

# **A**ppendix E: Posters

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# SHRP2 I-64 Corridor Study

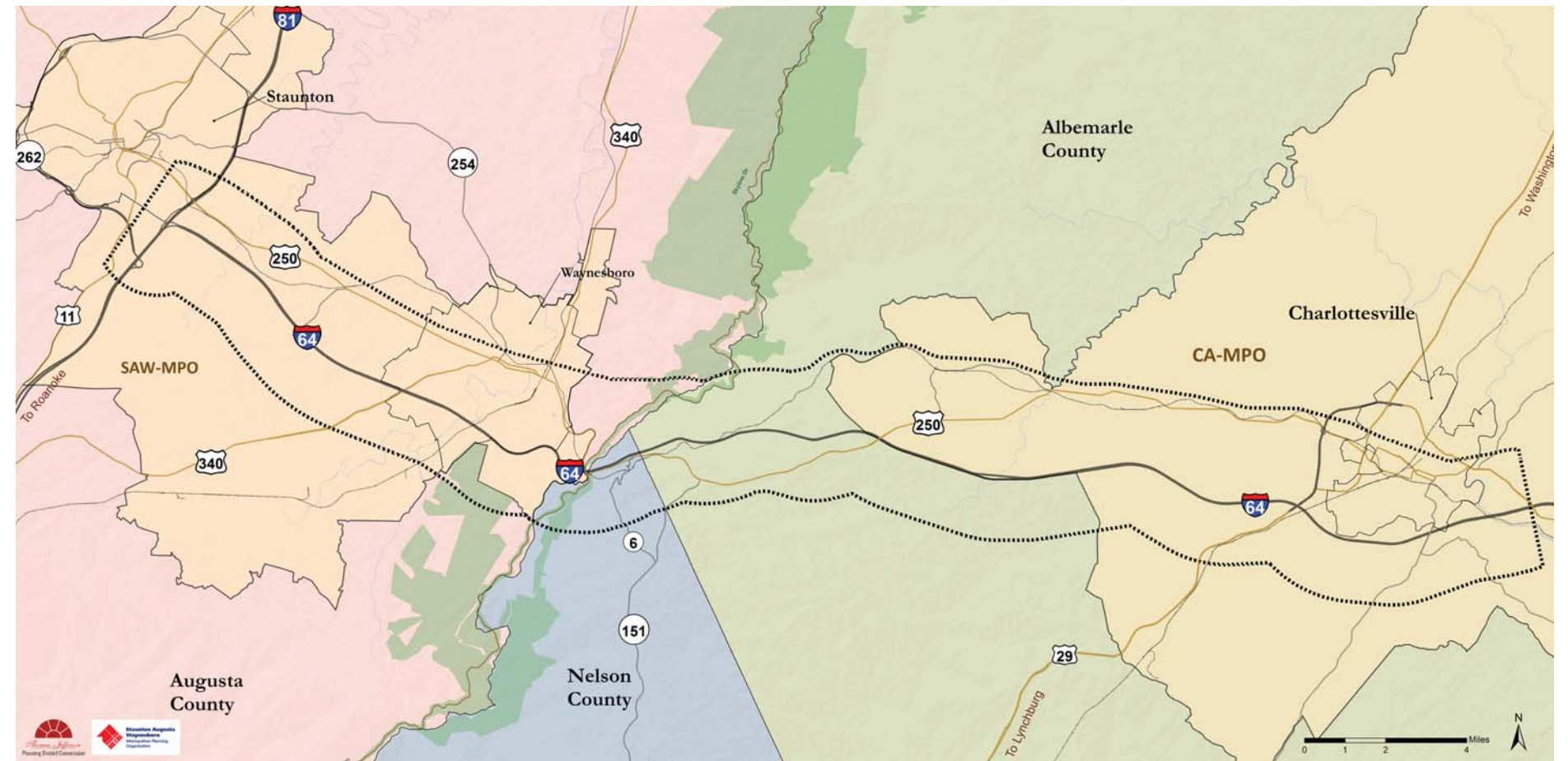


## Introduction

The I64 Corridor study is a joint project between the Charlottesville Albemarle Metropolitan Planning Organization (MPO) and the Staunton Augusta Waynesboro MPO. The study is focusing on the Interstate 64 Corridor between Charlottesville and Staunton. The study is being funded by FHWA's Strategic Highway Research Program and focuses on using FHWA's PlanWorks toolbox to inform the corridor planning project. The project is being managed by staff from the MPOs with the support of a Working Group with members from the MPOs, VDOT, public safety, local governments, FHWA, private industry and topical experts. This group will be meeting every other month and will provide technical expertise to help guide the process.



## Project Corridor



## The Corridor

The I64 corridor serves as one of Virginia's key east west corridors and is identified in the State-wide transportation plan as a corridor of statewide significance. The interstate, along with US250 and the CSX Buckingham Branch/ CSX pass over the Blue Ridge Mountains at Rockfish Gap. Weather, congestion and frequent accidents result in a corridor that quickly becomes congested causing delays for a growing number of commuters, travelers and freight. The Corridor presents some unique constraints including steep slopes of the Blue Ridge which limit the ability for the roadways to be widened.

