

## **“E is for Everybody”: Using Equity to Prioritize Pedestrian Safety Projects and Make the Case for Greater State Funding**

### **Background**

Like many States across the country, Virginia is facing a pedestrian safety crisis. On average, 70-90 pedestrians were killed per year from the early 2000s to 2016. Starting in 2016, pedestrian fatalities increased dramatically to 111 to 122 per year; this was followed by a large increase to over 170 in 2022. To address this crisis and reach their goal of zero deaths, which is set in the State’s SHSP,<sup>1</sup> VDOT developed a [Pedestrian Safety Action Plan](#) (PSAP): [bit.ly/VDOTPSAP](https://www.virginiadot.org/info/hwysafetyplan.asp).<sup>2</sup> Through collaboration with the Virginia Department of Health (VDH), VDOT incorporated VDH’s [Health Opportunity Index \(HOI\)](#) in their PSAP update to proactively and systemically prioritize locations for pedestrian safety improvements.<sup>3</sup>

### **PSAP**

The PSAP consists of three parts: data analysis in the form of a GIS map, policy recommendations, and a library of pedestrian safety countermeasures. In the first version of the PSAP, the VDOT safety data analysis team<sup>4</sup> used 12 available engineering, social, behavioral and land use metrics listed below to proactively identify and map locations with high pedestrian fatality risk:

- Annual average daily traffic (AADT)
- Posted speed limit
- Number of lanes and presence of a median
- Zero vehicle households (Census block group-level)
- Population below the poverty line (Census block group-level)
- Population density (Census block group level)
- Density of employed persons (Census block group-level)
- Existing pedestrian crash history
- Urban/rural context (as defined by Census-defined urbanized boundaries)
- Proportion of alcohol-related crashes by VDOT district
- Proximity to a park (within ¼ mile)
- Proximity to a school (within ¼ mile).<sup>5</sup>

### **“E is for Everybody”: Collaboration is Critical**

The Virginia Department of Transportation (VDOT) recognizes that traffic safety impacts everyone, so all people play a part in the development, implementation and use of a safe transportation system. To this effect, VDOT added a new “E” in their Strategic Highway Safety Plan (SHSP) that stands for “Everybody”.

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<sup>1</sup> Virginia Department of Transportation, Virginia 2022-2026 Strategic Highway Safety Plan.

<https://www.virginiadot.org/info/hwysafetyplan.asp>

<sup>2</sup> Virginia Pedestrian Crash Assessment: Analysis of Pedestrian Crashes Occurring Between 2014 and 2018.

[https://www.virginiadot.org/business/resources/HSIP/VDOT\\_Pedestrians\\_Crash\\_Assessment\\_2014-2018.pdf](https://www.virginiadot.org/business/resources/HSIP/VDOT_Pedestrians_Crash_Assessment_2014-2018.pdf)

<sup>3</sup> VDH, The Virginia Health Opportunity Index. <https://apps.vdh.virginia.gov/omhhe/hoi/what-is-the-hoi/definitions>

<sup>4</sup> The safety analysis team consists of members from VDOT, other State-level agencies, other State-level stakeholder, and Federal agencies.

<sup>5</sup> Virginia Department of Transportation (VDOT). Pedestrian Safety Action Plan. May 2018.

[https://www.virginiadot.org/business/resources/VDOT\\_PSAP\\_Report\\_052118\\_with\\_Appendix\\_A\\_B\\_C.pdf](https://www.virginiadot.org/business/resources/VDOT_PSAP_Report_052118_with_Appendix_A_B_C.pdf)

According to VDOT Traffic Operations Division Director Mark Cole, “everyone has ideas, and everyone can help to make a better world.”

To this end, VDOT collaborated with stakeholders whose skills and expertise bolster the engineering and planning knowledge of VDOT staff as part of updating the PSAP into a more robust tool. These experts, including public health professionals, provided critical understanding of the systemic social, cultural, environmental and economic causes contributing to the pedestrian fatality crisis.

Through collaboration with the Virginia Department of Health (VDH), VDOT learned about VDH’s Health Opportunity Index (HOI) tool which examines how the opportunity to live a long and healthy life can vary widely depending on where you live, work and play.<sup>6,7</sup> Some communities, for instance, live in areas where economic and consumer resources, the environment and access to care provide residents with ample opportunity to be healthy and live long, healthy lives. In other areas, people may have more difficulty living healthy lives and making healthy choices.

