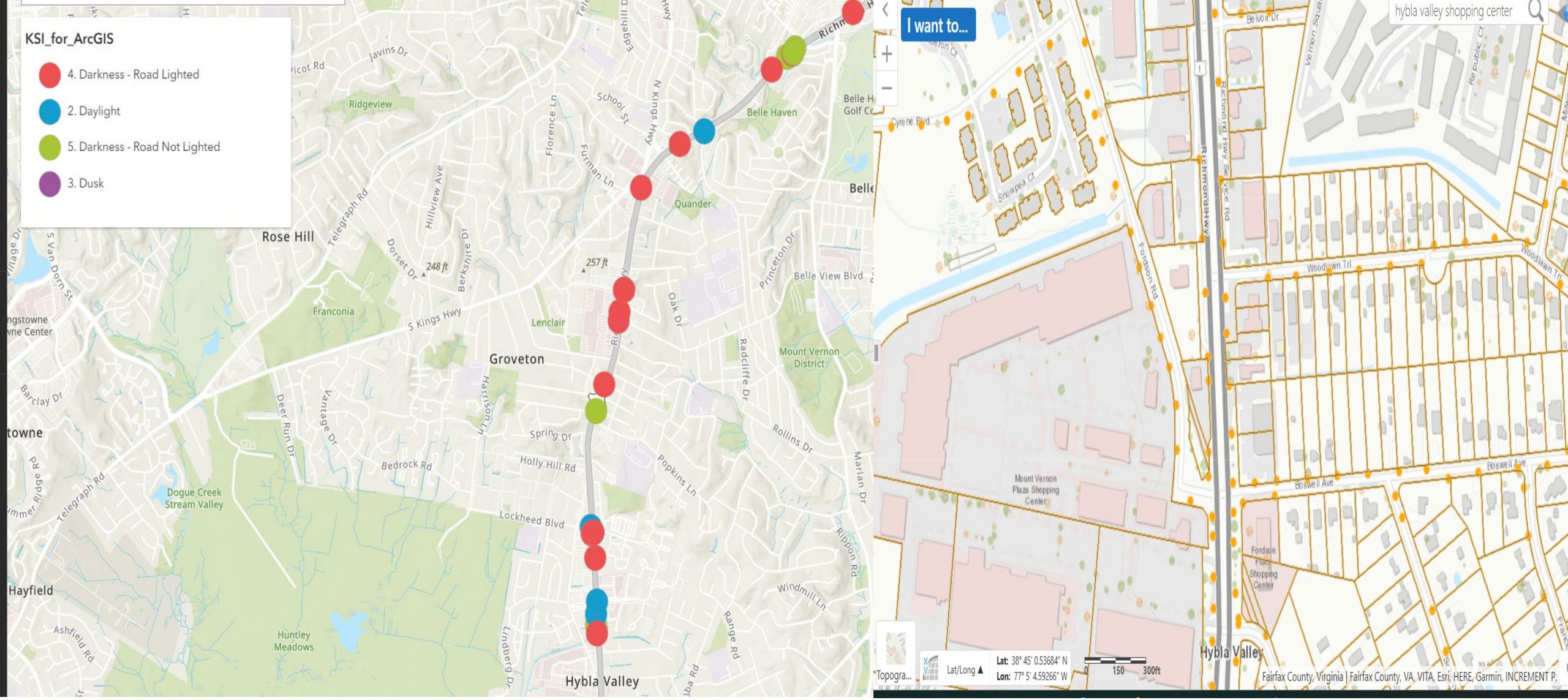


- Crash clusters occur along the main corridor and ramp system.
- Street lighting is present in parts of the area, but severe crashes still occur.
- This indicates that road geometry and traffic complexity also play a major role