## Corridor Facts

The Project Corridor includes Interstate 64 and US250 as well as the Amtrak, Buckingham Branch, CSX railway line between Charlottesville and Staunton.

- Corridor length: 36 miles
- Crash Rate: One and a Half
- US Route 250 Annual Average Daily Traffic: 12,404
- Interstate 64 Annual Average Daily Traffic: 35,944
- Percent of vehicles classified as trucks: 11%
- Population within 2 miles of the corridor 97,784

## PlanWorks

PlanWorks is a set of planning tools and best practices created by FHWA through extensive collaboration with State DOT's MPO's and local governments. The toolkits are orientated around major topics of Transportation Planning. The Decision Guide outlined below was developed through extensive research by FHWA and is designed to streamline the transportation planning process. The Corridor Planning Decision Guide consists of 9 steps focused on key decision points. This Corridor Planning guide is being used to inform the I64 corridor planning process.



### Corridor Planning

|   |   |   |   |  |   |                                       |   |  |
|---|---|---|---|--|---|---------------------------------------|---|--|
| COR-1<br>Approve Scope of Corridor Planning Process | COR-2<br>Approve Problem Statements and Opportunities | COR-3<br>Approve Goals for the Corridor | COR-4<br>Reach Consensus on Scope of Environmental Review | COR-5<br>Approve Evaluation Criteria, Methods and Measures | COR-6<br>Approve Range of Solution Sets | COR-7<br>Adopt Preferred Solution Set | COR-8<br>Approve Problem Statements and Opportunities | COR-9<br>Adopt Priorities for Implementation |
|---|---|---|---|--|---|---------------------------------------|---|--|

## Outcomes

1. Draft MOUs that establish a framework for increased communication and cooperation between groups that have infrequently communicated or worked collaboratively with each other in the past.
2. Draft corridor plan that contains recommendations for future projects and studies to address key deficiencies that are identified in the corridor. Recommendations will be structured so that they can be implemented through Long Range Transportation Plans and the Statewide Transportation plan.

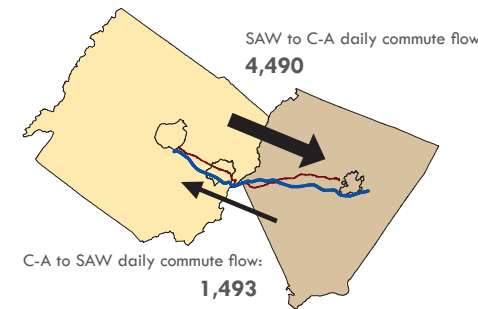
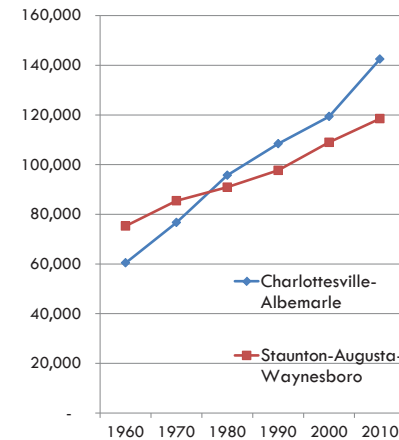


# I-64 Corridor Communit[ies] Profile

## Population Change

Since World War II, population has grown faster in Charlottesville and Albemarle than in Staunton, Augusta, and Waynesboro. For most of that time, growth was faster in the counties. In the last 5 years, however, Charlottesville has outpaced Albemarle and Staunton and Waynesboro have grown faster than Augusta.

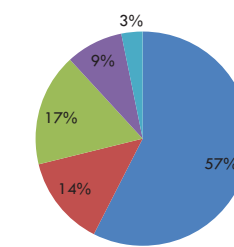
| Geography       | 2015 Pop  | 2010-15 Growth Rate |
|-----------------|-----------|---------------------|
| Virginia        | 8,382,993 | 4.8%                |
| C-A             | 153,261   | 7.6%                |
| Charlottesville | 48,210    | 10.9%               |
| Albemarle       | 105,051   | 6.1%                |
| SAW             | 121,218   | 2.3%                |
| Staunton        | 24,542    | 3.4%                |
| Augusta         | 74,881    | 1.5%                |
| Waynesboro      | 21,795    | 3.8%                |



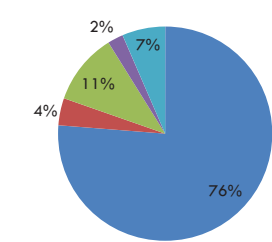
Source: Census Bureau Longitudinal Employer-Household Dynamics 2014 data (Includes only "primary" jobs)

## Housing

Charlottesville-Albemarle



Staunton-Augusta-Waynesboro

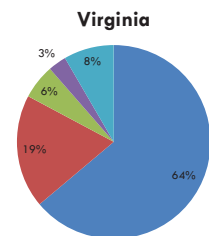


- Single-family detached
- SF Attached or Duplex
- 3-19 units
- 20 or more units
- Mobile home or RV

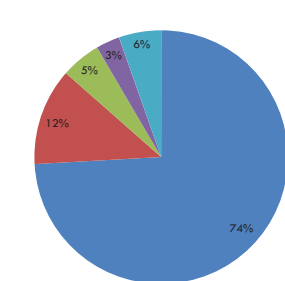
Single family detached is the predominant form of housing in both communities. The Charlottesville area has more multi-family and a slightly newer housing stock than Staunton, Augusta, and Waynesboro. The difference in home values is dramatic and likely the main reason that more workers commute into Charlottesville than out of it.