The HOI is an index of 13 factors, listed below, which were selected by VDH’s public health professionals based on evidence of the indicator’s impact from public health literature, input from Local Health Districts and other key stakeholders, and the consistency and availability of quality data at the Census Tract level across the State. The HOI’s spatially weighted regression techniques have shown it is remarkably predictive of health outcomes, including life expectancy and specific diseases in local areas.<sup>8</sup>

## 13 HOI Factors

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Environmental Quality Index (EPA)
Population Churning Index
Population-Weighted Density Index
Walkability Index
Affordability Index
Education Index
Segregation Index
Townsend Deprivation Index
Food Accessibility Index
Employment Access Index
Income Inequality Index
Job Participation Index
Access to Care

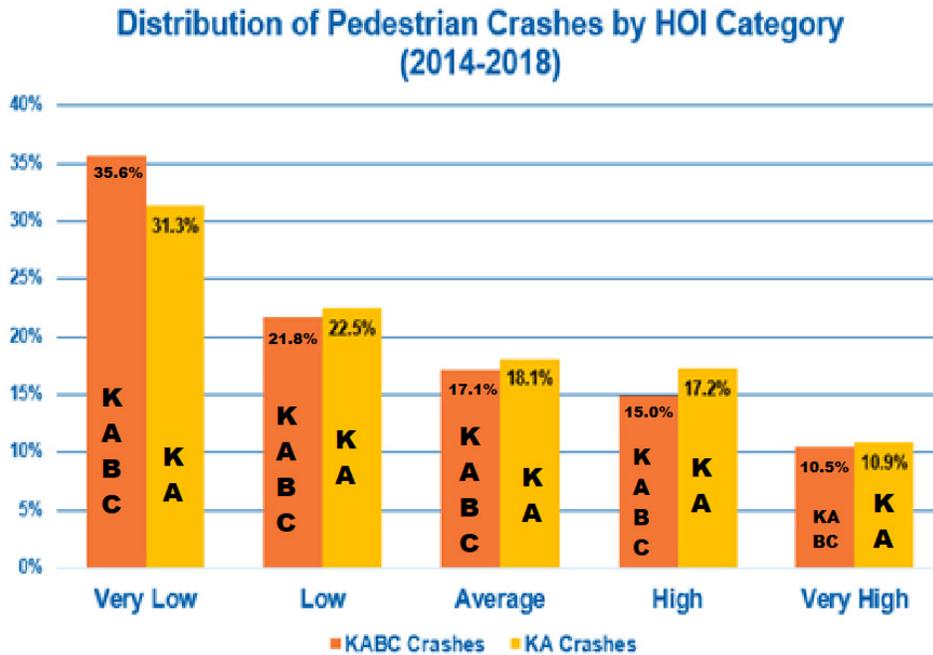
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<sup>6</sup> VDH Office of Minority Health & Health Equity, “Health Opportunity Index Place Matters,” Oct 13, 2015. <https://www.vdh.virginia.gov/content/uploads/sites/76/2017/02/Virginia-Health-Opportunity-Index.pdf>

<sup>7</sup> VDH, The Virginia Health Opportunity Index. <https://apps.vdh.virginia.gov/omhhe/hoi/what-is-the-hoi/definitions>

<sup>8</sup> VDH, Virginia Health Opportunity Index Methodology. <https://apps.vdh.virginia.gov/omhhe/hoi/what-is-the-hoi/methodology>

VDOT investigated whether the HOI could predict fatal and serious injury pedestrian crashes. The results of the statistical analysis demonstrated that the HOI was highly predictive of pedestrian fatal and serious injury crashes: almost 60 percent of the pedestrian deaths and injuries fell into census tracts with low or very-low health opportunity.



VDOT also explored the relationship between the initial 13 factors in the PSAP and additional factors (identified with an asterisk in the graph), including the HOI, which they identified as potentially predictive through collaboration with stakeholders. As a result of this analysis, VDOT added the HOI and transit access and removed the proportion of alcohol-related crashes and population living below the poverty line.