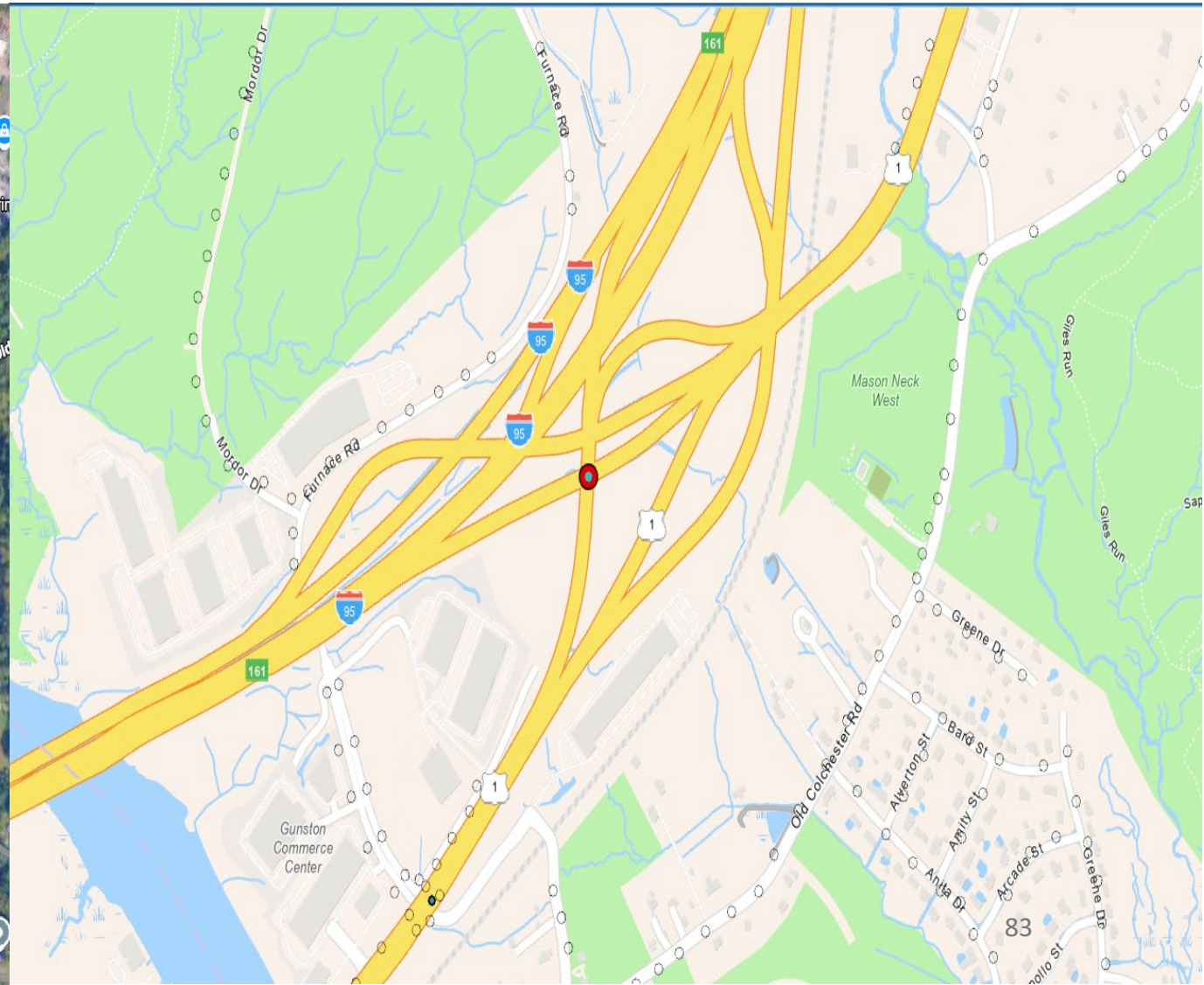
- KSI crashes align along the **main corridor**.
- Clusters occur near **intersections and driveway access**.
- Night conditions dominate, indicating **conflict zones** are critical for nighttime safety.



