Hampton Roads Regional Safety Study 2013 Update

Part I: Crash Trends and Locations

T13-11

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

October 2013

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HAMPTON ROADS REGIONAL SAFETY STUDY

2013 UPDATE

PART I: CRASH TRENDS AND LOCATIONS

PREPARED BY:

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

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Hampton Roads Regional Safety Study – 2013 Update
Part I: Crash Trends and Locations

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ABSTRACT
In 2001 the Hampton Roads Planning District Commission initiated the Hampton Roads Regional Safety Study, a comprehensive analysis of highway safety throughout the region. This study examined General Crash Data and Trends, Interstate and Intersection Crash Findings, and Crash Analysis and Countermeasures.

This report is the first full update to the original Regional Safety Study. Topics included in Part I of the 2013 Update include:

- Regional Safety Trends – Trends in traffic crashes in Hampton Roads are included, as is information related to injuries and fatalities resulting from traffic crashes. Crash data for each Hampton Roads jurisdiction is highlighted, and comparisons with other metropolitan areas in Virginia are also included.

- Crash Characteristics – This section looks at the characteristics of crashes and fatalities in Hampton Roads. Examples include crash types, driver actions, alcohol usage, speeding, and safety belt usage.

- Crash Locations – The locations of crashes, injuries, and fatalities on the Hampton Roads roadway system is examined. Details regarding how the crash data was collected and analyzed are provided. The number of crashes for each location is shown, as is the rate based on the severity of crashes and the exposure to crashes.

Part II of this study will examine efforts to improve roadway safety, general crash countermeasures, and safety improvements for high crash locations.

ACKNOWLEDGMENTS
This document was prepared by the Hampton Roads Transportation Planning Organization (HRTPO) in cooperation with the U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), Federal Transit Administration (FTA), Virginia Department of Transportation (VDOT), Virginia Department of Rail and Public Transportation (DRPT), and the local jurisdictions and transit agencies within the Hampton Roads metropolitan planning area. The contents of this report reflect the views of the HRTPO. The HRTPO staff is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the FHWA, FTA, VDOT or DRPT. This report does not constitute a standard, specification, or regulation. FHWA, FTA, VDOT or DRPT acceptance of this report as evidence of fulfillment of the objectives of this program does not constitute endorsement/approval of the need for any recommended improvements nor does it constitute approval of their location and design or a commitment to fund any such improvements. Additional project level environmental impact assessments and/or studies of alternatives may be necessary.

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INTRODUCTION

There were a total of 25,192 crashes in Hampton Roads in 2012 – an average of 69 crashes every day throughout the year, or one crash in the region every 21 minutes. These crashes resulted in tens of millions of dollars of damage, 15,034 injuries, and 99 lives lost. Crashes have a wide range of impacts, not only on the transportation system, but also on families, friends, and society as a whole.

Because of these impacts, roadway safety has been a priority in the state and metropolitan transportation planning processes. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) aimed for a transportation system that provides safe and efficient mobility and accessibility. In 1998, the Transportation Equity Act for the 21st Century (TEA-21) required that Metropolitan Planning Organizations (MPOs) incorporate safety and security as a priority factor in their metropolitan planning process. Safety planning also continued as a priority under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which established the Highway Safety Improvement Program (HSIP) as a core Federal-aid program in 2005.

The current federal surface transportation authorization program, Moving Ahead for Progress in the 21st Century Act (MAP-21), makes safety the U.S. Department of Transportation's number one priority throughout all transportation planning efforts. MAP-21 aims to improve safety throughout the country by establishing national safety performance goals, requiring regular updates to each state's Strategic Highway Safety Plan (SHSP), and doubling the amount of funding available for safety improvements through the Highway Safety Improvement Program.

The Hampton Roads Transportation Planning Organization (HRTPO) initiated its regional roadway safety planning efforts with the *Hampton Roads Regional Safety Study* in 2001. This comprehensive three-part report examined general crash data and trends on a regional and jurisdictional level[1], the locations of crashes on Interstates and at arterial intersections

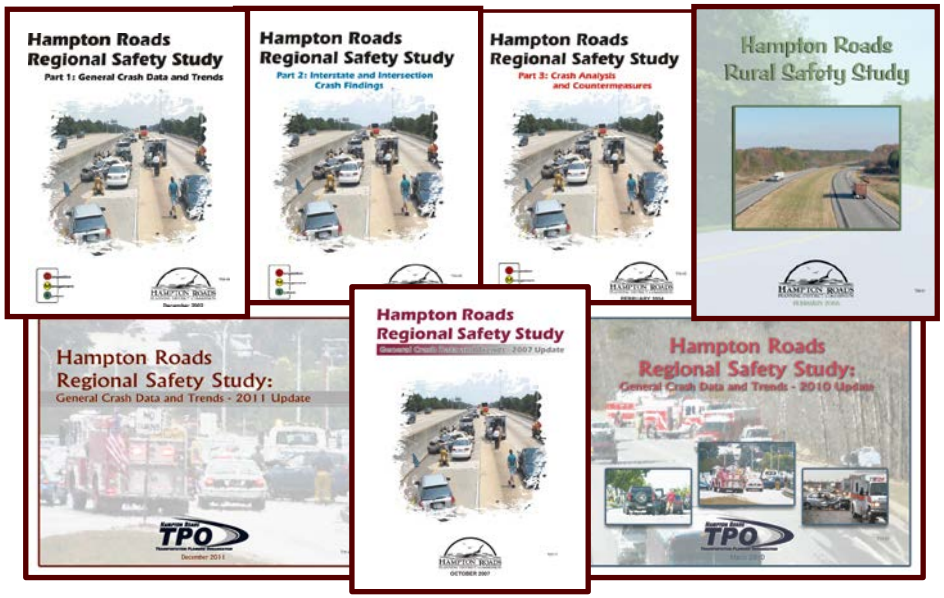


FIGURE 1 - HRTPO SAFETY PLANNING EFFORTS

throughout the region[2], and crash countermeasures for high crash locations[3].

Based on the work completed in the *Hampton Roads Regional Safety Study*, HRTPO staff expanded its safety planning efforts to the rural areas of the region. The 2006 *Hampton Roads Rural Safety Study*[4] comprehensively examined roadway safety in those Hampton Roads communities outside of the metropolitan planning area, including Franklin, Gloucester County, Southampton County, and Surry County.

[1] Hampton Roads Planning District Commission, *Hampton Roads Regional Safety Study Part I: General Crash Data and Trends*, December 2002.

[2] Hampton Roads Planning District Commission, *Hampton Roads Regional Safety Study Part II: Interstate and Intersection Crash Findings*, May 2003.

[3] Hampton Roads Planning District Commission, *Hampton Roads Regional Safety Study Part III: Crash Analysis and Countermeasures*, February 2004.

[4] Hampton Roads Planning District Commission, *Hampton Roads Rural Safety Study*, February 2006.

HRTPO staff has also continued the work of the Regional Safety Study with biennial updates to the General Crash Data and Trends report. The General Crash Data and Trends report examines trends for crashes, injuries and fatalities on regional and jurisdictional levels, and compares regional, statewide, and national crash data.

The *Hampton Roads Regional Safety Study – 2013 Update* provides the first full update to the original Hampton Roads Regional Safety Study. Most of the topics included in this update are similar to those included in the original Regional Safety Study, while incorporating new information and methodologies.

The *Hampton Roads Regional Safety Study – 2013 Update* is produced in two parts. This report (Part I) includes the following sections:

- **Regional Safety Trends** – This section includes information similar to previous General Crash Data and Trends reports. Trends in traffic crashes in Hampton Roads are highlighted, as is information related to injuries and fatalities resulting from traffic crashes. Crash data for each Hampton Roads jurisdiction is included, and comparisons with other metropolitan areas in Virginia are also examined.
- **Crash Characteristics** – This section looks at the characteristics of crashes and fatalities in Hampton Roads. Examples include crash types, driver actions, alcohol usage, speeding, and safety belt usage.
- **Crash Locations** – This section examines the locations of crashes, injuries, and fatalities on the Hampton Roads roadway system. Details are provided on how the crash data was collected and analyzed. The number of crashes for each location is shown, as is the rate based on the severity of crashes and the exposure to crashes.
- **Next Steps** – This section highlights the information that will be included in Part II of the Hampton Roads Regional Safety Study – 2013 Update. This includes efforts to improve roadway safety, general crash countermeasures, and safety improvements for high crash locations.
- **Appendices** – The appendices include the annual number of crashes, injuries, and fatalities for each Hampton Roads jurisdiction, and crash numbers and rates for each freeway segment and intersection.

REGIONAL SAFETY TRENDS

Roadway safety has improved greatly over the last decade in terms of reduced crashes and injuries. This section examines the number and rate of crashes, injuries, and fatalities in Hampton Roads, and how they compare to recent trends and the levels seen in other urban areas in Virginia.

CRASHES

There were 25,192 reportable crashes[5] in Hampton Roads in 2012 according to data obtained from the Virginia Department of Motor Vehicles (DMV) – an average of 69 crashes every day throughout the year, or one crash throughout the region every 21 minutes.

The number of crashes in Hampton Roads has decreased by nearly 8,000 annually from the highs seen in the middle of the last decade, as shown in **Figure 2**. However, the number of crashes in the region has increased by approximately 2,000 per year since the low seen in 2010.

The decrease in the number of crashes has led to a reduced regional crash rate. In 2011 – the most recent year for which vehicular travel data is available – there were 1.65 crashes for every million vehicle-miles of travel (VMT) in Hampton Roads. This crash rate is down 25% from 2.20 crashes per million VMT in the region in 2000 (**Figure 3**).

The crash rate in Hampton Roads is typical of the crash rates experienced in other metropolitan areas throughout the state. As shown in **Figure 4** on page 4, Hampton Roads 2011 crash rate of 1.65 crashes per million VMT is slightly higher than the crash rate in the Northern Virginia area (1.57 crashes per million VMT), equal to the rate in the Roanoke area, and slightly lower than the rate experienced in the Richmond area (1.69).

Figure 5 on page 4 shows the number of crashes in 2012 and the crash rates in 2011 for each jurisdiction in Hampton Roads. Virginia Beach had the most

[5] Crashes are defined by the Virginia Department of Motor Vehicles as being reportable if the crash involves a fatality, injury, or estimated property damage of at least $1,500.

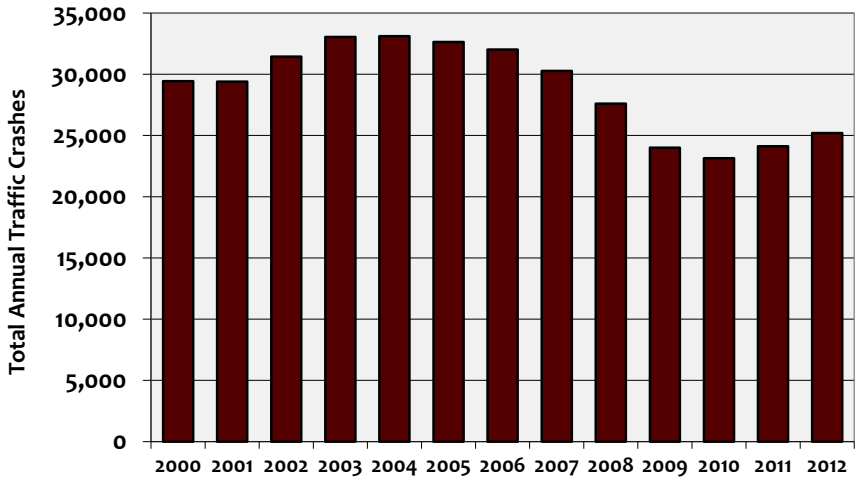


FIGURE 2 – HAMPTON ROADS ANNUAL TRAFFIC CRASHES, 2000-2012

Source: HRTPO analysis of Virginia Department of Motor Vehicles (DMV) data.
A reported traffic crash includes all crashes on public roadways that involve a fatality, injury, or estimated property damage of at least $1,500 according to the DMV.

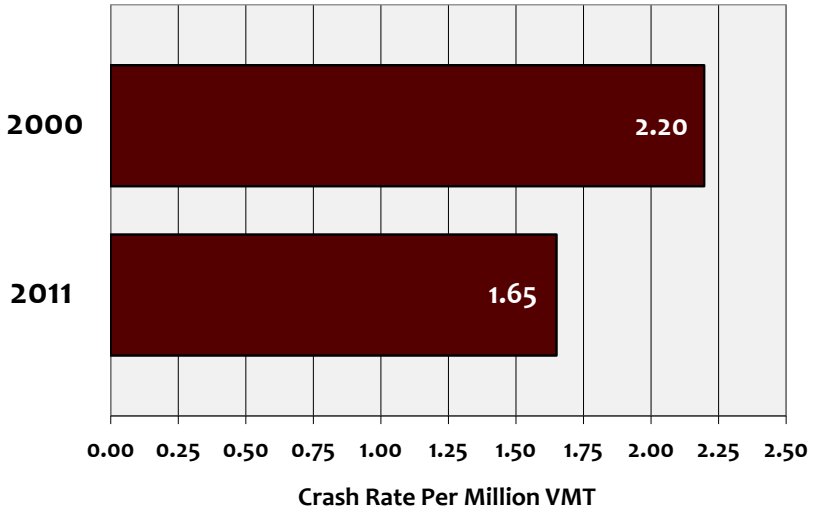


FIGURE 3 – HAMPTON ROADS TRAFFIC CRASH RATES, 2000 AND 2011

Source: HRTPO analysis of Virginia DMV and VDOT data.

crashes (6,419) in Hampton Roads in 2012, followed by Norfolk (4,323), Newport News (3,065), and Hampton (2,862).

In terms of crash rates, Franklin (2.63 crashes per million vehicle-miles of travel), Portsmouth (2.32), Virginia Beach (2.18), and Norfolk (2.01) had the highest crash rates in the region in 2011. The lowest crash rates were found in Southampton County (0.59 crashes per million vehicle-miles of travel), Isle of Wight County (0.93), and Gloucester County (0.96), all three of which are more rural in nature than most of the localities of Hampton Roads.

Appendix A includes annual crash data for each Hampton Roads jurisdiction dating back to 1994.

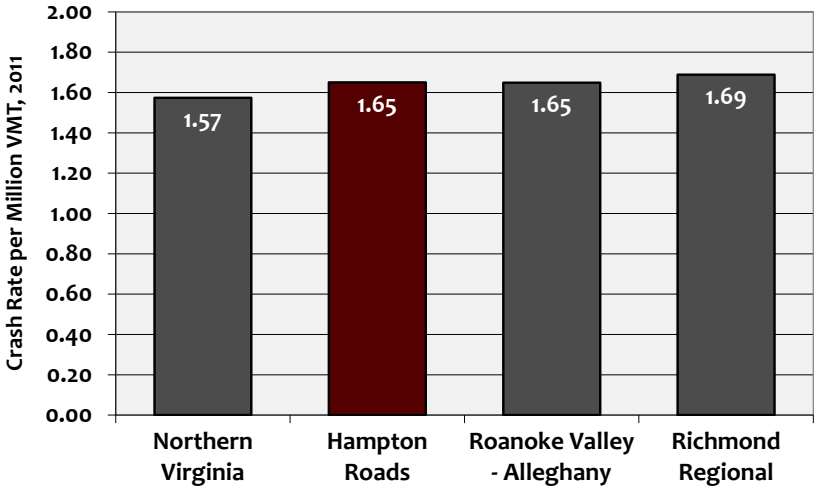


FIGURE 4 – CRASH RATES IN VIRGINIA METROPOLITAN AREAS, 2011

Source: HRTPO analysis of Virginia DMV and VDOT data.

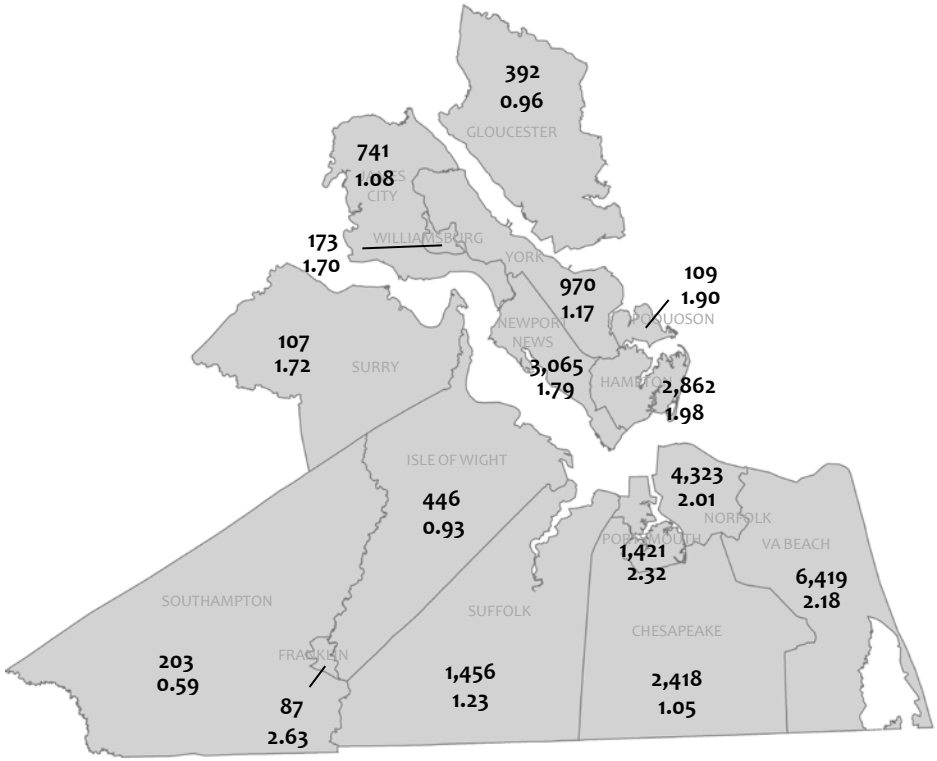


FIGURE 5 – TRAFFIC CRASHES (2012) AND RATES (2011) BY JURISDICTION

Source: HRTPO analysis of Virginia DMV and VDOT data.

INJURIES

There were 15,034 injuries[6] that resulted from traffic crashes in Hampton Roads in 2012 – an average of 41 injuries throughout the region every day, or one injury every 35 minutes.

The annual number of injuries resulting from traffic crashes in Hampton Roads is down 3,000 injuries from the highs seen early in the last decade, as shown in **Figure 6**. However, similar to the trend in crashes, the number of injuries in the region has increased somewhat since 2010.

The decrease in the number of traffic crash injuries has led to a reduced regional injury rate. In 2011, there were 0.96 traffic crash injuries for every million vehicle-miles of travel (VMT) in Hampton Roads. This injury rate is down 28% from 1.34 injuries per million VMT in the region in 2000 (**Figure 7**).

The traffic crash injury rate in Hampton Roads is higher than the rates experienced in other metropolitan areas throughout the state. As shown in **Figure 8** on page 6, Hampton Roads 2011 traffic crash injury rate of 0.96 injuries per million VMT is higher than the rate in the Roanoke (0.71), Northern Virginia (0.80), and Richmond areas (0.82).

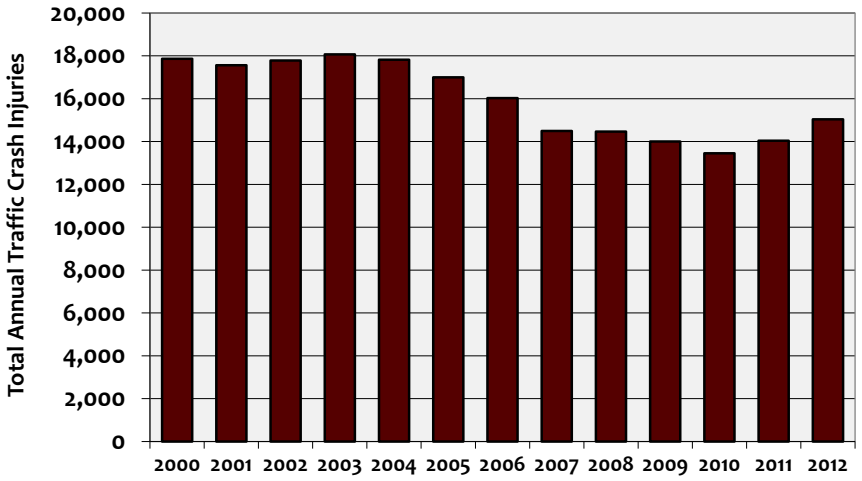


FIGURE 6 – HAMPTON ROADS ANNUAL TRAFFIC CRASH INJURIES, 2000-2012

Source: HRTPO analysis of Virginia Department of Motor Vehicles (DMV) data.
Data includes all injuries in traffic crashes that result in no fatalities within 30 days of the crash according to the DMV.

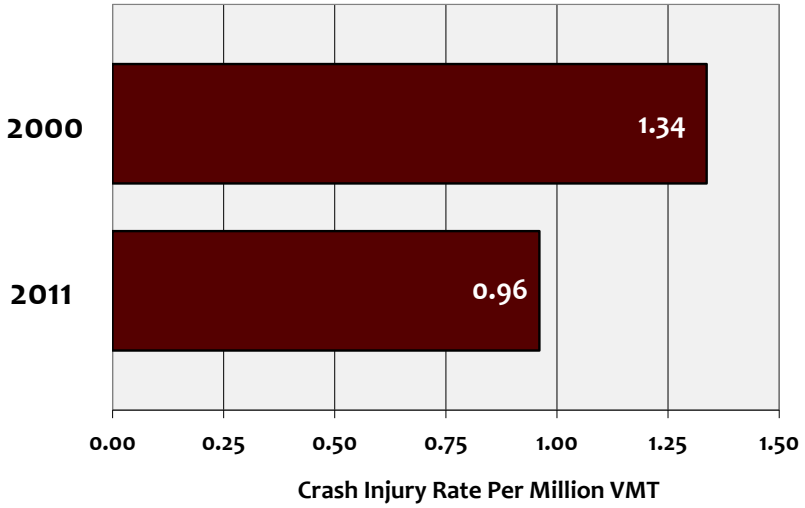


FIGURE 7 – HAMPTON ROADS TRAFFIC CRASH INJURY RATES, 2000 AND 2011

Source: HRTPO analysis of Virginia DMV and VDOT data.

[6] Injuries in traffic crashes that result in no fatalities within 30 days of the crash according to the DMV.

Figure 9 shows the number of injuries resulting from traffic crashes in 2012 and the crash injury rates in 2011 for each jurisdiction in Hampton Roads. Similar to the number of crashes, Virginia Beach had the most injuries (3,478) in Hampton Roads in 2012, followed by Norfolk (2,529), Newport News (1,834), and Chesapeake (1,769).

Similar to the crash rate, Franklin (1.62 injuries per million vehicle-miles of travel) also had the highest rate of injuries in 2011. Portsmouth (1.45), Williamsburg (1.18), and Norfolk (1.16) had the next highest crash injury rates in the region. The lowest crash injury rates occurred in Southampton County (0.43), Isle of Wight County (0.57), Chesapeake (0.66), and York County (0.70).

Appendix A includes annual traffic crash injury data for each Hampton Roads jurisdiction dating back to 1994.

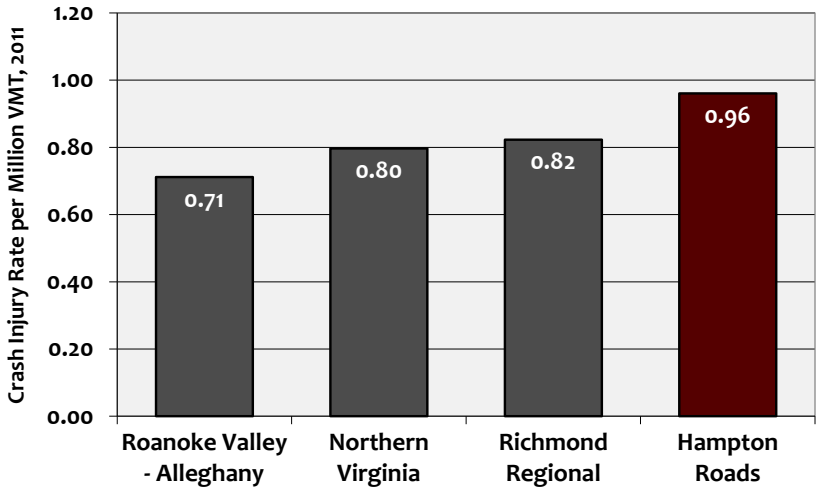


FIGURE 8 – INJURY RATES IN VIRGINIA METROPOLITAN AREAS, 2011

Source: HRTPO analysis of Virginia DMV and VDOT data.

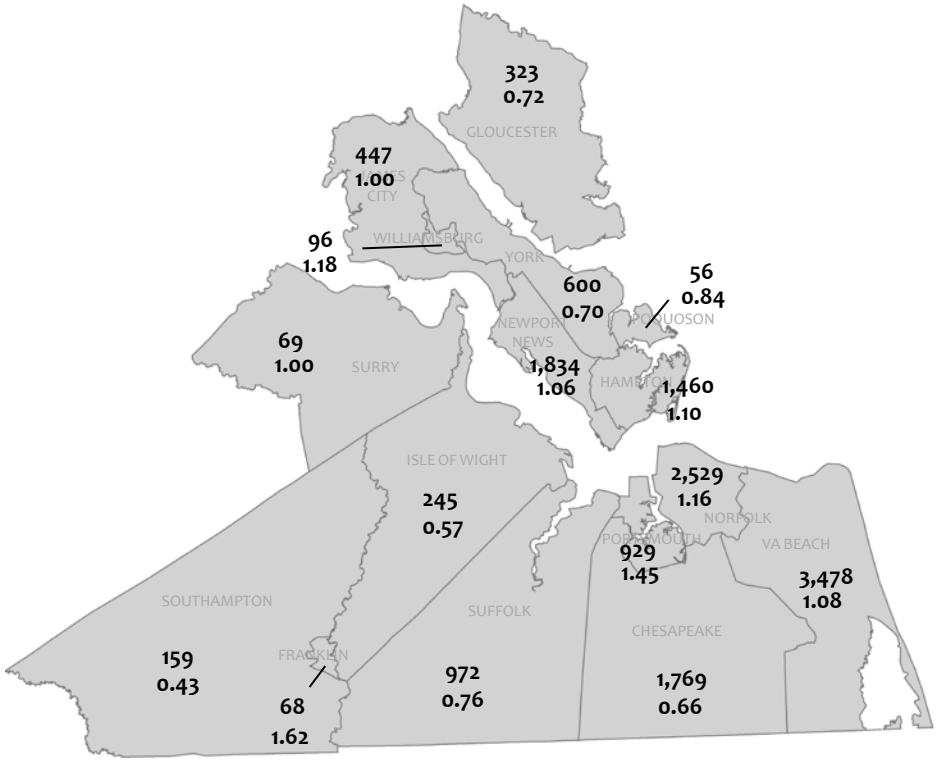


FIGURE 9 – CRASH INJURIES (2012) AND RATES (2011) BY JURISDICTION

Source: HRTPO analysis of Virginia DMV and VDOT data.

FATALITIES

There were 99 fatalities[7] that resulted from traffic crashes in Hampton Roads in 2012 – an average of one fatality every 3.7 days throughout the region.

The number of fatalities in Hampton Roads has fluctuated since 2000. As shown in **Figure 10**, the number of fatalities increased in the middle of the last decade and decreased in recent years, with the exception of 2011.

Because of the variability in the number of fatalities that occur in any given year, most analyses of fatalities include a longer period of time than one year. The fatality data included in this section is shown in three-year intervals.

The total number of fatalities decreased 15% in Hampton Roads between the 2000-2002 period and the 2010-2012 period. The regional crash fatality rate decreased similarly. In 2009-2011, there were 0.86 fatalities for every 100 million vehicle-miles of travel (VMT) in Hampton Roads. This represents a 17% decrease from 1.04 fatalities per 100 million VMT in the region in 2000-2002 (**Figure 11**).

As shown in **Figure 12** on page 8, Hampton Roads crash fatality rate of 0.86 fatalities per 100 million VMT in 2009-2011 is similar to the fatality rate in the Richmond area (0.87) and slightly lower than the fatality rate in the Roanoke area (0.92). However, the crash fatality rate in Northern Virginia (0.43) is half the fatality rate seen in Hampton Roads.

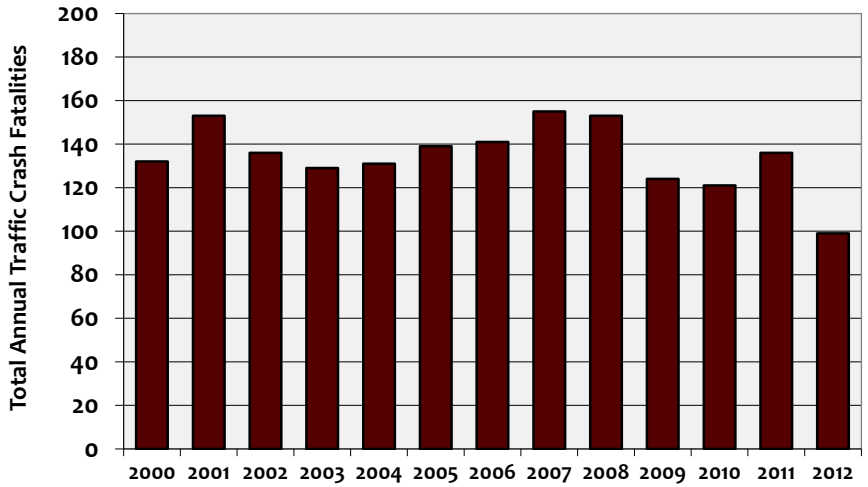


FIGURE 10 – HAMPTON ROADS ANNUAL TRAFFIC CRASH FATALITIES, 2000-2012

Source: HRTPO analysis of Virginia Department of Motor Vehicles (DMV) data.
Data includes all fatalities resulting from injuries suffered in traffic crashes that occur within 30 days of the crash according to the DMV.

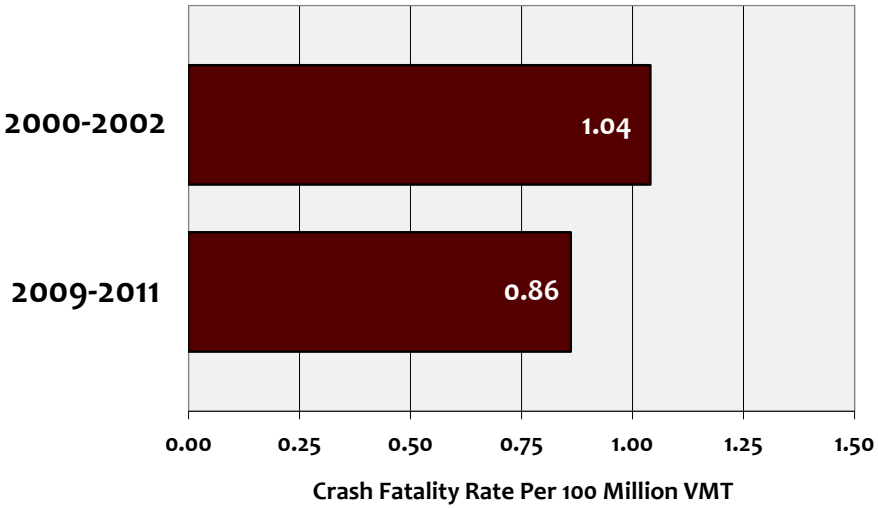


FIGURE 11 – HAMPTON ROADS TRAFFIC CRASH FATALITY RATES, 2000-2002 AND 2009-2011

Source: HRTPO analysis of Virginia DMV and VDOT data.

[7] Fatalities resulting from traffic crashes within 30 days of the crash according to the DMV.

Figure 13 shows the average number of annual fatalities for each jurisdiction during the 2010-2012 time period, and the average crash fatality rate during the 2009-2011 time period. Virginia Beach had the most fatalities in Hampton Roads (an average of 19.3 fatalities each year), followed by Chesapeake (16.7), Norfolk (14.7), and Suffolk (12.7).

In terms of crash fatality rates, rural areas have a higher rate than the more urbanized areas of the region. Gloucester County (2.21 fatalities per 100 million vehicle-miles of travel), Southampton County (1.66), Surry County (1.64), and Isle of Wight County (1.15) had the highest crash fatality rates in the region in the 2009-2011 period. Two localities (Franklin and Poquoson) had no fatalities during the 2009-2011 period, while York County (0.56 fatalities per 100 million vehicle-miles of travel), James City County (0.61), and Hampton (0.72) had low fatality rates. Rural areas tend to have higher speeds, narrower roads and shoulder areas, and lower safety belt usage than urban areas, leading to higher fatality rates.

Appendix A includes annual crash fatality data for each Hampton Roads jurisdiction dating back to 1994.

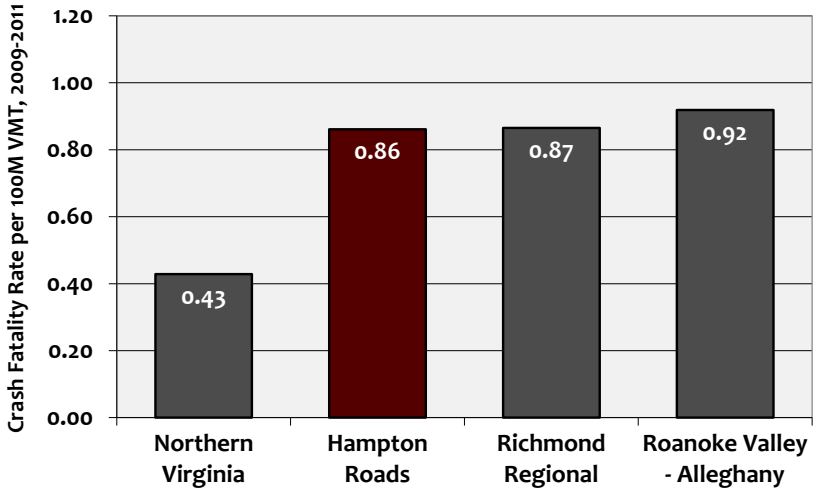


FIGURE 12 – CRASH FATALITY RATES IN VIRGINIA METROPOLITAN AREAS, 2009-2011

Source: HRTPO analysis of Virginia DMV and VDOT data.

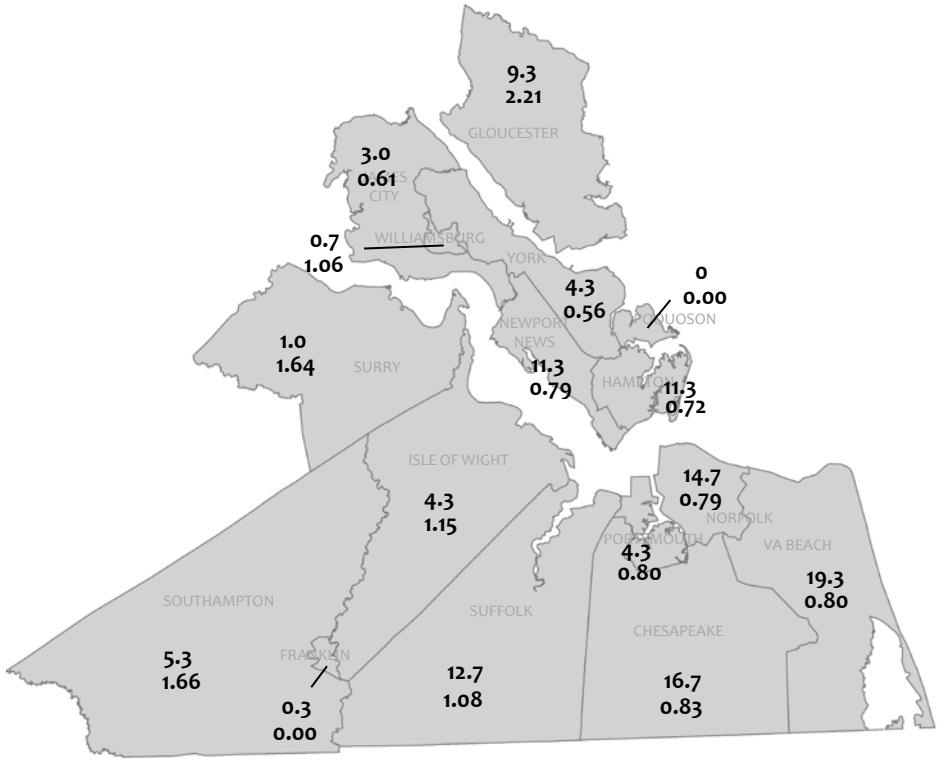


FIGURE 13 – AVERAGE ANNUAL FATALITIES (2010-2012) AND FATALITY RATES (2009-2011) BY JURISDICTION

Source: HRTPO analysis of Virginia DMV and VDOT data.

Crash Characteristics

Crashes are caused by a number of factors. Many of these factors are human in nature, such as driver inattention, driving under the influence of alcohol, or speeding. In other cases, factors such as bad weather or defective equipment may also be a cause.

This section looks at the characteristics of crashes and fatalities in Hampton Roads. These characteristics include:

- **Crash Types** – The primary types of crashes and fatal crashes in Hampton Roads.
- **Weather** – Those crashes in Hampton Roads where the weather likely played a factor.
- **Number of vehicles** – Compares the number of single vehicle and multi-vehicle crashes in the region.
- **Driver Actions** – The primary actions that led to crashes and fatal crashes in the region.
- **Alcohol Usage** – Those crashes and fatalities that resulted from drivers being under the influence of alcohol at the time of the crash.
- **Speeding** – Those crashes and fatal crashes where at least one of the drivers was traveling over the speed limit or exceeded the safe travel speed.
- **Safety Belt Usage** – Those fatalities where the person killed in the crash was not wearing a safety belt.
- **Motorcycles**

For each of the characteristics detailed in this section, data for the entire Hampton Roads region for the years 2010 through 2012 is analyzed.

Crash Types

The primary crash types in Hampton Roads for the years 2010-2012 (**Figure 14**) were rear end crashes (38.3%), angle crashes (28.2%), and fixed objects off the roadway surface crashes (13.1%). Nearly four out of every five crashes in Hampton Roads during this period were one of these three crash types.

The most prevalent fatal crash type in Hampton Roads between 2010 and 2012 was fixed object off the roadway surface crashes, causing 36.7% of all fatal crashes. This is despite only 13.1% of all crashes being off road fixed object crashes during this time.

Bicyclist/pedestrian and head on crashes are also highly represented in fatal crash types in Hampton Roads. Bicyclist/pedestrians only comprised 1.7% of all crashes but 16.0% of all fatal crashes in Hampton Roads, and head on crashes comprised 3.3% of all crashes but 10.4% of all fatal crashes.