## Race and Ethnicity

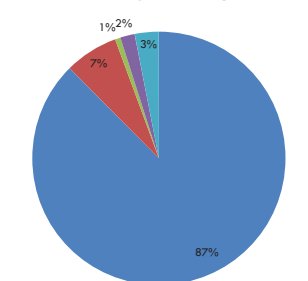
Both regions are more White than the state as a whole, with the Valley being significantly more White. Charlottesville has a higher population of Asian, Hispanic, and African-American residents.



Charlottesville-Albemarle



Staunton-Augusta-Waynesboro

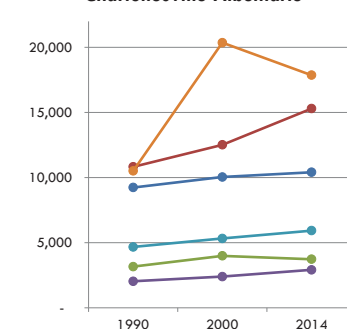


- Non-Hispanic White
- Non-Hispanic Black
- Asian
- Other (including multiracial)
- Hispanic or Latino

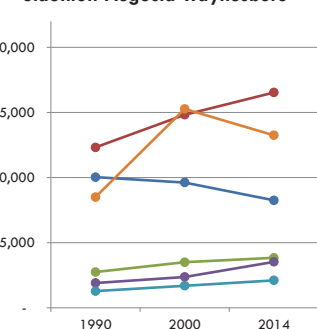
## Household Type

In both regions, married couples without children have grown as a percentage of households while families with children have declined or stayed constant.

Charlottesville-Albemarle



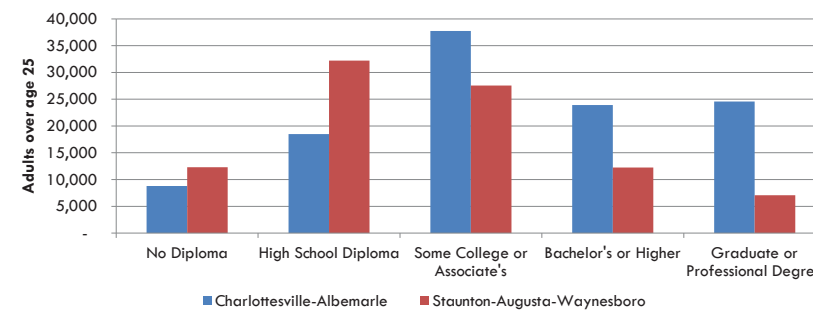
Staunton-Augusta-Waynesboro



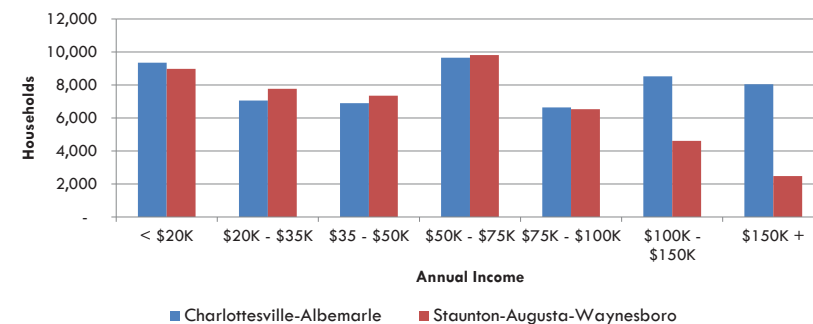
## Income, Education, and Employment

Poverty and unemployment are both slightly higher in the Valley, but the difference is small. Income is distributed similarly in both communities across the lower and middle income brackets. Educational attainment and median income, however, are substantially higher in the Charlottesville area, which has about 10,000 more households earning \$100,000 or more per year.