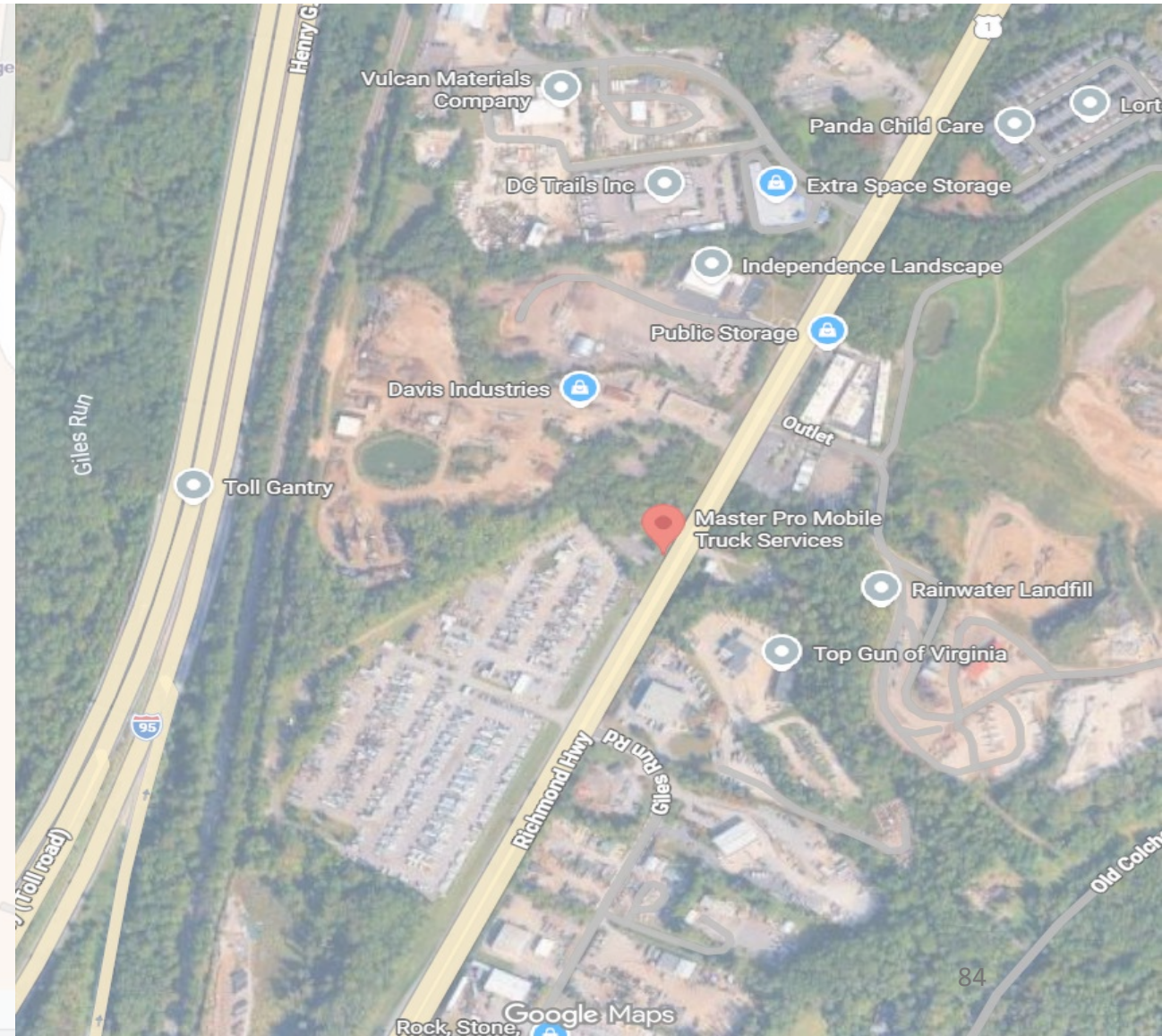
- KSI crashes cluster along the main corridor, especially at high-conflict access locations.
- Many of these locations also occur under night lighting conditions.
- This suggests severe crash risk is influenced by lighting context plus roadway design and access density.

Priority Location for Inspection

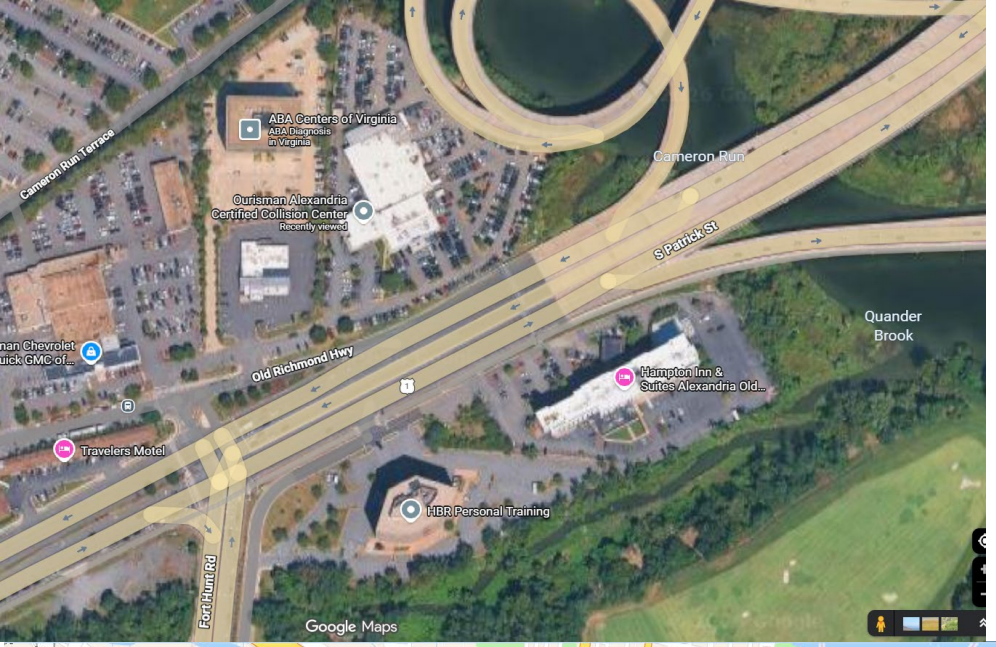
Site 1 : Richmond Hwy SB near Giles Run Rd ramp area (RMP 177.00B), Fairfax County
Fatal nighttime crash; nearest mapped street light: 844.8 ft