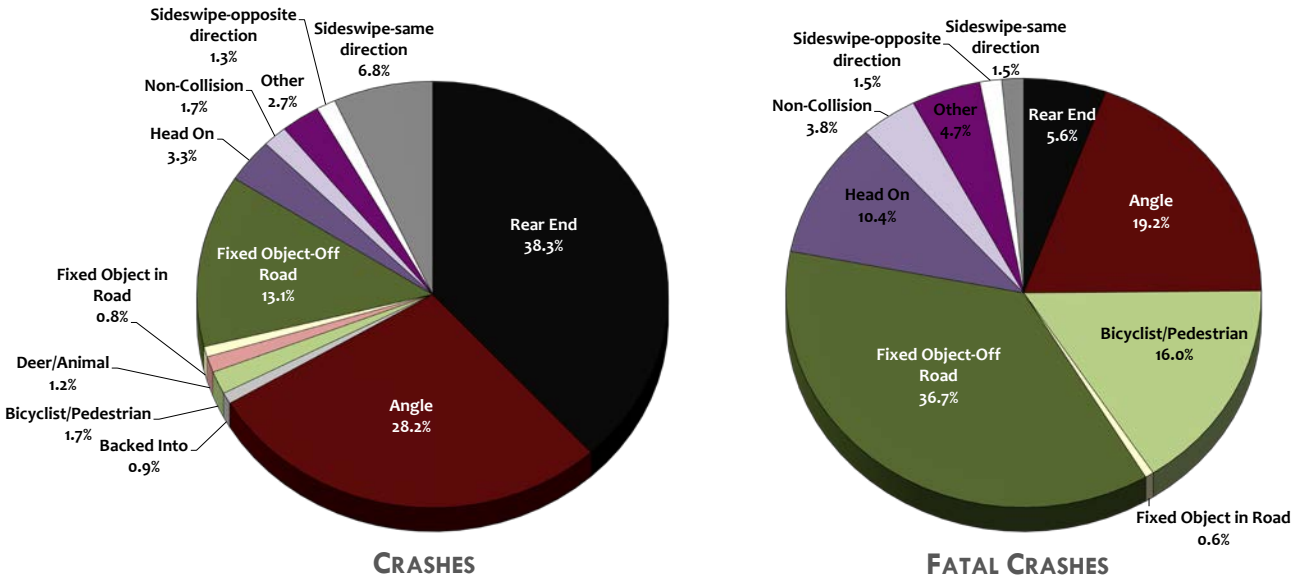


FIGURE 14 – HAMPTON ROADS CRASHES AND FATAL CRASHES BY CRASH TYPE, 2010-2012

Source: HRTPO analysis of Virginia Department of Motor Vehicles (DMV) data.

Weather

Although the Hampton Roads climate is temperate compared to many areas of the country, weather does impact traffic safety in the region. Safety is impacted by a number of factors including poor visibility, slick or flooded pavement, and increased congestion in bad weather.

Over 15% of all crashes in Hampton Roads between 2010 and 2012 occurred in bad weather conditions such as rain, snow, and fog (**Figure 15**). Based on a Federal Highway Administration (FHWA) estimate that 15% of all crashes nationwide occur in rain, snow, or foggy conditions, the Hampton Roads rate is typical.

Weather conditions contribute less of an impact to fatal crashes. About 11% of all fatal crashes in Hampton Roads between 2010 and 2012 occurred in bad weather conditions.

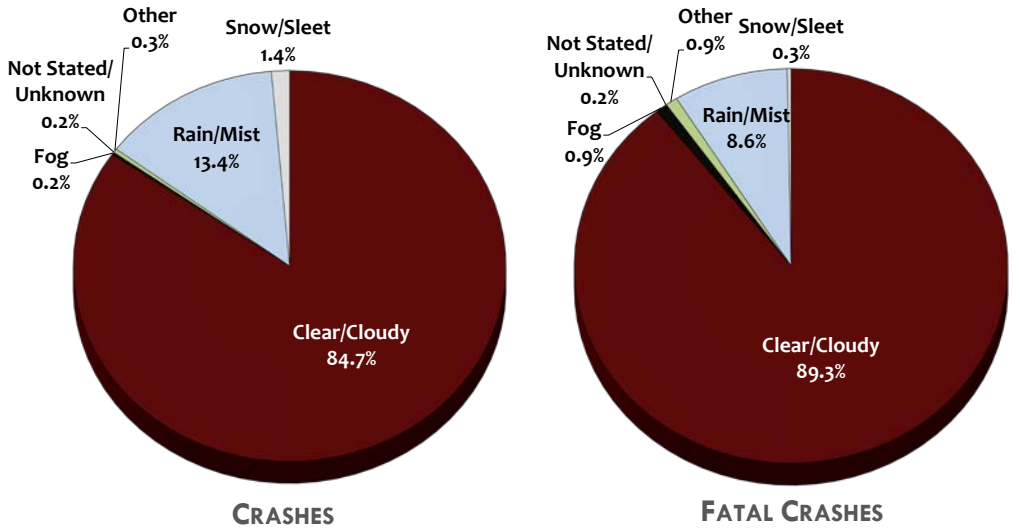


FIGURE 15 – HAMPTON ROADS CRASHES AND FATAL CRASHES BY WEATHER, 2010-2012

Source: HRTPO analysis of Virginia Department of Motor Vehicles (DMV) data.

Number of Vehicles

Crashes in Hampton Roads typically involve two vehicles. Between 2010 and 2012, two out of every three crashes in the region involved two vehicles (**Figure 16**). Single vehicle crashes constituted 21% of all crashes in the region, while 13% of all crashes involved three or more vehicles.

Fatal crashes, however, typically involve only one vehicle. Over 60% of all fatal crashes in Hampton Roads from 2010 to 2012 involved one vehicle. Slightly less than one out of every three fatal crashes (31%) involved two vehicles, and about 7% of all fatal crashes involved three or more vehicles.

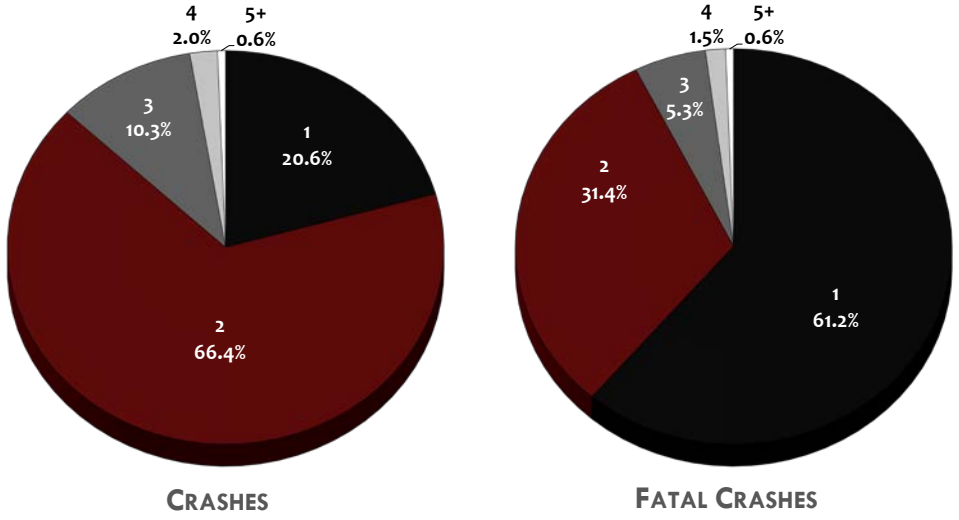


FIGURE 16 – HAMPTON ROADS CRASHES AND FATAL CRASHES BY # OF VEHICLES, 2010-2012

Source: HRTPO analysis of Virginia Department of Motor Vehicles (DMV) data.

Driver Actions

FHWA estimates that driver error is involved in 90% of all motor vehicle crashes. Understanding the driver actions that precede traffic crashes is critical to improving safety on a localized and regional level.

The most prevalent primary actions by drivers leading to crashes in Hampton Roads between 2010 and 2012 (**Figure 17**) were following too closely (29.3%), failing to yield the right-of-way (15.6%), and failing to maintain control of the vehicle (15.1%). Three out of every five crashes in Hampton Roads during this time were caused by one of these three driver actions.

These actions leading to crashes, however, are different from the most prevalent driver actions leading to fatal crashes. The most prevalent driver action leading to fatal crashes in Hampton Roads for the years 2010-2012 was failure to maintain control of the vehicle. Failure to maintain control of the vehicle led to 15.1% of all crashes in Hampton Roads but 43.8% of all fatal crashes.

The second most prevalent driver action leading to fatal crashes was speeding. Speeding led to 2.5% of all crashes in Hampton Roads but 13.0% of all fatal crashes between 2010 and 2012.

Following too closely, which is the most prevalent crash type in Hampton Roads at 29.3% of all crashes, only led to 1.5% of the fatal crashes in the region.

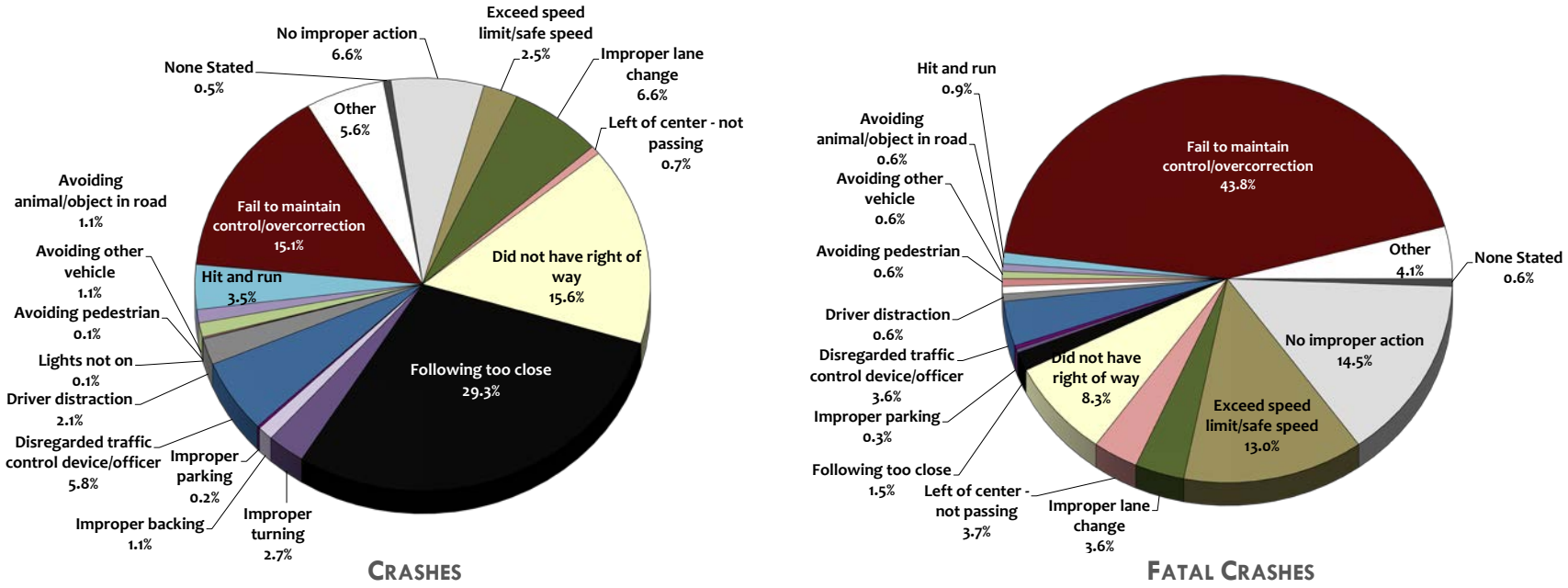


FIGURE 17 – HAMPTON ROADS CRASHES AND FATAL CRASHES BY PRIMARY DRIVER ACTION, 2010-2012

Source: HRTPO analysis of Virginia Department of Motor Vehicles (DMV) data.

Alcohol Usage

The DMV records whether crashes involve alcohol usage, defined by DMV as crashes where a driver, pedestrian, or bicyclist had been drinking before the crash, regardless of the blood alcohol content. Driving under the influence of alcohol is one of the main causes of fatal crashes in Hampton Roads. Although only 7.2% of all traffic crashes in Hampton Roads between 2010 and 2012 (**Figure 18**) involved alcohol, the percentage of all fatalities that involved alcohol was 38.7%.

A total of 154 people were killed in Hampton Roads between 2010 and 2012 in crashes involving alcohol use before the crash.

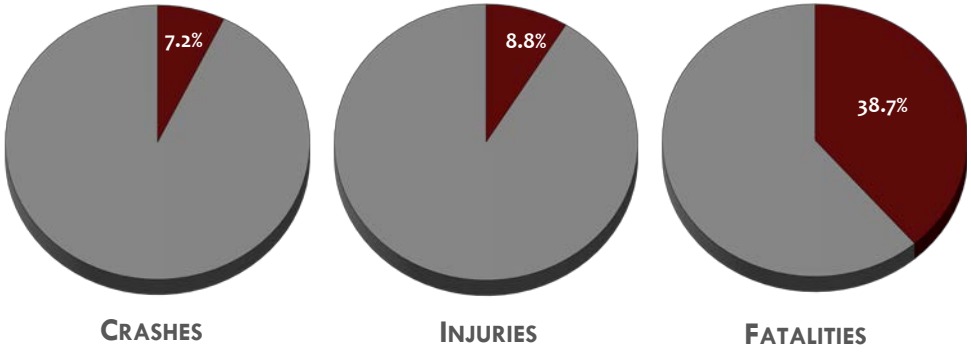


FIGURE 18 – HAMPTON ROADS CRASHES, INJURIES, AND FATALITIES WHERE AT LEAST ONE DRIVER HAD BEEN DRINKING, 2010-2012

Source: HRTPO analysis of Virginia Department of Motor Vehicles (DMV) data.

Speeding

Another main cause of fatal crashes in Hampton Roads is speeding. According to DMV statistics, a total of 17.8% of all traffic crashes in Hampton Roads between 2010 and 2012 included at least one driver exceeding the speed limit or the safe travel speed (**Figure 19**), regardless of other driver actions that resulted in the crash. Note that this differs from the percentage listed in the Driver Actions data on the previous page, which covers only the *primary* driver actions. In terms of speed-related fatalities, however, this percentage nearly doubles, at 34.8% of all fatalities.

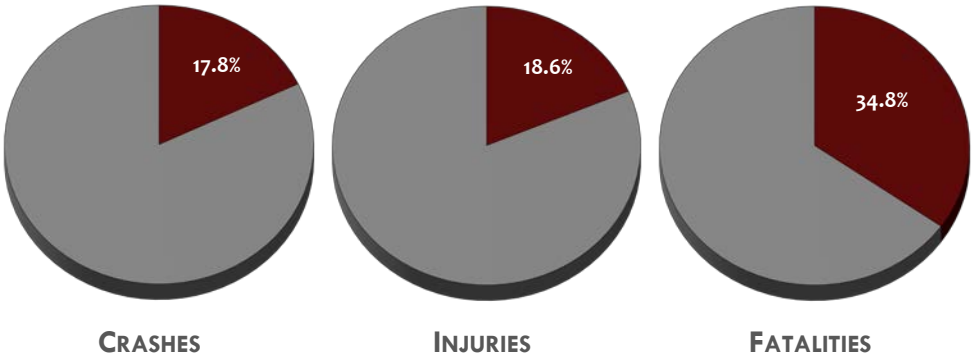


FIGURE 19 – HAMPTON ROADS SPEEDING RELATED CRASHES, INJURIES, AND FATALITIES, 2010-2012

Source: HRTPO analysis of Virginia Department of Motor Vehicles (DMV) data.

Safety Belt Usage

Along with alcohol usage and speeding, not using a safety belt is a primary characteristic of fatal crashes in Hampton Roads. Looking at Hampton Roads data for the years 2010 to 2012, among those people that were killed in crashes as drivers or passengers in motor vehicles (in other words excluding bicyclists, pedestrians, and motorcyclists), 54.7% were not using safety belts at the time of the crash.

MOTORCYCLISTS

Many of the fatalities resulting from traffic crashes in Hampton Roads are suffered by motorcyclists. Although only 2.3% of all crashes in Hampton Roads between 2010 and 2012 involved motorcyclists (**Figure 20**), 50 of the 356 fatalities (14.0%) that occurred in Hampton Roads during this time were motorcyclists.

CRASH CHARACTERISTICS SUMMARY

Crashes are caused by a variety of factors, most of which are the result of driver error such as following too close and failing to yield the right of way. Most fatal crashes in Hampton Roads, however, are primarily caused by a small number of factors, including drivers traveling under the influence of alcohol, speeding, or not using safety belts. Many fatal crashes involve more than one of these factors, such as drivers traveling at a high rate of speed under the influence of alcohol and not wearing a safety belt. The number of fatalities involving motorcycle users, bicyclists, and pedestrians is also highly overrepresented compared to their amount of travel.

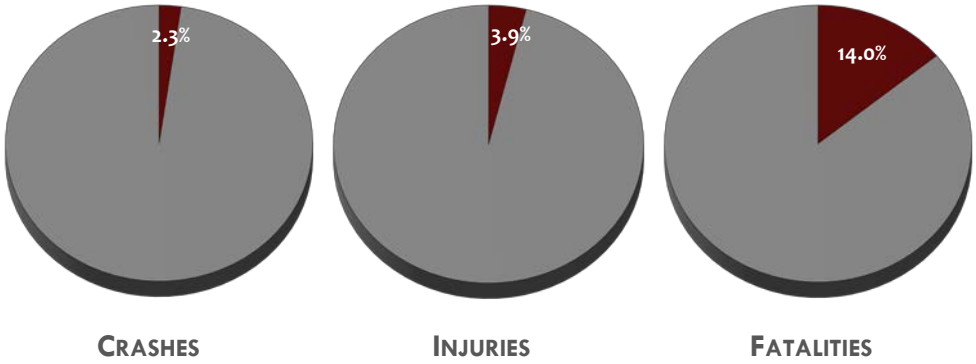


FIGURE 20 – HAMPTON ROADS CRASHES, INJURIES, AND FATALITIES INVOLVING MOTORCYCLISTS, 2010-2012

Source: HRTPO analysis of Virginia Department of Motor Vehicles (DMV) data.

Crash Locations

This section examines the location of crashes on the Hampton Roads roadway system, and highlights those locations with a high number and rate of crashes. This section includes:

- **Data Collection** – Details how the crash data used in this study was obtained.
- **Data Analysis** – Details how the crash data was analyzed, terms and equations used in the analysis, methodologies, etc.
- **Crash Analysis by Location** – Details the locations of crashes throughout the region. This section also highlights locations with a high number and rate of crashes.

Data Collection

Crash data used in this report was obtained by HRTPO from the Virginia Department of Motor Vehicles (DMV) and the Virginia Department of Transportation (VDOT). DMV and VDOT each maintain a database containing a record of every reportable[8] crash that occurred on public roadways. Each database record contains a wide variety of information regarding the crash, such as the date, time of day, number of injuries and fatalities, collision type, weather, driver action, etc. VDOT's database also provides the location of each crash, in terms of latitude and longitude coordinates.

In recent years, these crash databases have been improved. Prior to 2008, VDOT's crash database only included locations for those crashes that occurred on state-maintained roadways, which are all roadways within counties and the entire Interstate system. The locations of most crashes on city-maintained roadways were not included in the data. Starting with the 2008 data, VDOT's crash database includes the location of all reportable crashes on public roadways, regardless of the jurisdiction where it occurred and roadway ownership. From the 2009 data onward, the latitude and longitude coordinates for each crash have been included. These improvements allowed HRTPO staff to use the VDOT crash database as the sole source of crash location data for this study rather than the combination of state and city crash data sources used in the original Regional Safety Study.

The number of crashes at any particular location fluctuates from year to year. Crash data is typically evaluated for multi-year periods in order to reduce this variation and make the data more reliable. For this study, the four most recent years of crash data – 2009 to 2012 – were used.

Data Analysis

Once the 2009-2012 raw crash data was obtained from DMV and VDOT, HRTPO staff highlighted those crashes in the dataset with missing latitude/longitude location data and those crashes with obviously incorrect location data. HRTPO staff corrected these errors using the text location of the crash and Google maps to obtain the correct latitude/longitude location of those crashes.

After correcting these errors, HRTPO staff imported the crash data into ArcGIS, a geographic information software package with which users can produce data-oriented maps. HRTPO staff spatially analyzed the crash data for each location using this software. An example of using ArcGIS to show the location of crashes is shown in **Figure 21** on page 15.

As in the original Regional Safety Study, crash data in this study was analyzed separately for the freeway system and the non-freeway roadway network. This is due to the operational differences between freeways – which have fewer safety conflicts due to limits to access and no at-grade intersections – and other roadways.

[8] A reportable traffic crash involves either a fatality, injury, or an estimated property damage of at least $1,500.

FREEWAYS

Crashes were analyzed for the entire regional freeway system as part of this study. The regional freeway system network includes all Interstates (I-64, I-264, I-464, I-564, and I-664), as well as the Chesapeake Expressway, MLK Freeway, Southwest Suffolk Bypass, Suffolk Bypass, Western Freeway, and a portion of Route 199. The freeway system analyzed in this report includes 218 total segments, comprising approximately 178 centerline miles.

The location of each crash on the freeway system was identified using ArcGIS software. HRTPO staff grouped crashes by freeway segment and direction for the initial analysis. The total number of crashes was calculated for each freeway segment for each year of the four-year period from 2009 to 2012, and an annual average was calculated.

Although determining the total number of crashes that occurred on each freeway segment is a necessity for safety analyses, this number does not provide an accurate means of comparing the safety levels between freeway segments, since freeway segments vary both in length and the volumes they carry. In the previous Regional Safety Study, freeway segment comparisons were done using the Equivalent Property Damage Only (EPDO) crash rate. The EPDO crash rate accounts not only for the number of crashes but also the severity of crashes and the exposure to crashes based on traffic volumes and segment length. The EPDO crash rate is also used for freeways in this report.

In order to calculate the EPDO crash rate for freeway system segments, crashes are categorized to reflect crashes with at least one fatality (FAT), crashes with at least one injury but no fatalities (INJ), and crashes that only resulted in property damage (PDO). Weighting factors are applied to FAT and INJ crashes to account for the increased severity of these types of crashes. Agencies throughout the country use different weighting factors in calculating EPDO crash rates. In this study, a weighting factor of 3 is applied to INJ crashes and a weighting factor of 12 is applied to FAT crashes.

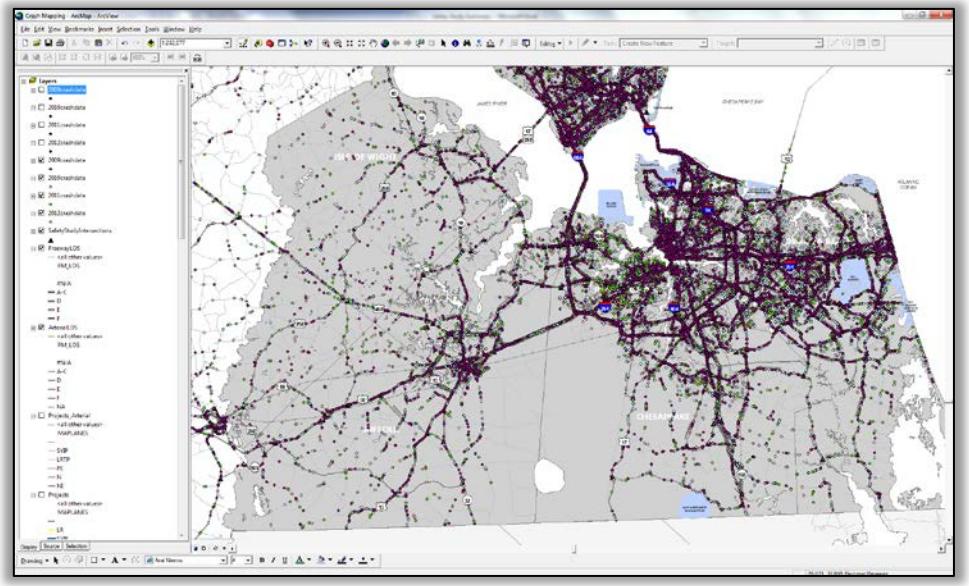


FIGURE 21 – SOUTHSIDE CRASH LOCATIONS IN ARCGIS

Source: HRTPO.

For freeway segments, the EPDO crash rate per million vehicle-miles of travel is calculated using the following formula:

$$\text{Freeway EPDO Crash Rate} = \frac{1{,}000{,}000 \times \left(\begin{array}{c} \text{Annual PDO Crashes} \\ + 3 \times \text{Annual INJ crashes} \\ + 12 \times \text{Annual FAT crashes} \end{array} \right)}{365 \times \text{Annual Average Daily Traffic (AADT)} \times \text{Segment Length}}$$

The results of the freeway crash analysis are included in the Crash Analysis by Location section of this report, beginning on page 18.

INTERSECTIONS

According to National Highway Traffic Safety Administration estimates, nearly half of all crashes in urban areas occur at intersections. In addition, intersections are an emphasis area in the updated Virginia Strategic Highway Safety Plan, which will be detailed further in Part II of this study. In order to focus this study, crashes were analyzed for select at-grade intersections in Hampton Roads.

Intersections were selected for this study based on their inclusion in the Hampton Roads Congestion Management Process (CMP) roadway network. The Hampton Roads CMP roadway network is a 1,600 mile network that includes all roadways that are classified as interstates, freeways or other expressways, principal arterials, and minor arterials. Based on network connectivity, access to major activity centers, and input from jurisdictions, the CMP roadway network also includes several roadways classified as collectors. More information on the Hampton Roads CMP roadway network is available in HRTPO's Congestion Management Process report[9].

Intersections were selected for this analysis if they comprise an at-grade crossing of at least two CMP network roadway segments. Based on this criteria, 597 locations throughout Hampton Roads were included in this intersection safety analysis.

The location of each crash that occurred at each of the 597 intersections was identified using ArcGIS software. All crashes that occurred within 250 feet (or 0.05 miles) of the intersection were included in the crash totals for that intersection. The total number of crashes at each intersection was calculated for each year of the four-year period from 2009 to 2012, and an annual average was also calculated.

Determining the total number of crashes that occurred at each intersection provides a means for determining those locations where safety improvements can have the biggest impact. For example, adding a turn bay at an intersection with high traffic volumes and a high number of crashes will likely result in a higher reduction in crashes than adding a similar turn bay at an intersection with lower traffic volumes and a lower number of crashes.

However, the total number of crashes does not provide an accurate means of comparing the safety levels between various intersections, since the number of vehicles served by each intersection varies greatly. For example, the intersection of Independence Boulevard and Virginia Beach Boulevard in Virginia Beach (where an average of 110,500 vehicles enter the intersection each weekday) would be expected to have many more crashes than the intersection of Centerville Road and John Tyler Highway in James City County (which only serves 8,100 vehicles each weekday).

As with freeways, comparisons between intersections were made in the previous and current Regional Safety Study using the Equivalent Property Damage Only (EPDO) crash rate. The EPDO crash rate accounts for the number and severity of crashes as well as the exposure to crashes based on the traffic volumes entering each intersection. Crashes are categorized as those with at least one fatality (FAT), those with at least one injury but no fatalities (INJ), and those that only resulted in property damage (PDO). A weighting factor of 3 is applied to INJ crashes, and a weighting factor of 12 is applied to FAT crashes.

For intersections, the EPDO crash rate per million entering vehicles is calculated using the following formula:

$$\text{Intersection EPDO Crash Rate} = \frac{1{,}000{,}000 \times \left(\begin{array}{c} \text{Annual PDO Crashes} \\ + 3 \times \text{Annual INJ crashes} \\ + 12 \times \text{Annual FAT crashes} \end{array} \right)}{365 \times \text{Annual Average Daily Vehicles Entering Intersection}}$$

[9] Hampton Roads Transportation Planning Organization, *Hampton Roads Congestion Management Process: 2010 Update*, September 2010

For this study, the "Annual Average Daily Vehicles Entering Intersection" number in the previous equation was estimated using VDOT's Annual Average Daily Traffic (AADT) volumes. The average daily vehicles entering an intersection is equal to half of the sum of the 2-way AADT volumes of each leg of the intersection. For those legs of the intersection where AADT volumes are not available (such as local roadways or roadways that provide access to areas such as office parks or shopping centers), HRTPO staff estimated AADT volumes.

The results of the intersection crash analysis are included in the Crash Analysis by Location section of this report, beginning on page 22.

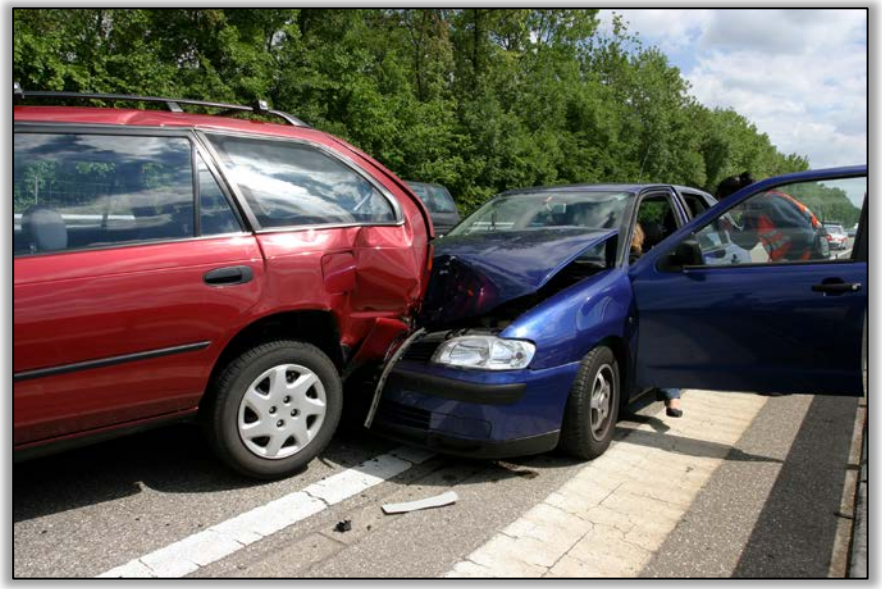


Photo Source: Shutterfly.

Crash Analysis by Location

This section of the report details the results of the crash analysis that was completed by HRTPO for the four-year study period from 2009 to 2012. This section lists the location of crashes on freeway segments first, followed by the analysis for arterial intersections.

Freeways

Number of Crashes

Using ArcGIS software, the total number of crashes for each of the 218 freeway segments was determined by year and direction. This information is included in **Appendix B**.

However, since freeway segments vary greatly both in length and the volumes they carry, no summaries or comparisons were made between freeway segments in this study using solely the number of crashes.

EPDO Crash Rate

The EPDO crash rate not only accounts for the number of crashes but also the severity of crashes and the exposure based on traffic volumes and segment length. For more information on calculating the freeway EPDO Crash Rate, see the Data Analysis – Freeways section on page 15.

The average EPDO crash rate per million vehicle-miles of travel for the entire Hampton Roads freeway system was 1.41 for the years 2009 to 2012. **Table 1** on page 19 shows the 42 freeway segments in Hampton Roads with EPDO crash rates of 2.00 or greater during this period.

Between 2009 and 2012, the freeway segment in Hampton Roads with the highest EPDO crash rate per million vehicle-miles of travel (6.26) was the Eastbound Downtown Tunnel (I-264) between Effingham Street and I-464. In fact, six of the top eleven freeway segments with the highest EPDO crash rates are at the Downtown Tunnel/Berkley Bridge or their approaches.

Eastbound Downtown Tunnel Approach
PhotoSource: HRTPO.

The freeway segment with the second highest EPDO crash rate per million vehicle-miles of travel (5.94) was Northbound MLK Freeway between High Street and London Boulevard. Because this segment has one of the lowest volumes of any freeway segment in Hampton Roads (6,000 vehicles per weekday), its high EPDO crash rate may be due to having such a small sample size. This segment only experienced 1.8 crashes per year between 2009 and 2012.

The freeway segment with the third highest EPDO crash rate per million vehicle-miles of travel (5.03) was Eastbound I-64 between Northampton Boulevard and I-264. This segment had the highest EPDO crash rate in HRTPO's previous Regional Safety Study, but the rate has decreased 14% since that study. This may be due to a double solid line pavement marking that was installed in the mid-2000s that prohibits lane changing close to the off ramp to I-264.

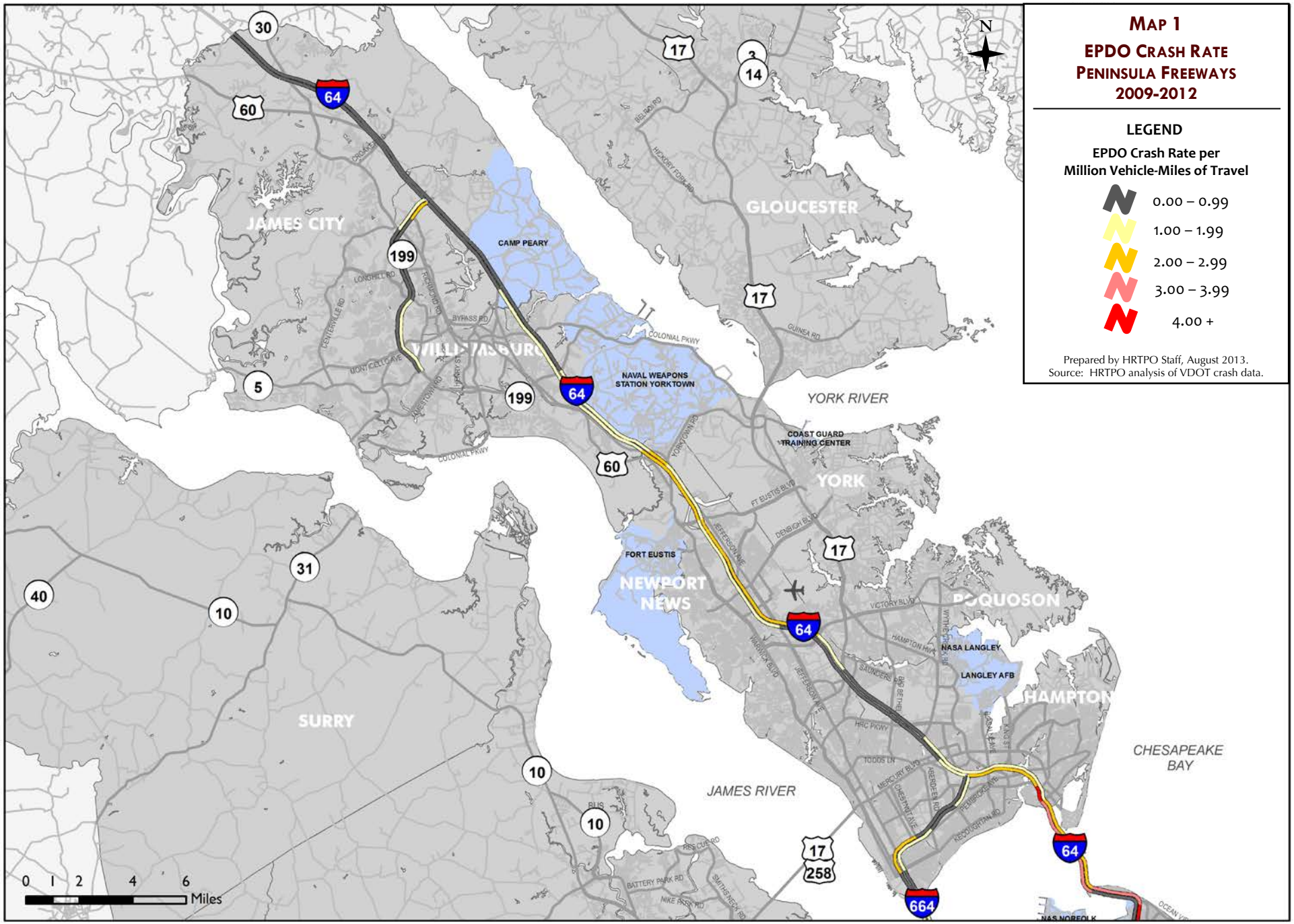
Two other locations with high freeway EPDO crash rates in Hampton Roads are approaches to the Hampton Roads Bridge-Tunnel. I-64 Westbound between Bay Avenue and Fourth View Avenue had the sixth highest EPDO crash rate between 2009 and 2012 (4.47), and I-64 Eastbound between Settlers Landing Road and Mallory Street had the seventh highest rate (4.39).

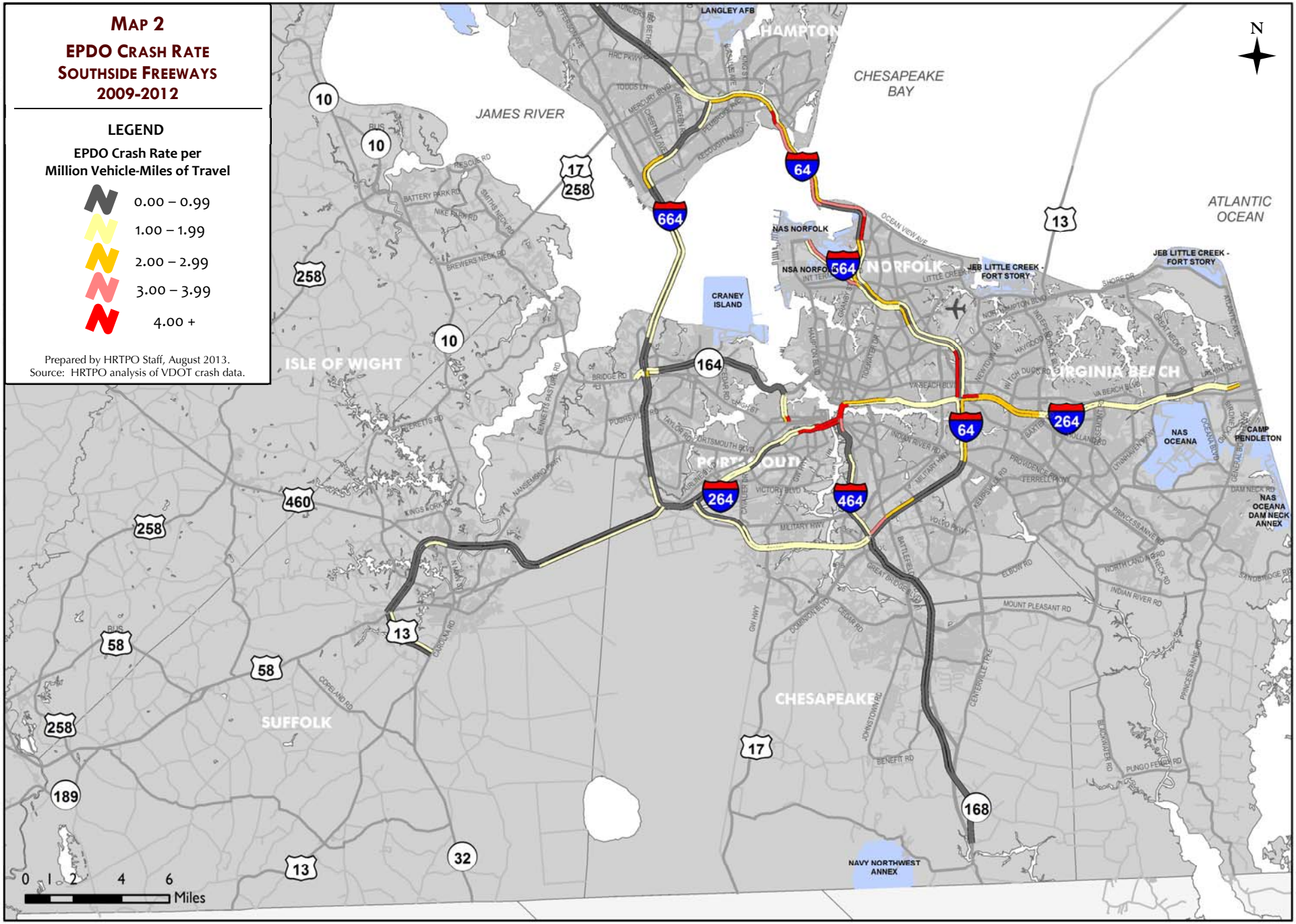
The EPDO crash rate of each of the 218 freeway segments in Hampton Roads from 2009 to 2012 is shown in **Appendix B**. In addition, **Map 1** on page 20 shows the EPDO crash rates for each freeway segment on the Peninsula, and **Map 2** on page 21 shows these rates for the Southside.