Educational Attainment

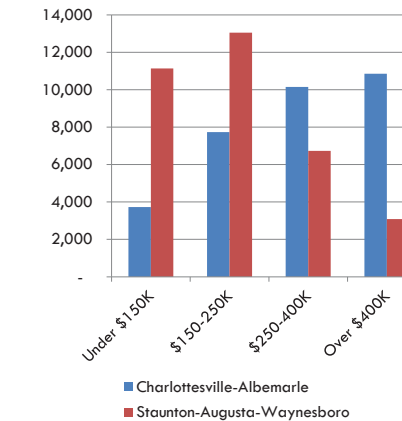


Income Distribution

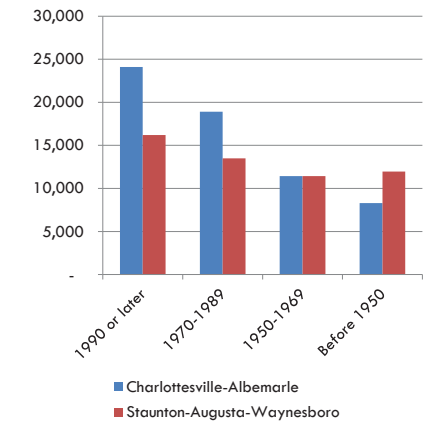


| Geography                      | Median Household Income | Poverty Rate | Non-student Poverty Rate | Unemployment Rate (BLS) |
|--------------------------------|-------------------------|--------------|--------------------------|-------------------------|
| Charlottesville Metro Area     | \$59,189                | 15.2%        | 10.2%                    | 3.9%                    |
| Charlottesville                | \$47,218                | 27.5%        | 15.1%                    | 3.7%                    |
| Albemarle                      | \$67,958                | 9.7%         | 8.4%                     | 3.9%                    |
| Staunton-Waynesboro Metro Area | \$49,262                | 13.2%        | 13.2%                    | 4.3%                    |
| Staunton                       | \$39,982                | 18.2%        | 17.8%                    | 4.4%                    |
| Augusta                        | \$54,018                | 9.3%         | 9.4%                     | 4.1%                    |
| Waynesboro                     | \$45,499                | 20.7%        | 20.8%                    | 4.7%                    |

Home Values



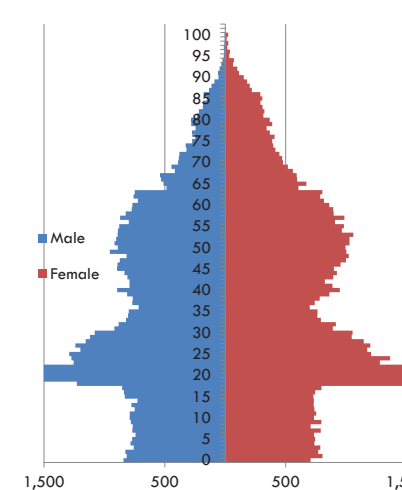
Housing age (year built)



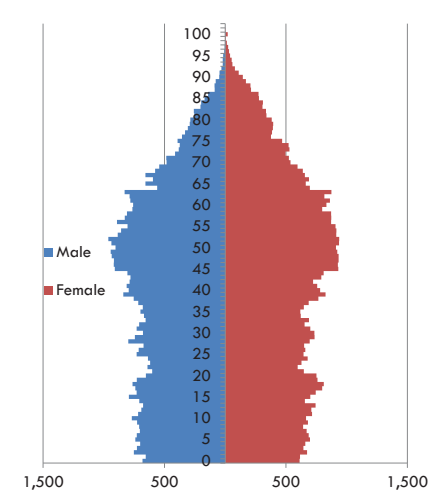
## Age

Aside from the huge number of college-aged residents in Charlottesville, both areas have relatively balanced age pyramids. Both will struggle with aging populations in the future, though Charlottesville has seen a huge influx of young adults in their late 20's and early 30's in the last decade. (Age pyramids from 2010 census)

Charlottesville-Albemarle



Staunton-Augusta-Waynesboro





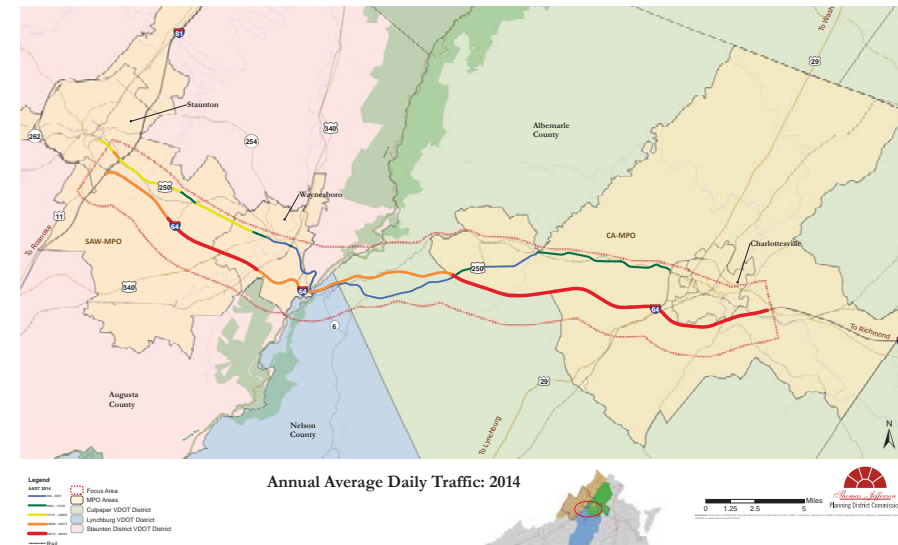
# I-64 Corridor Existing Conditions

## Introduction

Examining the current conditions of the corridor is an important first step of this study. A few of those conditions are highlighted here and include: annual traffic averages (both for the current year and projected to 2035), pavement conditions of the roadway, the level of heavy vehicles (trucks) traveling through the corridor, and the roadway's capacity to handle traffic. These data sets provide a snapshot of the corridor as it stands today and help to identify potential conflict spots that may require more attention.