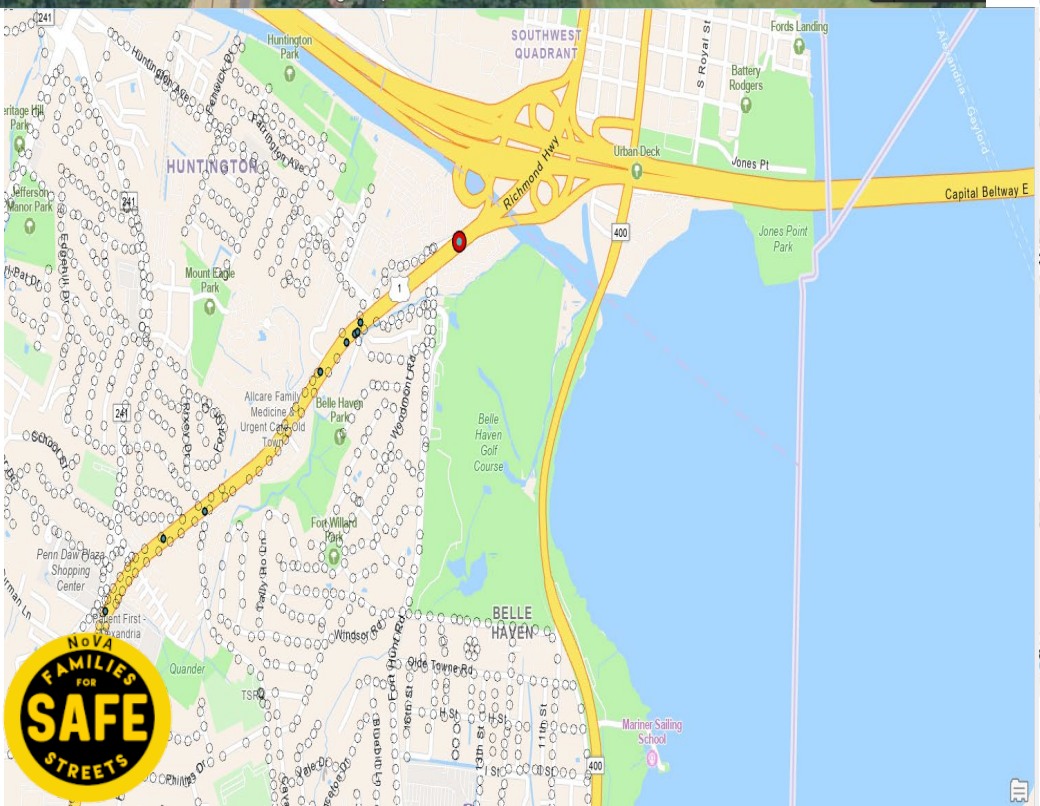


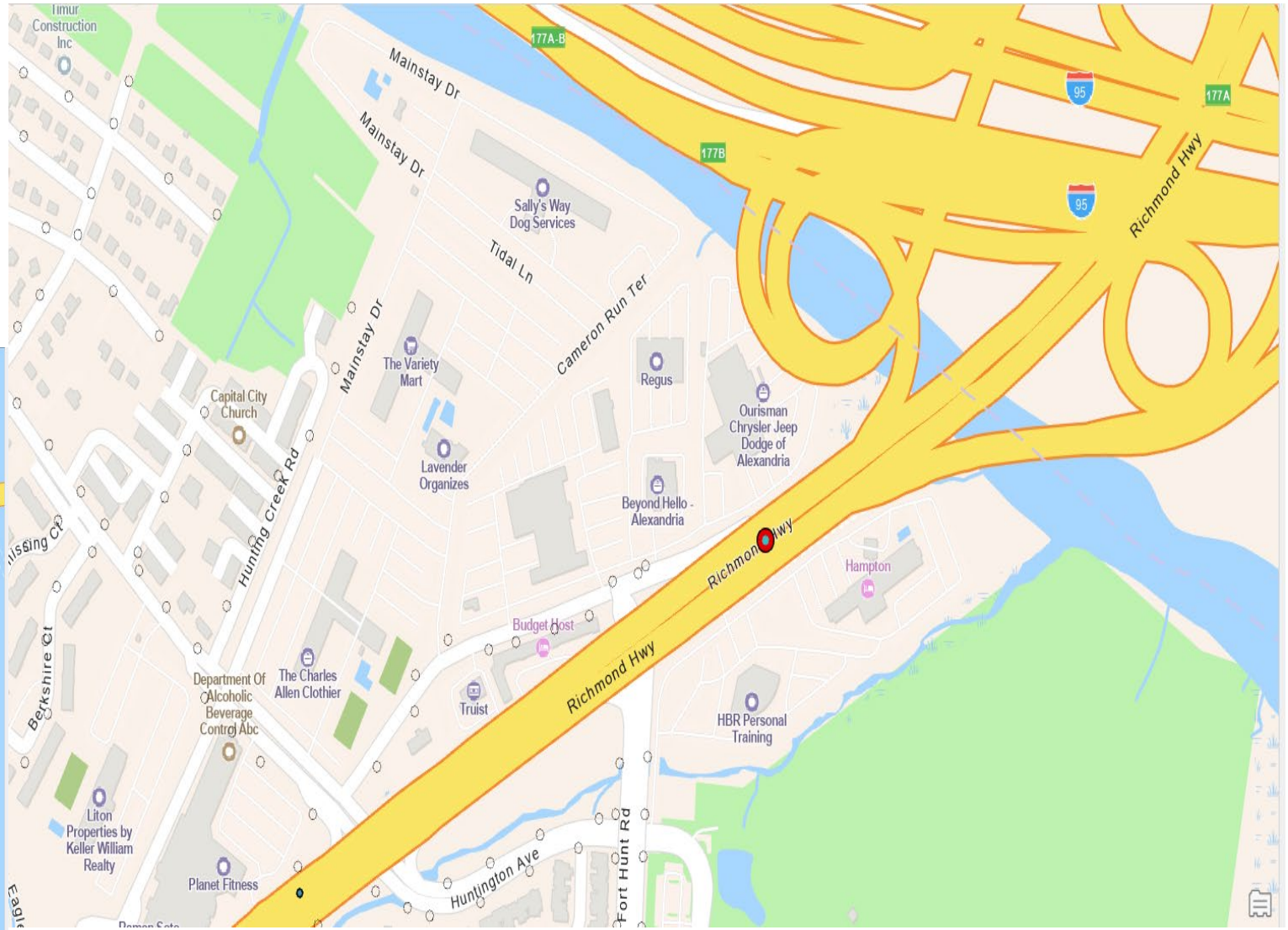
- **Site 2:** Richmond Hwy SB near RMP 191.62 — Fatal nighttime crash; nearest light **405.4 ft**
- **Site 3:** Richmond Hwy NB near RMP 178.48 — Fatal nighttime crash; nearest light **392.0 ft**
- **Site 4:** Richmond Hwy SB near RMP 178.51 — Serious injury nighttime crash; nearest light **349.6 ft**



Site 5: Richmond Hwy SB near RMP 178.56 Serious injury nighttime non-intersection crash; nearest light 202.9 ft

