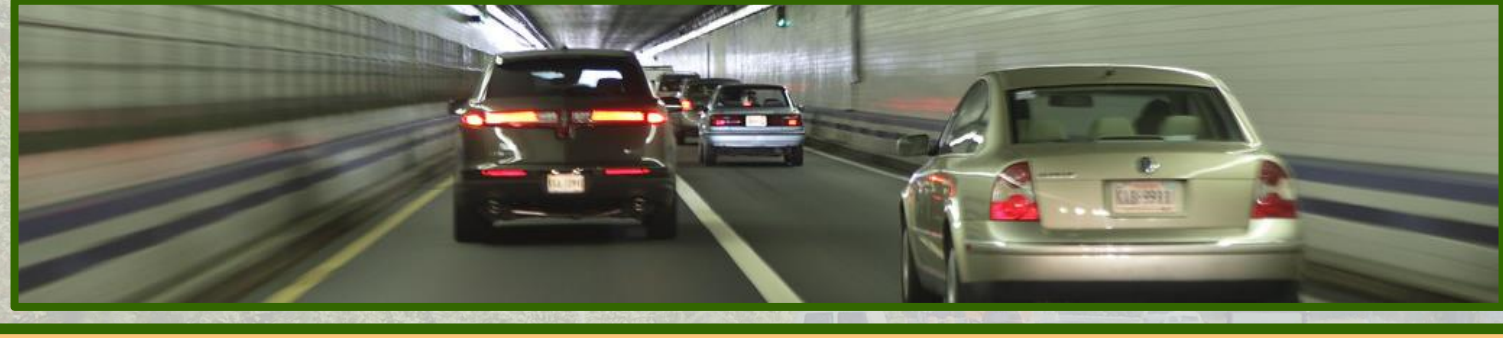
The State of Transportation in Hampton Roads 2019



HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

OCTOBER 2019

T19-10

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INVITED PARTICIPANT
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Stephen A. Johnsen, Commonwealth Transportation Board
W. Sheppard Miller, Commonwealth Transportation Board

HRTPO PROJECT STAFF

Robert Crum	Executive Director
Mike Kimbrel	Deputy Executive Director
Keith Nichols	Principal Transportation Engineer
Andrew Margason	General Services Manager
Chris Vaigneur	Assistant General Services Manager

THE STATE OF TRANSPORTATION IN HAMPTON ROADS 2019

PREPARED BY:

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

OCTOBER 2019

T19-10

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AUTHOR/PROJECT MANAGER
Keith M. Nichols, PE

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ORGANIZATION CONTACT INFORMATION
Hampton Roads Transportation Planning Organization
723 Woodlake Drive
Chesapeake, Virginia 23320
(757) 420-8300
http://www.hrtpo.org

ABSTRACT

This annual report details the current status of all facets of the transportation system in Hampton Roads, including air, rail, water, and highways. Many aspects of the highway system are highlighted, including roadway usage, bridge conditions, costs of congestion, commuting characteristics, roadway safety, truck data, transit usage, bicycle and pedestrian facilities, highway funding, tolling, and operations.

This report is produced as part of the region's Congestion Management Process (CMP). The Congestion Management Process is an on-going process that identifies, develops, evaluates, and implements transportation strategies to enhance mobility regionwide. This report is also produced as part of the HRTPO's Performance Management effort.

NON-DISCRIMINATION

The HRTPO assures that no person shall, on the ground of race, color, national origin, handicap, sex, age, or income status as provided by Title VI of the Civil Rights Act of 1964 and subsequent authorities, be excluded from participation in, be denied the benefits of, or be otherwise subject to discrimination under any program or activity. The HRTPO Title VI Plan provides this assurance, information about HRTPO responsibilities, and a Discrimination Complaint Form.