Jurisdiction	Facility	Segment From	Segment To	Dir	Average Annual Crashes PDO	INJ	FAT	Total	Average Daily Traffic	EPDO Crash Rate
PORT/NOR	I-264/DOWNTOWN TUNNEL	EFFINGHAM ST	I-464	EB	44.0	22.0	0.0	66.0	43,000	6.26
PORT	M L K FREEWAY	HIGH ST	LONDON BLVD	NB	1.0	0.8	0.0	1.8	6,000	5.94
NOR	I-64	NORTHAMPTON BLVD	I-264	EB	127.5	53.5	0.0	181.0	74,000	5.03
NOR	I-264/BERKLEY BRIDGE	I-464	WATERSIDE/CITY HALL/TIDEWATER	WB	24.3	15.3	0.0	39.5	55,000	4.84
NOR	I-264/BERKLEY BRIDGE	I-464	WATERSIDE/CITY HALL/TIDEWATER	EB	24.8	15.3	0.0	40.0	56,000	4.79
NOR	I-64	4TH VIEW AVE	BAY AVE	WB	26.0	12.8	0.0	38.8	39,000	4.47
HAM	I-64	SETTLERS LANDING RD	MALLORY ST	EB	19.0	5.5	0.0	24.5	41,000	4.39
PORT	I-264	DES MOINES AVE	EFFINGHAM ST	EB	13.3	9.0	0.0	22.3	35,000	4.38
NOR	I-264	I-64	NEWTOWN RD/WCL VA. BEACH	WB	45.8	19.0	0.3	65.0	93,000	4.21
PORT/NOR	I-264/DOWNTOWN TUNNEL	EFFINGHAM ST	I-464	WB	28.8	15.3	0.5	44.5	47,000	4.19
NOR	I-464	SOUTH MAIN ST	I-264	NB	5.3	4.3	0.0	9.5	23,000	3.51
NOR	I-564	ADMIRAL TAUSSIG BLVD	INTERNATIONAL TERMINAL BLVD	NB	17.8	7.3	0.0	25.0	17,000	3.40
CHES	I-64	BATTLEFIELD BLVD	I-464	EB	33.8	12.8	0.0	46.5	54,000	3.38
HAM/NOR	I-64/HRBT	MALLORY ST	OCEAN VIEW AVE	EB	103.8	31.0	0.3	135.0	42,000	3.36
NOR	I-564	INTERNATIONAL TERMINAL BLVD	I-64	SB	11.0	4.3	0.0	15.3	22,000	3.29
NOR	I-64	OCEAN VIEW AVE	4TH VIEW AVE	WB	37.0	18.0	0.0	55.0	44,000	3.11
HAM	I-64	ARMISTEAD AVE	SETTLERS LANDING RD	EB	37.5	17.3	0.0	54.8	41,000	2.97
HAM/NOR	I-64/HRBT	MALLORY ST	OCEAN VIEW AVE	WB	73.0	34.0	0.0	107.0	43,000	2.87
NN	I-64	YORKTOWN RD	FORT EUSTIS BLVD	EB	61.8	16.3	0.0	78.0	44,000	2.81
PORT	M L K FREEWAY	HIGH ST	LONDON BLVD	SB	0.8	0.3	0.0	1.0	6,000	2.74
VB	I-264	BIRDNECK RD	PARKS AVE	EB	2.3	1.5	0.0	3.8	14,000	2.70
VB	I-264	NEWTOWN RD/ECL NORFOLK	WITCHDUCK RD	EB	42.8	29.0	0.0	71.8	90,000	2.69
VB	I-264	WITCHDUCK RD	INDEPENDENCE BLVD	WB	31.8	25.8	0.3	57.8	90,000	2.68
NOR	I-264	WATERSIDE/CITY HALL/TIDEWATER	BRAMBLETON AVE	WB	12.0	9.5	0.0	21.5	47,000	2.59
YC	ROUTE 199	MOORETOWN RD	I-64	WB	3.0	2.0	0.0	5.0	12,000	2.42
NN	I-64	JEFFERSON AVE	OYSTER POINT RD	WB	31.8	16.0	0.3	48.0	59,000	2.40
VB	I-264	NEWTOWN RD/ECL NORFOLK	WITCHDUCK RD	WB	41.0	23.8	0.5	65.3	93,000	2.37
NOR	I-264	BRAMBLETON AVE	BALLENTINE BLVD	WB	13.3	10.8	0.0	24.0	62,000	2.37
NOR/VB	I-64	I-264	INDIAN RIVER RD	WB	52.3	31.3	0.0	83.5	68,000	2.35
NN	I-64	RTE 143 (NORTH)	YORKTOWN RD	EB	12.3	5.0	0.3	17.5	41,000	2.30
VB	I-264	WITCHDUCK RD	INDEPENDENCE BLVD	EB	35.5	19.0	0.0	54.5	89,000	2.24
NOR	I-264	I-64	NEWTOWN RD/WCL VA. BEACH	EB	18.0	12.0	0.0	30.0	90,000	2.22
NN	I-664	23RD ST	CHESTNUT AVE	SB	15.8	6.5	0.5	22.8	31,000	2.16
SUF	I-664	BRIDGE RD	WESTERN FWY	NB	1.3	0.8	0.0	2.0	30,000	2.13
CHES	I-64	GREENBRIER PKWY	BATTLEFIELD BLVD	EB	18.0	9.8	0.0	27.8	43,000	2.12
NOR	I-64	I-564/LITTLE CREEK RD	TIDEWATER DR	WB	20.3	10.0	0.3	30.5	59,000	2.11
NOR	I-64	BAY AVE	I-564/LITTLE CREEK RD	EB	25.8	10.3	0.3	36.3	43,000	2.09
HAM	I-64	I-664	ARMISTEAD AVE	EB	15.3	7.3	0.0	22.5	55,000	2.09
NOR	I-64	CHESAPEAKE BLVD	NORVIEW AVE	EB	14.0	10.0	0.5	24.5	68,000	2.08
NOR	I-64	TIDEWATER DR	CHESAPEAKE BLVD	WB	20.5	7.3	0.3	28.0	58,000	2.06
NN	I-64	FORT EUSTIS BLVD	JEFFERSON AVE	WB	73.5	31.0	0.3	104.8	47,000	2.03
NN	I-64	RTE 143 (NORTH)	YORKTOWN RD	WB	9.5	4.5	0.3	14.3	40,000	2.02

TABLE 1 – HAMPTON ROADS FREEWAY SEGMENTS WITH EPDO CRASH RATES OF 2.00 OR GREATER, 2009-2012

Source: HRTPO analysis of VDOT data.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Freeway EPDO Crash Rate (per million vehicle-miles of travel) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Traffic x Segment Length]


MAP 1
EPDO CRASH RATE
PENINSULA FREEWAYS
2009-2012
LEGEND
EPDO Crash Rate per
Million Vehicle-Miles of Travel
0.00 – 0.99
1.00 – 1.99
2.00 – 2.99
3.00 – 3.99
4.00 +
Prepared by HRTPO Staff, August 2013.
Source: HRTPO analysis of VDOT crash data.
N
JAMES CITY
GLOUCESTER
CAMP PEARY
NAVAL WEAPONS STATION YORKTOWN
YORK RIVER
COAST GUARD TRAINING CENTER
YORK
FORT EUSTIS
NEWPORT NEWS
POQUOSON
NASA LANGLEY
LANGLEY AFB
HAMPTON
SURRY
JAMES RIVER
CHESAPEAKE BAY
NAS NORFOLK
0 1 2 4 6
Miles


MAP 2
EPDO CRASH RATE
SOUTHSIDE FREEWAYS
2009-2012
LEGEND
EPDO Crash Rate per
Million Vehicle-Miles of Travel
0.00 – 0.99
1.00 – 1.99
2.00 – 2.99
3.00 – 3.99
4.00 +
Prepared by HRTPO Staff, August 2013.
Source: HRTPO analysis of VDOT crash data.
N
LANGLEY AFB
HAMPTON
CHESAPEAKE BAY
JAMES RIVER
ATLANTIC OCEAN
NAS NORFOLK
NSA NORFOLK
NORFOLK
JEB LITTLE CREEK - FORT STORY
CRANEY ISLAND
ISLE OF WIGHT
VIRGINIA BEACH
NAS OCEANA
CAMP PENDLETON
NAS OCEANA DAM NECK ANNEX
PORTSMOUTH
CHESAPEAKE
SUFFOLK
NAVY NORTHWEST ANNEX
0 1 2 4 6
Miles

INTERSECTIONS

Number of Crashes

As described in the Data Analysis section of this report, HRTPO staff used ArcGIS software to determine the total number of crashes at each of the 597 intersections analyzed in this study.

Table 2 shows the intersections in Hampton Roads with the highest annual number of crashes between 2009 and 2012. A total of 35 intersections analyzed in this study had at least 20 crashes per year during this period. Of these 35 intersections, 17 are in Virginia Beach, 8 are in Newport News, 7 are in Hampton, and one each are in Chesapeake, Norfolk, and Portsmouth. Intersections in suburban areas typically have a higher number of crashes, since suburban intersections tend to have higher volumes and therefore more exposure to traffic crashes. Of the fifteen busiest intersections in the region (each carrying 75,000 vehicles or more each weekday), nine are in Virginia Beach.

The intersection of Holland Road and Rosemont Road in Virginia Beach had the highest number of crashes among the 597 analyzed intersections in Hampton Roads, at 44.8 crashes per year between 2009 and 2012. The intersections with the second and third highest number of crashes were both in Hampton: Mercury Boulevard at Power Plant Parkway/Todds Lane (44.3 crashes per year) and Hampton Roads Center Parkway at Big Bethel Road (41.8 crashes per year).

The total number of crashes for each of the 597 intersections analyzed as part of this study is shown in **Appendix C**. This data is broken down by year and crash severity. **Table 3** on page 23 shows the intersections in each Hampton Roads jurisdiction with the highest number of crashes. In addition, **Map 3** on page 24 shows the annual number of crashes for each intersection on the Peninsula, and **Map 4** on page 25 shows these crash levels for the Southside.

Juris-diction	Major Road	Minor Road	Average Annual Crashes PDO	INJ	FAT	Total
VB	Holland Rd	Rosemont Rd	26.3	18.5	0.0	44.8
HAM	Mercury Blvd	Power Plant Pkwy/Todds Ln	24.5	19.8	0.0	44.3
HAM	HRC Pkwy	Big Bethel Rd	27.0	14.8	0.0	41.8
NN	Mercury Blvd	Jefferson Ave	17.5	19.8	0.0	37.3
VB	General Booth Blvd	Dam Neck Rd	27.0	9.3	0.0	36.3
VB	First Colonial Rd	Va Beach Blvd	23.0	11.3	0.0	34.3
VB	Princess Anne Rd	Dam Neck Rd	21.5	10.8	0.0	32.3
VB	Indian River Rd	Kempsville Rd	18.0	13.3	0.0	31.3
VB	Independence Blvd	Virginia Beach Blvd	19.3	11.0	0.0	30.3
HAM	Mercury Blvd	Coliseum Dr	19.0	10.8	0.0	29.8
NN	Jefferson Ave	Oyster Point Rd	16.0	13.8	0.0	29.8
NN	Jefferson Ave	J Clyde Morris Blvd	13.5	15.8	0.0	29.3
VB	Independence Blvd	Bonney Rd/Euclid Rd	21.8	7.5	0.0	29.3
HAM	Mercury Blvd	Cunningham Dr	17.3	11.5	0.0	28.8
VB	Va Beach Blvd	Great Neck Rd/London Bridge Rd	19.0	9.5	0.3	28.8
HAM	Mercury Blvd	Armistead Ave	15.8	10.8	0.3	26.8
VB	Princess Anne Rd	Lynnhaven Pkwy	16.3	10.5	0.0	26.8
NN	J Clyde Morris Blvd	Diligence Dr	12.0	13.5	0.3	25.8
NN	Jefferson Ave	Bland Blvd	15.8	10.0	0.0	25.8
VB	Military Hwy	Indian River Rd	16.5	9.3	0.0	25.8
NN	Jefferson Ave	Denbigh Blvd	11.5	13.5	0.0	25.0
VB	Lynnhaven Pkwy	Independence Blvd	12.8	12.0	0.0	24.8
NN	Warwick Blvd	Denbigh Blvd	12.8	11.3	0.0	24.0
NOR	Little Creek Rd	Chesapeake Blvd	12.3	11.8	0.0	24.0
CHES	Battlefield Blvd	Great Bridge Blvd/Kempsville Rd	12.8	11.0	0.0	23.8
VB	Lynnhaven Pkwy	Holland Rd	15.0	8.8	0.0	23.8
HAM	Armistead Ave	LaSalle Ave	15.0	8.3	0.0	23.3
VB	Independence Blvd	Baxter Rd/South Blvd	14.5	8.3	0.0	22.8
VB	First Colonial Rd	Laskin Rd	15.0	6.8	0.0	21.8
NN	Jefferson Ave	Thimble Shoals Blvd	10.8	10.8	0.0	21.5
PORT	George Washington Hwy	Victory Blvd	12.0	9.5	0.0	21.5
VB	General Booth Blvd	London Bridge Rd/Red Mill Blvd	12.0	8.5	0.0	20.5
HAM	Mercury Blvd	Big Bethel Rd	10.8	9.5	0.0	20.3
VB	Northampton Blvd	Diamond Springs Rd	13.0	7.3	0.0	20.3
VB	Dam Neck Rd	Holland Rd	13.8	6.3	0.0	20.0

TABLE 2 – HAMPTON ROADS INTERSECTIONS WITH THE HIGHEST NUMBER OF CRASHES, 2009-2012

Source: HRTPO analysis of VDOT data. Data includes all crashes that occurred within 250′ of the intersection. Analysis only includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.

Chesapeake		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Battlefield Blvd	Great Bridge Blvd/Kempsville Rd	12.8	11.0	23.8
Dominion Blvd	Cedar Rd	8.8	7.8	16.5
Greenbrier Pkwy	Eden Way	7.0	8.3	15.3

Franklin		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Armory Dr	College Dr	3.0	4.0	7.0
Second Ave	High St	2.0	1.3	3.3
Clay St	College Dr/Hunterdale Rd	1.3	1.3	2.5

Gloucester		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Route 17	Route 17 Bus South (Main St)	4.3	3.5	7.8
Route 17	Guinea Rd	2.3	4.0	6.3
Route 17	Route 33/198	1.3	3.8	5.0

Hampton		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Mercury Blvd	Power Plant Pkwy/Todds Ln	24.5	19.8	44.3
HRC Pkwy	Big Bethel Rd	27.0	14.8	41.8
Mercury Blvd	Coliseum Dr	19.0	10.8	29.8

Isle of Wight		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Route 10 Bypass	Main St	3.3	2.3	5.5
Carrollton Blvd	Brewers Neck Blvd	3.8	1.5	5.3
Benns Church Blvd	Brewers Neck Rd	2.8	1.3	4.0

James City		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Route 199	John Tyler Hwy	6.3	3.8	10.0
Richmond Rd	Centerville Rd	3.5	4.8	8.3
Monticello Ave	Ironbound Rd	5.0	3.0	8.0

Newport News		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Mercury Blvd	Jefferson Ave	17.5	19.8	37.3
Jefferson Ave	Oyster Point Rd	16.0	13.8	29.8
Jefferson Ave	J Clyde Morris Blvd	13.5	15.8	29.3

Norfolk		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Little Creek Rd	Chesapeake Blvd	12.3	11.8	24.0
Chesapeake Blvd	Norview Ave	9.0	10.5	19.5
Va Beach Blvd	Newtown Rd	9.0	7.5	16.5

Poquoson		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Wythe Creek Rd	Victory Blvd/Little Florida Rd	8.5	4.5	13.0
Hunt's Neck Rd/East Yorktown Rd	East Yorktown Rd	1.8	0.0	1.8
Little Florida Rd	Poquoson Ave	1.0	0.8	1.8

Portsmouth		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
George Washington Hwy	Victory Blvd	12.0	9.5	21.5
Frederick Blvd	Airline Blvd	7.5	6.5	14.0
Airline Blvd	Portsmouth Blvd/McLean St	7.5	4.5	12.0

Southampton		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Route 58	Bus Route 58 (Jerusalem Rd)	0.8	1.5	2.3
Route 35	General Thomas Hwy (Rte 671)	0.8	0.0	0.8
Route 460	Route 616 (Main St)	0.3	0.5	0.8

Suffolk		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Main St	Constance Rd	8.0	6.0	14.0
Portsmouth Blvd	Nansemond Pkwy/Washington St	3.5	7.0	10.5
Bridge Rd	College Dr	4.5	5.3	9.8

Surry		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Route 10	Route 31 (North)	0.3	0.5	0.8
Route 10	Route 40	0.5	0.3	0.8
Route 10	Route 31 (South)	0.0	0.5	0.5

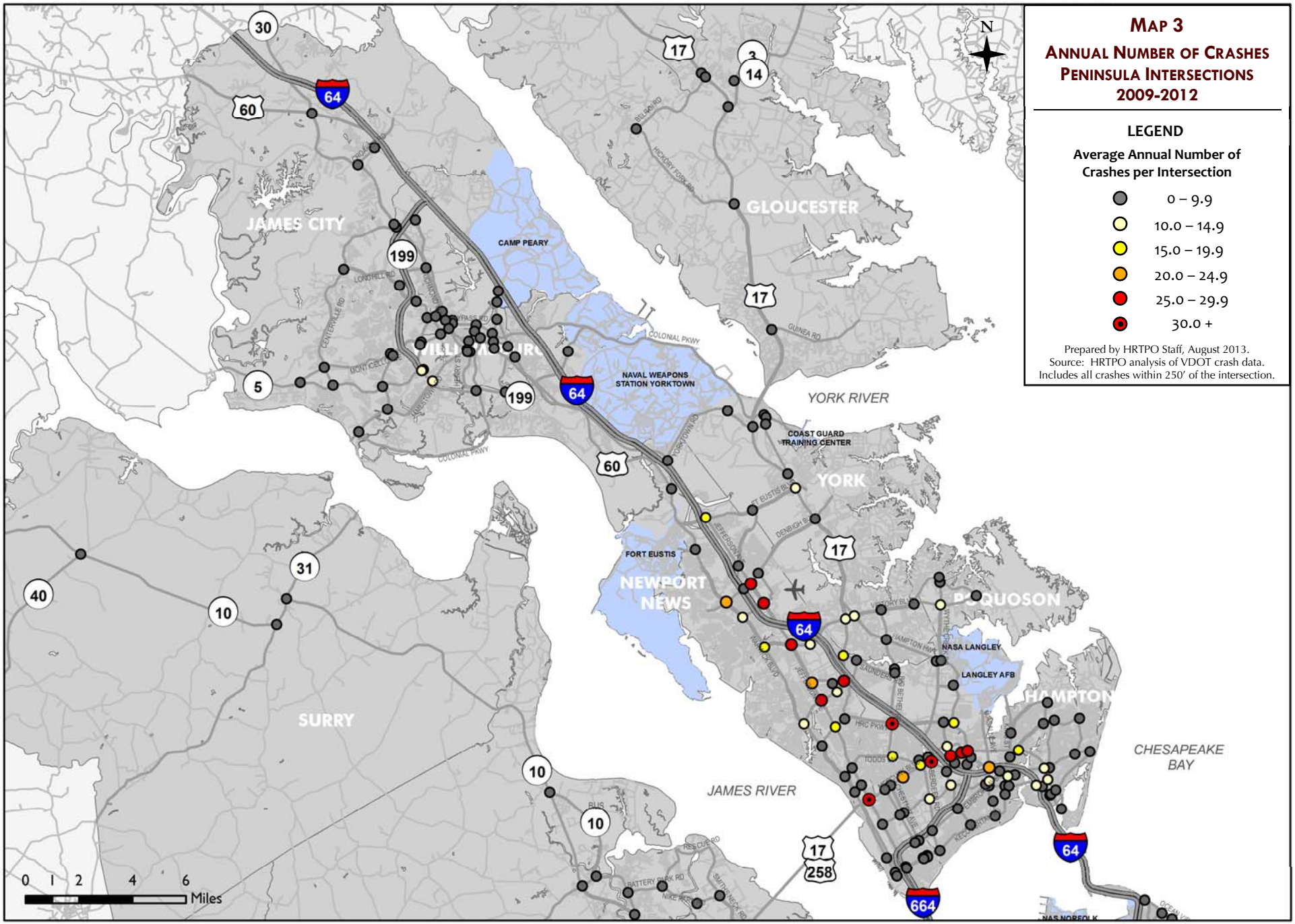
Virginia Beach		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Holland Rd	Rosemont Rd	26.3	18.5	44.8
General Booth Blvd	Dam Neck Rd	27.0	9.3	36.3
First Colonial Rd	Va Beach Blvd	23.0	11.3	34.3

Williamsburg		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
Route 199	Jamestown Rd	5.5	5.8	11.3
Henry St	Route 132Y	3.3	3.8	7.0
Richmond Rd	Lafayette St/Monticello Ave	2.8	2.0	4.8

York		Average Annual Crashes		
Major Road	Minor Road	PDO	F+I	Total
George Washington Hwy	Victory Blvd	8.5	6.0	14.5
George Washington Hwy	Fort Eustis Blvd	6.5	5.8	12.3
Victory Blvd	Hampton Hwy	8.0	3.8	11.8

TABLE 3 – INTERSECTIONS WITH THE HIGHEST NUMBER OF CRASHES IN EACH JURISDICTION, 2009-2012

Source: HRTPO analysis of VDOT data. Data includes all crashes that occurred within 250' of the intersection. Analysis only includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only. F+I = FAT + INJ crashes.


MAP 3
ANNUAL NUMBER OF CRASHES
PENINSULA INTERSECTIONS
2009-2012
LEGEND
Average Annual Number of Crashes per Intersection
0 – 9.9
10.0 – 14.9
15.0 – 19.9
20.0 – 24.9
25.0 – 29.9
30.0 +
Prepared by HRTPO Staff, August 2013.
Source: HRTPO analysis of VDOT crash data.
Includes all crashes within 250' of the intersection.
N
JAMES CITY
GLOUCESTER
CAMP PEARY
NAVAL WEAPONS STATION YORKTOWN
YORK RIVER
COAST GUARD TRAINING CENTER
YORK
FORT EUSTIS
NEWPORT NEWS
POQUOSON
NASA LANGLEY
LANGLEY AFB
HAMPTON
SURRY
JAMES RIVER
CHESAPEAKE BAY
NAS NORFOLK
0 1 2 4 6
Miles

MAP 4

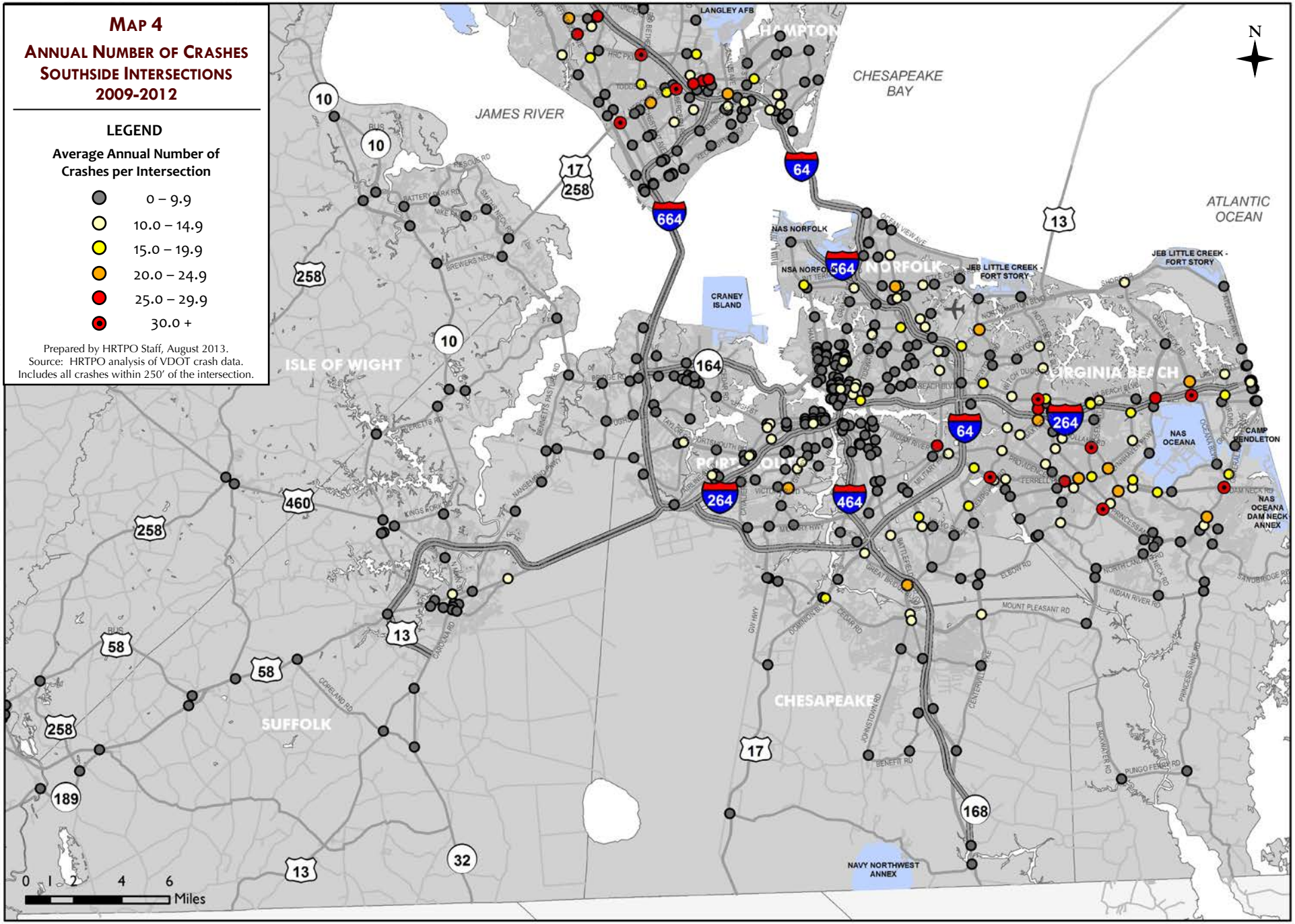
ANNUAL NUMBER OF CRASHES SOUTHSIDE INTERSECTIONS 2009-2012

LEGEND

Average Annual Number of Crashes per Intersection

- 0 – 9.9
- 10.0 – 14.9
- 15.0 – 19.9
- 20.0 – 24.9
- 25.0 – 29.9
- 30.0 +

Prepared by HRTPO Staff, August 2013.
Source: HRTPO analysis of VDOT crash data.
Includes all crashes within 250' of the intersection.



EPDO Crash Rate

The EPDO crash rate not only accounts for the number of crashes but also the severity of crashes and the exposure to crashes based on traffic volumes. For more information on calculating the intersection EPDO crash rate, see the Data Analysis – Intersections section on page 16.

HRTPO staff calculated the EPDO crash rate for all 597 Hampton Roads intersections included in this analysis. Among these intersections, the average EPDO crash rate per million entering vehicles was 1.15 for the years 2009 to 2012. **Table 5** on page 27 shows the 68 intersections analyzed in this study with EPDO crash rates of 2.00 or greater, and **Table 6** on page 29 shows the intersections in each jurisdiction with the highest EPDO crash rates.

The intersection with the highest EPDO crash rate per million entering vehicles (at 3.86) between 2009 and 2012 was Holland Road at Rosemont Road in Virginia Beach. This intersection also had the highest number of crashes during this period. Most of the intersections with high EPDO crash rates, however, do not rank high in terms of number of crashes. Of the 68 intersections with EPDO crash rates of 2.00 or higher, only 18 intersections also had at least 20 crashes per year (**Table 4**).

The intersections with the highest EPDO crash rates vary greatly in terms of the number of crashes. Six of the top ten intersections (Holland Road at Rosemont Road, J Clyde Morris Boulevard at Diligence Drive in Newport News, HRC Parkway at Big Bethel Road in Hampton, George Washington Highway at Victory Boulevard in Portsmouth, Mercury Boulevard at Power Plant Parkway in Hampton, and Mercury Boulevard at Jefferson Avenue in Newport News) had more than 20 crashes per year between 2009 and 2012, while the remaining four intersections (Henry Street at Route 132Y in Williamsburg, 25th Street at Buxton Avenue in Newport News, Kecoughtan Road at Powhatan Parkway in Hampton, and Monticello Avenue at 26th Street in Norfolk) all had 12 crashes per year or less.

Although Virginia Beach had nearly half (17 of 35) of the intersections in Hampton Roads with at least 20 crashes per year, it has a much lower percentage of regional intersections with EPDO crash rates of 2.00 or greater. Of the 68 intersections with the highest EPDO crash rates between 2009 and 2012, Hampton had the highest number at 18 intersections. The next highest jurisdictions were Virginia Beach (12 intersections), Portsmouth (10 intersections), Newport News (9 intersections), and Norfolk (6 intersections).

The EPDO crash rate from 2009 to 2012 for each of the 597 intersections analyzed as part of this study is shown in **Appendix C**. In addition, **Map 5** on page 30 shows the EPDO crash rate for each intersection on the Peninsula, and **Map 6** on page 31 shows the EPDO crash rate for intersections on the Southside.

Juris-diction	Major Road	Minor Road	Average Annual Crashes	EPDO Crash Rate
VB	Holland Rd	Rosemont Rd	44.8	3.86
NN	J Clyde Morris Blvd	Diligence Dr	25.8	3.75
HAM	HRC Pkwy	Big Bethel Rd	41.8	3.49
PORT	George Washington Hwy	Victory Blvd	21.5	3.29
HAM	Mercury Blvd	Power Plant Pkwy/Todds Ln	44.3	3.06
NN	Mercury Blvd	Jefferson Ave	37.3	2.92
HAM	Armistead Ave	LaSalle Ave	23.3	2.87
VB	First Colonial Rd	Va Beach Blvd	34.3	2.64
HAM	Mercury Blvd	Cunningham Dr	28.8	2.63
VB	Lynnhaven Pkwy	Independence Blvd	24.8	2.45
VB	Princess Anne Rd	Dam Neck Rd	32.3	2.38
NOR	Little Creek Rd	Chesapeake Blvd	24.0	2.37
CHES	Battlefield Blvd	Great Bridge Blvd/Kempsville Rd	23.8	2.30
VB	General Booth Blvd	Dam Neck Rd	36.3	2.24
HAM	Mercury Blvd	Coliseum Dr	29.8	2.21
NN	Warwick Blvd	Denbigh Blvd	24.0	2.14
NN	Jefferson Ave	J Clyde Morris Blvd	29.3	2.03
NN	Jefferson Ave	Thimble Shoals Blvd	21.5	2.01

TABLE 4 – HAMPTON ROADS INTERSECTIONS WITH BOTH A HIGH NUMBER OF CRASHES AND A HIGH EPDO CRASH RATE, 2009-2012

Source: HRTPO analysis of VDOT data. Data includes all crashes that occurred within 250′ of the intersection. Analysis only includes those intersections that are part of the Hampton Roads CMP network as defined in this study. Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]

Jurisdiction	Major Road	Minor Road	Average Annual Crashes PDO	INJ	FAT	Total	Average Daily Entering Volume	EPDO Crash Rate
VB	Holland Rd	Rosemont Rd	26.3	18.5	0.0	44.8	58,000	3.86
NN	J Clyde Morris Blvd	Diligence Dr	12.0	13.5	0.3	25.8	40,500	3.75
WMB	Henry St	Route 132Y	3.3	3.8	0.0	7.0	10,850	3.66
NN	25th St	Buxton Ave	2.8	2.5	0.0	5.3	7,900	3.55
HAM	HRC Pkwy	Big Bethel Rd	27.0	14.8	0.0	41.8	56,000	3.49
PORT	George Washington Hwy	Victory Blvd	12.0	9.5	0.0	21.5	33,750	3.29
HAM	Kecoughtan Rd	Powhatan Pkwy	1.8	2.5	0.0	4.3	8,160	3.11
NOR	Monticello Ave	26th St	3.5	8.5	0.0	12.0	25,700	3.09
HAM	Mercury Blvd	Power Plant Pkwy/Todds Ln	24.5	19.8	0.0	44.3	75,000	3.06
NN	Mercury Blvd	Jefferson Ave	17.5	19.8	0.0	37.3	72,000	2.92
PORT	George Washington Hwy	Greenwood Dr	2.5	8.5	0.0	11.0	26,600	2.88
HAM	Armistead Ave	LaSalle Ave	15.0	8.3	0.0	23.3	38,000	2.87
PORT	Airline Blvd	Greenwood Dr	3.0	7.0	0.0	10.0	22,950	2.87
NOR	Chesapeake Blvd	Norview Ave	9.0	10.3	0.3	19.5	40,950	2.86
HAM	Mercury Blvd	Mallory St	5.0	3.5	0.0	8.5	15,500	2.74
HAM	Todds Ln	Big Bethel Rd	11.0	6.5	0.3	17.8	33,500	2.74
JCC	Merrimac Trail	Penniman Rd	2.5	4.3	0.0	6.8	15,250	2.74
PORT	Portsmouth Blvd	Elm Ave	4.0	3.5	0.0	7.5	14,600	2.72
PORT	Elmhurst Ln	Garwood Ave	1.0	1.5	0.0	2.5	5,550	2.72
VB	First Colonial Rd	Va Beach Blvd	23.0	11.3	0.0	34.3	59,000	2.64
HAM	Mercury Blvd	Cunningham Dr	17.3	11.5	0.0	28.8	53,950	2.63
HAM	Power Plant Pkwy	Briarfield Rd/Queen St	7.0	6.8	0.0	13.8	28,500	2.62
VB	Pacific Ave	22nd St	7.3	4.0	0.0	11.3	20,300	2.60
VB	Birdneck Rd	Va Beach Blvd	9.3	7.3	0.0	16.5	33,000	2.57
PORT	Greenwood Dr	Garwood Ave	4.0	4.0	0.0	8.0	17,050	2.57
GLO	Route 17	Route 33/198	1.3	3.8	0.0	5.0	13,350	2.57
POQ	Wythe Creek Rd	Victory Blvd/Little Florida Rd	8.5	4.5	0.0	13.0	24,500	2.46
VB	Lynnhaven Pkwy	Independence Blvd	12.8	12.0	0.0	24.8	54,500	2.45
HAM	Armistead Ave	HRC Pkwy/Armistead Pointe Pkwy	11.5	6.3	0.0	17.8	34,000	2.44
HAM	Woodland Rd	Mercury Blvd	5.5	6.0	0.0	11.5	26,500	2.43
SUF	Portsmouth Blvd	Nansemond Pkwy/Washington St	3.5	7.0	0.0	10.5	28,200	2.38
VB	Princess Anne Rd	Dam Neck Rd	21.5	10.8	0.0	32.3	62,000	2.38
NOR	Little Creek Rd	Chesapeake Blvd	12.3	11.8	0.0	24.0	55,000	2.37
HAM	Armistead Ave	Pembroke Ave	6.0	4.8	0.0	10.8	23,450	2.37
NN	Roanoke Ave	39th St	1.0	2.3	0.0	3.3	9,000	2.36

TABLE 5 – HAMPTON ROADS INTERSECTIONS WITH EPDO CRASH RATES OF 2.00 OR GREATER, 2009-2012

Source: HRTPO analysis of VDOT data. Data includes all crashes that occurred within 250′ of the intersection. Analysis only includes those intersections that are part of the Hampton Roads CMP network as defined in this study.

EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.

Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is generally equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.

Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]

Jurisdiction	Major Road	Minor Road	Average Annual Crashes PDO	INJ	FAT	Total	Average Daily Entering Volume	EPDO Crash Rate
NN	Jefferson Ave	Fort Eustis Blvd	11.0	7.3	0.0	18.3	38,050	2.36
PORT	George Washington Hwy	Elm Ave	3.5	5.0	0.0	8.5	21,550	2.35
JCC	Longhill Rd	Olde Towne Rd/Devon Rd	2.5	4.0	0.0	6.5	17,150	2.32
VB	Birdneck Rd	Norfolk Ave	5.3	2.8	0.0	8.0	16,000	2.31
CHES	Dominion Blvd	Cedar Rd	8.8	7.8	0.0	16.5	38,000	2.31
CHES	Battlefield Blvd	Great Bridge Blvd/Kempsville Rd	12.8	11.0	0.0	23.8	54,500	2.30
VB	Lynnhaven Pkwy	Rosemont Rd	10.5	9.3	0.0	19.8	46,500	2.25
VB	Salem Rd	Dam Neck Rd/Elbow Rd	6.5	3.5	0.0	10.0	20,700	2.25
VB	Drakesmile Rd/London Bridge Rd	Shipps Corner Rd/London Bridge Rd	11.0	6.5	0.0	17.5	37,150	2.25
VB	General Booth Blvd	Dam Neck Rd	27.0	9.3	0.0	36.3	67,000	2.24
HAM	Pembroke Ave	Woodland Rd	5.8	4.0	0.0	9.8	21,850	2.23
PORT	Frederick Blvd	Deep Creek Blvd	3.5	6.0	0.0	9.5	26,500	2.22
HAM	Mercury Blvd	Coliseum Dr	19.0	10.8	0.0	29.8	63,400	2.21
YC	Route 143	Rochambeau Dr/I-64 Ramp	5.5	4.3	0.0	9.8	22,600	2.21
NN	25th St	Chestnut Ave	0.8	1.3	0.0	2.0	5,600	2.20
NOR	Little Creek Rd	Halprin Dr	5.8	6.5	0.0	12.3	31,550	2.19
NN	Warwick Blvd	Denbigh Blvd	12.8	11.3	0.0	24.0	59,500	2.14
NOR	Church St	27th St	2.3	5.0	0.0	7.3	22,100	2.14
PORT	Frederick Blvd	Portsmouth Blvd	3.5	5.0	0.0	8.5	23,750	2.13
SUF	Bennetts Pasture Rd	Kings Hwy	1.3	1.8	0.0	3.0	8,395	2.12
JCC	Centerville Rd	Longhill Rd	0.8	3.0	0.0	3.8	12,650	2.11
HAM	Mercury Blvd	Fox Hill Rd/Cherry Acres Dr	10.3	7.5	0.0	17.8	42,500	2.11
NOR	Chesapeake Blvd	Johnstons Rd	5.0	7.5	0.0	12.5	35,700	2.11
HAM	Mercury Blvd	Pembroke Ave	5.5	4.8	0.0	10.3	25,950	2.09
HAM	Pembroke Ave	King St	2.3	3.0	0.0	5.3	14,800	2.08
HAM	Kecoughtan Rd	LaSalle Ave	2.0	2.0	0.0	4.0	10,650	2.06
VB	Indian River Rd	West Neck Rd	2.0	2.5	0.0	4.5	12,650	2.06
FR	Armory Dr	College Dr	3.0	4.0	0.0	7.0	20,050	2.05
NN	Jefferson Ave	J Clyde Morris Blvd	13.5	15.8	0.0	29.3	82,000	2.03
NN	Jefferson Ave	Thimble Shoals Blvd	10.8	10.8	0.0	21.5	58,500	2.01
PORT	High St	Court St	1.5	2.5	0.0	4.0	12,250	2.01
HAM	Pembroke Ave	Old Buckroe Rd	4.0	1.8	0.0	5.8	12,600	2.01
WMB	Francis St	Henry St	1.8	2.3	0.0	4.0	11,650	2.00

TABLE 5 (CONTINUED) – HAMPTON ROADS INTERSECTIONS WITH EPDO CRASH RATES OF 2.00 OR GREATER, 2009-2012

Source: HRTPO analysis of VDOT data. Data includes all crashes that occurred within 250′ of the intersection. Analysis only includes those intersections that are part of the Hampton Roads CMP network as defined in this study.

EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.

Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is generally equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.

Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]

Chesapeake		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
Dominion Blvd	Cedar Rd	38,000	2.31
Battlefield Blvd	Great Bridge Blvd/Kempsville Rd	54,500	2.30
Battlefield Blvd	Johnstown Rd/Mount Pleasant Rd	32,200	1.94

Franklin		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
Armory Dr	College Dr	20,050	2.05
Second Ave	High St	10,500	1.50
Clay St	College Dr/Hunterdale Rd	12,850	1.07

Gloucester		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
Route 17	Route 33/198	13,350	2.57
Route 17	Belroi Rd	24,250	1.38
Hickory Fork Rd	Belroi Rd	6,500	1.16

Hampton		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
HRC Pkwy	Big Bethel Rd	56,000	3.49
Kecoughtan Rd	Powhatan Pkwy	8,160	3.11
Mercury Blvd	Power Plant Pkwy/Todds Ln	75,000	3.06

Isle of Wight		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
Nike Park Rd	Titus Creek Dr	9,500	1.80
Smiths Neck Rd	Titus Creek Dr	8,450	1.70
Route 10 Bypass	Main St	22,900	1.20

James City		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
Merrimac Trail	Penniman Rd	15,250	2.74
Longhill Rd	Olde Towne Rd/Devon Rd	17,150	2.32
Centerville Rd	Longhill Rd	12,650	2.11

Newport News		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
J Clyde Morris Blvd	Diligence Dr	40,500	3.75
25th St	Buxton Ave	7,900	3.55
Mercury Blvd	Jefferson Ave	72,000	2.92

Norfolk		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
Monticello Ave	26th St	25,700	3.09
Chesapeake Blvd	Norview Ave	40,950	2.86
Little Creek Rd	Chesapeake Blvd	55,000	2.37

Poquoson		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
Wythe Creek Rd	Victory Blvd/Little Florida Rd	24,500	2.46
Little Florida Rd	Poquoson Ave	10,500	0.85
Hunt's Neck Rd/East Yorktown Rd	East Yorktown Rd	8,950	0.54

Portsmouth		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
George Washington Hwy	Victory Blvd	33,750	3.29
George Washington Hwy	Greenwood Dr	26,600	2.88
Airline Blvd	Greenwood Dr	22,950	2.87

Southampton		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
Route 258	Route 189	5,300	0.78
Route 58	Bus Route 58 (Jerusalem Rd)	21,450	0.67
Route 35	General Thomas Hwy (Rte 671)	3,600	0.57

Suffolk		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
Portsmouth Blvd	Nansemond Pkwy/Washington St	28,200	2.38
Bennetts Pasture Rd	Kings Hwy	8,395	2.12
Godwin Blvd	Kings Fork Rd	18,800	1.97

Surry		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
Route 10	Route 40	3,065	1.12
Route 10	Route 31 (South)	4,150	0.99
Route 10	Route 31 (North)	6,350	0.76

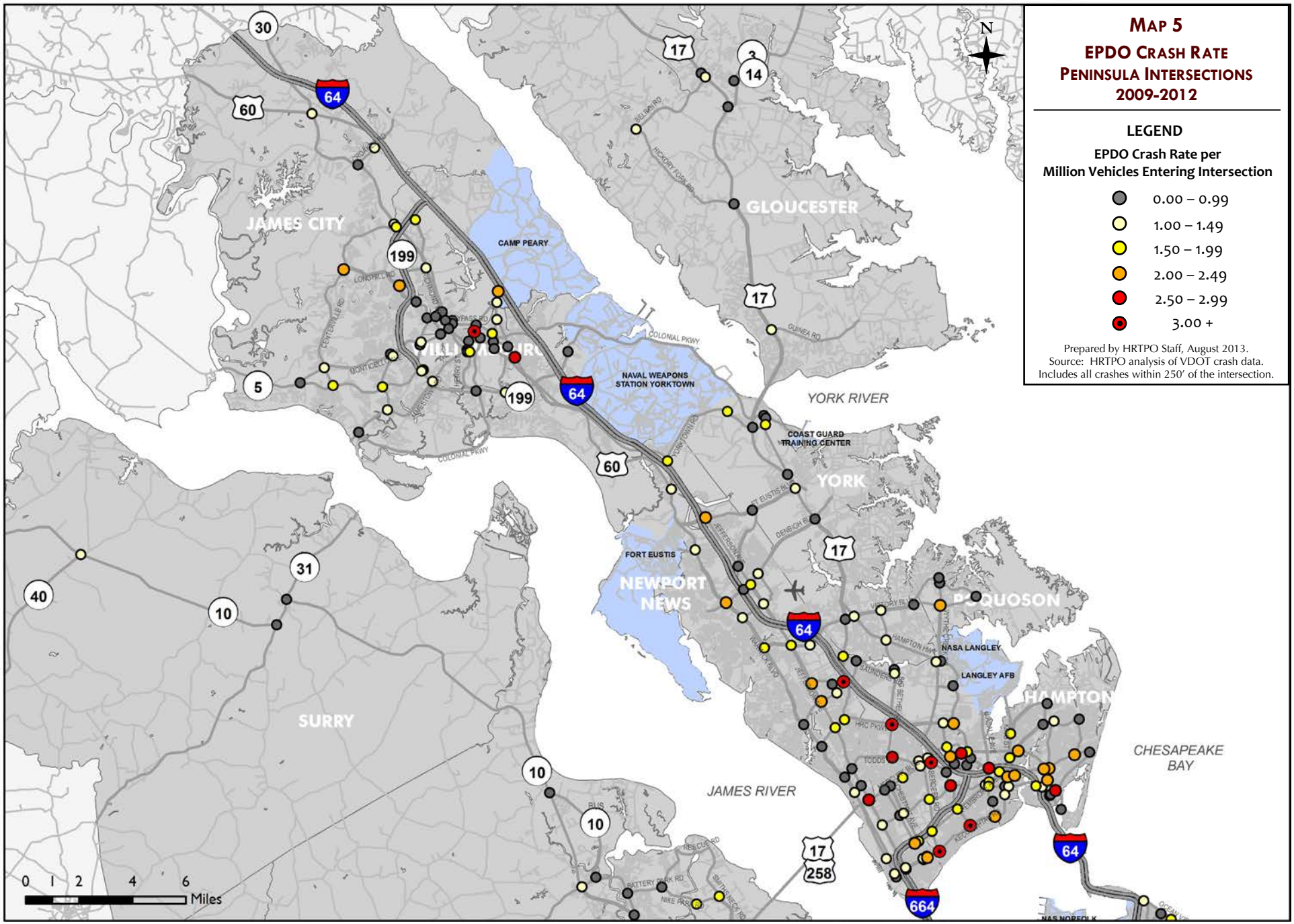
Virginia Beach		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
Holland Rd	Rosemont Rd	58,000	3.86
First Colonial Rd	Va Beach Blvd	59,000	2.64
Pacific Ave	22nd St	20,300	2.60

Williamsburg		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
Henry St	Route 132Y	10,850	3.66
Francis St	Henry St	11,650	2.00
Page St/Capitol Landing Rd	Bypass Rd	17,950	1.56

York		Average Daily Entering Volume	EPDO Crash Rate
Major Road	**Minor Road**		
Route 143	Rochambeau Dr/I-64 Ramp	22,600	2.21
Cook Rd	Goosley Rd	6,850	1.90
Old Williamsburg Rd	Goosley Rd	8,950	1.53

TABLE 6 – INTERSECTIONS WITH THE HIGHEST EPDO CRASH RATES IN EACH JURISDICTION, 2009-2012

Source: HRTPO analysis of VDOT data. Data includes all crashes that occurred within 250' of the intersection. Analysis only includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]


MAP 5
EPDO CRASH RATE
PENINSULA INTERSECTIONS
2009-2012
LEGEND
EPDO Crash Rate per
Million Vehicles Entering Intersection
0.00 – 0.99
1.00 – 1.49
1.50 – 1.99
2.00 – 2.49
2.50 – 2.99
3.00 +
Prepared by HRTPO Staff, August 2013.
Source: HRTPO analysis of VDOT crash data.
Includes all crashes within 250' of the intersection.
N
JAMES CITY
GLOUCESTER
CAMP PEARY
NAVAL WEAPONS STATION YORKTOWN
COAST GUARD TRAINING CENTER
YORK
YORK RIVER
FORT EUSTIS
NEWPORT NEWS
HAMPTON
NASA LANGLEY
LANGLEY AFB
SURRY
JAMES RIVER
CHESAPEAKE BAY
NAS NORFOLK
0 1 2 4 6
Miles

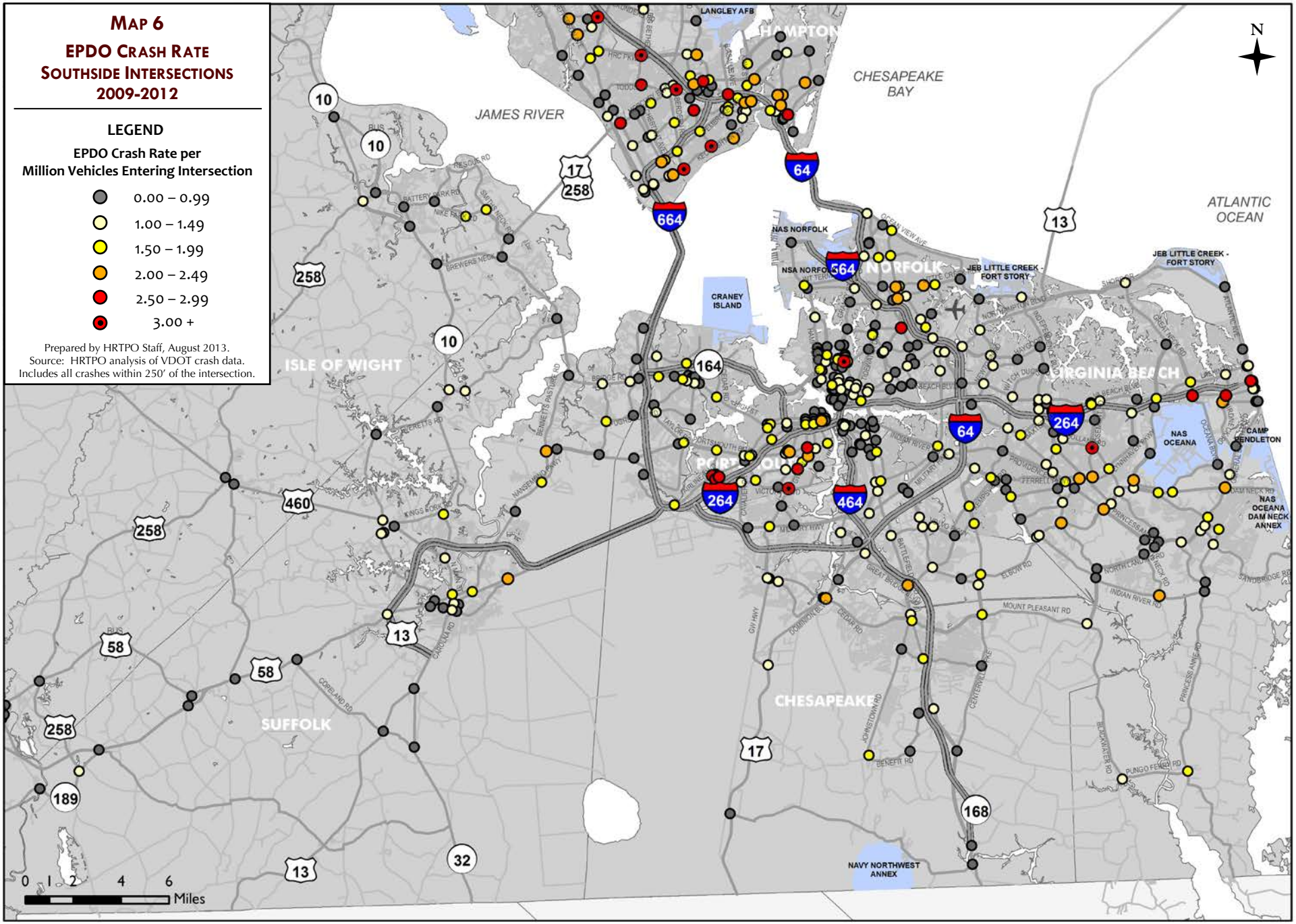
MAP 6
EPDO CRASH RATE
SOUTHSIDE INTERSECTIONS
2009-2012

LEGEND

EPDO Crash Rate per Million Vehicles Entering Intersection

- 0.00 – 0.99
- 1.00 – 1.49
- 1.50 – 1.99
- 2.00 – 2.49
- 2.50 – 2.99
- 3.00 +

Prepared by HRTPO Staff, August 2013.
Source: HRTPO analysis of VDOT crash data.
Includes all crashes within 250′ of the intersection.



NEXT STEPS

Part I of the *Hampton Roads Regional Safety Study – 2013 Update* introduces previous HRTPO safety planning efforts, reports the recent trends in roadway safety in Hampton Roads, details the characteristics of crashes in Hampton Roads, and specifies the number of crashes and EPDO crash rates at intersections and freeway segments throughout the region.

Part II of the *Hampton Roads Regional Safety Study – 2013 Update* will build on this Part I report by addressing roadway safety improvements. Sections in the next report will include:

- **Efforts to Improve Roadway Safety** – There are a number of national and statewide efforts to improve roadway safety. Examples that will be described in this section include the Highway Safety Improvement Program (HSIP), educational efforts, Road Safety Audits (RSAs), and the Virginia Strategic Highway Safety Plan (SHSP).

  In addition, new tools have been created to better analyze roadway safety. The American Association of State Highway Transportation Officials (AASHTO) recently released the first edition of the Highway Safety Manual. The primary focus of the Highway Safety Manual is the development of analytical tools to quantify and predict the number of crashes at various facilities. This will assist with determining the impact of planning decisions on roadway safety, selecting safety countermeasures, comparing alternatives, and prioritizing safety projects.

  In Part II of this study, HRTPO staff will use the methods described in the Highway Safety Manual to determine the predicted number of crashes at each of the 597 intersections included in this report, and compare this predicted number with the actual number of crashes that occurred. This will produce an "Excess Expected Average Crash Frequency" for each intersection. Another new tool, developed in National Cooperative Highway Research

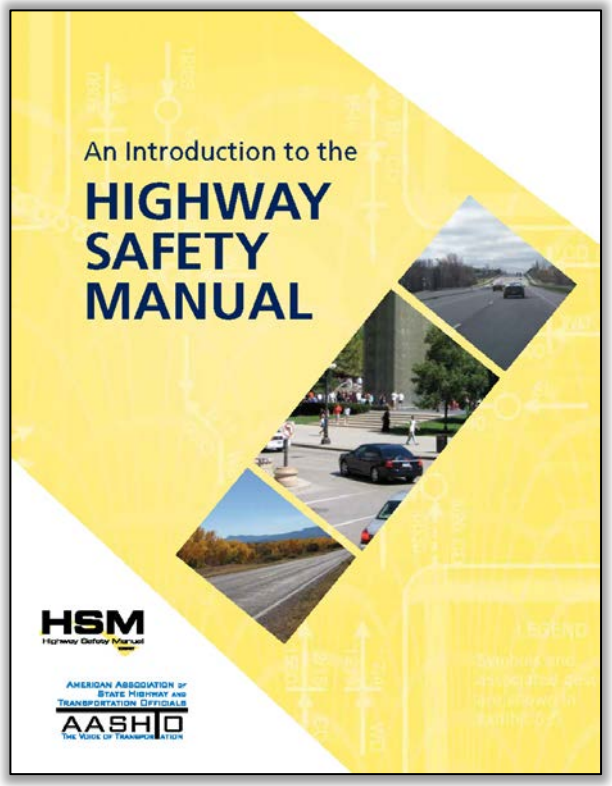


FIGURE 22 – HIGHWAY SAFETY MANUAL

Source: AASHTO.

Program (NCHRP) Project 17-45, will be used to perform a similar analysis for each of the regional freeway segments.

- **General Crash Countermeasures** – A wide range of countermeasures exist to address both general and specific roadway safety problems. A description of these various crash countermeasures will be included, as will other general strategies to improve roadway safety.

- **Crash Countermeasures for Freeway and Intersection Locations** – This Part I report determined locations throughout Hampton Roads with a high number of crashes and a high EPDO crash rate. Part II of this report will determine locations with a high "Excess Expected Average Crash Frequency" using methods in the Highway Safety Manual and NCHRP Project 17-45. Based on these analyses, a number of locations with safety issues will be identified. These locations will be analyzed in detail, including collision diagrams, summaries of crash characteristics at each location, expected benefits of possible countermeasures, and prioritized recommendations.

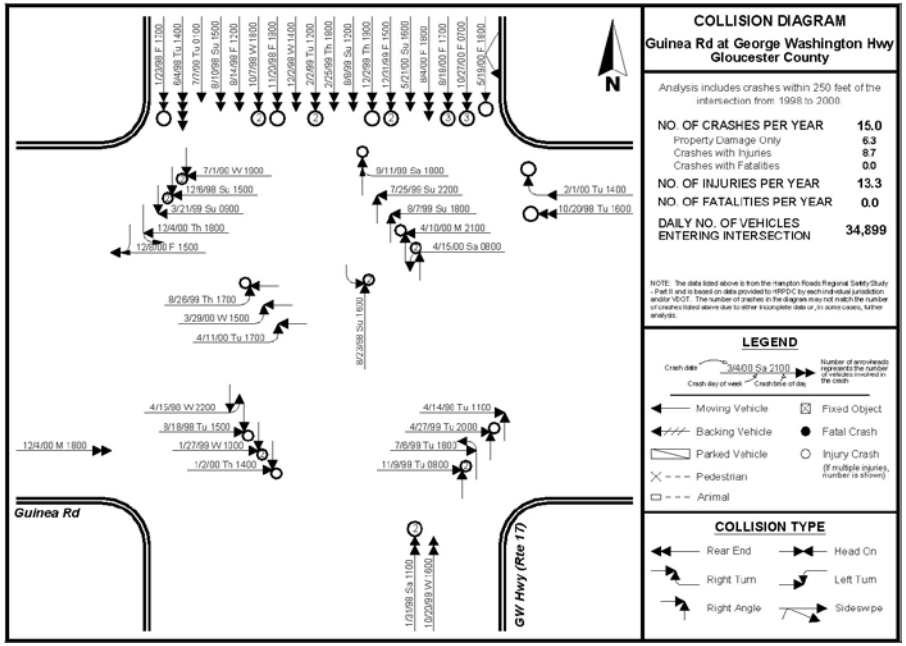


FIGURE 23 – COLLISION DIAGRAM EXAMPLE

Source: HRTPO.

APPENDIX A - HAMPTON ROADS JURISDICTIONAL CRASH DATA

Jurisdiction	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	% change 2003-2012
Chesapeake	3,007	3,063	3,331	3,281	3,251	3,373	3,193	3,104	3,141	3,274	3,594	3,652	3,442	3,364	2,977	2,521	2,394	2,295	2,418	-26.1%
Franklin	106	81	76	136	120	117	107	110	74	75	47	98	97	82	50	53	81	91	87	16.0%
Gloucester	478	475	470	469	529	533	490	466	494	505	475	419	440	461	436	428	352	357	392	-22.4%
Hampton	3,094	3,288	3,210	3,271	2,950	3,059	3,050	3,158	3,663	4,115	3,862	3,875	3,488	3,225	3,173	2,823	2,794	2,765	2,862	-30.4%
Isle of Wight	457	492	519	480	526	488	517	516	568	567	592	586	595	528	538	439	349	402	446	-21.3%
James City	494	482	532	582	552	518	499	513	558	656	650	703	759	726	608	660	698	703	741	13.0%
Newport News	3,815	3,759	3,890	3,887	3,964	3,998	3,867	3,750	3,861	3,900	4,211	4,160	4,258	4,034	3,630	3,219	2,901	2,863	3,065	-21.4%
Norfolk	6,226	6,348	6,051	5,892	5,855	5,779	5,542	5,359	5,705	5,810	5,703	5,749	5,400	5,092	4,868	4,270	4,137	4,223	4,323	-25.6%
Poquoson	74	57	75	95	87	76	80	93	91	81	86	83	94	103	68	79	54	84	109	34.6%
Portsmouth	1,868	1,710	1,701	1,796	1,624	1,778	1,729	1,691	1,928	2,061	2,036	1,718	1,753	1,294	868	510	360	1,420	1,421	-31.1%
Southampton	406	370	350	303	327	333	320	314	277	376	410	296	321	274	312	297	220	210	203	-46.0%
Suffolk	1,197	1,148	1,177	1,214	1,283	1,324	1,204	1,337	1,379	1,566	1,678	1,618	1,742	1,844	1,590	1,374	1,216	1,251	1,456	-7.0%
Surry	106	112	119	100	138	117	113	111	107	115	117	141	139	127	133	112	140	105	107	-7.0%
Virginia Beach	7,845	7,487	7,524	7,195	7,591	7,837	7,679	7,788	8,478	8,653	8,324	8,292	8,268	7,823	7,258	6,301	6,463	6,279	6,419	-25.8%
Williamsburg	278	250	270	222	220	238	185	215	222	204	186	186	171	236	181	141	160	162	173	-15.2%
York	808	854	854	866	907	894	857	868	896	1,089	1,137	1,053	1,052	1,063	909	778	823	905	970	-10.9%
Hampton Roads	30,259	29,976	30,149	29,789	29,924	30,462	29,432	29,393	31,442	33,047	33,108	32,629	32,019	30,276	27,599	24,005	23,142	24,115	25,192	-23.8%
Virginia	126,637	127,126	131,088	129,980	136,138	139,573	141,650	144,585	147,737	154,848	153,907	153,849	151,692	145,405	135,282	116,744	116,386	120,513	123,579	-20.2%
HR % of state	23.9%	23.6%	23.0%	22.9%	22.0%	21.8%	20.8%	20.3%	21.3%	21.3%	21.5%	21.2%	21.1%	20.8%	20.4%	20.6%	19.9%	20.0%	20.4%	
United States	6,496,000	6,699,000	6,770,000	6,624,000	6,335,000	6,279,000	6,394,000	6,323,000	6,316,000	6,289,000	6,143,000	6,159,000	5,974,000	6,024,000	5,811,000	5,505,000	5,419,000	5,338,000	N/A	

Sources: Virginia DMV, National Highway Traffic Safety Administration (NHTSA).

HAMPTON ROADS CRASHES BY JURISDICTION, 1994 - 2012

APPENDIX A (CONTINUED) - HAMPTON ROADS JURISDICTIONAL CRASH DATA

Jurisdiction	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	% change 2003-2012
Chesapeake	2,189	2,182	2,425	2,356	2,281	2,397	2,198	2,162	2,095	2,106	2,279	2,167	2,084	2,126	1,924	1,566	1,483	1,452	1,769	-16.0%
Franklin	71	48	43	65	85	74	59	51	31	37	14	64	49	36	32	14	51	56	68	83.8%
Gloucester	432	423	403	400	447	430	396	347	407	365	360	317	327	345	355	333	288	268	323	-11.5%
Hampton	2,150	2,095	2,130	2,127	1,922	1,926	1,833	1,914	1,963	1,961	1,677	1,785	1,465	1,349	1,530	1,505	1,419	1,536	1,460	-25.5%
Isle of Wight	416	419	451	422	372	421	382	381	370	354	341	395	311	306	330	315	221	249	245	-30.8%
James City	363	377	348	350	337	313	324	366	383	385	384	403	375	373	323	451	623	654	447	16.1%
Newport News	2,830	2,604	2,728	2,573	2,584	2,492	2,241	2,212	2,287	2,279	2,532	2,418	2,235	1,844	1,965	1,894	1,755	1,700	1,834	-19.5%
Norfolk	4,154	4,123	3,600	3,633	3,400	3,137	3,008	2,906	3,062	3,053	2,951	2,664	2,624	2,246	2,448	2,506	2,417	2,435	2,529	-17.2%
Poquoson	30	21	42	50	34	41	25	58	54	35	30	35	40	37	23	43	39	37	56	60.0%
Portsmouth	1,401	1,353	1,357	1,403	1,301	1,338	1,269	1,111	1,209	1,274	1,265	942	871	648	485	334	199	891	929	-27.1%
Southampton	347	338	320	271	255	266	284	260	219	262	263	239	243	209	205	166	155	153	159	-39.3%
Suffolk	1,135	1,111	1,078	1,046	1,109	995	880	1,006	941	1,033	1,066	1,010	1,106	921	787	877	787	778	972	-5.9%
Surry	86	87	85	71	94	84	68	69	60	59	66	84	69	58	76	103	67	61	69	16.9%
Virginia Beach	5,024	4,685	4,362	4,220	4,360	4,431	4,241	4,057	4,009	4,066	3,771	3,705	3,563	3,347	3,345	3,342	3,376	3,116	3,478	-14.5%
Williamsburg	132	142	133	127	95	121	103	108	103	119	99	99	94	95	99	76	93	113	96	-19.3%
York	616	631	586	553	658	545	549	555	592	677	717	672	570	554	538	479	476	539	600	-11.4%
Hampton Roads	21,376	20,639	20,091	19,667	19,334	19,011	17,860	17,563	17,785	18,065	17,815	16,999	16,026	14,494	14,465	14,004	13,449	14,038	15,034	-16.8%
Virginia	82,146	82,400	82,363	81,866	81,221	81,204	79,806	80,187	78,896	78,842	78,487	76,023	73,348	68,822	69,130	62,976	61,418	63,382	67,004	-15.0%
HR % of state	26.0%	25.0%	24.4%	24.0%	23.8%	23.4%	22.4%	21.9%	22.5%	22.9%	22.7%	22.4%	21.8%	21.1%	20.9%	22.2%	21.9%	22.1%	22.4%	
United States	3,266,000	3,465,000	3,483,000	3,348,000	3,192,000	3,236,000	3,189,000	3,033,000	2,926,000	2,889,000	2,788,000	2,699,000	2,575,000	2,491,000	2,346,000	2,217,000	2,239,000	2,217,000	N/A	

Sources: Virginia DMV, National Highway Traffic Safety Administration (NHTSA).

HAMPTON ROADS INJURIES BY JURISDICTION, 1994 - 2012

APPENDIX A (CONTINUED) - HAMPTON ROADS JURISDICTIONAL CRASH DATA

Jurisdiction	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	% change 2003-2012
Chesapeake	20	21	13	21	26	10	12	20	19	17	13	21	26	25	15	18	13	24	13	-23.5%
Franklin	0	0	0	0	0	0	2	1	0	0	0	0	0	1	0	0	0	0	1	-
Gloucester	7	5	4	4	5	2	3	9	5	4	3	7	11	5	12	4	15	6	7	75.0%
Hampton	10	3	10	5	4	13	5	6	10	9	14	3	8	11	14	5	10	15	9	0.0%
Isle of Wight	8	4	11	7	12	9	6	7	5	7	7	6	10	11	9	6	6	3	4	-42.9%
James City	4	2	4	7	6	4	7	4	6	5	6	8	7	4	9	4	2	6	1	-80.0%
Newport News	11	16	16	15	16	11	11	10	11	13	12	13	8	13	9	13	12	13	9	-30.8%
Norfolk	17	24	17	27	20	24	22	25	10	15	13	15	18	10	19	24	9	17	18	20.0%
Poquoson	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Portsmouth	8	5	9	11	12	7	4	5	9	7	11	1	5	2	4	5	2	8	3	-57.1%
Southampton	14	13	13	9	7	8	8	7	3	4	8	10	8	10	4	7	9	2	5	25.0%
Suffolk	14	9	12	8	24	13	13	17	20	8	16	8	12	26	17	8	15	11	12	50.0%
Surry	2	3	4	4	4	1	6	1	1	2	1	4	2	4	2	0	3	0	0	-100.0%
Virginia Beach	25	20	31	24	20	24	24	31	27	27	22	31	22	25	31	27	19	24	15	-44.4%
Williamsburg	1	0	0	0	2	1	0	0	1	0	0	0	0	0	0	1	0	2	0	-
York	11	17	0	8	11	3	9	10	9	11	5	12	4	8	8	2	6	5	2	-81.8%
Hampton Roads	152	142	145	150	169	130	132	153	136	129	131	139	141	155	153	124	121	136	99	-23.3%
Virginia	925	900	869	981	934	877	930	935	913	942	922	946	961	1,026	821	756	740	764	775	-17.7%
HR % of state	16.4%	15.8%	16.7%	15.3%	18.1%	14.8%	14.2%	16.4%	14.9%	13.7%	14.2%	14.7%	14.7%	15.1%	18.6%	16.4%	16.4%	17.8%	12.8%	
United States	40,716	41,817	42,065	42,013	41,501	41,717	41,945	42,196	43,005	42,884	42,836	43,510	42,708	41,259	37,423	33,883	32,999	32,367	34,080	-20.5%

Sources: Virginia DMV, National Highway Traffic Safety Administration (NHTSA).

HAMPTON ROADS FATALITIES BY JURISDICTION, 1994 - 2012

APPENDIX B - HAMPTON ROADS FREEWAY CRASH DATA

Juris-diction	Facility	Segment From	Segment To	Dir	Distance (miles)	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Traffic	EPDO Crash Rate
						PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
JCC	I-64	NEW KENT CL	RTE 30	EB	2.69	6	2	0	8	5	2	0	7	1	1	0	2	4	3	0	7	4.0	2.0	0.0	6.0	27,000	0.38
JCC				WB		7	4	0	11	5	2	0	7	4	1	0	5	9	4	0	13	6.3	2.8	0.0	9.0	26,000	0.57
JCC	I-64	RTE 30	CROAKER RD (RTE 607)	EB	4.34	14	5	0	19	11	9	0	20	8	5	0	13	8	5	0	13	10.3	6.0	0.0	16.3	29,000	0.61
JCC				WB		8	4	0	12	9	5	0	14	11	6	0	17	6	10	0	16	8.5	6.3	0.0	14.8	29,000	0.59
JCC/YC	I-64	CROAKER RD (RTE 607)	RTE 199/646	EB	2.79	2	4	0	6	2	5	0	7	7	4	1	12	9	7	0	16	5.0	5.0	0.3	10.3	32,000	0.71
JCC/YC				WB		2	5	1	8	1	2	0	3	8	6	0	14	5	3	0	8	4.0	4.0	0.3	8.3	32,000	0.58
YC	I-64	RTE 199/646	RTE 143	EB	4.29	8	12	0	20	6	8	1	15	11	12	0	23	16	6	0	22	10.3	9.5	0.3	20.0	31,000	0.86
YC				WB		8	5	0	13	9	7	1	17	13	7	0	20	20	13	1	34	12.5	8.0	0.5	21.0	30,000	0.90
YC	I-64	RTE 143	RTE 199 (EAST OF WILLIAMSBURG)	EB	3.88	16	8	0	24	19	10	0	29	8	15	0	23	22	8	1	31	16.3	10.3	0.3	26.8	33,000	1.07
YC				WB		11	14	0	25	16	8	0	24	7	5	0	12	13	9	0	22	11.8	9.0	0.0	20.8	30,000	0.91
YC	I-64	RTE 199 (EAST OF WILLIAMSBURG)	GROVE CONNECTOR	EB	1.14	8	5	0	13	9	5	0	14	12	6	0	18	16	9	0	25	11.3	6.3	0.0	17.5	42,000	1.72
YC				WB		12	4	0	16	14	4	0	18	6	4	0	10	9	3	0	12	10.3	3.8	0.0	14.0	38,000	1.36
YC/JCC/NN	I-64	GROVE CONNECTOR	RTE 143 (NORTH)	EB	3.50	22	10	0	32	16	11	0	27	35	12	0	47	32	12	0	44	26.3	11.3	0.0	37.5	40,000	1.17
YC/JCC/NN				WB		41	16	0	57	37	24	0	61	45	14	0	59	59	14	0	73	45.5	17.0	0.0	62.5	42,000	1.80
NN	I-64	RTE 143 (NORTH)	YORKTOWN RD	EB	0.88	13	2	0	15	14	9	0	23	9	3	1	13	13	6	0	19	12.3	5.0	0.3	17.5	41,000	2.30
NN				WB		6	4	0	10	17	9	0	26	7	4	1	12	8	1	0	9	9.5	4.5	0.3	14.3	40,000	2.02
NN	I-64	YORKTOWN RD	FORT EUSTIS BLVD	EB	2.45	62	13	0	75	47	20	0	67	66	15	0	81	72	17	0	89	61.8	16.3	0.0	78.0	44,000	2.81
NN				WB		28	9	0	37	30	12	0	42	33	15	0	48	19	10	0	29	27.5	11.5	0.0	39.0	44,000	1.58
NN	I-64	FORT EUSTIS BLVD	JEFFERSON AVE	EB	4.86	47	23	0	70	53	25	0	78	51	9	0	60	65	17	1	83	54.0	18.5	0.3	72.8	49,000	1.29
NN				WB		69	31	1	101	92	33	0	125	62	29	0	91	71	31	0	102	73.5	31.0	0.3	104.8	47,000	2.03
NN	I-64	JEFFERSON AVE	OYSTER POINT RD	EB	1.60	11	7	0	18	8	1	0	9	8	5	1	14	5	5	0	10	8.0	4.5	0.3	12.8	59,000	0.71
NN				WB		43	22	0	65	26	11	1	38	31	13	0	44	27	18	0	45	31.8	16.0	0.3	48.0	59,000	2.40
NN	I-64	OYSTER POINT RD	J C MORRIS BLVD	EB	1.64	4	5	0	9	14	4	0	18	9	5	0	14	10	3	0	13	9.3	4.3	0.0	13.5	67,000	0.55
NN				WB		11	6	1	18	18	13	0	31	12	5	1	18	2	6	0	8	10.8	7.5	0.5	18.8	65,000	1.01
NN/HAM	I-64	J C MORRIS BLVD	HRC PARKWAY	EB	3.14	27	10	0	37	30	15	0	45	24	16	0	40	25	14	0	39	26.5	13.8	0.0	40.3	78,000	0.76
NN/HAM				WB		30	9	1	40	28	18	0	46	22	12	1	35	34	13	1	48	28.5	13.0	0.8	42.3	76,000	0.88
HAM	I-64	HRC PARKWAY	MAGRUDER BLVD	EB	0.77	4	4	0	8	4	2	0	6	4	2	0	6	4	1	0	5	4.0	2.3	0.0	6.3	69,000	0.55
HAM				WB		2	1	0	3	9	3	0	12	4	2	0	6	5	1	0	6	5.0	1.8	0.0	6.8	68,000	0.54
HAM	I-64	MAGRUDER BLVD	MERCURY BLVD	EB	1.04	13	5	0	18	19	6	0	25	8	8	0	16	8	3	0	11	12.0	5.5	0.0	17.5	80,000	0.94
HAM				WB		8	7	0	15	26	11	0	37	10	5	0	15	11	4	0	15	13.8	6.8	0.0	20.5	80,000	1.12
HAM	I-64	MERCURY BLVD	I-664	EB	0.96	17	11	0	28	14	7	0	21	9	8	0	17	12	8	0	20	13.0	8.5	0.0	21.5	76,000	1.45
HAM				WB		14	3	0	17	13	6	0	19	13	7	0	20	9	6	0	15	12.3	5.5	0.0	17.8	76,000	1.08
HAM	I-64	I-664	ARMISTEAD AVE	EB	0.88	16	5	0	21	18	10	0	28	10	7	0	17	17	7	0	24	15.3	7.3	0.0	22.5	55,000	2.09
HAM				WB		5	4	0	9	17	3	0	20	5	6	0	11	11	0	0	11	9.5	3.3	0.0	12.8	57,000	1.05
HAM	I-64	ARMISTEAD AVE	SETTLERS LANDING RD	EB	2.01	43	20	0	63	38	18	0	56	27	8	0	35	42	23	0	65	37.5	17.3	0.0	54.8	41,000	2.97
HAM				WB		13	11	0	24	21	13	0	34	9	5	0	14	18	8	0	26	15.3	9.3	0.0	24.5	48,000	1.22
HAM	I-64	SETTLERS LANDING RD	MALLORY ST	EB	0.54	31	9	0	40	11	5	0	16	11	1	0	12	23	7	0	30	19.0	5.5	0.0	24.5	41,000	4.39
HAM				WB		8	1	0	9	5	1	0	6	4	1	0	5	6	2	0	8	5.8	1.3	0.0	7.0	45,000	1.07
HAM/NOR	I-64/HRBT	MALLORY ST	OCEAN VIEW AVE	EB	3.88	85	17	0	102	71	29	0	100	122	46	0	168	137	32	1	170	103.8	31.0	0.3	135.0	42,000	3.36
HAM/NOR				WB		79	40	0	119	79	27	0	106	77	41	0	118	57	28	0	85	73.0	34.0	0.0	107.0	43,000	2.87
NOR	I-64	OCEAN VIEW AVE	4TH VIEW AVE	EB	1.82	16	2	0	18	9	4	0	13	9	6	0	15	11	9	0	20	11.3	5.3	0.0	16.5	42,000	0.97
NOR				WB		30	21	0	51	37	15	0	52	37	20	0	57	44	16	0	60	37.0	18.0	0.0	55.0	44,000	3.11
NOR	I-64	4TH VIEW AVE	BAY AVE	EB	1.01	6	0	0	6	7	2	0	9	3	1	0	4	11	6	0	17	6.8	2.3	0.0	9.0	38,000	0.96
NOR				WB		21	11	0	32	23	16	0	39	37	10	0	47	23	14	0	37	26.0	12.8	0.0	38.8	39,000	4.47
NOR	I-64	BAY AVE	I-564/LITTLE CREEK RD	EB	1.81	20	11	1	32	28	8	0	36	33	14	0	47	22	8	0	30	25.8	10.3	0.3	36.3	43,000	2.09
NOR				WB		17	14	0	31	27	12	0	39	18	12	0	30	26	6	0	32	22.0	11.0	0.0	33.0	43,000	1.94
NOR	I-64	I-564/LITTLE CREEK RD	TIDEWATER DR	REV	1.17	4	2	0	6	2	0	0	2	6	1	0	7	2	0	0	2	3.5	0.8	0.0	4.3	21,000	0.64
NOR				EB		19	6	0	25	7	6	0	13	7	4	0	11	11	5	0	16	11.0	5.3	0.0	16.3	47,000	1.33
NOR				WB		17	7	1	25	22	17	0	39	28	10	0	38	14	6	0	20	20.3	10.0	0.3	30.5	59,000	2.11
NOR	I-64	TIDEWATER DR	CHESAPEAKE BLVD	REV	1.04	8	3	0	11	1	2	0	3	6	1	0	7	3	1	0	4	4.5	1.8	0.0	6.3	21,000	1.22
NOR				EB		13	7	0	20	15	5	0	20	11	8	1	20	10	1	0	11	12.3	5.3	0.3	17.8	55,000	1.48
NOR				WB		20	13	0	33	18	10	1	29	21	2	0	23	23	4	0	27	20.5	7.3	0.3	28.0	58,000	2.06