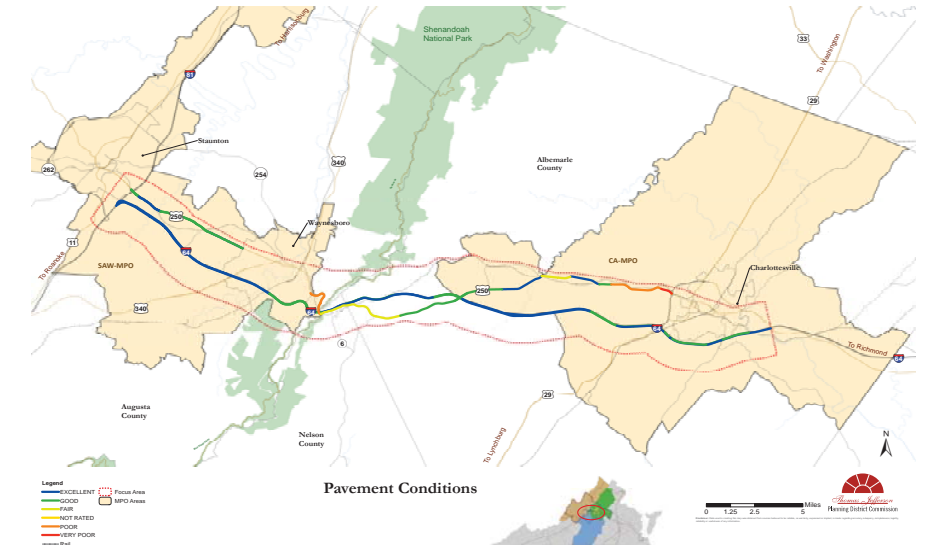


## 2014 Annual Average Daily Traffic



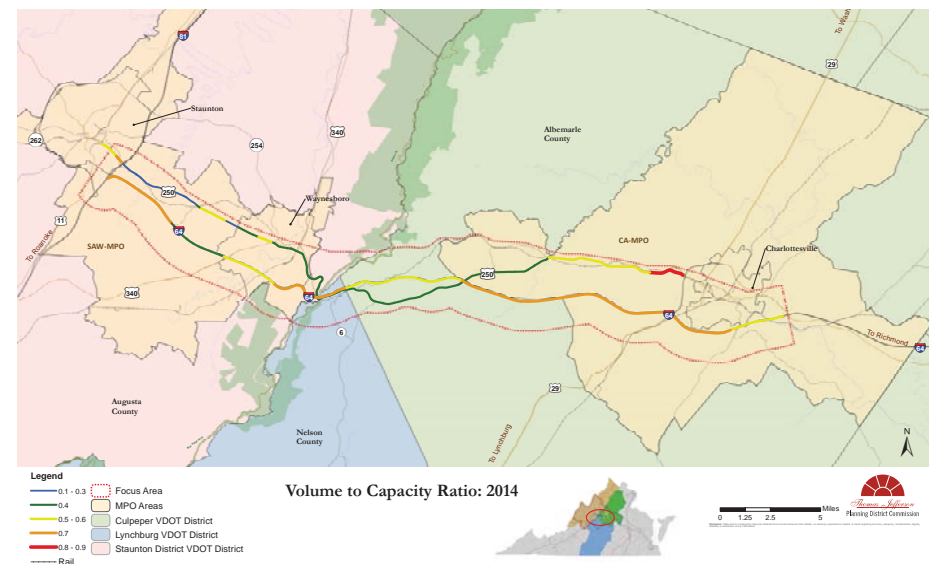
Annual Average Daily Traffic (AADT) is an estimate of the average number of vehicles that travel along a given road segment. VDOT collects traffic count data using sensors along the roadway. Portions of I-64 between Staunton and Waynesboro, as well as the majority of I-64 in the CA-MPO region, have high volumes of daily traffic.