ACKNOWLEDGMENTS

Prepared in cooperation with the U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), and Virginia Department of Transportation (VDOT). The contents of this report reflect the views of the Hampton Roads Transportation Planning Organization (HRTPO). The HRTPO 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, VDOT or Hampton Roads Planning District Commission. This report does not constitute a standard, specification, or regulation. FHWA or VDOT acceptance of this report as evidence of fulfillment of the objectives of this planning study 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.

TABLE OF CONTENTS

HIGH RISE BRIDGE CONSTRUCTION

Image Source: VDOT

INTRODUCTION

A number of transportation improvements that only a few years ago would have been considered "once in a lifetime" in Hampton Roads are underway or will begin construction soon. These projects include new tunnels, widened interstates, improved bridges, port expansions, and more.

There are a number of major roadway construction projects in Hampton Roads that have recently been completed. These projects include an additional tube at the Midtown Tunnel, the Martin Luther King Freeway Extension, Phases I and II of I-64 widening on the Peninsula, upgrading the Dominion Boulevard corridor including the new fixed-span Veterans Bridge, the I-564 Intermodal Connector, the replacement of the Lesner Bridge in Virginia Beach, and the first phase of the I-64 Express Lanes network.

Construction is currently underway on three other Regional Priority Projects – Phase III of I-64 widening on the Peninsula, widening I-64 in Chesapeake (including the High Rise Bridge), and improvements to the I-64/I-264 interchange in Norfolk and Virginia Beach – that are primarily being funded by the Hampton Roads Transportation Accountability Commission (HRTAC) with the regional Hampton Roads Transportation Fund (HRTF). In addition, construction is underway on a parallel tube at the Chesapeake Bay Bridge-Tunnel. Construction will start soon on another Regional Priority Project, the $3.8 billion widening of the Hampton Roads Bridge-Tunnel and adjacent sections of I-64.

I-64 CONSTRUCTION

Image Source: VDOT.

Transportation improvements in Hampton Roads have not been limited to the highway network. The Port of Virginia has nearly completed $700 million in projects to greatly improve and expand Norfolk International Terminals and the Virginia International Gateway facility, and plans are underway to widen and deepen the shipping channels to the port. Millions of dollars of improvements have been made in the last few years at both of the region's commercial service airports (Norfolk International and Newport News-Williamsburg International). A new Amtrak station was built in Norfolk, and construction is expected to begin in the next year on a new multi-modal station near Bland Boulevard in Newport News.

However, even with all of these projects in Hampton Roads, there continue to be challenges. Funding levels have been lower than anticipated in recent years due to lower fuel prices. In spite of increased funding, many important transportation projects have no funding identified. The 2040 Hampton Roads Long-Range Transportation Plan identified $40 billion in candidate projects, but less than $13 billion is projected to be available. Funding for bridge and roadway maintenance will need to increase as transportation infrastructure continues to age. In addition, congestion will continue to be prevalent in many areas of the region.

This State of Transportation report details the current status of all facets of the transportation system in Hampton Roads, including air, rail, water, and highways. Many aspects of the highway system are highlighted, including roadway usage, pavement condition, bridge condition, congestion, commuting characteristics, roadway safety, truck data, transit usage, active transportation, transportation financing, tolling, transportation operations, and air quality.

This report is produced as part of the HRTPO's Congestion Management Process (CMP), which is an ongoing program that identifies, develops, evaluates, and implements transportation strategies to enhance mobility regionwide. The Hampton Roads Congestion Management Process report includes a comprehensive congestion analysis of the region's highway system, identification of the most congested corridors and areas of Hampton Roads, and congestion management strategies. This report and all other CMP documents are available on HRTPO's website at **http://www.hrtpo.org/page/congestion-management**.