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Freeway EPDO Crash Rate (per million vehicle-miles of travel) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Traffic x Segment Length]

APPENDIX B (CONTINUED) - HAMPTON ROADS FREEWAY CRASH DATA

Juris-diction	Facility	Segment From	Segment To	Dir	Distance (miles)	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Traffic	EPDO Crash Rate
						PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
NOR	I-64	CHESAPEAKE BLVD	NORVIEW AVE	REV	0.97	2	0	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0.5	0.3	0.0	0.8	21,000	0.17
NOR				EB		11	11	0	22	11	6	0	17	19	13	1	33	15	10	1	26	14.0	10.0	0.5	24.5	68,000	2.08
NOR				WB		10	7	0	17	18	7	0	25	10	7	0	17	11	8	0	19	12.3	7.3	0.0	19.5	58,000	1.66
NOR	I-64	NORVIEW AVE	MILITARY HWY	REV	1.22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	21,000	0.00
NOR				EB		14	8	0	22	15	7	0	22	19	6	0	25	15	5	1	21	15.8	6.5	0.3	22.5	75,000	1.15
NOR				WB		15	5	1	21	16	5	0	21	17	5	0	22	23	14	0	37	17.8	7.3	0.3	25.3	69,000	1.38
NOR	I-64	MILITARY HWY	NORTHAMPTON BLVD	REV	1.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	21,000	0.00
NOR				EB		8	4	0	12	9	6	0	15	7	9	1	17	11	7	0	18	8.8	6.5	0.3	15.5	60,000	1.33
NOR				WB		14	12	0	26	24	9	0	33	14	10	0	24	25	7	1	33	19.3	9.5	0.3	29.0	69,000	1.88
NOR	I-64	NORTHAMPTON BLVD	I-264	REV	2.12	1	1	0	2	2	1	0	3	4	1	0	5	1	1	0	2	2.0	1.0	0.0	3.0	21,000	0.31
NOR				EB		103	42	0	145	126	50	0	176	133	49	0	182	148	73	0	221	127.5	53.5	0.0	181.0	74,000	5.03
NOR				WB		28	15	0	43	33	13	0	46	39	17	0	56	49	22	1	72	37.3	16.8	0.3	54.3	79,000	1.48
NOR/VB	I-64	I-264	INDIAN RIVER RD	EB	2.50	26	12	0	38	27	9	0	36	31	18	0	49	39	17	0	56	30.8	14.0	0.0	44.8	71,000	1.12
NOR/VB				WB		52	30	0	82	55	30	0	85	48	32	0	80	54	33	0	87	52.3	31.3	0.0	83.5	68,000	2.35
VB/CHES	I-64	INDIAN RIVER RD	GREENBRIER PKWY	EB	2.66	19	6	0	25	17	14	0	31	14	9	0	23	15	4	0	19	16.3	8.3	0.0	24.5	66,000	0.64
VB/CHES				WB		16	11	0	27	17	12	0	29	4	11	0	15	13	13	0	26	12.5	11.8	0.0	24.3	60,000	0.82
CHES	I-64	GREENBRIER PKWY	BATTLEFIELD BLVD	EB	1.42	22	6	0	28	27	18	0	45	17	7	0	24	6	8	0	14	18.0	9.8	0.0	27.8	43,000	2.12
CHES				WB		15	7	0	22	11	4	0	15	5	5	0	10	4	6	0	10	8.8	5.5	0.0	14.3	51,000	0.96
CHES	I-64	BATTLEFIELD BLVD	I-464	EB	1.08	29	9	0	38	29	18	0	47	29	13	0	42	48	11	0	59	33.8	12.8	0.0	46.5	54,000	3.38
CHES				WB		7	5	0	12	7	2	0	9	10	4	0	14	8	4	0	12	8.0	3.8	0.0	11.8	53,000	0.92
CHES	I-64	I-464	GEORGE WASHINGTON HWY	EB	4.38	57	24	1	82	38	12	1	51	55	18	1	74	35	18	0	53	46.3	18.0	0.8	65.0	39,000	1.75
CHES				WB		34	16	0	50	42	14	0	56	24	11	1	36	43	19	1	63	35.8	15.0	0.5	51.3	36,000	1.51
CHES	I-64	GEORGE WASHINGTON HWY	MILITARY HWY	EB	1.53	11	1	0	12	8	5	1	14	6	4	0	10	8	5	0	13	8.3	3.8	0.3	12.3	36,000	1.12
CHES				WB		12	5	0	17	14	7	0	21	10	12	0	22	12	2	0	14	12.0	6.5	0.0	18.5	35,000	1.61
CHES	I-64	MILITARY HWY	I-264&664	EB	2.31	11	3	0	14	5	5	1	11	12	4	0	16	6	4	0	10	8.5	4.0	0.3	12.8	37,000	0.75
CHES				WB		15	8	1	24	16	6	0	22	5	4	0	9	12	3	0	15	12.0	5.3	0.3	17.5	35,000	1.04
CHES/PORT	I-264	I-64&664	GREENWOOD DR	EB	1.65	2	2	0	4	1	4	0	5	3	4	0	7	2	6	0	8	2.0	4.0	0.0	6.0	27,000	0.86
CHES/PORT				WB		6	4	0	10	3	2	0	5	4	2	0	6	3	3	0	6	4.0	2.8	0.0	6.8	28,000	0.73
PORT	I-264	GREENWOOD DR	VICTORY BLVD	EB	1.31	7	0	1	8	2	1	0	3	6	7	0	13	4	3	0	7	4.8	2.8	0.3	7.8	26,000	1.29
PORT				WB		19	8	0	27	8	5	0	13	7	1	0	8	6	2	0	8	10.0	4.0	0.0	14.0	27,000	1.70
PORT	I-264	VICTORY BLVD	PORTSMOUTH BLVD	EB	0.75	6	0	0	6	4	1	0	5	1	0	0	1	2	0	0	2	3.3	0.3	0.0	3.5	30,000	0.49
PORT				WB		7	2	0	9	2	0	0	2	1	3	1	5	2	3	0	5	3.0	2.0	0.3	5.3	29,000	1.51
PORT	I-264	PORTSMOUTH BLVD	FREDERICK BLVD	EB	0.91	2	3	0	5	3	0	0	3	3	2	0	5	5	2	0	7	3.3	1.8	0.0	5.0	31,000	0.83
PORT				WB		6	2	0	8	2	7	0	9	2	4	0	6	4	2	0	6	3.5	3.8	0.0	7.3	33,000	1.35
PORT	I-264	FREDERICK BLVD	DES MOINES AVE	EB	0.96	12	4	0	16	10	4	0	14	10	5	0	15	7	4	0	11	9.8	4.3	0.0	14.0	38,000	1.69
PORT				WB		12	5	0	17	4	5	0	9	5	9	0	14	4	1	0	5	6.3	5.0	0.0	11.3	37,000	1.64
PORT	I-264	DES MOINES AVE	EFFINGHAM ST	EB	0.72	11	8	0	19	15	8	0	23	12	10	0	22	15	10	0	25	13.3	9.0	0.0	22.3	35,000	4.38
PORT				WB		2	4	0	6	5	2	0	7	5	2	0	7	3	1	0	4	3.8	2.3	0.0	6.0	35,000	1.14
PORT/NOR	I-264/DOWNTOWN TUNNEL	EFFINGHAM ST	I-464	EB	1.12	45	24	0	69	33	22	0	55	46	19	0	65	52	23	0	75	44.0	22.0	0.0	66.0	43,000	6.26
PORT/NOR				WB		26	17	0	43	33	15	0	48	29	19	2	50	27	10	0	37	28.8	15.3	0.5	44.5	47,000	4.19
NOR	I-264/BERKLEY BRIDGE	I-464	WATERSIDE/CITY HALL/TIDEWATER	EB	0.72	18	23	0	41	27	12	0	39	27	11	0	38	27	15	0	42	24.8	15.3	0.0	40.0	56,000	4.79
NOR				WB		28	18	0	46	18	12	0	30	25	17	0	42	26	14	0	40	24.3	15.3	0.0	39.5	55,000	4.84
NOR	I-264	WATERSIDE/CITY HALL/TIDEWATER	BRAMBLETON AVE	EB	0.91	13	3	0	16	7	9	0	16	12	3	0	15	7	5	0	12	9.8	5.0	0.0	14.8	52,000	1.43
NOR				WB		17	10	0	27	9	9	0	18	15	7	0	22	7	12	0	19	12.0	9.5	0.0	21.5	47,000	2.59
NOR	I-264	BRAMBLETON AVE	BALLENTINE BLVD	EB	0.85	16	7	0	23	12	10	0	22	5	4	0	9	6	9	0	15	9.8	7.5	0.0	17.3	61,000	1.70
NOR				WB		13	9	0	22	19	11	0	30	14	12	0	26	7	11	0	18	13.3	10.8	0.0	24.0	62,000	2.37
NOR	I-264	BALLENTINE BLVD	MILITARY HWY	EB	2.43	23	22	0	45	30	22	1	53	27	16	0	43	39	17	0	56	29.8	19.3	0.3	49.3	60,000	1.70
NOR				WB		20	20	1	41	30	17	0	47	24	32	0	56	18	19	0	37	23.0	22.0	0.3	45.3	61,000	1.70
NOR	I-264	MILITARY HWY	I-64	EB	0.78	13	5	0	18	10	3	0	13	11	9	0	20	19	14	0	33	13.3	7.8	0.0	21.0	67,000	1.91
NOR				WB		6	5	0	11	13	8	0	21	16	3	0	19	5	6	1	12	10.0	5.5	0.3	15.8	67,000	1.55
NOR	I-264	I-64	NEWTOWN RD/WCL VA. BEACH	EB	0.74	16	8	0	24	19	8	0	27	20	21	0	41	17	11	0	28	18.0	12.0	0.0	30.0	90,000	2.22
NOR				WB		37	22	1	60	47	19	0	66	49	12	0	61	50	23	0	73	45.8	19.0	0.3	65.0	93,000	4.21

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Freeway EPDO Crash Rate (per million vehicle-miles of travel) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Traffic x Segment Length]

APPENDIX B (CONTINUED) - HAMPTON ROADS FREEWAY CRASH DATA

Juris-diction	Facility	Segment From	Segment To	Dir	Distance (miles)	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Traffic	EPDO Crash Rate
						PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
VB	I-264	NEWTOWN RD/ECL NORFOLK	WITCHDUCK RD	EB	1.47	51	35	0	86	23	23	0	46	42	28	0	70	55	30	0	85	42.8	29.0	0.0	71.8	90,000	2.69
VB				WB		53	33	1	87	37	19	1	57	39	23	0	62	35	20	0	55	41.0	23.8	0.5	65.3	93,000	2.37
VB	I-264	WITCHDUCK RD	INDEPENDENCE BLVD	EB	1.27	43	20	0	63	32	15	0	47	35	19	0	54	32	22	0	54	35.5	19.0	0.0	54.5	89,000	2.24
VB				WB		39	35	1	75	36	25	0	61	28	18	0	46	24	25	0	49	31.8	25.8	0.3	57.8	90,000	2.68
VB	I-264	INDEPENDENCE BLVD	ROSEMONT RD	EB	2.36	21	13	0	34	30	10	0	40	32	14	0	46	31	17	0	48	28.5	13.5	0.0	42.0	76,000	1.05
VB				WB		26	17	0	43	22	16	0	38	17	14	0	31	27	12	0	39	23.0	14.8	0.0	37.8	71,000	1.10
VB	I-264	ROSEMONT RD	LYNNHAVEN PKWY	EB	1.72	16	15	0	31	20	10	0	30	22	10	0	32	16	12	0	28	18.5	11.8	0.0	30.3	65,000	1.32
VB				WB		11	7	0	18	17	8	1	26	13	10	0	23	13	15	0	28	13.5	10.0	0.3	23.8	67,000	1.11
VB	I-264	LYNNHAVEN PKWY	LASKIN RD	EB	1.48	13	5	0	18	19	14	0	33	37	18	0	55	14	11	1	26	20.8	12.0	0.3	33.0	56,000	1.98
VB				WB		6	8	0	14	14	7	0	21	14	8	0	22	9	7	0	16	10.8	7.5	0.0	18.3	52,000	1.18
VB	I-264	LASKIN RD	FIRST COLONIAL RD	EB	1.19	7	5	0	12	9	6	0	15	5	5	0	10	1	5	0	6	5.5	5.3	0.0	10.8	33,000	1.48
VB				WB		6	3	0	9	4	3	0	7	3	3	0	6	5	6	0	11	4.5	3.8	0.0	8.3	37,000	0.98
VB	I-264	FIRST COLONIAL RD	BIRDNECK RD	EB	1.48	2	3	1	6	2	1	0	3	2	3	0	5	5	5	0	10	2.8	3.0	0.3	6.0	27,000	1.01
VB				WB		2	4	0	6	1	6	0	7	1	2	0	3	7	6	0	13	2.8	4.5	0.0	7.3	28,000	1.07
VB	I-264	BIRDNECK RD	PARKS AVE	EB	0.49	3	0	0	3	3	0	0	3	2	3	0	5	1	3	0	4	2.3	1.5	0.0	3.8	14,000	2.70
VB				WB		0	0	0	0	0	2	0	2	1	1	0	2	1	1	0	2	0.5	1.0	0.0	1.5	12,000	1.63
CHES	I-464	I-64	MILITARY HWY	NB	1.00	3	2	0	5	7	3	0	10	3	3	0	6	5	3	0	8	4.5	2.8	0.0	7.3	27,000	1.29
CHES				SB		3	1	0	4	4	2	0	6	7	2	0	9	3	0	0	3	4.3	1.3	0.0	5.5	24,000	0.91
CHES	I-464	MILITARY HWY	FREEMAN AVE	NB	0.97	2	2	0	4	3	1	0	4	4	4	0	8	5	1	0	6	3.5	2.0	0.0	5.5	23,000	1.17
CHES				SB		4	2	0	6	2	1	0	3	0	1	0	1	2	1	0	3	2.0	1.3	0.0	3.3	20,000	0.81
CHES	I-464	FREEMAN AVE	POINDEXTER ST	NB	1.90	10	6	0	16	4	7	0	11	4	0	0	4	4	2	0	6	5.5	3.8	0.0	9.3	23,000	1.05
CHES				SB		1	2	0	3	2	3	0	5	4	1	0	5	3	0	0	3	2.5	1.5	0.0	4.0	20,000	0.50
CHES/NOR	I-464	POINDEXTER ST	SOUTH MAIN ST	NB	1.14	4	4	0	8	4	2	0	6	0	0	0	0	4	3	0	7	3.0	2.3	0.0	5.3	25,000	0.94
CHES/NOR				SB		4	1	0	5	1	1	0	2	1	1	0	2	2	2	0	4	2.0	1.3	0.0	3.3	20,000	0.69
NOR	I-464	SOUTH MAIN ST	I-264	NB	0.61	3	3	0	6	5	4	0	9	7	2	0	9	6	8	0	14	5.3	4.3	0.0	9.5	23,000	3.51
NOR				SB		1	1	0	2	0	1	0	1	2	1	0	3	0	1	0	1	0.8	1.0	0.0	1.8	19,000	0.89
NOR	I-564	ADMIRAL TAUSSIG BLVD	INTERNATIONAL TERMINAL BLVD	NB	1.87	32	15	0	47	12	7	0	19	13	5	0	18	14	2	0	16	17.8	7.3	0.0	25.0	17,000	3.40
NOR				SB		12	5	0	17	10	3	0	13	7	0	0	7	8	0	0	8	9.3	2.0	0.0	11.3	18,000	1.24
NOR	I-564	INTERNATIONAL TERMINAL BLVD	I-64	NB	0.90	6	3	0	9	13	4	0	17	7	3	0	10	3	3	0	6	7.3	3.3	0.0	10.5	30,000	1.73
NOR				SB		8	7	0	15	15	2	0	17	8	4	0	12	13	4	0	17	11.0	4.3	0.0	15.3	22,000	3.29
CHES	I-664	I-64 & I-264	ROUTES 13/58/460	NB	1.70	8	4	0	12	8	3	0	11	11	1	0	12	11	4	1	16	9.5	3.0	0.3	12.8	59,000	0.59
CHES				SB		10	3	1	14	7	3	0	10	9	3	0	12	17	5	0	22	10.8	3.5	0.3	14.5	63,000	0.62
CHES	I-664	ROUTES 13/58/460	DOCK LANDING RD	NB	1.25	6	1	1	8	18	3	0	21	5	5	0	10	5	1	0	6	8.5	2.5	0.3	11.3	49,000	0.85
CHES				SB		7	5	0	12	8	8	2	18	8	5	0	13	6	6	0	12	7.3	6.0	0.5	13.8	41,000	1.67
CHES	I-664	DOCK LANDING RD	PORTSMOUTH BLVD	NB	1.14	5	3	1	9	1	2	0	3	6	1	0	7	6	2	0	8	4.5	2.0	0.3	6.8	42,000	0.77
CHES				SB		1	5	0	6	3	3	0	6	3	3	0	6	5	1	1	7	3.0	3.0	0.3	6.3	47,000	0.77
CHES	I-664	PORTSMOUTH BLVD	PUGHSVILLE RD	NB	2.06	7	2	0	9	7	8	0	15	10	4	0	14	6	7	0	13	7.5	5.3	0.0	12.8	46,000	0.67
CHES				SB		4	3	0	7	9	8	0	17	7	1	0	8	10	2	0	12	7.5	3.5	0.0	11.0	46,000	0.52
CHES/SUF	I-664	PUGHSVILLE RD	BRIDGE RD	NB	1.57	4	2	0	6	8	2	0	10	6	1	0	7	8	2	0	10	6.5	1.8	0.0	8.3	41,000	0.50
CHES/SUF				SB		5	2	0	7	10	2	0	12	7	3	0	10	9	5	0	14	7.8	3.0	0.0	10.8	41,000	0.71
SUF	I-664	BRIDGE RD	WESTERN FWY	NB	0.15	0	2	0	2	1	0	0	1	2	0	0	2	2	1	0	3	1.3	0.8	0.0	2.0	30,000	2.13
SUF				SB		0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1	0.0	0.8	0.0	0.8	29,000	1.42
SUF	I-664	WESTERN FWY	COLLEGE DR	NB	1.41	8	2	0	10	5	0	0	5	9	1	0	10	3	2	0	5	6.3	1.3	0.0	7.5	31,000	0.63
SUF				SB		6	2	0	8	6	0	0	6	6	1	0	7	8	0	0	8	6.5	0.8	0.0	7.3	28,000	0.61
SUF/NN	I-664/MMMBT	COLLEGE DR	TERMINAL AVE	NB	6.13	70	23	1	94	42	18	0	60	63	27	0	90	58	21	0	79	58.3	22.3	0.3	80.8	30,000	1.91
SUF/NN				SB		39	23	0	62	27	7	0	34	45	20	0	65	35	20	0	55	36.5	17.5	0.0	54.0	29,000	1.37
NN	I-664	TERMINAL AVE	23RD ST	NB	0.92	2	1	0	3	1	0	0	1	0	1	0	1	0	1	0	1	0.8	0.8	0.0	1.5	31,000	0.29
NN				SB		6	1	0	7	2	0	0	2	2	1	0	3	7	0	0	7	4.3	0.5	0.0	4.8	31,000	0.55
NN	I-664	23RD ST	CHESTNUT AVE	NB	1.69	10	4	0	14	8	5	0	13	6	2	0	8	7	4	0	11	7.8	3.8	0.0	11.5	30,000	1.03
NN				SB		20	6	2	28	15	7	0	22	8	4	0	12	20	9	0	29	15.8	6.5	0.5	22.8	31,000	2.16
NN/HAM	I-664	CHESTNUT AVE	ABERDEEN RD	NB	0.68	3	1	0	4	3	2	0	5	3	3	0	6	3	1	0	4	3.0	1.8	0.0	4.8	33,000	1.01
NN/HAM				SB		1	0	0	1	4	0	0	4	4	3	0	7	6	2	0	8	3.8	1.3	0.0	5.0	34,000	0.89

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Freeway EPDO Crash Rate (per million vehicle-miles of travel) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Traffic x Segment Length]

APPENDIX B (CONTINUED) - HAMPTON ROADS FREEWAY CRASH DATA

Juris-diction	Facility	Segment From	Segment To	Dir	Distance (miles)	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Traffic	EPDO Crash Rate
						PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
HAM	I-664	ABERDEEN RD	POWER PLANT PKWY	NB	1.29	5	2	0	7	4	1	0	5	4	3	0	7	4	3	0	7	4.3	2.3	0.0	6.5	38,000	0.61
HAM				SB		2	4	0	6	2	2	0	4	3	2	0	5	4	2	0	6	2.8	2.5	0.0	5.3	36,000	0.60
HAM	I-664	POWER PLANT PKWY	I-64	NB	1.38	8	3	0	11	9	5	0	14	14	7	0	21	16	7	0	23	11.8	5.5	0.0	17.3	36,000	1.56
HAM				SB		12	3	0	15	3	1	0	4	8	0	0	8	9	3	0	12	8.0	1.8	0.0	9.8	38,000	0.69
CHES	CHESAPEAKE EXPWY	GALLBUSH RD	BATTLEFIELD BLVD (IND. CREEK)	NB	2.61	1	1	0	2	2	2	0	4	0	0	0	0	0	0	0	0	0.8	0.8	0.0	1.5	6,000	0.52
CHES				SB		0	1	0	1	1	1	0	2	2	1	0	3	1	1	0	2	1.0	1.0	0.0	2.0	6,000	0.70
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (IND. CREEK)	HILLCREST PKWY	NB	2.63	1	0	0	1	1	0	0	1	1	0	0	1	2	0	0	2	1.3	0.0	0.0	1.3	6,000	0.22
CHES				SB		1	0	0	1	0	0	0	0	0	1	0	1	1	1	0	2	0.5	0.5	0.0	1.0	6,000	0.35
CHES	CHESAPEAKE EXPWY	HILLCREST PKWY	BATTLEFIELD BLVD (S OF G. BR.)	NB	2.21	2	0	0	2	1	0	0	1	0	0	0	0	1	1	0	2	1.0	0.3	0.0	1.3	16,000	0.14
CHES				SB		1	1	0	2	1	0	0	1	1	1	0	2	0	0	0	0	0.8	0.5	0.0	1.3	16,000	0.17
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (S OF G. BR.)	HANBURY RD	NB	0.59	2	2	0	4	1	0	0	1	0	0	0	0	0	0	0	0	0.8	0.5	0.0	1.3	14,500	0.72
CHES				SB		2	0	0	2	0	0	0	0	0	1	0	1	2	1	0	3	1.0	0.5	0.0	1.5	14,500	0.80
CHES	CHESAPEAKE EXPWY	HANBURY RD	MT PLEASANT RD	NB	1.31	3	0	0	3	0	0	0	0	1	1	0	2	2	2	0	4	1.5	0.8	0.0	2.3	23,500	0.33
CHES				SB		2	1	0	3	0	1	0	1	0	2	0	2	0	0	0	0	0.5	1.0	0.0	1.5	23,500	0.31
CHES	CHESAPEAKE EXPWY	MT PLEASANT RD	BATTLEFIELD BLVD (N OF G. BR.)	NB	2.31	7	4	0	11	6	6	0	12	5	2	0	7	7	7	0	14	6.3	4.8	0.0	11.0	35,500	0.68
CHES				SB		1	1	0	2	1	2	0	3	2	4	0	6	3	4	0	7	1.8	2.8	0.0	4.5	35,500	0.33
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (N OF G. BR.)	DOMINION BLVD	NB	1.90	4	2	0	6	4	4	0	8	6	2	0	8	6	0	0	6	5.0	2.0	0.0	7.0	35,000	0.45
CHES				SB		2	2	0	4	2	4	0	6	2	3	0	5	6	5	0	11	3.0	3.5	0.0	6.5	35,000	0.56
CHES	CHESAPEAKE EXPWY	DOMINION BLVD	I-64	NB	0.57	4	2	0	6	6	1	0	7	6	1	0	7	4	1	0	5	5.0	1.3	0.0	6.3	53,500	0.79
CHES				SB		2	1	0	3	3	0	0	3	2	0	0	2	5	3	0	8	3.0	1.0	0.0	4.0	53,500	0.54
PORT	M L K FREEWAY	HIGH ST	LONDON BLVD	NB	0.25	1	1	0	2	1	0	0	1	2	1	0	3	0	1	0	1	1.0	0.8	0.0	1.8	6,000	5.94
PORT				SB		0	0	0	0	0	0	0	0	1	0	0	1	2	1	0	3	0.8	0.3	0.0	1.0	6,000	2.74
PORT	M L K FREEWAY	LONDON BLVD	WESTERN FWY/MIDTOWN TUNNEL	NB	0.98	2	2	0	4	1	0	0	1	3	5	0	8	3	4	0	7	2.3	2.8	0.0	5.0	15,500	1.89
PORT				SB		0	0	0	0	0	0	1	1	5	1	0	6	2	2	0	4	1.8	0.8	0.3	2.8	15,500	1.26
YC	ROUTE 199	MOORETOWN RD	I-64	EB	0.85	9	0	0	9	2	2	0	4	5	0	0	5	4	1	0	5	5.0	0.8	0.0	5.8	12,000	1.95
YC				WB		1	0	0	1	3	2	0	5	4	3	0	7	4	3	0	7	3.0	2.0	0.0	5.0	12,000	2.42
YC	ROUTE 199	RICHMOND RD	MOORETOWN RD	EB	0.73	1	0	0	1	5	0	0	5	3	0	0	3	1	3	0	4	2.5	0.8	0.0	3.3	11,000	1.62
YC				WB		0	0	0	0	1	0	0	1	4	0	0	4	0	1	0	1	1.3	0.3	0.0	1.5	11,000	0.68
JCC	ROUTE 199	RICHMOND RD	LONGHILL RD	EB	2.94	3	0	0	3	1	1	0	2	1	2	0	3	3	2	0	5	2.0	1.3	0.0	3.3	11,500	0.47
JCC				WB		3	0	0	3	1	2	0	3	2	2	0	4	6	2	0	8	3.0	1.5	0.0	4.5	11,500	0.61
JCC	ROUTE 199	LONGHILL RD	MONTICELLO AVE	EB	1.89	1	0	0	1	3	1	0	4	1	1	0	2	1	0	0	1	1.5	0.5	0.0	2.0	14,000	0.31
JCC				WB		2	4	0	6	4	5	0	9	3	5	0	8	1	2	0	3	2.5	4.0	0.0	6.5	14,000	1.50
JCC	ROUTE 199	MONTICELLO AVE	JOHN TYLER HWY	EB	1.30	1	1	0	2	2	0	0	2	3	0	0	3	1	2	0	3	1.8	0.8	0.0	2.5	13,500	0.62
JCC				WB		1	0	0	1	1	1	1	3	1	2	0	3	3	1	0	4	1.5	1.0	0.3	2.8	13,500	1.17
SUF	SOUTHWEST SUFFOLK BYP.	HOLLAND RD	CAROLINA RD	NB	2.55	0	2	0	2	1	1	0	2	0	1	0	1	0	2	0	2	0.3	1.5	0.0	1.8	5,000	1.02
SUF				SB		1	0	0	1	1	1	0	2	1	1	0	2	1	1	0	2	1.0	0.8	0.0	1.8	5,000	0.70
SUF	SUFFOLK BYPASS	HOLLAND RD	PITCHKETTLE RD	EB	1.69	2	0	0	2	1	0	0	1	1	0	0	1	1	1	0	2	1.3	0.3	0.0	1.5	19,000	0.17
SUF				WB		2	0	0	2	3	0	0	3	3	2	0	5	4	2	0	6	3.0	1.0	0.0	4.0	19,000	0.51
SUF	SUFFOLK BYPASS	PITCHKETTLE RD	PRUDEN BLVD	EB	1.63	0	4	0	4	1	1	0	2	1	2	0	3	0	1	0	1	0.5	2.0	0.0	2.5	20,500	0.53
SUF				WB		3	1	0	4	4	0	0	4	0	0	0	0	4	1	0	5	2.8	0.5	0.0	3.3	20,500	0.35
SUF	SUFFOLK BYPASS	PRUDEN BLVD	GODWIN BLVD	EB	1.06	4	3	0	7	3	2	0	5	3	2	0	5	4	2	0	6	3.5	2.3	0.0	5.8	24,500	1.08
SUF				WB		1	1	0	2	1	1	0	2	3	2	0	5	4	0	0	4	2.3	1.0	0.0	3.3	24,500	0.55
SUF	SUFFOLK BYPASS	GODWIN BLVD	WILROY RD	EB	1.85	3	1	0	4	5	4	0	9	3	1	0	4	1	2	0	3	3.0	2.0	0.0	5.0	30,000	0.44
SUF				WB		1	0	0	1	4	2	0	6	4	3	0	7	3	2	1	6	3.0	1.8	0.3	5.0	30,000	0.56
SUF	SUFFOLK BYPASS	WILROY RD	ROUTES 13/58/460	EB	2.02	4	6	0	10	5	4	0	9	1	0	0	1	1	2	0	3	2.8	3.0	0.0	5.8	26,000	0.61
SUF				WB		1	0	0	1	3	3	0	6	2	3	0	5	5	2	0	7	2.8	2.0	0.0	4.8	26,000	0.46
SUF/CHES	ROUTE 13/58/460	SUFFOLK BYPASS	I-664	EB	6.11	13	14	0	27	18	22	1	41	21	18	0	39	27	19	0	46	19.8	18.3	0.3	38.3	33,500	1.04
SUF/CHES				WB		11	9	0	20	15	11	0	26	11	17	0	28	4	14	0	18	10.3	12.8	0.0	23.0	33,500	0.65
SUF	WESTERN FWY	BRIDGE RD	I-664	EB	0.74	2	1	0	3	0	2	0	2	0	0	0	0	0	0	0	0	0.5	0.8	0.0	1.3	9,500	1.07
SUF				WB		1	2	0	3	1	1	0	2	0	0	0	0	0	1	0	1	0.5	1.0	0.0	1.5	9,500	1.36
SUF	WESTERN FWY	I-664	COLLEGE DR	EB	0.57	2	0	0	2	1	2	0	3	1	3	0	4	1	0	0	1	1.3	1.3	0.0	2.5	19,000	1.26
SUF				WB		0	0	0	0	2	0	0	2	2	0	0	2	0	1	1	2	1.0	0.3	0.3	1.5	19,000	1.20

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Freeway EPDO Crash Rate (per million vehicle-miles of travel) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Traffic x Segment Length]

APPENDIX B (CONTINUED) - HAMPTON ROADS FREEWAY CRASH DATA

Juris-diction	Facility	Segment From	Segment To	Dir	Distance (miles)	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Traffic	EPDO Crash Rate
						PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
SUF/PORT	WESTERN FWY	COLLEGE DR	TOWN POINT RD	EB	1.21	1	1	0	2	0	0	0	0	1	2	0	3	0	1	0	1	0.5	1.0	0.0	1.5	22,000	0.36
SUF/PORT				WB		0	1	0	1	0	2	0	2	1	2	0	3	2	1	0	3	0.8	1.5	0.0	2.3	22,000	0.54
PORT	WESTERN FWY	TOWN POINT RD	CEDAR LN	EB	1.31	0	0	0	0	1	0	0	1	1	2	0	3	3	1	0	4	1.3	0.8	0.0	2.0	25,000	0.29
PORT				WB		0	1	0	1	0	0	0	0	1	2	0	3	2	2	0	4	0.8	1.3	0.0	2.0	25,000	0.38
PORT	WESTERN FWY	CEDAR LN	APM BLVD	EB	1.00	1	1	0	2	1	0	0	1	2	1	0	3	3	1	0	4	1.8	0.8	0.0	2.5	23,000	0.48
PORT				WB		0	1	0	1	0	0	0	0	0	3	0	3	1	2	0	3	0.3	1.5	0.0	1.8	23,000	0.57
PORT	WESTERN FWY	APM BLVD	WEST NORFOLK RD	EB	0.61	0	1	0	1	0	0	0	0	1	1	0	2	0	1	0	1	0.3	0.8	0.0	1.0	23,000	0.49
PORT				WB		0	0	0	0	0	0	0	0	2	2	0	4	0	0	0	0	0.5	0.5	0.0	1.0	23,000	0.39
PORT	WESTERN FWY	WEST NORFOLK RD	MLK FREEWAY/MIDTOWN TUNNEL	EB	1.78	3	1	0	4	0	0	0	0	7	5	0	12	11	6	0	17	5.3	3.0	0.0	8.3	24,500	0.90
PORT				WB		1	1	0	2	0	0	0	0	2	3	0	5	5	1	0	6	2.0	1.3	0.0	3.3	24,500	0.36

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Freeway EPDO Crash Rate (per million vehicle-miles of travel) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Traffic x Segment Length]