### High

- Annual average daily traffic (AADT)
- Zero-vehicle households
- Transit access\*
- Health Opportunity Index (HOI)\*

### Medium

- Roadway geometry
- Employment density
- Proximity to a school
- Posted speed limit\*

### Low

- Pedestrian crash history
- Proximity to a park
- Population density\*
- Urban/rural context\*

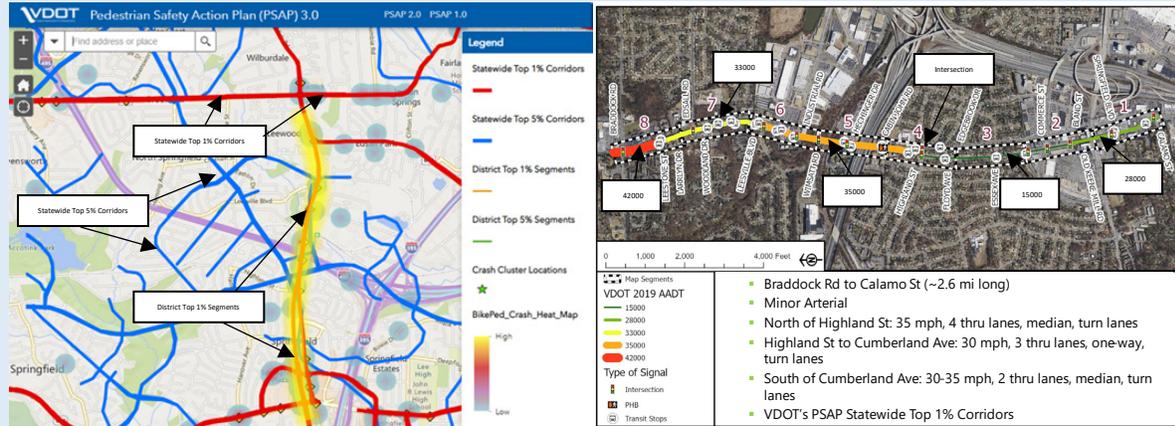
## Prioritizing Funding

VDOT uses the predictive data-driven safety analysis in the PSAP to identify the propensity and risk for vulnerable road users to prioritize where to fund pedestrian safety projects. This collaborative, proactive approach has allowed VDOT to make the case for additional State investment to address the pedestrian fatality crisis. Prior to 2020, funding for these projects was mainly Federal with a State match. Since 2020, State funding makes up one-third of the funding invested in pedestrian safety improvements.

- In 2018, VDOT provided \$8 million in funding for pedestrian crossing improvements since the PSAP's analysis showed that 90 to 95 percent of pedestrian fatalities occurred as they attempted to cross streets. VDOT received applications totaling \$45 million.
- In 2019, VDOT provided an additional \$35 million to systematically install pedestrian signals at pedestrian priority corridors identified by the PSAP, which amounted to the installation of 600 VDOT traffic signals.
- In January 2022, VDOT provided \$20 million in additional funds for signalized and unsignalized pedestrian crossings in locations identified by the PSAP.

## Northern Virginia: PSAP Pedestrian Safety Improvement Example

The NoVa district has a concentration of PSAP priority corridors of statewide significance. VDOT worked with Fairfax County and Virginia Department of Health staff to identify the Backlick Rd / Amherst Ave PSAP corridor for a pedestrian-focused Road Safety Assessment (RSA).



Fairfax County selected Backlick Rd /Amherst Ave for the RSA based on pedestrian crash history and proximity to historically disadvantaged or marginalized populations. In May 2022, VDOT, Fairfax County staff and local stakeholders met with VDOT contractors to walk and review the corridor.

The Fairfax-VDOT RSA team provided recommendations for the corridor including the following:

- Sidewalk maintenance, improvements, and expanding the sidewalk width.
- Enhanced crossing improvements including Pedestrian Hybrid Beacons (PHB), midblock crossings, and additional signals.
- Relocation of transit stops to encourage crossings near controlled intersections.
- Signal modifications including Leading Pedestrian Intervals (LPIs) and pedestrian recall.
- Improved lighting.
- Lane reduction.
- Future speed study on the corridor to identify speed management strategies.

VDOT incorporated several near-term improvement recommendations into scheduled Virginia Highway Safety Improvement Program (VHSIP) systemic projects along Backlick Road. These included refreshing and updating pavement markings, installing pedestrian pushbuttons, updating pedestrian crossing times, and providing additional signage treatments. Read more [here](#).

## **Evaluation**

Initial evaluation of preliminary projects implemented in 2018 found that no pedestrian crashes have occurred since the project's implementation, as of this writing. However, VDOT recognizes that it will take time to evaluate the impact of these improvements.

## **Key Takeaways**

- E is for Everybody: Collaboration with public health experts and communities is essential to reach the goal of zero deaths.
- A social determinant of health index, like Virginia's HOI, is highly predictive of corridors with pedestrian fatal and serious injury crashes.
- A collaborative and strategic approach can help make the case for additional State funding and build partnerships to prioritize vulnerable user safety.