LESNER BRIDGE

Image Source: Virginia Beach

This report is also produced as part of HRTPO's Performance Management effort. In 2009, the Virginia General Assembly passed legislation codifying regional transportation performance measurement and in response, HRTPO staff developed a list of regional performance measures. In addition, new federal regulations require states and metropolitan areas to use performance measures and set targets in areas such as pavement and bridge condition, freight, travel time reliability, transit, and safety. More information on HRTPO's Performance Management effort is available on HRTPO's website at **http://www.hrtpo.org/page/performance-management**.

AIR TRAVEL

After a decade of decreases, passenger levels began to increase at Hampton Roads airports in 2016. This growth has contributed to an increase in the number of flights and nonstop destinations to the region.

The number of passengers using commercial air service in Hampton Roads has increased over the last three years after seeing decreases every year since 2007. Over two million passengers boarded flights at the two commercial service airports in Hampton Roads – Norfolk International Airport and Newport News-Williamsburg International Airport – in 2018. The number of passengers using the region's airports has decreased 7% over the last decade but has increased 19% from the low seen in 2015.

Most of the decrease in regional passenger levels over the last decade occurred at Newport News-Williamsburg International Airport. This is primarily due to the departure of the dominant carrier, AirTran Airways, from the airport in 2012. In addition, Allegiant Air, Frontier Airlines, and People Express have discontinued service from Newport News-Williamsburg in recent years.

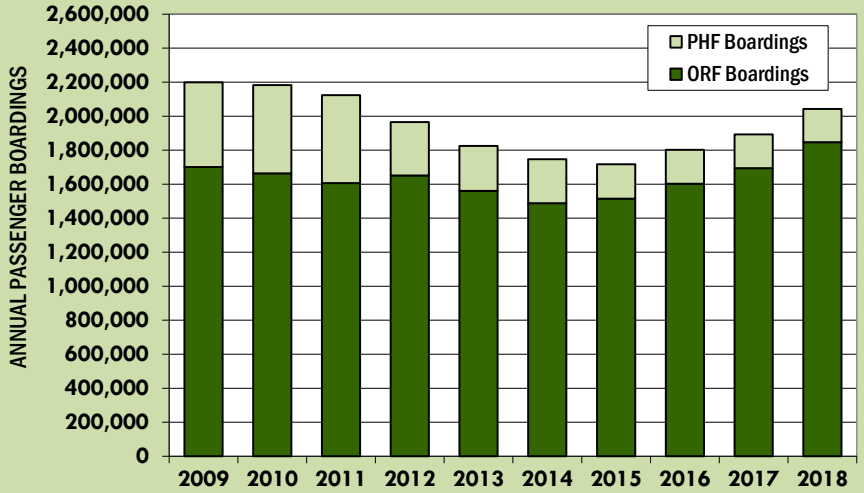
NOTABLE AIR TRAVEL NUMBERS

7% ▼ The decrease in the number of passengers that used Hampton Roads airports between 2009 and 2018.

34% ▲ The increase in capacity (in terms of available seat-miles) at Hampton Roads airports between 2015 and 2018.

21% ▲ The increase in average airfare at Norfolk International Airport between 2009 and 2018. At Newport News-Williamsburg International Airport, the average airfare increase was 62%.