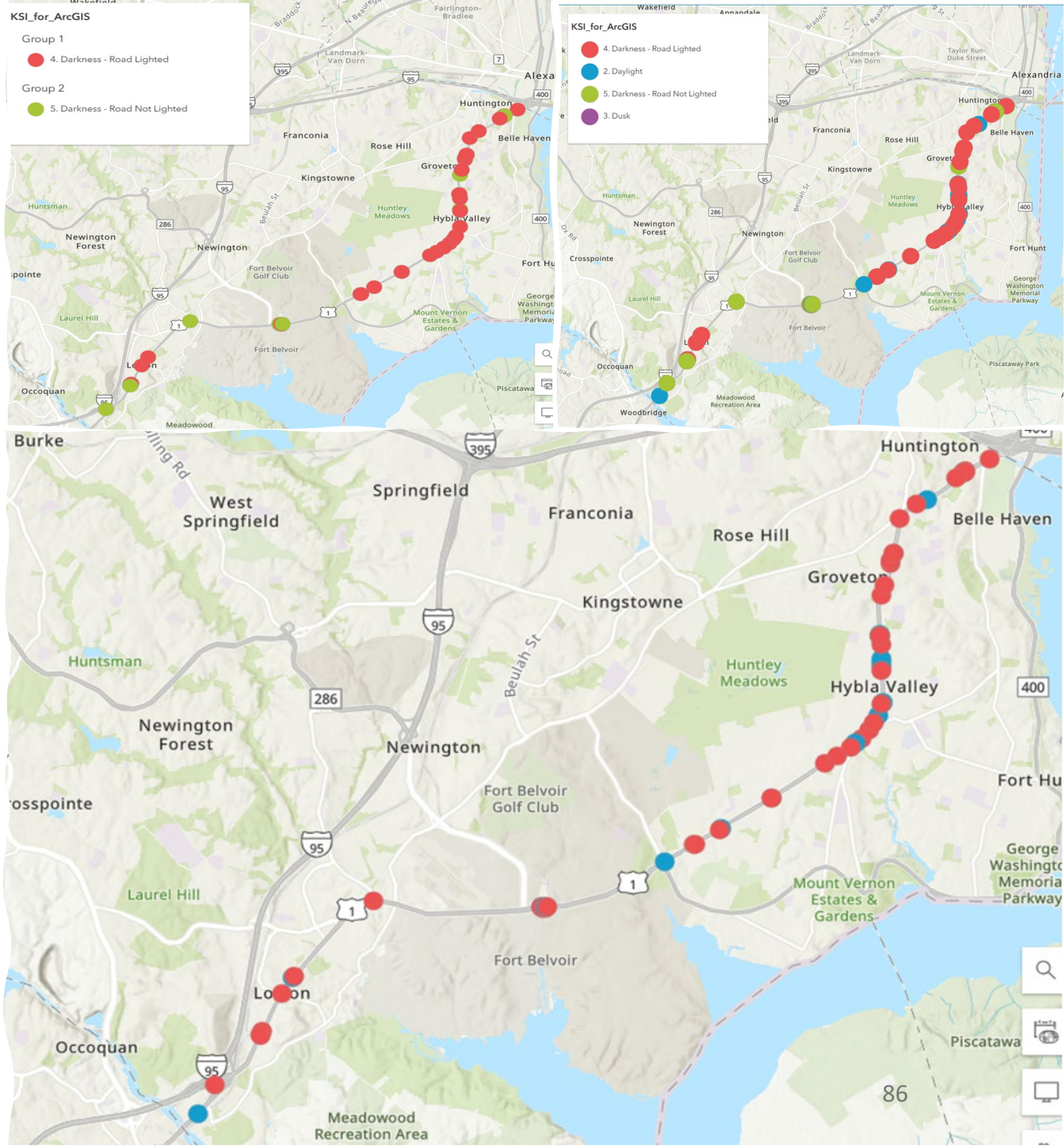






Night Conditions Dominate KSIs; Severity Is Worse on Unlighted Roads

- Most KSIs occurred in Darkness – Road Lighted conditions.
- Fatal severity was proportionally higher in Darkness – Road Not Lighted locations.
- Daylight and dusk crashes were comparatively limited.
- Night conditions remain the primary corridor safety concern.



Priority Screening Summary

Priority Class by Severity

Priority Class	Fatal	Serious Injury Only	Total
Very High	8	2	10
High	4	3	7
Medium	10	25	35
Lower	0	10	10
Total	22	39	62

Priority Class by Night vs Day

Time of Day	High	Lower	Medium	Very High	Total
Day	0	10	4	0	14
Night	7	0	31	10	48
Total	7	10	34	10	62

Average Nearest-Light Distance by Priority Class

Priority Class	Avg. NEAR_DIST (ft)
Very High	283.6
High	80.7
Lower	68.3
Medium	66.1

Very High priority crashes stand out clearly, with much larger nearest-light distances than all other groups.

Non-Intersection Locations Show Higher Lighting Risk

- **Non-intersection crashes are much farther from street-lights** than intersection crashes.
- **Non-intersection crashes also occur more often at night** and have a slightly higher fatal share.