## Pavement Conditions



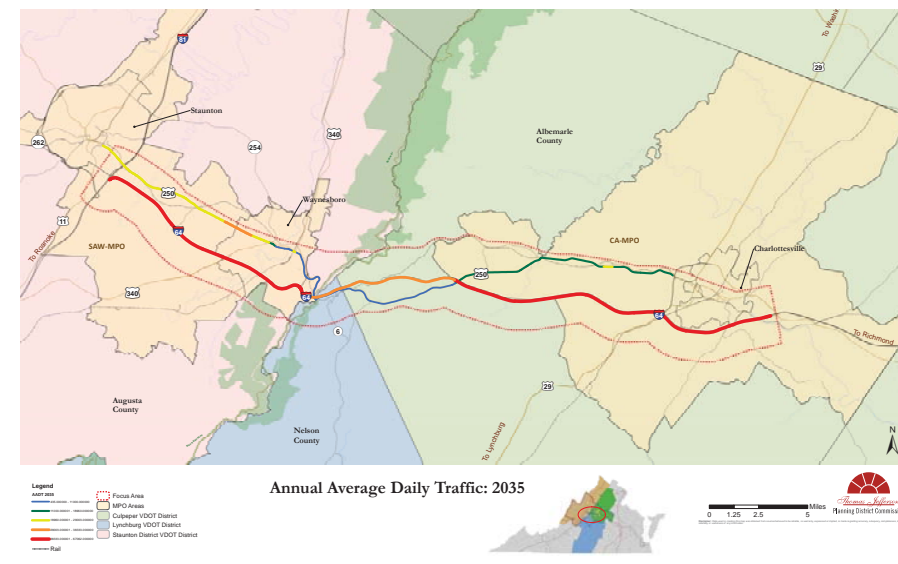
Pavement conditions of the roadway are monitored and recorded by VDOT. The above map reveals that all of I-64 within the study area falls into the "excellent" or "good" categories. However, portions of US 250 fall into the "poor" or "very poor" categories. Data for roads within city boundaries is not available.

## Volume to Capacity Ratio 2014



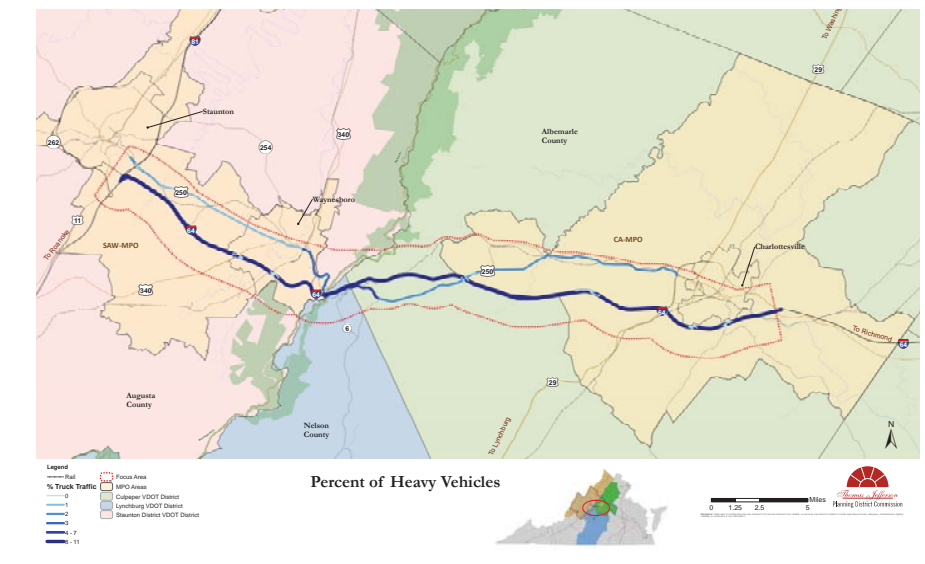
Volume to capacity ratios or V/C vary from 0 to 1 depending on travel speed the closer a segment is to a V/C of 1 the more congested the road segment is. V/C ratio helps planners and transportation engineers understand how over capacity or under capacity any given segment of roadway is. Segments of I-64 have V/C ratio of 0.6. The section of I-64 at Afton has a current Level of Service (LOS) of C and is forecasted to be a LOS of E by 2035.

## 2035 Annual Average Daily Traffic



VDOT forecasts future AADT to the year 2035. Without any interventions or upgrades, I-64 and US 250 will continue to see increases in daily traffic volumes. Almost all of the 64 corridor in the study area has increased along with portions of 250 within the boundaries of the SAW-MPO. Those segments highlighted in red represent higher levels of traffic, while those in the green and blue represent lower traffic volumes.

## Percentage of Heavy Vehicles



The sensors that are used to conduct vehicle counts for the AADT calculations are able to distinguish between typical, 2-axled vehicles (such as passenger cars) and larger, multi-axled vehicles (such as trucks and busses). The map above shows the percentage of heavy vehicles, those with multiple axles, on each segment of the roadway. The darker blues represent higher percentages. The light blues that can be seen on I-64 are the entrance and exit ramps.



# I-64 Corridor Safety Profile

## Introduction

Analyzing crash data is crucial in understanding the safety of the I-64 and US 250 corridors. Looking at the types of crashes that are occurring, how severe they are, and their location, helps to reveal potential hazardous areas. Identifying these points where crashes are clustering provides practitioners with specific locations where improvements or further study need to occur in order to provide a safe and efficient network for all users.