ANNUAL PASSENGER BOARDINGS AT HAMPTON ROADS AIRPORTS, 2009-2018



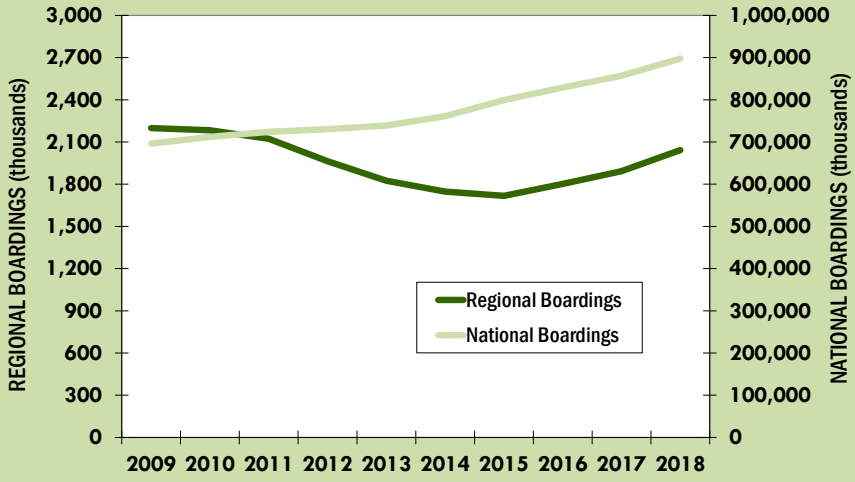
Data sources: Federal Aviation Administration, Norfolk International Airport (ORF) and Newport News-Williamsburg International Airport (PHF). Boardings represent only those passengers that board airplanes at each airport.

While passenger levels at Hampton Roads airports decreased by 7% over the last decade, passenger levels at Richmond International Airport increased by 24%, and nationally, passenger levels increased by 29% between 2009 and 2018.

Airfares at Hampton Roads airports have decreased over the last four years, after increasing earlier in the decade. In 2009, average airfares at Norfolk International Airport were $331, which was about $17 higher than the national average. At Newport News-Williamsburg International Airport, airfares ($284) were well below the national average, driven by low-cost carrier service. By the end of 2018, the average airfare at Norfolk International Airport had increased 21% to $399, and 62% at Newport News-Williamsburg International Airport to $461. Both were above the national average airfare of $359. However, average airfares decreased by $64 at Norfolk International between the end of 2014 and 2018 and decreased by $7 at Newport News-Williamsburg International.

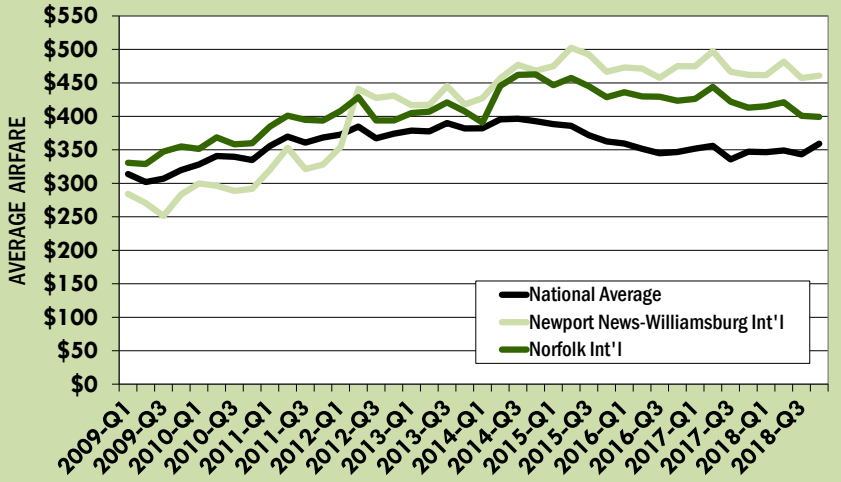
It should be noted that these airfares only reflect the costs associated with ticket fares and do not include additional fees

ANNUAL PASSENGER BOARDINGS AT HAMPTON ROADS AND NATIONAL AIRPORTS, 2009-2018



Data sources: Federal Aviation Administration, Norfolk International Airport (ORF) and Newport News-Williamsburg International Airport (PHF). Boardings represent only those passengers that board airplanes at each airport.