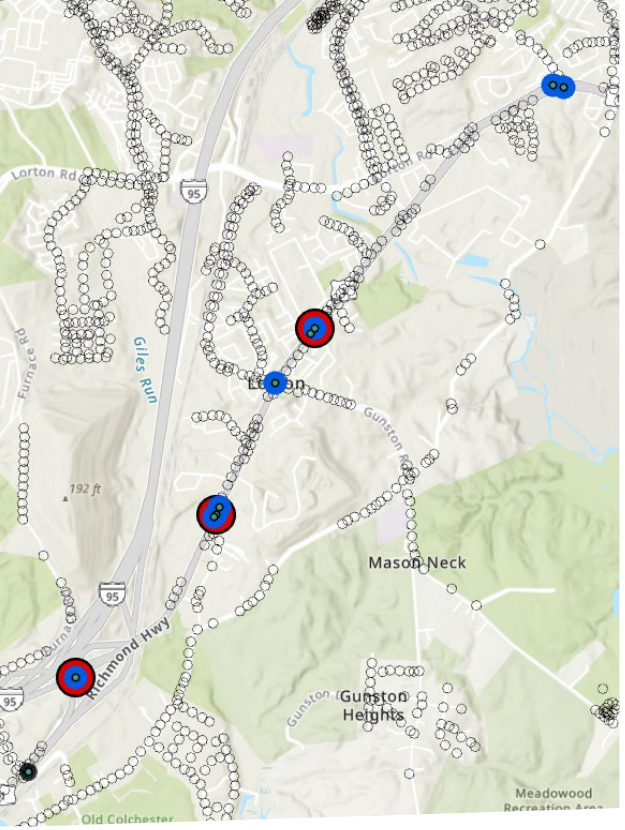
Location Type	Crashes	Avg. Distance to Nearest Light	Fatal Share	Night Share
Intersection	35	65.0 ft	34.3%	71.4%
Non-Intersection	27	155.9 ft	38.5%	84.6%

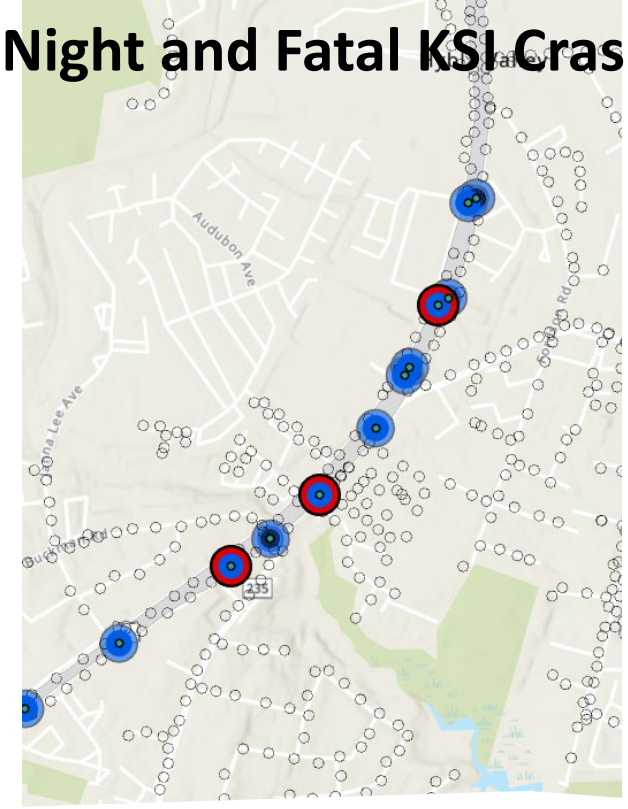
Top 5 Priority Crash Locations for Field Inspection