## Crash Type

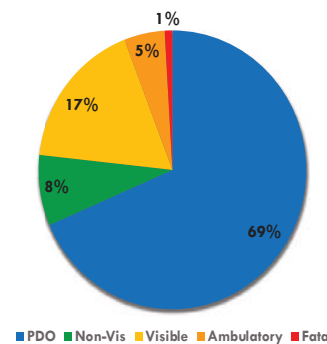
Identifying crash type provides a snapshot of the nature of the collision that has occurred. There are 11 broad categories of crashes, with the number of crashes occurring for the study years of each type represented in the table below. The most common crash type was "Rear End" collisions, followed by "Fixed Object Off Road." The table also shows the number of serious injuries and fatalities for each crash type.

| Collision Type               | Number      | Fatality  | Serious Injury | Serious or Fatal % of Total |
|------------------------------|-------------|-----------|----------------|-----------------------------|
| Rear End Collision           | 1023        | 3         | 31             | 3%                          |
| Fixed Object Off Road        | 687         | 6         | 44             | 7%                          |
| Angle                        | 535         | 8         | 27             | 7%                          |
| Deer or Other Animal         | 466         | 0         | 2              | .5%                         |
| Sideswipe (Either Direction) | 222         | 2         | 6              | 4%                          |
| Non-Collision                | 72          | 2         | 17             | 26%                         |
| Head On                      | 54          | 3         | 10             | 24%                         |
| Other                        | 36          | 1         | 3              | 11%                         |
| Fixed Object In Road         | 19          | 1         | 0              | 5%                          |
| Pedestrian                   | 18          | 3         | 6              | 50%                         |
| Backed Into                  | 8           | 0         | 0              | N/A                         |
| <b>TOTAL</b>                 | <b>3140</b> | <b>29</b> | <b>146</b>     |                             |

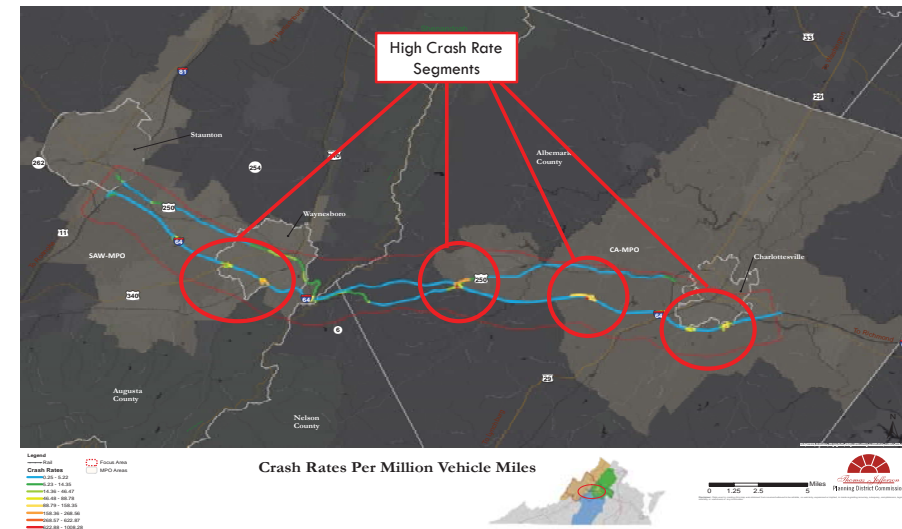
## Crash Severity

To supplement crash type data, crash severity looks at how serious, in terms of injury, a crash is. There are 5 categories of severity, with "Property Damage Only" being the least severe, and "Fatal" being the most. The overwhelming majority of accidents fall into the least severe category.

| Severity             | Number | Percentage of Total |
|----------------------|--------|---------------------|
| Property Damage Only | 2152   | 69%                 |
| Non-Visible Injury   | 257    | 8%                  |
| Visible Injury       | 548    | 17%                 |
| Ambulatory Injury    | 154    | 5%                  |
| Fatal Injury         | 29     | 1%                  |

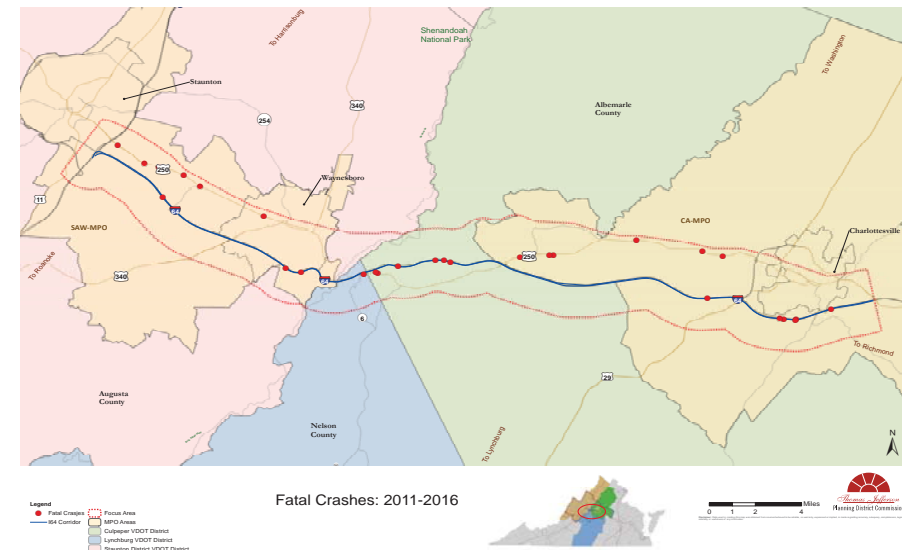


## Crash Rates per 100 Million Vehicle



Crash rates explore the amount of collisions occurring on a given road segment, providing a more comparable measure of crashes to similar road types. The areas highlighted above identify segments that have higher than average crash rates. These segments tend to be located along interchanges, merging lanes, and on and off ramps.