AVERAGE AIRFARES FOR HAMPTON ROADS AND NATIONAL AIRPORTS, 2009-2018



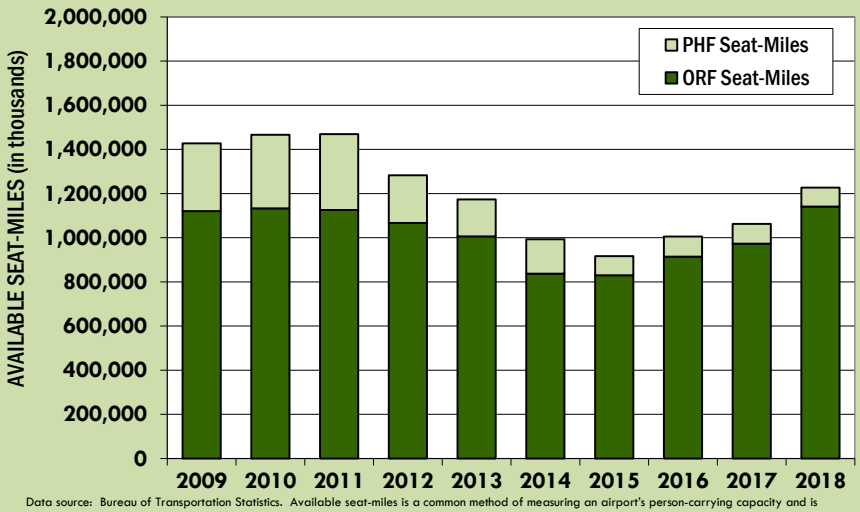
Data source: Bureau of Transportation Statistics. Average fares are based on domestic itinerary fares consisting of round-trip fares unless the customer does not purchase a return trip, in which case the one-way fare is included. Fares are based on the total ticket value (including any additional taxes and fees) and do not include other fees (such as baggage fees) paid at the airport or onboard the aircraft.

that have expanded in recent years for checked baggage, seat assignments, ticket changes, early check-in, snacks, etc.

The number of flights departing from Hampton Roads airports decreased throughout the last decade but has increased over the last few years. As of August 2019, an average of 97 commercial flights depart from Hampton Roads airports each day. This is an increase from 82 flights offered each day in 2018 and 75 flights offered daily in 2017 but remains lower than the 110 flights offered each day as recently as 2010.

The increase in the number of flights from Hampton Roads airports over the last few years has resulted in an increase in the number of available seat-miles, a common method of measuring an airport's person-carrying capacity. There were 1.22 billion seat-miles available on flights departing Hampton Roads in 2018. While this is down 14% from 1.43 billion

ANNUAL AVAILABLE SEAT-MILES AT HAMPTON ROADS AIRPORTS, 2009-2018



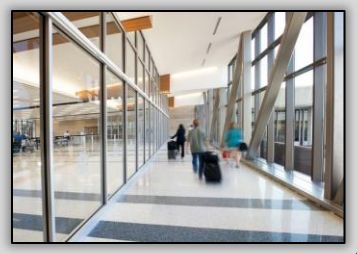
Data source: Bureau of Transportation Statistics. Available seat-miles is a common method of measuring an airport's person-carrying capacity and is equal to the number of seats available multiplied by the number of miles flown.

BEHIND THE NUMBERS

Passenger levels and airline capacity (in terms of nonstop flights and available seat-miles) have rebounded in Hampton Roads over the last three years. However, volumes decreased each year prior to 2015, and Hampton Roads airports experienced a decrease in passenger volumes and capacity overall between 2009 and 2018. This decrease, however, was not atypical of similar-sized airports throughout the country. Of the 100 airports classified as "small" or "medium" by the Federal Aviation Administration (which includes Norfolk International), passenger levels decreased at 21 airports between 2009 and 2018, and capacity (in terms of available domestic seat-miles) decreased at 24 of the 100 "small" and "medium" airports during this time.

There are a number of factors that caused this decrease. While some causes are specific to Hampton Roads such as the effects of government sequestration, many are a symptom of the state of the airline industry such as airline consolidation and reducing the number of hubs.