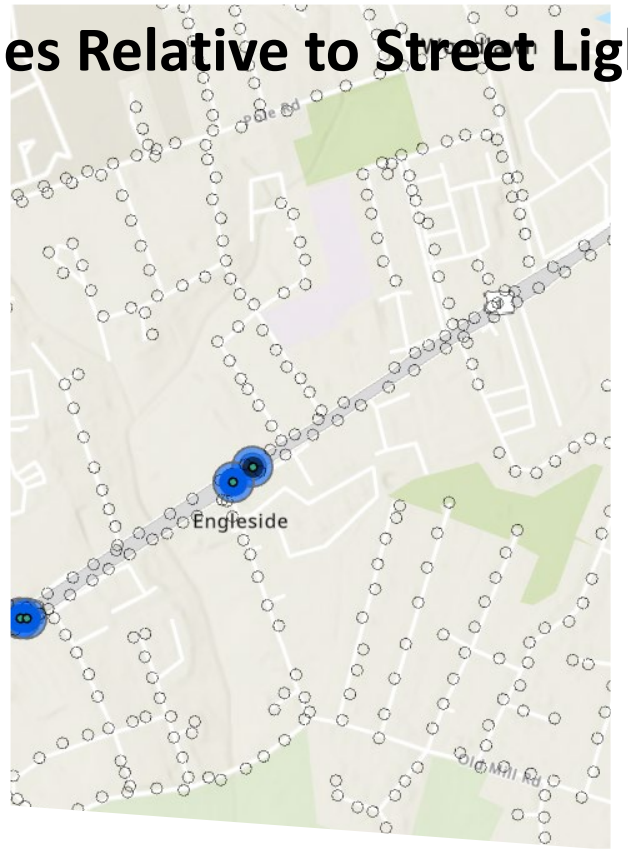
Rank	OBJECTID	Crash Year	Severity	Light Condition	Location Type	Nearest Light Distance (ft)	Priority
1	624690	2022	Fatal	Darkness – Road Not Lighted	Non-Intersection	844.8	Very High
2	316765	2019	Fatal	Darkness – Road Lighted	Non-Intersection	405.4	Very High
3	445042	2020	Fatal	Darkness – Road Not Lighted	Non-Intersection	392.0	Very High
4	959111	2024	Serious Injury Only	Darkness – Road Not Lighted	Non-Intersection	349.6	Very High
5	842286	2023	Serious Injury Only	Darkness – Road Lighted	Non-Intersection	202.9	High

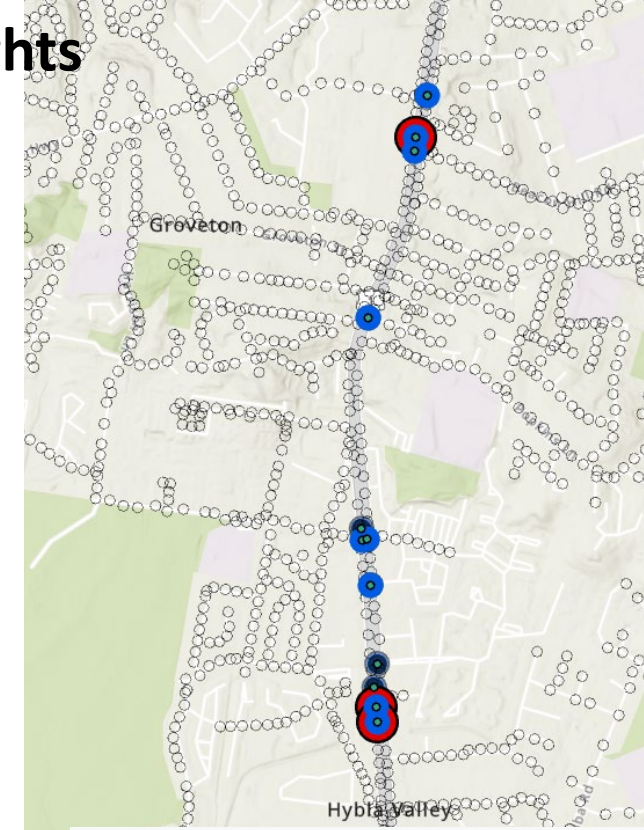
- **All top 5 priority sites are nighttime non-intersection crashes, and four of the five are Very High priority.**
- **The highest-ranked locations are associated with larger nearest-street-light distances, especially under Darkness – Road Not Lighted conditions.**

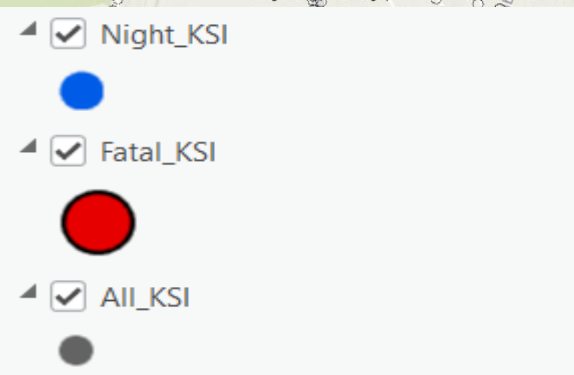
Night and Fatal KSI Crashes Relative to Street Lights











Richmond Highway: Night and Fatal KSI Crashes Relative to Street Lights