APPENDIX C - HAMPTON ROADS INTERSECTION CRASH DATA

Juris-diction	Major Road	Minor Road	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Entering Volume	EPDO Crash Rate
			PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
CHES	Airline Blvd	Jolliff Rd	1	2	0	3	1	2	0	3	1	3	0	4	2	3	0	5	1.3	2.5	0.0	3.8	13,350	1.80
CHES	Atlantic Ave	Old Atlantic Ave/Martin Ave	1	0	0	1	1	3	0	4	1	2	0	3	0	0	0	0	0.8	1.3	0.0	2.0	16,200	0.76
CHES	Atlantic Ave	Providence Rd	1	1	0	2	2	2	0	4	1	2	0	3	0	3	0	3	1.0	2.0	0.0	3.0	19,000	1.01
CHES	Bainbridge Blvd	Freeman Ave	3	3	0	6	2	0	0	2	2	1	0	3	4	1	0	5	2.8	1.3	0.0	4.0	16,200	1.10
CHES	Bainbridge Blvd	Great Bridge Blvd	0	2	0	2	1	1	0	2	3	2	0	5	1	0	0	1	1.3	1.3	0.0	2.5	10,400	1.32
CHES	Battlefield Blvd	Campostella Rd	5	4	0	9	4	8	0	12	3	2	0	5	6	3	0	9	4.5	4.3	0.0	8.8	33,000	1.43
CHES	Battlefield Blvd	Cedar Rd	10	9	0	19	9	6	0	15	2	5	0	7	4	2	0	6	6.3	5.5	0.0	11.8	44,500	1.40
CHES	Battlefield Blvd	Centerville Tpke	0	0	0	0	2	1	0	3	1	1	0	2	0	3	0	3	0.8	1.3	0.0	2.0	19,200	0.64
CHES	Battlefield Blvd	Gallbush Rd	3	2	0	5	9	3	0	12	1	0	0	1	1	2	0	3	3.5	1.8	0.0	5.3	25,500	0.94
CHES	Battlefield Blvd	Great Bridge Blvd/Kempsville Rd	20	10	0	30	13	14	0	27	10	7	0	17	8	13	0	21	12.8	11.0	0.0	23.8	54,500	2.30
CHES	Battlefield Blvd	Hanbury Rd	4	2	0	6	10	2	0	12	5	5	0	10	2	2	0	4	5.3	2.8	0.0	8.0	24,050	1.54
CHES	Battlefield Blvd	Hillcrest Pkwy	4	3	0	7	8	1	0	9	4	1	0	5	0	3	0	3	4.0	2.0	0.0	6.0	21,500	1.27
CHES	Battlefield Blvd	Johnstown Rd/Mount Pleasant Rd	18	4	0	22	9	3	0	12	3	4	0	7	10	6	0	16	10.0	4.3	0.0	14.3	32,200	1.94
CHES	Battlefield Blvd	Old Battlefield Blvd	4	3	0	7	2	0	0	2	4	0	0	4	2	3	0	5	3.0	1.5	0.0	4.5	26,950	0.76
CHES	Battlefield Blvd	Volvo Pkwy	7	4	0	11	3	14	0	17	1	7	0	8	4	5	0	9	3.8	7.5	0.0	11.3	70,500	1.02
CHES	Benefit Rd	Johnstown Rd	0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1	0.0	0.8	0.0	0.8	3,200	1.93
CHES	Benefit Rd	Sign Pine Rd	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0.3	0.3	0.0	0.5	2,850	0.96
CHES	Bruce Rd	Tyre Neck Rd	0	1	0	1	1	2	0	3	0	0	0	0	1	0	0	1	0.5	0.8	0.0	1.3	12,000	0.63
CHES	Butts Station Rd	Elbow Rd	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0.0	0.5	0.0	0.5	14,250	0.29
CHES	Campostella Rd	Berkley Ave Ext	1	0	0	1	1	0	0	1	0	1	0	1	3	2	0	5	1.3	0.8	0.0	2.0	23,700	0.40
CHES	Campostella Rd	Liberty St/Border Rd	3	3	0	6	2	4	0	6	2	2	0	4	1	5	0	6	2.0	3.5	0.0	5.5	17,850	1.92
CHES	Centerville Tpke	Butts Station Rd	2	1	0	3	1	1	0	2	3	0	0	3	4	4	0	8	2.5	1.5	0.0	4.0	18,550	1.03
CHES	Centerville Tpke	Elbow Rd	1	4	0	5	2	5	0	7	1	1	0	2	1	1	0	2	1.3	2.8	0.0	4.0	14,400	1.81
CHES	Centerville Tpke	Ethridge Manor Blvd	0	1	0	1	1	1	0	2	1	0	0	1	0	0	0	0	0.5	0.5	0.0	1.0	14,300	0.38
CHES	Dominion Blvd	Bainbridge Blvd	5	1	0	6	2	0	0	2	4	2	0	6	3	2	0	5	3.5	1.3	0.0	4.8	30,250	0.66
CHES	Dominion Blvd	Cedar Rd	7	6	0	13	10	10	0	20	5	5	0	10	13	10	0	23	8.8	7.8	0.0	16.5	38,000	2.31
CHES	Dominion Blvd	Great Bridge Blvd	5	5	0	10	3	3	0	6	7	2	0	9	9	8	0	17	6.0	4.5	0.0	10.5	45,000	1.19
CHES	George Washington Hwy	Canal Dr	1	3	0	4	1	6	0	7	1	0	0	1	0	3	0	3	0.8	3.0	0.0	3.8	28,500	0.94
CHES	George Washington Hwy	Military Hwy	6	10	0	16	3	3	0	6	3	2	0	5	5	7	0	12	4.3	5.5	0.0	9.8	37,000	1.54
CHES	George Washington Hwy/Dominion Blvd	George Washington Hwy	0	2	0	2	0	1	0	1	2	3	0	5	2	2	0	4	1.0	2.0	0.0	3.0	13,250	1.45
CHES	George Washington Hwy/Mill Creek Pkwy	George Washington Hwy/Old Mill Rd	5	1	0	6	5	4	0	9	7	2	0	9	5	3	0	8	5.5	2.5	0.0	8.0	31,500	1.13
CHES	George Washington Hwy/Moses Grandy Trail	George Washington Hwy	4	0	0	4	2	2	0	4	0	0	0	0	5	1	0	6	2.8	0.8	0.0	3.5	20,750	0.66
CHES	Great Bridge Blvd	Campostella Rd	0	1	0	1	0	1	0	1	0	0	0	0	1	0	0	1	0.3	0.5	0.0	0.8	11,450	0.42
CHES	Greenbrier Pkwy	Eden Way	10	10	0	20	4	8	0	12	7	8	0	15	7	7	0	14	7.0	8.3	0.0	15.3	71,500	1.22
CHES	Greenbrier Pkwy	Volvo Pkwy	4	9	0	13	4	4	0	8	6	7	0	13	2	7	0	9	4.0	6.8	0.0	10.8	59,000	1.13
CHES	Greenbrier Pkwy	Woodlake Dr	5	3	0	8	8	6	0	14	3	1	0	4	2	5	0	7	4.5	3.8	0.0	8.3	61,000	0.71
CHES	Hillcrest Pkwy	Edinburgh Pkwy	0	1	0	1	0	0	0	0	0	0	0	0	2	0	0	2	0.5	0.3	0.0	0.8	6,700	0.51
CHES	Johnstown Rd	Hanbury Rd	0	0	0	0	1	1	0	2	0	0	0	0	1	0	0	1	0.5	0.3	0.0	0.8	7,550	0.45
CHES	Jolliff Rd	Dock Landing Rd	1	0	0	1	0	0	0	0	1	0	0	1	1	1	0	2	0.8	0.3	0.0	1.0	5,800	0.71
CHES	Kempsville Rd	Greenbrier Pkwy/Butts Station Rd	3	8	0	11	7	1	0	8	7	3	0	10	3	7	0	10	5.0	4.8	0.0	9.8	44,500	1.19
CHES	Kempsville Rd	Volvo Pkwy	2	3	0	5	3	0	0	3	2	0	0	2	4	7	0	11	2.8	2.5	0.0	5.3	40,350	0.70
CHES	Liberty St	22nd St	0	0	0	0	0	1	0	1	0	2	0	2	0	0	0	0	0.0	0.8	0.0	0.8	11,450	0.54
CHES	Liberty St	Old Atlantic Ave/Latham Ave	0	2	0	2	1	1	0	2	1	0	0	1	1	0	0	1	0.8	0.8	0.0	1.5	10,000	0.82
CHES	Liberty St	Poindexter St	0	1	0	1	3	0	0	3	0	0	0	0	1	0	0	1	1.0	0.3	0.0	1.3	12,500	0.38
CHES	Military Hwy	Campostella Rd	4	6	0	10	2	4	0	6	2	4	0	6	2	4	0	6	2.5	4.5	0.0	7.0	40,550	1.08
CHES	Military Hwy	Canal Dr	7	4	0	11	0	3	0	3	1	0	0	1	2	3	0	5	2.5	2.5	0.0	5.0	30,000	0.91
CHES	Military Hwy	Cavalier Blvd/I-64 Ramp	2	1	0	3	0	2	0	2	4	4	0	8	4	3	0	7	2.5	2.5	0.0	5.0	27,800	0.99
CHES	Military Hwy	Greenbrier Pkwy	10	4	0	14	3	1	0	4	4	3	0	7	3	3	0	6	5.0	2.8	0.0	7.8	50,100	0.72
CHES	Moses Grandy Trail	Cedar Rd/Sebriell Way	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0.0	0.3	0.0	0.3	15,400	0.13
CHES	Moses Grandy Trail	Cedar Rd/Shipyard Rd	3	1	0	4	3	1	0	4	0	1	0	1	1	3	0	4	1.8	1.5	0.0	3.3	15,390	1.11

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012 and includes all crashes that occurred within 250' of the intersection. This table includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.
Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]

APPENDIX C (CONTINUED) - HAMPTON ROADS INTERSECTION CRASH DATA

Juris-diction	Major Road	Minor Road	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Entering Volume	EPDO Crash Rate
			PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
CHES	Mount Pleasant Rd	Centerville Tpke	5	3	0	8	10	3	0	13	3	1	0	4	10	5	0	15	7.0	3.0	0.0	10.0	26,600	1.65
CHES	Mount Pleasant Rd	Fentress Airfield Rd	0	1	0	1	2	4	0	6	1	3	0	4	0	0	0	0	0.8	2.0	0.0	2.8	12,750	1.45
CHES	Poindexter St	Bainbridge Blvd	2	0	0	2	0	1	0	1	0	0	0	0	2	3	0	5	1.0	1.0	0.0	2.0	15,500	0.71
CHES	Portsmouth Blvd	Dock Landing Rd	5	5	0	10	6	9	0	15	5	3	0	8	5	6	0	11	5.3	5.8	0.0	11.0	31,850	1.94
CHES	Portsmouth Blvd	Jolliff Rd	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	2	0.3	0.5	0.0	0.8	17,600	0.27
CHES	Portsmouth Blvd	Taylor Rd	8	5	0	13	6	3	0	9	1	1	0	2	3	3	0	6	4.5	3.0	0.0	7.5	46,500	0.80
CHES	Providence Rd	Campostella Rd	1	4	0	5	3	2	0	5	4	5	0	9	4	8	0	12	3.0	4.8	0.0	7.8	24,500	1.93
CHES	Pughsville Rd/Taylor Rd	Taylor Rd/Lynnhurst Blvd	3	2	0	5	0	3	0	3	3	3	0	6	0	3	0	3	1.5	2.8	0.0	4.3	31,000	0.86
CHES	Route 17	Ballahack Rd	2	0	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0.5	0.3	0.0	0.8	12,400	0.28
CHES	Taylor Rd	Bruce Rd	6	7	0	13	3	1	0	4	5	6	0	11	1	1	0	2	3.8	3.8	0.0	7.5	32,000	1.28
CHES	Towne Point Rd	Churchland Blvd	1	4	0	5	1	1	0	2	2	4	0	6	1	0	0	1	1.3	2.3	0.0	3.5	28,800	0.76
CHES	Volvo Pkwy	Eden Way	4	2	0	6	5	4	0	9	3	4	0	7	1	3	0	4	3.3	3.3	0.0	6.5	30,000	1.19
CHES	Western Branch Blvd	Poplar Hill Rd	1	3	0	4	3	1	0	4	6	3	0	9	3	4	0	7	3.3	2.8	0.0	6.0	26,000	1.21
CHES	Western Branch Blvd	Taylor Rd	3	3	0	6	3	4	0	7	4	4	0	8	4	6	0	10	3.5	4.3	0.0	7.8	29,500	1.51
CHES	Western Branch Blvd/Bridge Rd	Churchland Blvd	2	5	0	7	1	1	0	2	1	2	0	3	1	1	0	2	1.3	2.3	0.0	3.5	24,800	0.88
FR	Armory Dr	College Dr	1	0	0	1	5	4	0	9	3	4	0	7	3	8	0	11	3.0	4.0	0.0	7.0	20,050	2.05
FR	Clay St	College Dr/Hunterdale Rd	1	1	0	2	1	1	0	2	1	3	0	4	2	0	0	2	1.3	1.3	0.0	2.5	12,850	1.07
FR	Fourth Ave	High St	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.0	0.0	0.3	5,750	0.12
FR	High St	Fairview Dr	1	0	0	1	1	0	0	1	2	0	0	2	0	1	0	1	1.0	0.3	0.0	1.3	4,700	1.02
FR	Hunterdale Rd	Fairview Dr	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0.3	0.3	0.0	0.5	9,600	0.29
FR	Second Ave	High St	3	0	0	3	1	0	0	1	3	2	0	5	1	3	0	4	2.0	1.3	0.0	3.3	10,500	1.50
FR	Second Ave	Main St	1	1	0	2	3	0	0	3	0	0	0	0	1	1	0	2	1.3	0.5	0.0	1.8	8,150	0.92
FR	Second Ave	Mechanic St	2	0	0	2	1	0	0	1	1	0	0	1	1	2	0	3	1.3	0.5	0.0	1.8	9,150	0.82
FR	South St	College Dr	3	0	0	3	0	0	0	0	0	1	0	1	0	0	0	0	0.8	0.3	0.0	1.0	11,200	0.37
FR	South St	High St	2	0	0	2	0	0	0	0	0	0	0	0	0	1	0	1	0.5	0.3	0.0	0.8	6,800	0.50
FR	South St	Pretlow St	0	0	0	0	1	1	0	2	0	1	0	1	1	1	0	2	0.5	0.8	0.0	1.3	9,350	0.81
GLO	Hickory Fork Rd	Belroi Rd	4	0	0	4	3	1	0	4	0	0	0	0	1	0	0	1	2.0	0.3	0.0	2.3	6,500	1.16
GLO	Main St	Route 3/14	2	0	0	2	0	4	0	4	2	2	0	4	1	2	0	3	1.3	2.0	0.0	3.3	25,000	0.79
GLO	Route 17	Belroi Rd	2	3	0	5	3	2	1	6	1	1	0	2	1	4	0	5	1.8	2.5	0.3	4.5	24,250	1.38
GLO	Route 17	Guinea Rd	2	5	0	7	1	2	0	3	3	5	0	8	3	4	0	7	2.3	4.0	0.0	6.3	38,550	1.01
GLO	Route 17	Hickory Fork Rd	3	4	0	7	2	2	0	4	3	0	0	3	2	1	0	3	2.5	1.8	0.0	4.3	35,800	0.59
GLO	Route 17	Route 14	1	3	0	4	3	0	0	3	0	0	0	0	0	2	0	2	1.0	1.3	0.0	2.3	11,250	1.16
GLO	Route 17	Route 17 Bus North	1	1	0	2	1	1	0	2	2	0	0	2	2	1	0	3	1.5	0.8	0.0	2.3	22,850	0.45
GLO	Route 17	Route 17 Bus South (Main St)	1	3	0	4	6	4	0	10	6	3	0	9	4	4	0	8	4.3	3.5	0.0	7.8	40,500	1.00
GLO	Route 17	Route 33/198	3	2	0	5	0	0	0	0	0	10	0	10	2	3	0	5	1.3	3.8	0.0	5.0	13,350	2.57
HAM	Aberdeen Rd	Briarfield Rd	7	4	0	11	5	4	0	9	5	4	0	9	10	5	0	15	6.8	4.3	0.0	11.0	27,500	1.94
HAM	Armistead Ave	Convention Center Blvd/Reese Dr	1	0	0	1	2	0	0	2	1	2	0	3	2	1	0	3	1.5	0.8	0.0	2.3	20,900	0.49
HAM	Armistead Ave	HRC Pkwy/Armistead Pointe Pkwy	11	7	0	18	7	8	0	15	7	5	0	12	21	5	0	26	11.5	6.3	0.0	17.8	34,000	2.44
HAM	Armistead Ave	LaSalle Ave	20	13	0	33	16	9	0	25	9	4	0	13	15	7	0	22	15.0	8.3	0.0	23.3	38,000	2.87
HAM	Armistead Ave	Pembroke Ave	3	3	0	6	10	6	0	16	6	5	0	11	5	5	0	10	6.0	4.8	0.0	10.8	23,450	2.37
HAM	Armistead Ave	Rip Rap Rd	5	2	0	7	5	4	0	9	5	1	0	6	6	5	0	11	5.3	3.0	0.0	8.3	21,500	1.82
HAM	Big Bethel Rd	Saunders Rd	3	3	0	6	3	2	0	5	0	3	0	3	1	1	0	2	1.8	2.3	0.0	4.0	23,000	1.01
HAM	Big Bethel Rd	Semple Farm Rd	2	1	0	3	0	1	0	1	1	2	0	3	1	1	0	2	1.0	1.3	0.0	2.3	16,500	0.79
HAM	Coliseum Dr	Convention Center Blvd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	1,700	0.00
HAM	Coliseum Dr	Cunningham Dr	9	9	0	18	4	5	0	9	7	6	0	13	9	4	0	13	7.3	6.0	0.0	13.3	38,950	1.78
HAM	Coliseum Dr	Pine Chapel Rd	1	2	0	3	2	2	0	4	1	0	0	1	0	0	0	0	1.0	1.0	0.0	2.0	12,850	0.85
HAM	Commander Sheppard Blvd	Armistead Ave	0	0	0	0	3	2	0	5	0	2	0	2	3	1	0	4	1.5	1.3	0.0	2.8	22,850	0.63
HAM	Commander Sheppard Blvd	Wythe Creek Rd	10	2	0	12	5	0	0	5	8	1	0	9	5	0	0	5	7.0	0.8	0.0	7.8	28,500	0.89
HAM	Cunningham Dr/Todds Ln	Todds Ln/Lakeshore Dr	4	1	0	5	6	1	0	7	8	2	0	10	5	3	0	8	5.8	1.8	0.0	7.5	27,500	1.10
HAM	Fox Hill Rd	Harris Creek Rd	0	2	0	2	7	1	0	8	2	0	0	2	3	1	0	4	3.0	1.0	0.0	4.0	26,400	0.62

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012 and includes all crashes that occurred within 250' of the intersection. This table includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.
Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]

APPENDIX C (CONTINUED) - HAMPTON ROADS INTERSECTION CRASH DATA

Juris-diction	Major Road	Minor Road	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Entering Volume	EPDO Crash Rate
			PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
HAM	Fox Hill Rd	Woodland Rd	2	2	0	4	1	1	0	2	3	4	0	7	2	2	0	4	2.0	2.3	0.0	4.3	23,850	1.01
HAM	Fox Hill Rd/Silver Isles Blvd	Old Buckroe Rd	1	0	0	1	1	0	0	1	0	1	0	1	2	2	0	4	1.0	0.8	0.0	1.8	12,400	0.72
HAM	Harris Creek Rd	Little Back River Rd	1	0	0	1	1	0	0	1	2	0	0	2	0	0	0	0	1.0	0.0	0.0	1.0	6,000	0.46
HAM	HRC Pkwy	Big Bethel Rd	29	15	0	44	25	13	0	38	22	13	0	35	32	18	0	50	27.0	14.8	0.0	41.8	56,000	3.49
HAM	HRC Pkwy	Coliseum Dr	4	5	0	9	8	4	0	12	5	4	0	9	6	2	0	8	5.8	3.8	0.0	9.5	40,000	1.16
HAM	Ignolls Rd	Mercury Blvd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	8,600	0.00
HAM	Kecoughtan Rd	LaSalle Ave	5	4	0	9	1	1	0	2	1	2	0	3	1	1	0	2	2.0	2.0	0.0	4.0	10,650	2.06
HAM	Kecoughtan Rd	Powhatan Pkwy	3	2	0	5	1	4	0	5	2	3	0	5	1	1	0	2	1.8	2.5	0.0	4.3	8,160	3.11
HAM	Kecoughtan Rd	Victoria Blvd	3	1	0	4	1	1	0	2	0	1	0	1	0	1	0	1	1.0	1.0	0.0	2.0	10,950	1.00
HAM	King St	Little Back River Rd	4	6	0	10	4	6	0	10	3	1	0	4	4	4	0	8	3.8	4.3	0.0	8.0	25,500	1.77
HAM	King St	Rip Rap Rd	5	4	0	9	4	2	0	6	4	3	0	7	2	2	0	4	3.8	2.8	0.0	6.5	18,400	1.79
HAM	LaSalle Ave	Pembroke Ave	7	6	0	13	7	1	0	8	6	1	0	7	6	7	0	13	6.5	3.8	0.0	10.3	32,000	1.52
HAM	LaSalle Ave	Settlers Landing Rd	3	4	0	7	2	2	0	4	7	4	0	11	4	5	0	9	4.0	3.8	0.0	7.8	26,500	1.58
HAM	LaSalle Ave	Victoria Blvd	1	1	0	2	0	1	0	1	4	1	0	5	3	2	0	5	2.0	1.3	0.0	3.3	16,100	0.98
HAM	Magruder Blvd	Commander Sheppard Blvd/Semple Farm Rd	4	4	0	8	2	1	0	3	8	3	0	11	6	4	0	10	5.0	3.0	0.0	8.0	36,500	1.05
HAM	Mallory St	County St	2	0	0	2	1	1	0	2	2	0	0	2	1	0	0	1	1.5	0.3	0.0	1.8	13,000	0.47
HAM	Mallory St	Mellen St	1	1	0	2	3	0	0	3	1	2	0	3	0	1	0	1	1.3	1.0	0.0	2.3	14,550	0.80
HAM	Mallory St	Pembroke Ave	1	0	0	1	0	0	0	0	1	1	0	2	1	0	0	1	0.8	0.3	0.0	1.0	6,900	0.60
HAM	Mercury Blvd	Aberdeen Rd	13	6	0	19	12	5	0	17	11	10	0	21	10	10	0	20	11.5	7.8	0.0	19.3	69,500	1.37
HAM	Mercury Blvd	Armistead Ave	15	13	0	28	21	8	0	29	12	10	1	23	15	12	0	27	15.8	10.8	0.3	26.8	74,500	1.88
HAM	Mercury Blvd	Big Bethel Rd	12	10	0	22	12	9	0	21	11	7	0	18	8	12	0	20	10.8	9.5	0.0	20.3	63,200	1.70
HAM	Mercury Blvd	Chestnut Ave	5	4	0	9	2	1	0	3	1	2	0	3	2	2	1	5	2.5	2.3	0.3	5.0	52,450	0.64
HAM	Mercury Blvd	Coliseum Dr	28	16	0	44	16	11	0	27	20	7	0	27	12	9	0	21	19.0	10.8	0.0	29.8	63,400	2.21
HAM	Mercury Blvd	Cunningham Dr	19	17	0	36	20	12	0	32	12	8	0	20	18	9	0	27	17.3	11.5	0.0	28.8	53,950	2.63
HAM	Mercury Blvd	Fox Hill Rd/Cherry Acres Dr	7	10	0	17	15	5	0	20	6	10	0	16	13	5	0	18	10.3	7.5	0.0	17.8	42,500	2.11
HAM	Mercury Blvd	Mallory St	5	3	0	8	6	4	0	10	6	4	0	10	3	3	0	6	5.0	3.5	0.0	8.5	15,500	2.74
HAM	Mercury Blvd	Pembroke Ave	8	8	0	16	3	8	0	11	5	3	0	8	6	0	0	6	5.5	4.8	0.0	10.3	25,950	2.09
HAM	Mercury Blvd	Power Plant Pkwy/Todds Ln	23	23	0	46	33	14	0	47	22	27	0	49	20	15	0	35	24.5	19.8	0.0	44.3	75,000	3.06
HAM	Mercury Blvd	Roanoke Ave/Wheelton Rd	2	5	0	7	3	0	0	3	4	3	0	7	5	2	0	7	3.5	2.5	0.0	6.0	53,900	0.56
HAM	Pembroke Ave	Aberdeen Rd	4	7	0	11	6	1	0	7	3	4	0	7	6	3	0	9	4.8	3.8	0.0	8.5	25,100	1.75
HAM	Pembroke Ave	King St	4	4	0	8	4	1	0	5	0	2	0	2	1	5	0	6	2.3	3.0	0.0	5.3	14,800	2.08
HAM	Pembroke Ave	Old Buckroe Rd	4	4	0	8	2	2	0	4	5	1	0	6	5	0	0	5	4.0	1.8	0.0	5.8	12,600	2.01
HAM	Pembroke Ave	Woodland Rd	5	5	0	10	7	3	0	10	3	3	0	6	8	5	0	13	5.8	4.0	0.0	9.8	21,850	2.23
HAM	Power Plant Pkwy	Briarfield Rd/Queen St	10	10	0	20	7	5	0	12	8	8	0	16	3	4	0	7	7.0	6.8	0.0	13.8	28,500	2.62
HAM	Power Plant Pkwy	Pine Chapel Rd	3	1	0	4	4	2	0	6	4	1	0	5	4	1	0	5	3.8	1.3	0.0	5.0	23,500	0.87
HAM	Powhatan Pkwy	Pembroke Ave	5	3	0	8	3	5	0	8	4	4	0	8	7	4	0	11	4.8	4.0	0.0	8.8	25,900	1.77
HAM	Settlers Landing Rd	Armistead Ave	2	2	0	4	7	3	0	10	2	2	0	4	1	1	0	2	3.0	2.0	0.0	5.0	21,700	1.14
HAM	Settlers Landing Rd	Kecoughtan Rd	0	0	0	0	2	3	0	5	1	1	0	2	2	0	0	2	1.3	1.0	0.0	2.3	17,500	0.67
HAM	Settlers Landing Rd	Tyler St/I-64 Ramp	10	7	0	17	5	2	0	7	8	4	0	12	3	2	0	5	6.5	3.8	0.0	10.3	24,500	1.98
HAM	Settlers Landing Rd/Queen St	Pembroke Ave	4	3	0	7	5	0	0	5	2	3	0	5	1	1	0	2	3.0	1.8	0.0	4.8	20,950	1.08
HAM	Todds Ln	Aberdeen Rd/Hunt Club Blvd	7	3	0	10	5	2	0	7	2	1	0	3	6	1	0	7	5.0	1.8	0.0	6.8	24,500	1.15
HAM	Todds Ln	Big Bethel Rd	13	8	0	21	9	4	0	13	10	8	1	19	12	6	0	18	11.0	6.5	0.3	17.8	33,500	2.74
HAM	Woodland Rd	County St	1	3	0	4	2	3	0	5	2	2	0	4	3	2	0	5	2.0	2.5	0.0	4.5	22,700	1.15
HAM	Woodland Rd	Mercury Blvd	7	9	0	16	6	5	0	11	4	5	0	9	5	5	0	10	5.5	6.0	0.0	11.5	26,500	2.43
IW	Battery Park Rd	Nike Park Rd	1	1	0	2	0	0	0	0	1	0	0	1	2	0	0	2	1.0	0.3	0.0	1.3	12,100	0.40
IW	Benns Church Blvd	Brewers Neck Rd	3	0	0	3	0	2	0	2	3	1	0	4	5	2	0	7	2.8	1.3	0.0	4.0	30,000	0.59
IW	Benns Church Blvd/Route 10 Bypass	Church St S	4	1	0	5	2	0	0	2	2	0	0	2	1	1	0	2	2.3	0.5	0.0	2.8	30,000	0.34
IW	Bus Route 58/258 (Carrsville Hwy)	Route 258	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0.0	0.3	0.0	0.3	7,480	0.27
IW	Carrollton Blvd	Brewers Neck Blvd	7	0	0	7	0	0	0	0	5	3	0	8	3	3	0	6	3.8	1.5	0.0	5.3	33,500	0.67
IW	Carrollton Blvd	Smiths Neck Rd	4	4	0	8	0	1	0	1	3	0	0	3	3	0	0	3	2.5	1.3	0.0	3.8	34,000	0.50

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012 and includes all crashes that occurred within 250' of the intersection. This table includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.
Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]

APPENDIX C (CONTINUED) - HAMPTON ROADS INTERSECTION CRASH DATA

Juris-diction	Major Road	Minor Road	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Entering Volume	EPDO Crash Rate
			PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
IW	Church St	Main St	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.0	0.0	0.3	13,400	0.05
IW	Church St S	Battery Park Rd	2	0	0	2	1	0	0	1	0	0	0	0	2	0	0	2	1.3	0.0	0.0	1.3	20,000	0.17
IW	Nike Park Rd	Titus Creek Dr	1	1	0	2	5	1	0	6	2	3	0	5	2	0	0	2	2.5	1.3	0.0	3.8	9,500	1.80
IW	Route 10 Bypass	Main St	2	1	0	3	4	3	0	7	3	0	0	3	4	5	0	9	3.3	2.3	0.0	5.5	22,900	1.20
IW	Route 10 Bypass/Old Stage Hwy	Bus Rte 10 N (Old Stage Hwy)	2	0	0	2	0	2	0	2	1	0	0	1	0	0	0	0	0.8	0.5	0.0	1.3	7,500	0.82
IW	Route 460	Court St/Church St/Bank St	0	0	0	0	0	3	0	3	1	0	0	1	2	0	0	2	0.8	0.8	0.0	1.5	18,000	0.46
IW	Route 460 (Windsor Blvd)	Route 258 (Prince Blvd)	0	0	0	0	4	0	0	4	8	2	0	10	1	0	0	1	3.3	0.5	0.0	3.8	17,700	0.74
IW	Smiths Neck Rd	Titus Creek Dr	0	2	0	2	3	1	0	4	1	2	0	3	2	0	0	2	1.5	1.3	0.0	2.8	8,450	1.70
JCC	Barhamsville Rd/Richmond Rd	Richmond Rd/Rochambeau Dr	2	2	0	4	2	4	0	6	1	3	0	4	2	1	0	3	1.8	2.5	0.0	4.3	19,150	1.32
JCC	Centerville Rd	Longhill Rd	1	3	0	4	2	2	0	4	0	6	0	6	0	1	0	1	0.8	3.0	0.0	3.8	12,650	2.11
JCC	Croaker Rd	Rochambeau Dr	2	3	0	5	2	1	0	3	2	1	0	3	2	1	0	3	2.0	1.5	0.0	3.5	13,650	1.30
JCC	Depue Dr/Ironbound Rd	Ironbound Rd/Galt Dr	2	0	0	2	1	0	0	1	0	1	0	1	1	0	0	1	1.0	0.3	0.0	1.3	17,200	0.28
JCC	Depue Dr/Longhill Rd	Longhill Rd	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0.0	0.5	0.0	0.5	19,150	0.21
JCC	Ironbound Rd	News Rd	0	1	0	1	0	1	0	1	1	2	0	3	0	1	0	1	0.3	1.3	0.0	1.5	10,100	1.09
JCC	Ironbound Rd	Strawberry Plains Rd	0	1	0	1	1	1	0	2	1	0	0	1	0	0	0	0	0.5	0.5	0.0	1.0	9,500	0.58
JCC	Jamestown Rd	Greensprings Rd/Rte 359	0	0	0	0	1	0	0	1	0	1	0	1	1	0	0	1	0.5	0.3	0.0	0.8	18,700	0.18
JCC	Jamestown Rd	Sandy Bay Rd	3	5	0	8	0	0	0	0	1	2	0	3	3	1	0	4	1.8	2.0	0.0	3.8	15,060	1.41
JCC	John Tyler Hwy	Centerville Rd	0	0	0	0	1	1	0	2	2	4	0	6	0	1	0	1	0.8	1.5	0.0	2.3	8,100	1.78
JCC	John Tyler Hwy	Ironbound Rd	1	0	0	1	1	2	0	3	2	4	0	6	4	5	0	9	2.0	2.8	0.0	4.8	17,550	1.60
JCC	John Tyler Hwy/Strawberry Plains Rd	John Tyler Hwy	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0.3	0.0	0.0	0.3	8,750	0.08
JCC	Longhill Rd	Olde Towne Rd/Devon Rd	3	3	0	6	1	4	0	5	1	4	0	5	5	5	0	10	2.5	4.0	0.0	6.5	17,150	2.32
JCC	Merrimac Trail	Penniman Rd	4	0	0	4	2	7	0	9	0	3	0	3	4	7	0	11	2.5	4.3	0.0	6.8	15,250	2.74
JCC	Monticello Ave	Centerville Rd	0	1	0	1	1	1	0	2	0	2	0	2	1	2	0	3	0.5	1.5	0.0	2.0	12,300	1.11
JCC	Monticello Ave	Ironbound Rd	5	1	0	6	5	3	0	8	1	4	0	5	9	4	0	13	5.0	3.0	0.0	8.0	31,000	1.24
JCC	Monticello Ave	News Rd	3	1	0	4	1	3	0	4	2	1	0	3	2	0	0	2	2.0	1.3	0.0	3.3	34,950	0.45
JCC	Monticello Ave/John Tyler Hwy	John Tyler Hwy	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0.3	0.3	0.0	0.5	5,000	0.55
JCC	Mooretown Rd	Rochambeau Dr	3	2	0	5	2	0	0	2	4	1	0	5	1	3	0	4	2.5	1.5	0.0	4.0	10,900	1.76
JCC	Richmond Rd	Centerville Rd	7	3	0	10	3	8	0	11	3	5	0	8	1	3	0	4	3.5	4.8	0.0	8.3	27,350	1.78
JCC	Richmond Rd	Croaker Rd	2	5	0	7	2	0	0	2	1	2	0	3	0	0	0	0	1.3	1.8	0.0	3.0	22,050	0.81
JCC	Richmond Rd	Lightfoot Rd	1	1	0	2	5	2	0	7	7	4	0	11	1	4	0	5	3.5	2.8	0.0	6.3	27,350	1.18
JCC	Richmond Rd	Olde Towne Rd	3	2	0	5	1	4	0	5	2	3	0	5	2	4	0	6	2.0	3.3	0.0	5.3	22,050	1.46
JCC	Route 199	Henry St/Kingspoint Dr	2	2	0	4	4	3	0	7	0	5	0	5	0	3	0	3	1.5	3.3	0.0	4.8	35,900	0.86
JCC	Route 199	John Tyler Hwy	5	3	0	8	6	2	0	8	7	7	0	14	7	3	0	10	6.3	3.8	0.0	10.0	41,500	1.16
JCC	Route 199	Quarterpath Rd/Mounts Bay Rd	2	1	0	3	5	6	0	11	3	7	0	10	3	3	0	6	3.3	4.3	0.0	7.5	36,775	1.19
NN	25th St	Buxton Ave	1	2	0	3	5	0	0	5	3	2	0	5	2	6	0	8	2.8	2.5	0.0	5.3	7,900	3.55
NN	25th St	Chestnut Ave	1	2	0	3	0	1	0	1	2	2	0	4	0	0	0	0	0.8	1.3	0.0	2.0	5,600	2.20
NN	25th St	Roanoke Ave	0	0	0	0	0	1	0	1	0	1	0	1	1	0	0	1	0.3	0.5	0.0	0.8	5,000	0.96
NN	26th St	Chestnut Ave	0	3	0	3	2	1	0	3	0	1	0	1	0	0	0	0	0.5	1.3	0.0	1.8	6,400	1.82
NN	26th St	Roanoke Ave	1	1	0	2	1	0	0	1	1	0	0	1	0	0	0	0	0.8	0.3	0.0	1.0	3,700	1.11
NN	Briarfield Rd	Roanoke Ave	0	1	0	1	0	1	0	1	0	1	0	1	2	0	0	2	0.5	0.8	0.0	1.3	9,650	0.78
NN	Chestnut Ave	39th St	2	2	0	4	3	4	0	7	0	2	0	2	5	1	0	6	2.5	2.3	0.0	4.8	13,150	1.93
NN	Chestnut Ave	Briarfield Rd	5	5	0	10	1	0	0	1	3	1	0	4	3	0	0	3	3.0	1.5	0.0	4.5	14,850	1.38
NN	Denbigh Blvd	McManus Blvd	3	5	0	8	7	3	0	10	3	3	0	6	4	2	0	6	4.3	3.3	0.0	7.5	32,800	1.17
NN	Denbigh Blvd	Richneck Rd	0	2	0	2	1	1	0	2	2	3	0	5	1	1	0	2	1.0	1.8	0.0	2.8	29,600	0.58
NN	Fort Eustis Blvd	Richneck Rd	3	1	0	4	3	0	0	3	2	2	0	4	0	0	0	0	2.0	0.8	0.0	2.8	17,350	0.67
NN	HRC Pkwy/Harpersville Rd	Harpersville Rd/Terrace Dr	2	7	0	9	5	7	0	12	3	2	0	5	7	3	0	10	4.3	4.8	0.0	9.0	26,450	1.92
NN	Huntington Ave	23rd St	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0.3	0.3	0.0	0.5	6,600	0.42
NN	Huntington Ave	26th St	1	2	0	3	0	1	0	1	3	3	0	6	2	2	0	4	1.5	2.0	0.0	3.5	15,900	1.29
NN	Huntington Ave	39th St	2	3	0	5	2	2	0	4	2	1	0	3	2	1	0	3	2.0	1.8	0.0	3.8	15,600	1.27
NN	J Clyde Morris Blvd	Diligence Dr	19	15	0	34	15	14	1	30	7	14	0	21	7	11	0	18	12.0	13.5	0.3	25.8	40,500	3.75

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012 and includes all crashes that occurred within 250' of the intersection. This table includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.
Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]