However, since 2015, passenger volumes have increased at Hampton Roads airports, and the increase in passenger levels and capacity in Hampton Roads has outpaced many similar-sized airports. Among the 100 "small" and "medium" airports, Norfolk International ranked 36th highest in terms of the largest percentage growth in passenger volumes between 2015 and 2018 and 29th highest in terms of capacity growth in available seat-miles.



seat-miles in 2009, it has increased 34% since 2015. The load factors (which are passenger-miles as a proportion of available seat-miles) have followed an inverse pattern, peaking in 2015 at both Norfolk International (84.3%) and Newport News-Williamsburg International (82.3%), before decreasing in 2018 to 81.0% at Norfolk International and 80.8% at Newport News-Williamsburg International.

As of August 2019 there are a total of 31 airports in 24 markets served nonstop from Hampton Roads. Norfolk International Airport has nonstop flights to all of these airports and markets, while 3 airports/ markets are served nonstop from Newport News-Williamsburg International Airport.

A number of markets lost nonstop service from Hampton Roads airports over the last decade. Most of these markets served as hubs for airlines that reduced service through consolidation in the airline industry. However, nonstop service from Hampton Roads to many of these markets, including Boston, Cleveland, Denver, Jacksonville, Las Vegas, and Tampa, has restarted in recent years.

The most popular final destination for passengers using Hampton Roads airports in 2018 was Chicago, with a total of

NEW DEVELOPMENTS

Airport Improvements – Major terminal renovations were recently completed at Norfolk International Airport. These renovations include the lobby atrium area, concourses, restrooms, ticketing areas, and security checkpoints. A number of retail storefronts were upgraded and many of the dining options were replaced with more local and healthy selections. In addition to these renovations, construction will begin this fall on a new 9-story parking garage that will replace long-term and employee surface lots.


RENOVATED ORF CONCOURSE Source: NIA.

At Newport News-Williamsburg International Airport, a new security checkpoint area was completed in 2017. The new security area consolidates the original two security checkpoints into one centralized checkpoint with three lanes.

New Service – A number of new air travel options and non-stop destinations have been added in the region over the last two years, including:

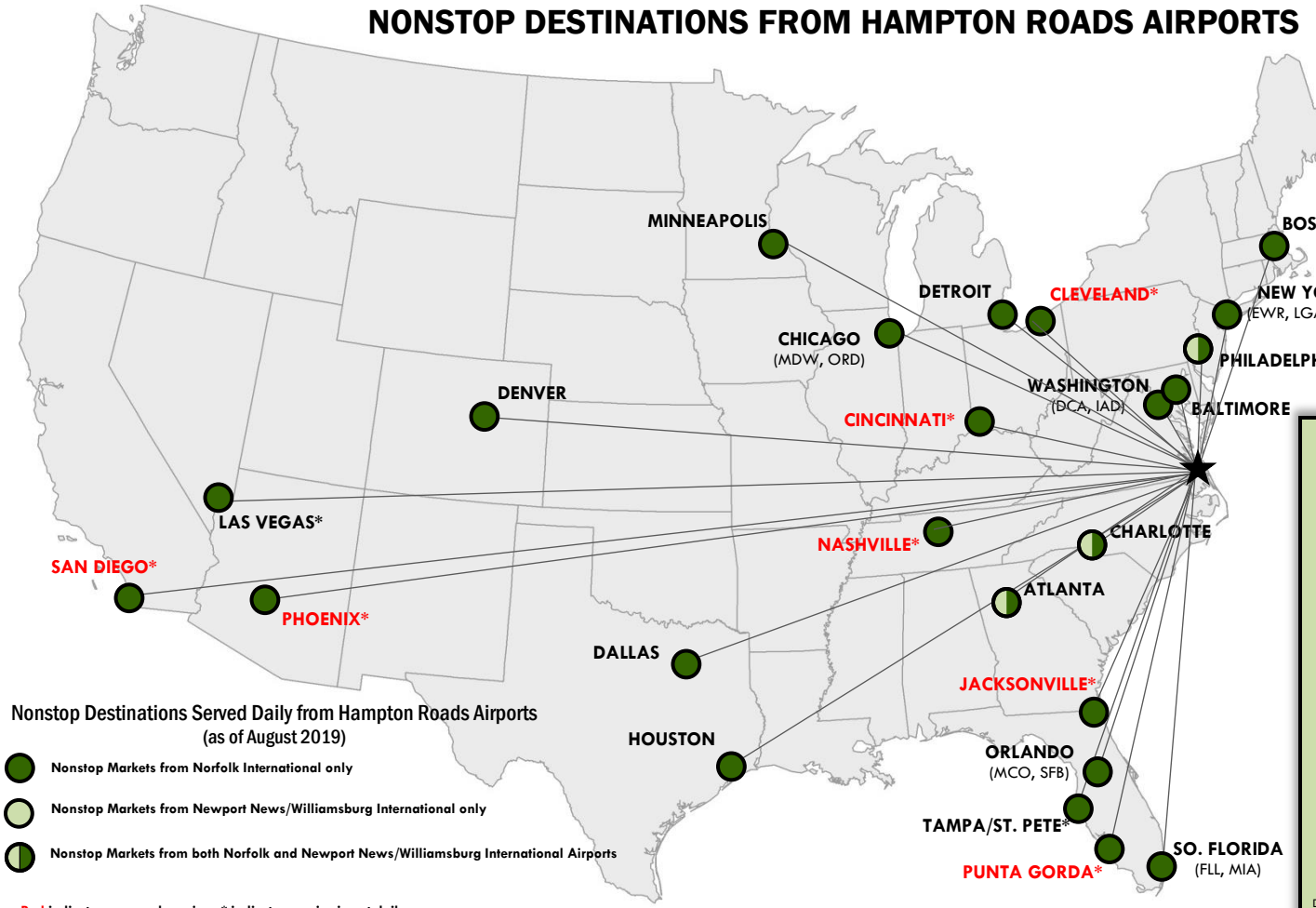
- Allegiant Air started twice-weekly service from Norfolk to Tampa/St. Petersburg (October 2017), Orlando/Sanford and Fort Lauderdale (November 2017), Jacksonville (June 2018), and Cleveland and Cincinnati (June 2019). Allegiant will start twice-weekly service to Punta Gorda (Ft. Myers, FL) in November 2019.
- Frontier Airlines began service at Norfolk International. Twice-weekly routes began to Denver, Orlando, and Las Vegas in August 2018, and Phoenix and Tampa in November 2018.
- Delta started new daily nonstop service between Norfolk and Boston in September 2017.
- United started year-round daily nonstop service between Norfolk and Denver in June 2018.
- Southwest Airlines added seasonal weekend nonstop service to Nashville and San Diego in June 2019.

Image Source: NIA.

166,700 passengers traveling either to or from Chicago. The second most popular destination from Hampton Roads in 2018 was New York with 162,600 passengers, and the third most popular final destination was Atlanta with 161,200 passengers.

Of the top twelve markets for Hampton Roads air travelers, only Los Angeles was not served by any nonstop service from Hampton Roads airports as of August 2019. In recent years this number has been as high as half (6) of the top 12 markets.

NONSTOP DESTINATIONS FROM HAMPTON ROADS AIRPORTS



Top Final Destinations to/from Hampton Roads Airports (2018)