## Fatal Crash Locations

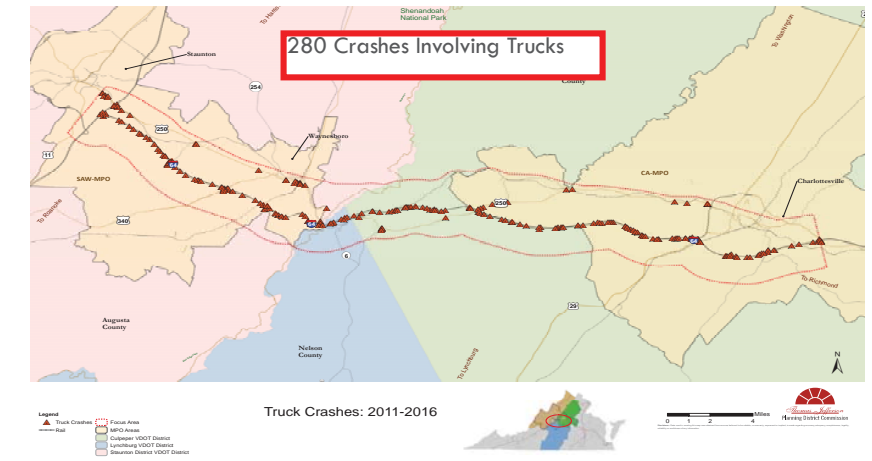


29 collisions that resulted in 30 total fatalities occurred over the last six years

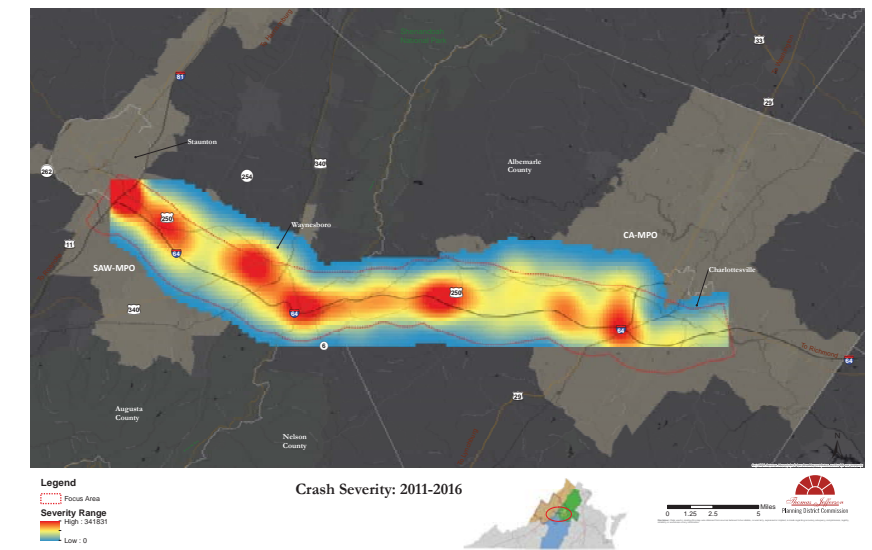
## Quick Stats

- 3,140 total crashes
- 30 Fatalities
- "Rear End" collisions most common type
- "Property Damage Only" most common severity category
- 25% occur during peak afternoon commute times (3 PM to 6 PM)
- Fridays have slightly higher number

## Truck Crashes

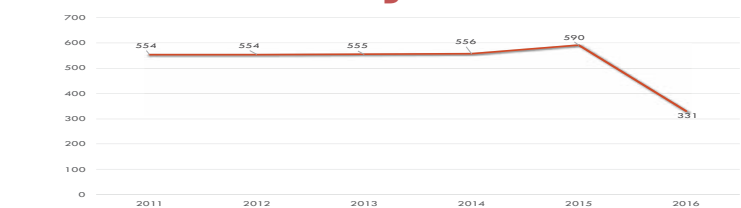


## Severity Hotspots: 2011-2016



The areas shaded in red and orange (known as hotspots) identify locations with higher numbers of severe crashes along the corridor. Clustering of severe crashes (from L to R on the above map) are occurring along US 250 in Staunton, US 250 in Waynesboro, around exit 99 in the Afton area on I-64, at the I-64 and US 250 interchange in Albemarle County, and at the I-64 and US 29 interchange in Charlottesville.

## Crash Counts by Year



For years 2011 through 2014, crash rates stayed consistent, averaging 554 per year. However, 2015 saw a 6% increase. Data for 2016 is not complete.



# I-64 Corridor Project Recommendations