APPENDIX C (CONTINUED) - HAMPTON ROADS INTERSECTION CRASH DATA

Juris-diction	Major Road	Minor Road	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Entering Volume	EPDO Crash Rate
			PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
NN	J Clyde Morris Blvd	Harpersville Rd/Old Oyster Point Rd	14	4	0	18	9	5	0	14	5	15	0	20	8	5	0	13	9.0	7.3	0.0	16.3	46,200	1.82
NN	J Clyde Morris Blvd	Thimble Shoals Blvd	10	3	0	13	8	5	0	13	1	4	0	5	7	6	0	13	6.5	4.5	0.0	11.0	37,300	1.47
NN	Jefferson Ave	25th St	0	0	0	0	0	2	0	2	0	1	0	1	0	1	0	1	0.0	1.0	0.0	1.0	12,000	0.68
NN	Jefferson Ave	26th St	1	0	0	1	0	5	0	5	0	3	0	3	0	1	0	1	0.3	2.3	0.0	2.5	13,200	1.45
NN	Jefferson Ave	Bland Blvd	18	10	0	28	17	11	0	28	17	14	0	31	11	5	0	16	15.8	10.0	0.0	25.8	94,000	1.33
NN	Jefferson Ave	Briarfield Rd	2	7	0	9	1	3	0	4	6	1	0	7	5	4	0	9	3.5	3.8	0.0	7.3	28,750	1.41
NN	Jefferson Ave	Center Ave	2	0	0	2	4	6	0	10	2	2	1	5	3	4	0	7	2.8	3.0	0.3	6.0	42,595	0.95
NN	Jefferson Ave	Denbigh Blvd	14	18	0	32	14	9	0	23	8	13	0	21	10	14	0	24	11.5	13.5	0.0	25.0	74,000	1.93
NN	Jefferson Ave	Fort Eustis Blvd	7	4	0	11	16	5	0	21	8	10	0	18	13	10	0	23	11.0	7.3	0.0	18.3	38,050	2.36
NN	Jefferson Ave	Harpersville Rd	9	14	0	23	9	12	1	22	0	7	0	7	5	9	0	14	5.8	10.5	0.3	16.5	61,000	1.81
NN	Jefferson Ave	J Clyde Morris Blvd	13	19	0	32	8	11	0	19	17	16	0	33	16	17	0	33	13.5	15.8	0.0	29.3	82,000	2.03
NN	Jefferson Ave	Main St	3	5	0	8	3	8	0	11	1	3	0	4	5	5	0	10	3.0	5.3	0.0	8.3	52,400	0.98
NN	Jefferson Ave	Oyster Point Rd	19	14	0	33	16	14	0	30	15	10	0	25	14	17	0	31	16.0	13.8	0.0	29.8	99,000	1.58
NN	Jefferson Ave	Richneck Rd	0	3	0	3	2	1	0	3	1	1	0	2	3	5	0	8	1.5	2.5	0.0	4.0	39,950	0.62
NN	Jefferson Ave	Thimble Shoals Blvd	17	11	0	28	13	15	0	28	5	10	0	15	8	7	0	15	10.8	10.8	0.0	21.5	58,500	2.01
NN	Jefferson Ave	Yorktown Rd	4	4	0	8	5	3	0	8	4	3	0	7	5	3	0	8	4.5	3.3	0.0	7.8	21,950	1.78
NN	Mercury Blvd	Jefferson Ave	15	22	0	37	20	23	0	43	20	19	0	39	15	15	0	30	17.5	19.8	0.0	37.3	72,000	2.92
NN	Oyster Point Rd	Canon Blvd	10	11	0	21	4	5	0	9	10	4	0	14	7	4	0	11	7.8	6.0	0.0	13.8	54,500	1.29
NN	Roanoke Ave	39th St	1	3	0	4	0	4	0	4	3	1	0	4	0	1	0	1	1.0	2.3	0.0	3.3	9,000	2.36
NN	Saunders Rd/Harpersville Rd	Harpersville Rd	0	0	0	0	0	0	0	0	1	2	0	3	2	1	0	3	0.8	0.8	0.0	1.5	13,650	0.60
NN	Thimble Shoals Blvd	Diligence Dr	1	0	0	1	3	2	0	5	1	2	0	3	0	1	0	1	1.3	1.3	0.0	2.5	16,800	0.82
NN	Warwick Blvd	Shellabarger Dr/Ashton Green Blvd	0	3	0	3	7	2	0	9	7	8	0	15	2	4	0	6	4.0	4.3	0.0	8.3	32,000	1.43
NN	Warwick Blvd	Bland Blvd	7	6	0	13	6	3	0	9	4	8	0	12	6	9	0	15	5.8	6.5	0.0	12.3	51,650	1.34
NN	Warwick Blvd	Center Ave	4	1	0	5	0	5	0	5	0	2	0	2	0	3	0	3	1.0	2.8	0.0	3.8	23,650	1.07
NN	Warwick Blvd	Denbigh Blvd	13	5	0	18	12	10	0	22	14	16	0	30	12	14	0	26	12.8	11.3	0.0	24.0	59,500	2.14
NN	Warwick Blvd	Harpersville Rd	5	1	0	6	3	3	0	6	1	3	0	4	7	0	0	7	4.0	1.8	0.0	5.8	29,500	0.86
NN	Warwick Blvd	J Clyde Morris Blvd	10	2	0	12	3	2	0	5	9	3	0	12	12	3	0	15	8.5	2.5	0.0	11.0	49,500	0.89
NN	Warwick Blvd	Main St	1	2	0	3	2	0	0	2	4	2	0	6	2	0	0	2	2.3	1.0	0.0	3.3	29,000	0.50
NN	Warwick Blvd	Oyster Point Rd	9	12	0	21	10	9	0	19	8	6	0	14	7	8	0	15	8.5	8.8	0.0	17.3	57,500	1.66
NN	Warwick Blvd	Yorktown Rd	6	3	0	9	2	1	0	3	6	0	0	6	2	0	0	2	4.0	1.0	0.0	5.0	14,950	1.28
NOR	21st St	Llewellyn St	1	2	0	3	0	2	0	2	0	1	0	1	0	0	0	0	0.3	1.3	0.0	1.5	20,400	0.54
NOR	26th St	Llewellyn St	5	0	0	5	3	3	0	6	4	3	0	7	2	1	0	3	3.5	1.8	0.0	5.3	15,600	1.54
NOR	27th St	Llewellyn Ave	2	1	0	3	3	3	0	6	1	2	0	3	4	1	0	5	2.5	1.8	0.0	4.3	17,550	1.21
NOR	Admiral Taussig Blvd	Hampton Blvd	3	0	0	3	5	2	0	7	2	4	0	6	3	3	0	6	3.3	2.3	0.0	5.5	39,000	0.70
NOR	Azalea Garden Rd	Robin Hood Rd	0	2	0	2	1	0	0	1	0	1	0	1	0	0	0	0	0.3	0.8	0.0	1.0	16,800	0.41
NOR	Azalea Garden Rd	Sewells Point Rd	1	0	0	1	1	1	0	2	0	5	0	5	2	3	0	5	1.0	2.3	0.0	3.3	25,450	0.83
NOR	Berkley Ave	Berkley Ave Ext/Fauquier St	0	0	0	0	2	0	0	2	0	1	0	1	0	0	0	0	0.5	0.3	0.0	0.8	15,700	0.22
NOR	Berkley Ave	South Main St	0	1	0	1	3	1	0	4	2	4	0	6	3	0	0	3	2.0	1.5	0.0	3.5	17,000	1.05
NOR	Berkley Ave	State St	2	1	0	3	3	0	0	3	0	0	0	0	2	2	0	4	1.8	0.8	0.0	2.5	17,350	0.63
NOR	Berkley Ave/Indian River Rd	Indian River Rd/Marsh St	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0.3	0.3	0.0	0.5	14,300	0.19
NOR	Boush St	City Hall Ave	2	0	0	2	0	0	0	0	2	0	0	2	2	0	0	2	1.5	0.0	0.0	1.5	32,500	0.13
NOR	Boush St/Llewellyn Ave	Va Beach Blvd	5	1	0	6	1	2	0	3	1	0	0	1	1	0	0	1	2.0	0.8	0.0	2.8	19,200	0.61
NOR	Brambleton Ave	Boush St	5	3	0	8	2	6	0	8	3	3	0	6	4	4	0	8	3.5	4.0	0.0	7.5	44,500	0.95
NOR	Brambleton Ave	Church St	2	2	0	4	1	3	0	4	3	4	0	7	5	5	0	10	2.8	3.5	0.0	6.3	38,350	0.95
NOR	Brambleton Ave	Colley Ave	11	5	0	16	2	2	0	4	3	4	0	7	4	2	0	6	5.0	3.3	0.0	8.3	42,500	0.95
NOR	Brambleton Ave	Duke St	1	2	0	3	1	2	0	3	4	3	0	7	6	5	0	11	3.0	3.0	0.0	6.0	42,750	0.77
NOR	Brambleton Ave	Monticello Ave	4	2	0	6	2	4	0	6	3	1	0	4	7	2	0	9	4.0	2.3	0.0	6.3	32,150	0.92
NOR	Brambleton Ave	Park Ave	8	5	1	14	12	8	0	20	0	3	0	3	9	14	0	23	7.3	7.5	0.3	15.0	49,000	1.83
NOR	Brambleton Ave	St Pauls Blvd	13	1	0	14	5	8	0	13	4	4	0	8	9	12	0	21	7.8	6.3	0.0	14.0	57,000	1.27
NOR	Brambleton Ave	Tidewater Dr	7	8	0	15	4	1	0	5	3	9	0	12	6	7	0	13	5.0	6.3	0.0	11.3	56,000	1.16

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012 and includes all crashes that occurred within 250' of the intersection. This table includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.
Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]

APPENDIX C (CONTINUED) - HAMPTON ROADS INTERSECTION CRASH DATA

Juris-diction	Major Road	Minor Road	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Entering Volume	EPDO Crash Rate
			PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
NOR	Campostella Rd	Indian River Rd	1	3	0	4	1	3	0	4	3	4	0	7	4	3	0	7	2.3	3.3	0.0	5.5	41,000	0.80
NOR	Campostella Rd	Wilson Rd	1	1	0	2	1	1	0	2	2	0	0	2	0	2	0	2	1.0	1.0	0.0	2.0	32,215	0.34
NOR	Chesapeake Blvd	Bayview Blvd	6	5	0	11	5	2	0	7	7	6	0	13	6	5	0	11	6.0	4.5	0.0	10.5	27,550	1.94
NOR	Chesapeake Blvd	Cromwell Dr	4	3	0	7	1	1	0	2	2	5	0	7	6	7	0	13	3.3	4.0	0.0	7.3	34,000	1.23
NOR	Chesapeake Blvd	Johnstons Rd	7	15	0	22	4	7	0	11	6	6	0	12	3	2	0	5	5.0	7.5	0.0	12.5	35,700	2.11
NOR	Chesapeake Blvd	Norview Ave	16	9	0	25	8	9	0	17	2	11	0	13	10	12	1	23	9.0	10.3	0.3	19.5	40,950	2.86
NOR	Chesapeake Blvd	Robin Hood Rd	0	0	0	0	0	0	0	0	2	2	0	4	1	0	0	1	0.8	0.5	0.0	1.3	22,200	0.28
NOR	Church St	26th St	4	4	0	8	3	2	0	5	3	1	0	4	2	1	0	3	3.0	2.0	0.0	5.0	24,800	0.99
NOR	Church St	27th St	4	7	0	11	1	4	0	5	3	5	0	8	1	4	0	5	2.3	5.0	0.0	7.3	22,100	2.14
NOR	Church St	Granby St	1	0	0	1	0	2	0	2	1	2	0	3	1	1	0	2	0.8	1.3	0.0	2.0	31,650	0.39
NOR	Church St	Monticello Ave	3	0	0	3	1	0	0	1	1	0	0	1	1	0	0	1	1.5	0.0	0.0	1.5	29,000	0.14
NOR	Church St	Princess Anne Rd	4	0	0	4	1	2	0	3	4	5	0	9	3	2	0	5	3.0	2.3	0.0	5.3	31,650	0.84
NOR	Church St	Va Beach Blvd	1	1	0	2	3	4	0	7	2	4	0	6	1	4	0	5	1.8	3.3	0.0	5.0	29,000	1.09
NOR	City Hall Ave	Monticello Ave	0	0	0	0	1	0	0	1	1	1	0	2	1	0	0	1	0.8	0.3	0.0	1.0	10,500	0.39
NOR	Colley Ave	21st St	3	3	0	6	3	0	0	3	2	5	0	7	3	3	0	6	2.8	2.8	0.0	5.5	27,100	1.11
NOR	Colley Ave	26th St	3	5	0	8	3	0	0	3	3	1	0	4	3	2	0	5	3.0	2.0	0.0	5.0	20,900	1.18
NOR	Colley Ave	27th St	5	4	0	9	3	3	0	6	5	4	0	9	0	4	0	4	3.3	3.8	0.0	7.0	25,100	1.58
NOR	Colley Ave	38th St	3	0	0	3	1	0	0	1	6	0	0	6	4	2	0	6	3.5	0.5	0.0	4.0	21,550	0.64
NOR	Colley Ave	Olney Rd	1	2	0	3	0	7	0	7	2	0	0	2	0	2	0	2	0.8	2.8	0.0	3.5	23,000	1.07
NOR	Duke St/Virginia Beach Blvd	Olney Rd	2	0	0	2	5	1	0	6	2	1	0	3	4	2	0	6	3.3	1.0	0.0	4.3	9,200	1.86
NOR	Granby St	38th St	1	1	0	2	3	0	0	3	2	0	0	2	1	1	0	2	1.8	0.5	0.0	2.3	27,550	0.32
NOR	Granby St	Bay Ave	0	0	0	0	1	2	0	3	2	0	0	2	2	0	0	2	1.3	0.5	0.0	1.8	15,150	0.50
NOR	Granby St	Bayview Blvd	5	4	0	9	3	0	0	3	3	2	0	5	5	1	0	6	4.0	1.8	0.0	5.8	24,350	1.04
NOR	Granby St	Little Creek Rd	12	2	1	15	7	7	0	14	2	5	0	7	11	4	0	15	8.0	4.5	0.3	12.8	53,000	1.27
NOR	Granby St	Ocean Ave	0	0	0	0	1	1	0	2	1	2	0	3	2	0	0	2	1.0	0.8	0.0	1.8	14,500	0.61
NOR	Granby St	Thole St	0	3	0	3	2	3	0	5	4	3	0	7	1	5	0	6	1.8	3.5	0.0	5.3	39,000	0.86
NOR	Granby St	Willow Wood Dr	6	4	0	10	5	1	0	6	2	2	0	4	0	2	0	2	3.3	2.3	0.0	5.5	43,000	0.64
NOR	Hampton Blvd	26th St	5	1	0	6	2	0	0	2	1	2	0	3	3	0	0	3	2.8	0.8	0.0	3.5	33,500	0.41
NOR	Hampton Blvd	27th St	2	2	0	4	0	2	0	2	0	0	0	0	2	2	0	4	1.0	1.5	0.0	2.5	42,600	0.35
NOR	Hampton Blvd	38th St	3	2	0	5	2	3	0	5	1	0	0	1	1	3	0	4	1.8	2.0	0.0	3.8	38,900	0.55
NOR	Hampton Blvd	Azalea Ct	5	2	0	7	2	0	0	2	0	1	0	1	1	2	0	3	2.0	1.3	0.0	3.3	35,100	0.45
NOR	Hampton Blvd	Int Terminal Blvd	9	7	0	16	8	5	0	13	13	7	0	20	10	4	0	14	10.0	5.8	0.0	15.8	45,000	1.66
NOR	Hampton Blvd	Jamestown Crescent	4	5	0	9	1	4	0	5	5	3	0	8	3	4	0	7	3.3	4.0	0.0	7.3	38,700	1.08
NOR	Hampton Blvd	Little Creek Rd	5	4	0	9	0	2	0	2	6	1	0	7	3	3	0	6	3.5	2.5	0.0	6.0	45,000	0.67
NOR	Hampton Blvd	Princess Anne Rd	4	4	0	8	4	5	0	9	7	3	0	10	1	7	0	8	4.0	4.8	0.0	8.8	31,555	1.58
NOR	Indian River Rd	Wilson Rd	2	0	0	2	1	0	0	1	0	0	0	0	1	2	0	3	1.0	0.5	0.0	1.5	22,200	0.31
NOR	Kempsville Rd/Princess Anne Rd	Newtown Rd	7	1	0	8	5	2	0	7	2	5	0	7	3	2	0	5	4.3	2.5	0.0	6.8	44,450	0.72
NOR	Little Creek Rd	Azalea Garden Rd	5	7	0	12	5	6	0	11	1	4	0	5	1	7	0	8	3.0	6.0	0.0	9.0	31,250	1.84
NOR	Little Creek Rd	Chesapeake Blvd	14	13	0	27	9	11	0	20	17	11	0	28	9	12	0	21	12.3	11.8	0.0	24.0	55,000	2.37
NOR	Little Creek Rd	Halprin Dr	3	8	0	11	7	7	0	14	6	5	0	11	7	6	0	13	5.8	6.5	0.0	12.3	31,550	2.19
NOR	Little Creek Rd	Military Hwy	6	4	0	10	4	6	0	10	4	7	0	11	10	8	0	18	6.0	6.3	0.0	12.3	45,000	1.51
NOR	Little Creek Rd	Sewells Point Rd	1	2	0	3	0	1	0	1	4	0	0	4	0	1	0	1	1.3	1.0	0.0	2.3	30,450	0.38
NOR	Llewellyn Ave	38th St	0	2	0	2	0	0	0	0	2	0	0	2	2	0	0	2	1.0	0.5	0.0	1.5	16,800	0.41
NOR	Llewellyn Ave	Princess Anne Rd	1	1	0	2	2	0	0	2	1	1	0	2	2	0	0	2	1.5	0.5	0.0	2.0	17,500	0.47
NOR	Military Hwy	Azalea Garden Rd	6	3	0	9	4	7	0	11	7	6	0	13	3	7	0	10	5.0	5.8	0.0	10.8	35,950	1.70
NOR	Military Hwy	Johnstons Rd	2	5	1	8	3	3	0	6	6	3	0	9	2	3	0	5	3.3	3.5	0.3	7.0	37,750	1.22
NOR	Military Hwy	Lowery Rd	8	9	0	17	6	5	0	11	6	7	0	13	5	4	0	9	6.3	6.3	0.0	12.5	53,900	1.27
NOR	Military Hwy	Northampton Blvd/Princess Anne Rd	6	8	0	14	7	7	0	14	5	5	0	10	9	9	0	18	6.8	7.3	0.0	14.0	72,500	1.08
NOR	Military Hwy	Norview Ave	9	4	0	13	8	4	0	12	2	2	0	4	5	7	1	13	6.0	4.3	0.3	10.5	46,500	1.28
NOR	Military Hwy	Robin Hood Rd	5	4	0	9	3	8	0	11	8	5	0	13	4	2	0	6	5.0	4.8	0.0	9.8	47,000	1.12

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012 and includes all crashes that occurred within 250' of the intersection. This table includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.
Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]

APPENDIX C (CONTINUED) - HAMPTON ROADS INTERSECTION CRASH DATA

Juris-diction	Major Road	Minor Road	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Entering Volume	EPDO Crash Rate
			PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
NOR	Monticello Ave	21st St	1	2	0	3	3	2	0	5	0	0	0	0	0	0	0	0	1.0	1.0	0.0	2.0	22,150	0.49
NOR	Monticello Ave	26th St	2	7	0	9	5	14	0	19	3	5	0	8	4	8	0	12	3.5	8.5	0.0	12.0	25,700	3.09
NOR	Monticello Ave	27th St	5	4	0	9	8	8	0	16	0	1	0	1	1	4	0	5	3.5	4.3	0.0	7.8	26,600	1.67
NOR	Monticello Ave	Princess Anne Rd	1	1	0	2	5	8	0	13	4	1	0	5	1	3	0	4	2.8	3.3	0.0	6.0	26,200	1.31
NOR	Monticello Ave	Va Beach Blvd	6	1	0	7	3	4	0	7	3	6	0	9	0	3	0	3	3.0	3.5	0.0	6.5	30,250	1.22
NOR	Northampton Blvd	Kempsville Rd/USAA Dr	3	4	1	8	2	3	0	5	1	2	1	4	6	6	0	12	3.0	3.8	0.5	7.3	42,000	1.32
NOR	Northampton Blvd	Wesleyan Dr	8	4	0	12	16	8	0	24	7	2	0	9	8	11	0	19	9.8	6.3	0.0	16.0	77,500	1.01
NOR	Norview Ave	Azalea Garden Rd	5	1	0	6	0	1	0	1	2	1	0	3	1	2	0	3	2.0	1.3	0.0	3.3	26,500	0.59
NOR	Ocean View Ave	4th View St	3	3	0	6	0	4	0	4	2	1	0	3	0	1	0	1	1.3	2.3	0.0	3.5	16,700	1.31
NOR	Ocean View Ave	Chesapeake Blvd	1	2	0	3	2	6	0	8	4	2	0	6	3	3	0	6	2.5	3.3	0.0	5.8	20,200	1.66
NOR	Ocean View Ave	Granby St	1	1	0	2	3	0	0	3	2	0	0	2	1	1	0	2	1.8	0.5	0.0	2.3	22,500	0.40
NOR	Princess Anne Rd	Azalea Garden Rd	5	2	0	7	3	4	0	7	2	4	0	6	2	3	0	5	3.0	3.3	0.0	6.3	34,500	1.01
NOR	Princess Anne Rd	Ballentine Blvd	3	2	0	5	5	3	0	8	4	4	0	8	2	2	0	4	3.5	2.8	0.0	6.3	31,500	1.02
NOR	Princess Anne Rd	Colley Ave	0	1	0	1	1	3	0	4	2	2	0	4	0	1	0	1	0.8	1.8	0.0	2.5	21,700	0.76
NOR	Princess Anne Rd	Ingleside Rd	2	3	0	5	3	1	0	4	3	3	0	6	1	4	0	5	2.3	2.8	0.0	5.0	35,500	0.81
NOR	Princess Anne Rd	Park Ave/Lead St	2	5	0	7	1	2	0	3	2	2	0	4	2	3	0	5	1.8	3.0	0.0	4.8	26,500	1.11
NOR	Princess Anne Rd	Sewells Point Rd	6	4	0	10	0	2	0	2	4	2	0	6	0	3	0	3	2.5	2.8	0.0	5.3	30,500	0.97
NOR	S Main St	Bainbridge Blvd	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0.5	0.0	0.0	0.5	5,600	0.24
NOR	S Main St	Liberty St	0	0	0	0	0	2	0	2	1	0	0	1	1	2	0	3	0.5	1.0	0.0	1.5	8,400	1.14
NOR	Sewells Point Rd	Johnstons Rd	2	1	0	3	0	0	0	0	1	1	0	2	0	0	0	0	0.8	0.5	0.0	1.3	13,100	0.47
NOR	Sewells Point Rd	Robin Hood Rd	0	1	0	1	2	1	0	3	1	3	0	4	3	2	0	5	1.5	1.8	0.0	3.3	18,850	0.98
NOR	Shore Dr	Little Creek Rd	4	4	0	8	2	6	0	8	2	2	0	4	3	5	0	8	2.8	4.3	0.0	7.0	44,500	0.95
NOR	St Pauls Blvd	City Hall Ave	5	1	0	6	4	2	0	6	6	1	0	7	10	2	0	12	6.3	1.5	0.0	7.8	37,000	0.80
NOR	St Pauls Blvd	Market St/I-264 Ramp	5	2	0	7	3	2	0	5	5	2	0	7	4	4	0	8	4.3	2.5	0.0	6.8	56,000	0.57
NOR	St Pauls Blvd	Monticello Ave	0	2	0	2	1	2	0	3	3	1	0	4	1	1	0	2	1.3	1.5	0.0	2.8	26,650	0.59
NOR	Tidewater Dr	Bayview Blvd	3	4	0	7	8	2	0	10	4	4	0	8	2	4	0	6	4.3	3.5	0.0	7.8	25,350	1.59
NOR	Tidewater Dr	Cromwell Dr	7	8	0	15	4	4	0	8	5	5	0	10	3	7	0	10	4.8	6.0	0.0	10.8	40,000	1.56
NOR	Tidewater Dr	Lafayette Blvd	1	2	0	3	3	7	0	10	2	3	0	5	2	8	0	10	2.0	5.0	0.0	7.0	47,500	0.98
NOR	Tidewater Dr	Norview Ave	3	3	0	6	4	6	0	10	2	2	0	4	1	4	0	5	2.5	3.8	0.0	6.3	38,700	0.97
NOR	Tidewater Dr	Princess Anne Rd	6	8	0	14	5	6	0	11	2	6	0	8	3	8	0	11	4.0	7.0	0.0	11.0	49,500	1.38
NOR	Tidewater Dr	Thole St/I-64 Ramp	1	6	1	8	1	5	0	6	2	4	0	6	4	6	0	10	2.0	5.3	0.3	7.5	43,500	1.31
NOR	Tidewater Dr	Va Beach Blvd	9	9	0	18	4	2	0	6	5	10	0	15	5	2	0	7	5.8	5.8	0.0	11.5	43,500	1.45
NOR	Tidewater Dr	Willow Wood Dr	2	3	0	5	2	4	0	6	2	2	0	4	6	2	0	8	3.0	2.8	0.0	5.8	40,500	0.76
NOR	Va Beach Blvd	Azalea Garden Rd	2	1	0	3	0	2	0	2	2	1	0	3	0	2	0	2	1.0	1.5	0.0	2.5	35,750	0.42
NOR	Va Beach Blvd	Ballentine Blvd	7	3	0	10	2	3	0	5	2	3	0	5	4	5	0	9	3.8	3.5	0.0	7.3	39,500	0.99
NOR	Va Beach Blvd	Ingleside Rd	2	4	0	6	2	3	0	5	2	1	0	3	4	4	0	8	2.5	3.0	0.0	5.5	34,600	0.91
NOR	Va Beach Blvd	Kempsville Rd	3	2	0	5	5	3	0	8	1	5	0	6	4	0	0	4	3.3	2.5	0.0	5.8	45,500	0.65
NOR	Va Beach Blvd	Newtown Rd	8	7	0	15	8	8	0	16	11	7	0	18	9	8	0	17	9.0	7.5	0.0	16.5	73,500	1.17
NOR	Va Beach Blvd	Park Ave	3	2	0	5	4	2	0	6	2	3	0	5	1	5	0	6	2.5	3.0	0.0	5.5	28,000	1.13
NOR	Waterside Dr	St Pauls Blvd/Water St	5	4	0	9	1	1	0	2	2	0	0	2	2	4	0	6	2.5	2.3	0.0	4.8	40,500	0.63
NOR	Wilson Rd/22nd St	Berkley Ave Ext	0	2	0	2	2	3	0	5	4	1	0	5	0	0	0	0	1.5	1.5	0.0	3.0	11,450	1.44
POQ	East Yorktown Rd/Wythe Creek Rd	Poquoson Ave/Kelsor Dr	2	0	0	2	0	0	0	0	0	0	0	0	1	0	0	1	0.8	0.0	0.0	0.8	9,150	0.22
POQ	Hunt's Neck Rd/East Yorktown Rd	East Yorktown Rd	0	0	0	0	1	0	0	1	3	0	0	3	3	0	0	3	1.8	0.0	0.0	1.8	8,950	0.54
POQ	Little Florida Rd	Poquoson Ave	0	1	0	1	1	1	0	2	0	1	0	1	3	0	0	3	1.0	0.8	0.0	1.8	10,500	0.85
POQ	Wythe Creek Rd	Victory Blvd/Little Florida Rd	6	4	0	10	10	4	0	14	8	6	0	14	10	4	0	14	8.5	4.5	0.0	13.0	24,500	2.46
PORT	Airline Blvd	Elmhurst Ln	-	-	-	-	-	-	-	-	1	1	0	2	2	1	0	3	1.5	1.0	0.0	2.5	16,650	0.74
PORT	Airline Blvd	Greenwood Dr	-	-	-	-	-	-	-	-	3	5	0	8	3	9	0	12	3.0	7.0	0.0	10.0	22,950	2.87
PORT	Airline Blvd	High St	-	-	-	-	-	-	-	-	3	5	0	8	9	6	0	15	6.0	5.5	0.0	11.5	31,500	1.96
PORT	Airline Blvd	Portsmouth Blvd/McLean St	-	-	-	-	-	-	-	-	8	3	0	11	7	6	0	13	7.5	4.5	0.0	12.0	32,900	1.75
PORT	Cedar Ln	Coast Guard Blvd/Rte 164 Ramp	-	-	-	-	-	-	-	-	2	1	0	3	2	0	0	2	2.0	0.5	0.0	2.5	15,950	0.60

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012 and includes all crashes that occurred within 250' of the intersection. This table includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.
Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]
Portsmouth crash data from 2009 and 2010 is not included due to incomplete data. Average annual crashes for Portsmouth reflect an average of 2011 and 2012 crash data.

APPENDIX C (CONTINUED) - HAMPTON ROADS INTERSECTION CRASH DATA

Juris-diction	Major Road	Minor Road	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Entering Volume	EPDO Crash Rate
			PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
PORT	Cedar Ln	W Norfolk Rd	-	-	-	-	-	-	-	-	2	0	0	2	4	1	0	5	3.0	0.5	0.0	3.5	17,500	0.70
PORT	Churchland Blvd	Tyre Neck Rd	-	-	-	-	-	-	-	-	2	1	0	3	0	0	0	0	1.0	0.5	0.0	1.5	13,250	0.52
PORT	Churchland Blvd	W Norfolk Rd/Academy Ave	-	-	-	-	-	-	-	-	1	0	0	1	2	2	0	4	1.5	1.0	0.0	2.5	13,500	0.91
PORT	Crawford Pkwy	Court St	-	-	-	-	-	-	-	-	1	0	0	1	0	0	0	0	0.5	0.0	0.0	0.5	2,650	0.52
PORT	Crawford St	High St	-	-	-	-	-	-	-	-	0	0	0	0	1	0	0	1	0.5	0.0	0.0	0.5	11,700	0.12
PORT	Crawford St	London Blvd	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	9,200	0.00
PORT	Deep Creek Blvd	Greenwood Dr	-	-	-	-	-	-	-	-	0	1	0	1	2	2	0	4	1.0	1.5	0.0	2.5	10,950	1.38
PORT	Effingham St	County St	-	-	-	-	-	-	-	-	6	3	0	9	6	5	0	11	6.0	4.0	0.0	10.0	30,400	1.62
PORT	Effingham St	Crawford Pkwy	-	-	-	-	-	-	-	-	0	1	0	1	3	1	0	4	1.5	1.0	0.0	2.5	16,050	0.77
PORT	Effingham St	High St	-	-	-	-	-	-	-	-	3	1	0	4	4	3	0	7	3.5	2.0	0.0	5.5	33,250	0.78
PORT	Effingham St	London Blvd	-	-	-	-	-	-	-	-	0	1	0	1	3	0	0	3	1.5	0.5	0.0	2.0	34,500	0.24
PORT	Effingham St/GW Hwy	Portsmouth Blvd	-	-	-	-	-	-	-	-	3	4	0	7	6	0	0	6	4.5	2.0	0.0	6.5	28,150	1.02
PORT	Elm Ave	County St	-	-	-	-	-	-	-	-	0	2	0	2	3	3	0	6	1.5	2.5	0.0	4.0	15,750	1.57
PORT	Elm Ave	Victory Blvd/Williams Ave	-	-	-	-	-	-	-	-	2	0	0	2	0	0	0	0	1.0	0.0	0.0	1.0	9,350	0.29
PORT	Elmhurst Ln	Garwood Ave	-	-	-	-	-	-	-	-	2	2	0	4	0	1	0	1	1.0	1.5	0.0	2.5	5,550	2.72
PORT	Frederick Blvd	Airline Blvd	-	-	-	-	-	-	-	-	9	7	0	16	6	6	0	12	7.5	6.5	0.0	14.0	39,500	1.87
PORT	Frederick Blvd	Deep Creek Blvd	-	-	-	-	-	-	-	-	6	6	0	12	1	6	0	7	3.5	6.0	0.0	9.5	26,500	2.22
PORT	Frederick Blvd	Portsmouth Blvd	-	-	-	-	-	-	-	-	4	5	0	9	3	5	0	8	3.5	5.0	0.0	8.5	23,750	2.13
PORT	Frederick Blvd	Turnpike Rd	-	-	-	-	-	-	-	-	9	7	0	16	3	5	0	8	6.0	6.0	0.0	12.0	41,700	1.58
PORT	George Washington Hwy	Elm Ave	-	-	-	-	-	-	-	-	3	6	0	9	4	4	0	8	3.5	5.0	0.0	8.5	21,550	2.35
PORT	George Washington Hwy	Frederick Blvd	-	-	-	-	-	-	-	-	7	3	0	10	7	3	0	10	7.0	3.0	0.0	10.0	29,000	1.51
PORT	George Washington Hwy	Greenwood Dr	-	-	-	-	-	-	-	-	4	9	0	13	1	8	0	9	2.5	8.5	0.0	11.0	26,600	2.88
PORT	George Washington Hwy	Victory Blvd	-	-	-	-	-	-	-	-	13	8	0	21	11	11	0	22	12.0	9.5	0.0	21.5	33,750	3.29
PORT	Greenwood Dr	Cavalier Blvd	-	-	-	-	-	-	-	-	2	1	0	3	3	2	0	5	2.5	1.5	0.0	4.0	18,250	1.05
PORT	Greenwood Dr	Garwood Ave	-	-	-	-	-	-	-	-	5	4	0	9	3	4	0	7	4.0	4.0	0.0	8.0	17,050	2.57
PORT	Harbor Dr	Turnpike Rd	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	11,950	0.00
PORT	High St	Cedar Ln/Sterling Point Dr	-	-	-	-	-	-	-	-	3	4	0	7	4	7	0	11	3.5	5.5	0.0	9.0	33,000	1.66
PORT	High St	Churchland Blvd	-	-	-	-	-	-	-	-	3	1	0	4	1	1	0	2	2.0	1.0	0.0	3.0	27,650	0.50
PORT	High St	Court St	-	-	-	-	-	-	-	-	1	3	0	4	2	2	0	4	1.5	2.5	0.0	4.0	12,250	2.01
PORT	High St	Elm Ave	-	-	-	-	-	-	-	-	5	2	0	7	2	3	0	5	3.5	2.5	0.0	6.0	21,650	1.39
PORT	High St	Frederick Blvd	-	-	-	-	-	-	-	-	2	0	0	2	1	2	0	3	1.5	1.0	0.0	2.5	30,500	0.40
PORT	High St	Harbor Dr/MLK Fwy	-	-	-	-	-	-	-	-	5	3	0	8	2	2	0	4	3.5	2.5	0.0	6.0	21,400	1.41
PORT	High St	Tyre Neck Rd	-	-	-	-	-	-	-	-	6	1	0	7	4	4	0	8	5.0	2.5	0.0	7.5	27,500	1.25
PORT	London Blvd	Court St	-	-	-	-	-	-	-	-	2	0	0	2	1	0	0	1	1.5	0.0	0.0	1.5	9,550	0.43
PORT	London Blvd	Elm Ave	-	-	-	-	-	-	-	-	1	1	0	2	1	0	0	1	1.0	0.5	0.0	1.5	30,950	0.22
PORT	Portcentre Pkwy	Portsmouth Blvd	-	-	-	-	-	-	-	-	2	0	0	2	1	3	0	4	1.5	1.5	0.0	3.0	9,050	1.82
PORT	Portsmouth Blvd	Deep Creek Blvd	-	-	-	-	-	-	-	-	1	1	0	2	1	3	0	4	1.0	2.0	0.0	3.0	16,700	1.15
PORT	Portsmouth Blvd	Elm Ave	-	-	-	-	-	-	-	-	5	3	0	8	3	4	0	7	4.0	3.5	0.0	7.5	14,600	2.72
PORT	Portsmouth Blvd	Elmhurst Ln	-	-	-	-	-	-	-	-	5	5	0	10	4	3	0	7	4.5	4.0	0.0	8.5	29,200	1.55
PORT	Portsmouth Blvd	Victory Blvd/California Ave	-	-	-	-	-	-	-	-	3	1	0	4	1	3	0	4	2.0	2.0	0.0	4.0	21,650	1.01
PORT	Turnpike Rd/Portsmouth Blvd	Portsmouth Blvd	-	-	-	-	-	-	-	-	1	2	0	3	1	3	0	4	1.0	2.5	0.0	3.5	16,200	1.44
PORT	Twin Pines Rd/Towne Point Rd	Towne Point Rd/Centenary Dr	-	-	-	-	-	-	-	-	2	6	0	8	1	3	0	4	1.5	4.5	0.0	6.0	20,850	1.97
PORT	Victory Blvd	Airline Blvd	-	-	-	-	-	-	-	-	1	2	0	3	4	2	0	6	2.5	2.0	0.0	4.5	28,900	0.81
PORT	Victory Blvd	Deep Creek Blvd	-	-	-	-	-	-	-	-	1	0	0	1	2	2	0	4	1.5	1.0	0.0	2.5	21,300	0.58
PORT	Victory Blvd	Greenwood Dr	-	-	-	-	-	-	-	-	3	4	0	7	7	4	0	11	5.0	4.0	0.0	9.0	25,000	1.86
PORT	West Norfolk Rd	Tyre Neck Rd	-	-	-	-	-	-	-	-	0	1	0	1	1	0	0	1	0.5	0.5	0.0	1.0	6,450	0.85
SH	Main St (Rte 35/58 Bus)	Meherrin Rd (Rte 35/58 Bus)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	6,500	0.00
SH	Route 189	Pretlow Rd	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0.3	0.0	0.0	0.3	2,700	0.25
SH	Route 258	Route 189	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0.0	0.5	0.0	0.5	5,300	0.78
SH	Route 35	General Thomas Hwy (Rte 671)	1	0	0	1	0	0	0	0	1	0	0	1	1	0	0	1	0.8	0.0	0.0	0.8	3,600	0.57

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012 and includes all crashes that occurred within 250' of the intersection. This table includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.
Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]
Portsmouth crash data from 2009 and 2010 is not included due to incomplete data. Average annual crashes for Portsmouth reflect an average of 2011 and 2012 crash data.

APPENDIX C (CONTINUED) - HAMPTON ROADS INTERSECTION CRASH DATA

Juris-diction	Major Road	Minor Road	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Entering Volume	EPDO Crash Rate
			PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
SH	Route 35	Ivor Rd (Route 616)	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0.3	0.0	0.0	0.3	3,750	0.18
SH	Route 35	Route 186	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	3,550	0.00
SH	Route 460	Route 616 (Main St)	0	0	0	0	0	1	0	1	1	0	0	1	0	1	0	1	0.3	0.5	0.0	0.8	10,100	0.47
SH	Route 58	Bus Route 58 (Camp Pkwy)	1	0	0	1	1	1	0	2	0	0	0	0	0	0	0	0	0.5	0.3	0.0	0.8	21,350	0.16
SH	Route 58	Bus Route 58 (Jerusalem Rd)	1	3	0	4	1	1	0	2	0	2	0	2	1	0	0	1	0.8	1.5	0.0	2.3	21,450	0.67
SUF	Bennetts Pasture Rd	Kings Hwy	2	2	0	4	0	3	0	3	0	1	0	1	3	1	0	4	1.3	1.8	0.0	3.0	8,395	2.12
SUF	Bridge Rd	Bennetts Pasture Rd/Bennetts Creek Ln	1	4	0	5	1	1	0	2	5	1	0	6	2	1	0	3	2.3	1.8	0.0	4.0	26,400	0.78
SUF	Bridge Rd	College Dr	3	4	0	7	6	7	0	13	5	5	0	10	4	5	0	9	4.5	5.3	0.0	9.8	28,500	1.95
SUF	Bridge Rd	Crittenden Rd	0	2	0	2	2	0	0	2	1	3	0	4	3	2	0	5	1.5	1.8	0.0	3.3	18,550	1.00
SUF	Bridge Rd	Harbour View Blvd	8	6	0	14	3	3	0	6	3	5	0	8	5	6	0	11	4.8	5.0	0.0	9.8	43,500	1.24
SUF	Bridge Rd	Shoulders Hill Rd/Knotts Neck Rd	8	2	0	10	8	2	0	10	2	3	0	5	3	3	0	6	5.3	2.5	0.0	7.8	33,800	1.03
SUF	Bridge Rd	Town Point Rd/Western Fwy Ramp	5	1	0	6	1	0	0	1	1	1	0	2	3	1	0	4	2.5	0.8	0.0	3.3	19,550	0.67
SUF	Carolina Rd	Copeland Rd	2	1	0	3	0	0	0	0	0	0	0	0	2	0	0	2	1.0	0.3	0.0	1.3	5,100	0.94
SUF	Carolina Rd/Whaleyville Blvd	Carolina Rd	3	0	0	3	2	0	0	2	1	1	0	2	2	1	0	3	2.0	0.5	0.0	2.5	15,750	0.61
SUF	College Dr	Hampton Roads Pkwy	6	3	0	9	3	4	0	7	2	2	0	4	2	3	0	5	3.3	3.0	0.0	6.3	27,800	1.21
SUF	College Dr	Harbour View Blvd/Armistead Rd	3	3	0	6	0	1	0	1	0	0	0	0	0	0	0	0	0.8	1.0	0.0	1.8	17,250	0.60
SUF	Constance Rd	Pinner St/Wilroy Rd	3	6	0	9	1	1	0	2	4	1	0	5	3	3	1	7	2.8	2.8	0.3	5.8	24,150	1.59
SUF	Constance Rd	Pitchkettle Rd/Prentis St	1	1	0	2	0	1	0	1	0	2	0	2	2	1	0	3	0.8	1.3	0.0	2.0	12,400	0.99
SUF	Everetts Rd	Lake Prince Dr	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.0	0.0	0.3	2,700	0.25
SUF	Godwin Blvd	Everetts Rd	0	0	0	0	0	0	0	0	1	0	0	1	2	1	0	3	0.8	0.3	0.0	1.0	12,850	0.32
SUF	Godwin Blvd	Kings Fork Rd	2	7	0	9	2	1	0	3	3	5	0	8	2	2	0	4	2.3	3.8	0.0	6.0	18,800	1.97
SUF	Godwin Blvd	Kings Hwy	1	1	0	2	1	3	0	4	1	1	0	2	2	1	0	3	1.3	1.5	0.0	2.8	12,650	1.25
SUF	Harbour View Blvd	Hampton Roads Pkwy/River Club Dr	1	0	0	1	3	2	0	5	0	1	0	1	1	2	0	3	1.3	1.3	0.0	2.5	23,000	0.60
SUF	Holland Rd/S Quay Rd	Ruritan Blvd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	2,785	0.00
SUF	Holland Rd/Suffolk Bypass	Holland Rd (Bus Rte 58)	9	6	0	15	6	5	0	11	5	3	0	8	2	2	0	4	5.5	4.0	0.0	9.5	40,000	1.20
SUF	Kings Fork Rd	Pitchkettle Rd	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0.0	0.5	0.0	0.5	3,250	1.26
SUF	Kings Fork Rd	Providence Rd	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0.5	0.0	0.0	0.5	3,000	0.46
SUF	Kings Hwy	Crittenden Rd	1	0	0	1	0	0	0	0	1	1	0	2	1	0	0	1	0.8	0.3	0.0	1.0	3,495	1.18
SUF	Main St	Constance Rd	12	6	0	18	4	2	0	6	8	5	0	13	8	11	0	19	8.0	6.0	0.0	14.0	37,500	1.90
SUF	Main St	Finney Ave	4	6	0	10	6	4	0	10	3	1	0	4	3	3	0	6	4.0	3.5	0.0	7.5	27,650	1.44
SUF	Main St	Market St	0	1	0	1	2	0	0	2	2	3	0	5	1	4	0	5	1.3	2.0	0.0	3.3	24,050	0.83
SUF	Main St	Washington St	7	6	0	13	3	3	0	6	2	3	0	5	3	1	0	4	3.8	3.3	0.0	7.0	26,800	1.38
SUF	Main St/Pruden Blvd	Godwin Blvd	5	1	0	6	2	3	0	5	3	2	0	5	6	5	0	11	4.0	2.8	0.0	6.8	28,000	1.20
SUF	Nansemond Pkwy	Bennetts Pasture Rd	2	3	0	5	1	1	0	2	1	1	0	2	4	3	0	7	2.0	2.0	0.0	4.0	11,900	1.84
SUF	Nansemond Pkwy	Kings Hwy	1	0	0	1	1	0	0	1	0	1	0	1	0	1	0	1	0.5	0.5	0.0	1.0	12,150	0.45
SUF	Nansemond Pkwy	Shoulders Hill Rd/Northgate Commerce Pkwy	1	0	0	1	1	2	0	3	1	1	0	2	2	3	0	5	1.3	1.5	0.0	2.8	18,900	0.83
SUF	Nansemond Pkwy	Wilroy Rd	3	2	0	5	2	0	0	2	1	0	0	1	2	1	0	3	2.0	0.8	0.0	2.8	11,950	0.97
SUF	Pinner St	Finney Ave	0	2	0	2	2	0	0	2	0	0	0	0	0	0	0	0	0.5	0.5	0.0	1.0	8,050	0.68
SUF	Portsmouth Blvd	Nansemond Pkwy/Washington St	5	6	0	11	3	8	0	11	4	7	0	11	2	7	0	9	3.5	7.0	0.0	10.5	28,200	2.38
SUF	Pruden Blvd (Rte 460)	Kings Fork Rd	1	1	0	2	0	0	0	0	3	3	0	6	2	1	0	3	1.5	1.3	0.0	2.8	22,500	0.64
SUF	Pruden Blvd (Rte 460)	Lake Prince Dr/Providence Rd	3	0	0	3	0	1	1	2	1	1	0	2	1	1	0	2	1.3	0.8	0.3	2.3	17,200	1.04
SUF	Pughsville Rd	Townpoint Rd	0	1	0	1	1	1	0	2	0	1	0	1	0	0	0	0	0.3	0.8	0.0	1.0	7,850	0.87
SUF	Route 189	Route 272	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0.0	0.5	0.0	0.5	2,850	1.44
SUF	Route 58	Buckhorn Dr	2	1	0	3	1	0	0	1	1	1	0	2	0	0	0	0	1.0	0.5	0.0	1.5	25,200	0.27
SUF	Route 58	Lummis Rd	3	6	0	9	1	0	0	1	1	3	0	4	0	0	0	0	1.3	2.3	0.0	3.5	25,700	0.85
SUF	Route 58	Route 189 (Holland)	0	0	0	0	1	1	0	2	1	1	0	2	0	0	0	0	0.5	0.5	0.0	1.0	20,835	0.26
SUF	Route 58	Route 272	1	0	0	1	0	0	0	0	1	1	0	2	0	0	0	0	0.5	0.3	0.0	0.8	21,200	0.16
SUF	Shoulders Hill Rd	Pughsville Rd/Rabey Farm Rd	4	1	0	5	2	3	0	5	5	1	0	6	1	1	0	2	3.0	1.5	0.0	4.5	10,950	1.88
SUF	Washington St	Market St/Wellons St	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.3	0.0	0.5	11,550	0.24
SUF	Washington St	Pinner St	1	2	0	3	1	1	0	2	3	1	0	4	0	1	0	1	1.3	1.3	0.0	2.5	13,950	0.98

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012 and includes all crashes that occurred within 250' of the intersection. This table includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.
Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]

APPENDIX C (CONTINUED) - HAMPTON ROADS INTERSECTION CRASH DATA

Juris-diction	Major Road	Minor Road	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Entering Volume	EPDO Crash Rate
			PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
SUF	Washington St/Holland Rd	Constance Rd	2	2	0	4	1	0	0	1	0	0	0	0	1	1	0	2	1.0	0.8	0.0	1.8	13,600	0.65
SUF	Whaleyville Blvd	Copeland Rd	2	0	0	2	0	1	0	1	0	1	0	1	0	1	0	1	0.5	0.8	0.0	1.3	10,285	0.73
SUR	Route 10	Route 31 (North)	0	1	0	1	0	1	0	1	1	0	0	1	0	0	0	0	0.3	0.5	0.0	0.8	6,350	0.76
SUR	Route 10	Route 31 (South)	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0.0	0.5	0.0	0.5	4,150	0.99
SUR	Route 10	Route 40	1	0	0	1	1	0	0	1	0	0	0	0	0	1	0	1	0.5	0.3	0.0	0.8	3,065	1.12
VB	Atlantic Ave	17th St/Va Beach Blvd	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1	0.5	0.0	0.0	0.5	15,200	0.09
VB	Atlantic Ave	21st St	2	0	0	2	1	1	0	2	1	0	0	1	3	1	0	4	1.8	0.5	0.0	2.3	11,700	0.76
VB	Atlantic Ave	22nd St	1	1	0	2	0	0	0	0	1	0	0	1	0	0	0	0	0.5	0.3	0.0	0.8	8,700	0.39
VB	Atlantic Ave	31st St	2	2	0	4	0	0	0	0	0	2	0	2	1	0	0	1	0.8	1.0	0.0	1.8	9,950	1.03
VB	Atlantic Ave	9th St/Norfolk Ave	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	0.3	0.3	0.0	0.5	10,000	0.27
VB	Atlantic Ave/Pacific Ave	Atlantic Ave	1	0	0	1	2	0	0	2	0	0	0	0	0	0	0	0	0.8	0.0	0.0	0.8	22,700	0.09
VB	Birdneck Rd	Norfolk Ave	7	2	0	9	7	3	0	10	5	3	0	8	2	3	0	5	5.3	2.8	0.0	8.0	16,000	2.31
VB	Birdneck Rd	Va Beach Blvd	9	6	0	15	8	4	0	12	11	11	0	22	9	8	0	17	9.3	7.3	0.0	16.5	33,000	2.57
VB	Blackwater Rd	Pungo Ferry Rd	0	1	0	1	1	1	0	2	0	0	0	0	1	0	0	1	0.5	0.5	0.0	1.0	3,950	1.39
VB	Bonney Rd	Constitution Dr	0	0	0	0	0	0	0	0	1	1	0	2	1	1	0	2	0.5	0.5	0.0	1.0	16,500	0.33
VB	Centerville Tpke	Lynnhaven Pkwy	0	8	0	8	6	2	0	8	1	4	0	5	5	1	0	6	3.0	3.8	0.0	6.8	19,900	1.96
VB	Constitution Dr	Columbus St	0	1	0	1	0	0	0	0	2	0	0	2	0	0	0	0	0.5	0.3	0.0	0.8	11,700	0.29
VB	Dam Neck Rd	Drakesmile Rd	12	4	0	16	13	3	0	16	6	3	0	9	11	4	0	15	10.5	3.5	0.0	14.0	51,500	1.12
VB	Dam Neck Rd	Harpers Rd	6	8	0	14	6	7	0	13	4	4	0	8	4	0	0	4	5.0	4.8	0.0	9.8	34,600	1.52
VB	Dam Neck Rd	Holland Rd	16	8	0	24	16	9	0	25	11	5	0	16	12	3	0	15	13.8	6.3	0.0	20.0	61,000	1.46
VB	Dam Neck Rd	London Bridge Rd	13	8	0	21	14	6	0	20	8	5	0	13	14	8	0	22	12.3	6.8	0.0	19.0	55,500	1.60
VB	Dam Neck Rd	Rosemont Rd	4	5	0	9	9	5	0	14	8	5	0	13	4	9	0	13	6.3	6.0	0.0	12.3	47,500	1.40
VB	Diamond Springs Rd	Wesleyan Dr	6	5	0	11	1	4	0	5	1	3	0	4	4	4	0	8	3.0	4.0	0.0	7.0	41,000	1.00
VB	Diamond Springs Rd/Newtown Rd	Newtown Rd	1	1	0	2	2	5	0	7	4	5	0	9	4	1	0	5	2.8	3.0	0.0	5.8	26,400	1.22
VB	Drakesmile Rd/London Bridge Rd	Shipps Corner Rd/London Bridge Rd	15	9	0	24	17	4	0	21	7	7	0	14	5	6	0	11	11.0	6.5	0.0	17.5	37,150	2.25
VB	Ferrell Pkwy	Indian Lakes Blvd	5	8	0	13	7	8	0	15	6	3	0	9	10	2	0	12	7.0	5.3	0.0	12.3	65,300	0.95
VB	Ferrell Pkwy/Indian River Rd	Indian River Rd	6	8	0	14	6	6	0	12	5	4	0	9	4	7	0	11	5.3	6.3	0.0	11.5	70,000	0.94
VB	First Colonial Rd	Laskin Rd	16	5	0	21	12	12	0	24	11	7	0	18	21	3	0	24	15.0	6.8	0.0	21.8	64,000	1.51
VB	First Colonial Rd	Va Beach Blvd	27	7	0	34	20	17	0	37	22	13	0	35	23	8	0	31	23.0	11.3	0.0	34.3	59,000	2.64
VB	General Booth Blvd	Birdneck Rd	5	3	0	8	1	4	0	5	9	1	0	10	3	1	0	4	4.5	2.3	0.0	6.8	32,700	0.94
VB	General Booth Blvd	Dam Neck Rd	29	6	0	35	37	15	0	52	21	8	0	29	21	8	0	29	27.0	9.3	0.0	36.3	67,000	2.24
VB	General Booth Blvd	London Bridge Rd/Red Mill Blvd	11	9	0	20	15	12	0	27	9	6	0	15	13	7	0	20	12.0	8.5	0.0	20.5	54,500	1.89
VB	General Booth Blvd	Nimmo Pkwy	5	5	0	10	8	4	0	12	11	6	0	17	10	3	0	13	8.5	4.5	0.0	13.0	53,500	1.13
VB	General Booth Blvd	Oceana Blvd/Prosperity Rd	10	10	0	20	16	7	0	23	11	5	0	16	10	6	0	16	11.8	7.0	0.0	18.8	64,000	1.40
VB	General Booth Blvd/Princess Anne Rd	Princess Anne Rd/Tuscany Dr	6	6	0	12	4	4	0	8	5	4	0	9	5	4	0	9	5.0	4.5	0.0	9.5	45,750	1.11
VB	Great Neck Rd	First Colonial Rd/Laurel Cove Dr	13	4	0	17	4	4	0	8	6	0	0	6	5	2	0	7	7.0	2.5	0.0	9.5	64,000	0.62
VB	Holland Rd	Nimmo Pkwy	-	-	-	-	-	-	-	-	-	-	-	-	2	0	0	2	2.0	0.0	0.0	2.0	13,500	0.41
VB	Holland Rd	Rosemont Rd	23	25	0	48	28	9	0	37	20	19	0	39	34	21	0	55	26.3	18.5	0.0	44.8	58,000	3.86
VB	Holland Rd	South Plaza Trail	11	7	0	18	17	3	0	20	3	6	0	9	5	3	0	8	9.0	4.8	0.0	13.8	49,500	1.29
VB	Holland Rd/Independence Blvd	Independence Blvd	5	2	0	7	7	3	0	10	3	2	0	5	9	6	0	15	6.0	3.3	0.0	9.3	78,000	0.55
VB	Independence Blvd	Baxter Rd/South Blvd	10	11	0	21	25	5	0	30	13	9	0	22	10	8	0	18	14.5	8.3	0.0	22.8	92,950	1.16
VB	Independence Blvd	Bonney Rd/Euclid Rd	23	11	0	34	22	3	0	25	17	5	0	22	25	11	0	36	21.8	7.5	0.0	29.3	88,550	1.37
VB	Independence Blvd	Columbus St	8	9	0	17	18	9	0	27	7	8	0	15	5	3	0	8	9.5	7.3	0.0	16.8	89,750	0.95
VB	Independence Blvd	Haygood Rd/Wishart Rd	7	2	0	9	7	3	0	10	7	3	0	10	8	3	0	11	7.3	2.8	0.0	10.0	56,750	0.75
VB	Independence Blvd	Pembroke Blvd	8	5	0	13	6	6	0	12	2	2	0	4	7	5	0	12	5.8	4.5	0.0	10.3	57,400	0.92
VB	Independence Blvd	South Plaza Trail	8	10	0	18	3	4	0	7	6	6	0	12	4	8	0	12	5.3	7.0	0.0	12.3	45,500	1.58
VB	Independence Blvd	Virginia Beach Blvd	21	12	0	33	20	7	0	27	16	13	0	29	20	12	0	32	19.3	11.0	0.0	30.3	110,500	1.30
VB	Indian River Rd	Centerville Tpke/Parkland Ln	17	8	0	25	14	11	0	25	5	3	0	8	11	7	0	18	11.8	7.3	0.0	19.0	80,000	1.15
VB	Indian River Rd	Independence Blvd	1	0	0	1	0	2	0	2	1	1	0	2	3	0	0	3	1.3	0.8	0.0	2.0	14,850	0.65
VB	Indian River Rd	Kempsville Rd	24	14	0	38	23	18	0	41	15	11	0	26	10	10	0	20	18.0	13.3	0.0	31.3	99,000	1.60

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012 and includes all crashes that occurred within 250' of the intersection. This table includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.
Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]

APPENDIX C (CONTINUED) - HAMPTON ROADS INTERSECTION CRASH DATA

Juris-diction	Major Road	Minor Road	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Entering Volume	EPDO Crash Rate
			PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
VB	Indian River Rd	Lynnhaven Pkwy	2	3	0	5	3	9	0	12	8	5	0	13	3	1	0	4	4.0	4.5	0.0	8.5	31,000	1.55
VB	Indian River Rd	Providence Rd	5	5	0	10	8	5	0	13	5	11	0	16	9	5	0	14	6.8	6.5	0.0	13.3	51,000	1.41
VB	Indian River Rd	West Neck Rd	2	1	0	3	4	5	0	9	1	2	0	3	1	2	0	3	2.0	2.5	0.0	4.5	12,650	2.06
VB	Indian River Rd (West)	Elbow Rd	1	1	0	2	1	0	0	1	4	1	0	5	1	2	0	3	1.8	1.0	0.0	2.8	10,100	1.29
VB	Indian River Rd/Elbow Rd	Indian River Rd (East)	3	0	0	3	0	2	0	2	2	2	0	4	1	2	0	3	1.5	1.5	0.0	3.0	11,300	1.45
VB	Indian River Rd/Indian Lakes Blvd	Indian River Rd/Settlers Park Dr	3	5	0	8	1	2	0	3	0	0	0	0	2	1	0	3	1.5	2.0	0.0	3.5	24,500	0.84
VB	Kempsville Rd	Centerville Tpke	18	6	0	24	15	9	0	24	8	9	0	17	7	5	0	12	12.0	7.3	0.0	19.3	54,000	1.71
VB	Kempsville Rd	Providence Rd	10	5	0	15	4	3	0	7	2	5	0	7	9	3	0	12	6.3	4.0	0.0	10.3	50,500	0.99
VB	Laskin Rd	Birdneck Rd	3	4	0	7	12	8	0	20	9	2	0	11	6	1	0	7	7.5	3.8	0.0	11.3	39,500	1.30
VB	London Bridge Rd	International Pkwy	1	2	0	3	0	3	0	3	8	3	0	11	8	2	0	10	4.3	2.5	0.0	6.8	36,500	0.88
VB	London Bridge Rd	Potters Rd	6	2	0	8	6	0	0	6	6	3	0	9	3	2	0	5	5.3	1.8	0.0	7.0	34,750	0.83
VB	Lynnhaven Pkwy	Holland Rd	7	10	0	17	16	3	0	19	17	13	0	30	20	9	0	29	15.0	8.8	0.0	23.8	61,000	1.85
VB	Lynnhaven Pkwy	Independence Blvd	14	15	0	29	7	12	0	19	19	16	0	35	11	5	0	16	12.8	12.0	0.0	24.8	54,500	2.45
VB	Lynnhaven Pkwy	International Pkwy/Mall Entrance	6	5	0	11	6	2	0	8	11	6	0	17	6	2	0	8	7.3	3.8	0.0	11.0	53,500	0.95
VB	Lynnhaven Pkwy	Potters Rd	18	11	0	29	11	8	0	19	9	4	0	13	8	10	0	18	11.5	8.3	0.0	19.8	75,500	1.32
VB	Lynnhaven Pkwy	Rosemont Rd	7	6	0	13	7	13	0	20	10	12	0	22	18	6	0	24	10.5	9.3	0.0	19.8	46,500	2.25
VB	Lynnhaven Pkwy	Salem Rd	4	2	0	6	7	5	0	12	2	3	0	5	5	2	0	7	4.5	3.0	0.0	7.5	38,000	0.97
VB	Military Hwy	Indian River Rd	15	10	0	25	19	15	0	34	14	4	0	18	18	8	0	26	16.5	9.3	0.0	25.8	68,000	1.78
VB	Military Hwy	Providence Rd	2	6	0	8	4	3	0	7	6	2	0	8	5	2	0	7	4.3	3.3	0.0	7.5	43,500	0.88
VB	Nimmo Pkwy	Upton Dr	0	2	0	2	4	4	0	8	9	4	0	13	5	3	0	8	4.5	3.3	0.0	7.8	21,000	1.86
VB	North Landing Rd	Indian River Rd	6	2	0	8	1	0	0	1	2	0	0	2	1	2	0	3	2.5	1.0	0.0	3.5	20,300	0.74
VB	North Landing Rd	Salem Rd	0	0	0	0	1	0	0	1	2	0	0	2	1	0	0	1	1.0	0.0	0.0	1.0	17,700	0.15
VB	North Landing Rd	West Neck Rd	3	0	0	3	4	2	0	6	3	1	0	4	2	0	0	2	3.0	0.8	0.0	3.8	20,350	0.71
VB	North Landing Rd/Princess Anne Rd	Princess Anne Rd	3	2	0	5	3	0	0	3	1	2	0	3	2	1	0	3	2.3	1.3	0.0	3.5	33,500	0.49
VB	Northampton Blvd	Diamond Springs Rd	5	6	0	11	14	3	0	17	14	8	0	22	19	12	0	31	13.0	7.3	0.0	20.3	74,500	1.28
VB	Oceana Blvd	Harpers Rd	5	2	0	7	4	1	0	5	5	2	0	7	5	3	0	8	4.8	2.0	0.0	6.8	37,550	0.78
VB	Pacific Ave	21st St	3	5	0	8	5	4	0	9	10	2	0	12	8	3	0	11	6.5	3.5	0.0	10.0	32,000	1.46
VB	Pacific Ave	22nd St	8	7	0	15	8	5	0	13	7	2	0	9	6	2	0	8	7.3	4.0	0.0	11.3	20,300	2.60
VB	Pacific Ave	Laskin Rd	9	1	0	10	6	1	0	7	1	0	0	1	4	3	0	7	5.0	1.3	0.0	6.3	35,400	0.68
VB	Pacific Ave	Norfolk Ave	1	0	0	1	1	0	0	1	0	0	0	0	4	2	0	6	1.5	0.5	0.0	2.0	27,500	0.30
VB	Pacific Ave	Va Beach Blvd	8	3	0	11	3	4	0	7	4	2	0	6	9	5	0	14	6.0	3.5	0.0	9.5	32,000	1.41
VB	Princess Anne Rd	Baxter Rd	8	6	0	14	11	6	0	17	7	6	0	13	8	5	0	13	8.5	5.8	0.0	14.3	43,500	1.62
VB	Princess Anne Rd	Dam Neck Rd	15	12	0	27	30	14	0	44	23	8	0	31	18	9	0	27	21.5	10.8	0.0	32.3	62,000	2.38
VB	Princess Anne Rd	Holland Rd	4	0	0	4	2	1	0	3	6	1	0	7	4	0	0	4	4.0	0.5	0.0	4.5	30,500	0.49
VB	Princess Anne Rd	Independence Blvd	4	3	0	7	13	5	0	18	13	3	0	16	10	6	0	16	10.0	4.3	0.0	14.3	62,700	0.99
VB	Princess Anne Rd	Indian River Rd	0	2	0	2	0	0	0	0	2	1	0	3	3	1	0	4	1.3	1.0	0.0	2.3	15,550	0.75
VB	Princess Anne Rd	Kempsville Rd/Witchduck Rd	7	7	1	15	4	1	0	5	3	5	0	8	6	7	0	13	5.0	5.0	0.3	10.3	62,500	1.01
VB	Princess Anne Rd	Lynnhaven Pkwy	15	13	0	28	16	10	0	26	16	14	0	30	18	5	0	23	16.3	10.5	0.0	26.8	74,000	1.77
VB	Princess Anne Rd	Nimmo Pkwy	2	0	0	2	2	0	0	2	4	1	0	5	3	3	0	6	2.8	1.0	0.0	3.8	31,500	0.50
VB	Princess Anne Rd	Plaza Trail/Providence Rd	6	5	0	11	6	5	0	11	2	2	0	4	12	3	0	15	6.5	3.8	0.0	10.3	47,500	1.02
VB	Princess Anne Rd	Pungo Ferry Rd	0	3	0	3	2	1	0	3	1	0	0	1	0	1	0	1	0.8	1.3	0.0	2.0	7,900	1.56
VB	Princess Anne Rd	Salem Rd/Windsor Oaks Blvd	5	5	0	10	2	7	0	9	5	4	0	9	6	4	0	10	4.5	5.0	0.0	9.5	50,200	1.06
VB	Princess Anne Rd	Seaboard Rd (North)	2	1	0	3	5	1	0	6	4	2	0	6	8	4	0	12	4.8	2.0	0.0	6.8	26,500	1.11
VB	Princess Anne Rd	Seaboard Rd (South)	2	1	0	3	0	0	0	0	2	0	0	2	0	0	0	0	1.0	0.3	0.0	1.3	13,500	0.36
VB	Princess Anne Rd/Sandbridge Rd	Upton Dr/Princess Anne Rd	6	3	0	9	2	4	0	6	6	1	0	7	2	2	0	4	4.0	2.5	0.0	6.5	30,500	1.03
VB	Rosemont Rd	Bonney Rd/I-264 Ramp	14	4	0	18	14	1	1	16	8	2	0	10	12	7	0	19	12.0	3.5	0.3	15.8	42,500	1.64
VB	Rosemont Rd	South Plaza Trail	9	4	0	13	5	1	0	6	4	2	0	6	4	2	0	6	5.5	2.3	0.0	7.8	44,500	0.75
VB	Salem Rd	Dam Neck Rd/Elbow Rd	5	0	0	5	3	5	0	8	8	2	0	10	10	7	0	17	6.5	3.5	0.0	10.0	20,700	2.25
VB	Salem Rd	Independence Blvd	7	2	0	9	1	3	0	4	5	2	0	7	4	2	0	6	4.3	2.3	0.0	6.5	25,400	1.19
VB	Shore Dr	Diamond Springs Rd	5	3	1	9	6	1	0	7	6	2	0	8	4	1	0	5	5.3	1.8	0.3	7.3	42,000	0.88

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012 and includes all crashes that occurred within 250' of the intersection. This table includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.
Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]

APPENDIX C (CONTINUED) - HAMPTON ROADS INTERSECTION CRASH DATA

Juris-diction	Major Road	Minor Road	2009 Crashes				2010 Crashes				2011 Crashes				2012 Crashes				Average Annual Crashes				Average Daily Entering Volume	EPDO Crash Rate
			PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total	PDO	INJ	FAT	Total		
VB	Shore Dr	Great Neck Rd	6	2	0	8	8	5	0	13	5	3	0	8	7	4	0	11	6.5	3.5	0.0	10.0	46,250	1.01
VB	Shore Dr	Independence Blvd/Little Creek Gate 5	5	3	0	8	3	4	0	7	3	2	0	5	5	5	0	10	4.0	3.5	0.0	7.5	35,500	1.12
VB	Shore Drive/Atlantic Ave	Atlantic Ave	1	1	0	2	1	1	0	2	1	0	0	1	0	0	0	0	0.8	0.5	0.0	1.3	19,450	0.32
VB	Va Beach Blvd	Constitution Dr	13	7	0	20	10	8	0	18	14	2	0	16	10	2	0	12	11.8	4.8	0.0	16.5	57,700	1.23
VB	Va Beach Blvd	Great Neck Rd/London Bridge Rd	17	9	1	27	20	6	0	26	14	14	0	28	25	9	0	34	19.0	9.5	0.3	28.8	75,500	1.83
VB	Va Beach Blvd	Lynnhaven Pkwy	2	8	0	10	1	3	0	4	3	3	0	6	5	4	0	9	2.8	4.5	0.0	7.3	56,000	0.80
VB	Va Beach Blvd	Rosemont Rd	9	3	0	12	13	11	0	24	11	2	0	13	9	4	0	13	10.5	5.0	0.0	15.5	68,000	1.03
VB	Va Beach Blvd	South Plaza Trail/Little Neck Rd	8	6	0	14	8	2	0	10	8	9	0	17	13	4	0	17	9.3	5.3	0.0	14.5	59,500	1.15
VB	Va Beach Blvd	Witchduck Rd	7	10	0	17	9	5	0	14	5	5	1	11	6	1	0	7	6.8	5.3	0.3	12.3	68,500	1.02
VB	Wesleyan Dr/Haygood Rd	Haygood Rd	1	2	0	3	2	1	0	3	1	1	0	2	1	0	0	1	1.3	1.0	0.0	2.3	22,550	0.52
WMB	Boundary St	Francis St	2	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.5	0.0	1.0	12,600	0.43
WMB	Boundary St	Jamestown Rd	0	0	0	0	1	3	0	4	1	0	0	1	2	1	0	3	1.0	1.0	0.0	2.0	19,000	0.58
WMB	Bypass Rd	Route 132	2	1	0	3	2	1	0	3	4	0	0	4	1	5	0	6	2.3	1.8	0.0	4.0	29,400	0.70
WMB	Capitol Landing Rd/Merrimac Trail	Merrimac Trail	2	2	0	4	1	2	0	3	0	0	0	0	2	1	0	3	1.3	1.3	0.0	2.5	11,450	1.20
WMB	Colonial Pkwy	Route 132Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	7,650	0.00
WMB	Francis St	Henry St	1	1	0	2	3	1	0	4	1	3	0	4	2	4	0	6	1.8	2.3	0.0	4.0	11,650	2.00
WMB	Henry St	Route 132Y	2	3	0	5	2	3	0	5	4	2	0	6	5	7	0	12	3.3	3.8	0.0	7.0	10,850	3.66
WMB	Ironbound Rd	Longhill Rd	0	1	0	1	0	0	0	0	1	1	0	2	0	0	0	0	0.3	0.5	0.0	0.8	13,500	0.36
WMB	Ironbound Rd	Treyburn Dr	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0.0	0.3	0.0	0.3	10,600	0.19
WMB	Lafayette St	Henry St	2	1	0	3	1	1	0	2	1	2	0	3	1	0	0	1	1.3	1.0	0.0	2.3	15,250	0.76
WMB	Lafayette St/York St	Page St/Francis St	2	1	0	3	0	0	0	0	1	1	0	2	3	0	0	3	1.5	0.5	0.0	2.0	20,900	0.39
WMB	Monticello Ave	Treyburn Dr	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0.3	0.0	0.0	0.3	19,750	0.03
WMB	Page St	Second St	1	2	0	3	1	0	0	1	1	0	0	1	1	1	0	2	1.0	0.8	0.0	1.8	21,500	0.41
WMB	Page St/Capitol Landing Rd	Bypass Rd	1	2	0	3	2	3	0	5	1	3	0	4	1	4	0	5	1.3	3.0	0.0	4.3	17,950	1.56
WMB	Richmond Rd	Bypass Rd	3	2	0	5	3	1	0	4	2	2	0	4	2	1	0	3	2.5	1.5	0.0	4.0	33,500	0.57
WMB	Richmond Rd	Ironbound Rd	0	1	0	1	1	3	0	4	2	4	0	6	0	1	0	1	0.8	2.3	0.0	3.0	30,000	0.68
WMB	Richmond Rd	Lafayette St/Monticello Ave	2	2	0	4	6	2	0	8	1	3	0	4	2	1	0	3	2.8	2.0	0.0	4.8	29,150	0.82
WMB	Route 199	Jamestown Rd	3	7	0	10	3	4	0	7	6	6	0	12	10	6	0	16	5.5	5.8	0.0	11.3	49,000	1.27
YC	Ballard St	Colonial Pkwy	0	0	0	0	1	0	0	1	0	3	0	3	0	0	0	0	0.3	0.8	0.0	1.0	7,600	0.90
YC	Ballard St	Cook Rd	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0.0	0.3	0.0	0.3	6,950	0.30
YC	Bypass Rd	Waller Mill Rd	1	5	0	6	0	0	0	0	2	2	0	4	5	1	0	6	2.0	2.0	0.0	4.0	27,150	0.81
YC	Cook Rd	Goosley Rd	0	1	0	1	0	2	0	2	1	3	0	4	0	0	0	0	0.3	1.5	0.0	1.8	6,850	1.90
YC	George Washington Hwy	Cook Rd/York Warwick Dr	2	1	0	3	4	1	0	5	3	4	0	7	3	4	0	7	3.0	2.5	0.0	5.5	34,400	0.84
YC	George Washington Hwy	Denbigh Blvd/Goodwin Neck Rd	3	2	0	5	4	3	0	7	3	7	0	10	5	2	0	7	3.8	3.5	0.0	7.3	46,750	0.84
YC	George Washington Hwy	Fort Eustis Blvd	8	7	0	15	5	6	0	11	6	6	0	12	7	4	0	11	6.5	5.8	0.0	12.3	45,150	1.44
YC	George Washington Hwy	Goosley Rd	2	1	0	3	3	0	0	3	3	3	0	6	6	2	0	8	3.5	1.5	0.0	5.0	32,950	0.67
YC	George Washington Hwy	Victory Blvd	6	6	0	12	7	6	0	13	14	4	0	18	7	8	0	15	8.5	6.0	0.0	14.5	76,500	0.95
YC	Hampton Hwy	Big Bethel Rd	1	4	0	5	3	2	0	5	5	3	0	8	3	6	0	9	3.0	3.8	0.0	6.8	32,050	1.22
YC	Old Williamsburg Rd	Goosley Rd	0	1	0	1	0	1	0	1	4	1	0	5	4	1	0	5	2.0	1.0	0.0	3.0	8,950	1.53
YC	Route 143	Rochambeau Dr/I-64 Ramp	3	5	0	8	4	1	0	5	6	5	0	11	9	6	0	15	5.5	4.3	0.0	9.8	22,600	2.21
YC	Route 143	Route 132	5	3	0	8	1	1	0	2	2	2	0	4	4	2	0	6	3.0	2.0	0.0	5.0	18,050	1.37
YC	Route 199	Penniman Rd/Tranquility Dr	2	0	0	2	0	0	0	0	1	1	0	2	2	0	0	2	1.3	0.3	0.0	1.5	8,400	0.65
YC	Second St/Merrimac Trail	Merrimac Trail	1	1	0	2	4	0	0	4	4	0	0	4	1	1	0	2	2.5	0.5	0.0	3.0	19,050	0.58
YC	Victory Blvd	Big Bethel Rd	7	3	0	10	2	6	0	8	3	2	0	5	2	1	0	3	3.5	3.0	0.0	6.5	24,550	1.39
YC	Victory Blvd	East Yorktown Rd/Carys Chapel Rd	1	0	0	1	2	1	0	3	2	3	0	5	2	1	0	3	1.8	1.3	0.0	3.0	21,400	0.70
YC	Victory Blvd	Hampton Hwy	7	5	0	12	10	2	0	12	5	1	0	6	10	7	0	17	8.0	3.8	0.0	11.8	47,500	1.11
YC	Waller Mill Rd	Mooretown Rd	0	1	0	1	1	1	0	2	1	0	0	1	0	0	0	0	0.5	0.5	0.0	1.0	7,400	0.74

Source: HRTPO analysis of VDOT data. Data reflects the years from 2009 to 2012 and includes all crashes that occurred within 250' of the intersection. This table includes those intersections that are part of the Hampton Roads CMP network as defined in this study.
EPDO = Equivalent Property Damage Only. FAT = Number of crashes with at least one fatality. INJ = Number of crashes with at least one injury but no fatalities. PDO = Number of crashes with property damage only.
Average Daily Entering Volume = The total number of vehicles entering the intersection each day. It is equal to half of the Annual Average Daily Traffic (AADT) volumes from each roadway segment adjacent to the intersection.
Intersection EPDO Crash Rate (per million entering vehicles) = [1,000,000 x (Annual PDO Crashes + 3 x Annual INJ Crashes + 12 x Annual FAT Crashes)] / [365 x Average Daily Volume Entering the Intersection]

APPENDIX D – PUBLIC REVIEW AND COMMENTS

As part of the Hampton Roads Transportation Planning Organization's (HRTPO) efforts to provide opportunities for the public to review and comment on this draft report prior to the final product being published, a two-week public comment period was provided. The public review period for the draft version of this study was conducted from September 4, 2013, through September 18, 2013. Received public comments are shown below:

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HRTPO Public Comment (via email)

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RE: Public Comment Regarding the Hampton Roads Regional Safety Study Draft Report (HRTPO Staff Response Follows Public Comment)

Name: Bruce Drees
Date: September 9, 2013
Subject: Comments on Hampton Roads Regional Safety Study

Thank you for forwarding the draft safety report and for the opportunity to comment.

In general this appears to be a very well done report highlighting overall crash and fatality occurrences throughout Hampton Rds.

From a bicycling standpoint I recommend considering changing one sentence. On page 13 (pdf page 17), under "Crash Characteristics Summary" we recommend changing "Most fatal crashes involve drivers traveling under the influence of alcohol, speeding, not using safety belts, or traveling on motorcycles, bicycles, or as pedestrians" to break the implied message that certain modes are causal factors on the same level with alcohol use, speeding, etc. While I understand the intent is to highlight the predominant themes in your analysis it might not come across that way to others.

My only other comment on the report itself is that I hope that HRTPO's transportation planners can encourage our cities and VDOT to analyze and implement measures to bring the bicyclist and pedestrian fatality rates down. TBA feels that our Highway Safety Program (HSIP) spending (and other sources) should target the over representation of non-motorized road users in your report with both infrastructure improvements as well as education.

As a League of American Bicyclists certified cycling instructor (LCI) I spend a lot of time monitoring crash trends for items to focus on. Most of what we can get at publicly is helpful though limited. For example, we know that for suburban areas such as Va Beach there is a clear association with the roadway classification, i.e. 66% of the crashes over 4 years were on urban arterials in a study that I did. Time of day and day of week are other reliable predictors. What we lack is actionable information on crash types (including what the driver and the cyclist were doing at the time of the crash) as well as cyclist demographics.

How do we use these? We can teach effective preventive and avoidance maneuvers for many of the crash types involving bicyclists, and the demographics data tell us which segments of the population we need to get close to in marketing our efforts to train better cyclists. In short both are helpful as we seek to focus our efforts and limited resources where they will do the most good.

Last, we look forward to reading the final report.

Feel free to give me a call if TBA can of further assistance.

Best regards,
Bruce Drees

HRTPO Staff Response:
Bruce,

Thank you for taking the time to review the Hampton Roads Regional Safety Study and providing us with your helpful comments. Based on your response, I have updated the Crash Characteristics Summary section to say the following:

"Crashes are caused by a variety of factors, most of which are the result of driver error such as following too close and failing to yield the right of way. Most fatal crashes in Hampton Roads, however, are primarily caused by a small number of factors, including drivers traveling under the influence of alcohol, speeding, or not using safety belts. Many fatal crashes involve more than one of these factors, such as drivers traveling at a high rate of speed under the influence of alcohol and not wearing a safety belt. The number of fatalities involving motorcycle users, bicyclists, and pedestrians is also highly overrepresented compared to their amount of travel."

I also wanted to mention that HRTPO long-range planning staff plans to use the bicyclist and pedestrian crash data from this study to refine the project prioritization process. We can forward you this regional bicyclist and pedestrian crash data if you think it will help with your planning efforts. Unfortunately, as you mentioned, our data also doesn't include much information on what the driver and the cyclist were doing at the time of the crash or cyclist demographics.

If you have any additional questions or comments, please feel free to submit them to us.

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HRTPO Public Comment (via email)

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RE: Public Comment Regarding the Hampton Roads Regional Safety Study Draft Report (HRTPO Staff Response Follows Public Comment)

Name: Marcus White
Date: September 18, 2013
Subject: Comments on Hampton Roads Regional Safety Study

Coming in under the wire...as today is the last day to "comment" on the recent Safety Study. First comment: This document is a masterpiece! It has more information delivered more ways than I have ever seen before. GREAT JOB!

Second: This may not be available now or maybe not in the future as it would require extensive law enforcement time & energy (=$$$). With the current study we have all the where's, how many's, and other data that helps identify problems - but - is there some way to drill down on the "who's"? Specifically, if law enforcement shared the ages of the "at fault" drivers involved, years of experience driving, and very importantly what training they had, where it was obtained and when. I believe this information could show all of us in the safe driving promotion world where we should focus our time and energy and maybe provide enough info to initiate helpful legislation. The information would only identify numbers - not individuals.

Thank you all very much for what you do,

Marcus W. White

HRTPO Staff Response:
Marcus,

Thank you for taking the time to review the Hampton Roads Regional Safety Study and for the compliments. We greatly appreciate it when we receive feedback on our work and hear that it is being used.

Regarding your comment about additional information on at-fault drivers, some of this information is collected. Police currently record the age of each driver involved in the crash, and those drivers that were ticketed as a result of the crash. Although this data is not included in the raw crash data that we receive from VDOT and DMV, they should have this information. Years of experience could probably be extracted from DMV records as well, at least for those drivers that were originally licensed in Virginia. However, I've never heard of any information being available regarding the training of each driver. DMV may have this information but I'm not sure.

If you have any additional questions or comments regarding this study, please feel free to submit them to us.