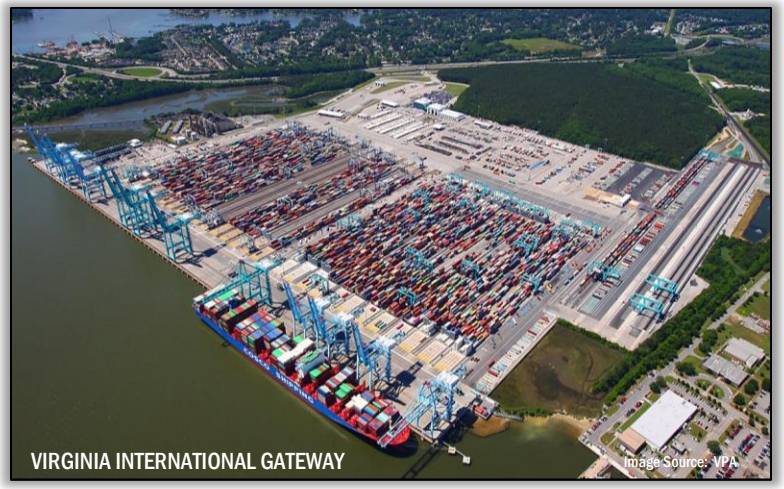
Destination	2018 Passengers
1) Chicago	166,700
2) New York	162,600
3) Atlanta	161,200
4) Orlando	136,700
5) Boston/Providence	125,900
6) Los Angeles	123,800
7) Miami/Ft Lauderdale	118,800
8) San Diego	115,400
9) Dallas/Ft. Worth	103,000
10) Las Vegas	84,200
11) Denver	78,900
12) Tampa/St. Pete	70,200

Data Source: Federal Aviation Administration.

PORT DATA

Cargo levels handled by the Port of Virginia reached another record in 2018, as some of the largest ships in the world visited the port. The Port continues to provide a boost to both the regional and statewide economies.

The Port of Virginia is comprised of four facilities in Hampton Roads: Norfolk International Terminals (NIT), Newport News Marine Terminal (NNMT), Portsmouth Marine Terminal (PMT), and the Virginia International Gateway (VIG) facility. The Virginia Port Authority also manages the Port of Richmond and operates an inland port facility near Front Royal. In addition, there are a number of private terminals in the region, such as Lambert's Point Docks and Elizabeth River Terminals.



Hampton Roads continues to be the largest exporter of coal in the country. Over 43 million tons of coal was shipped through the region in 2018, nearly double the 22 million tons handled in 2016. The amount of coal shipped through Hampton Roads, however, remains below the high of 51 million tons in 2013.

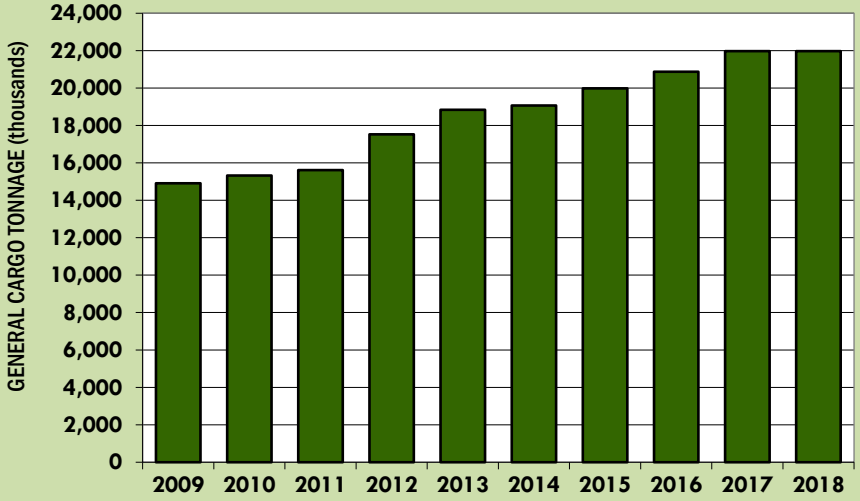
NOTABLE PORT DATA NUMBERS

47% ▲ The increase in general cargo tonnage handled by the Port of Virginia between 2009 and 2018.

96% ▲ The increase in the amount of coal shipped through Hampton Roads from 2016 to 2018.

3rd The rank of the Port of Virginia among East Coast ports in the volume of containerized cargo handled in 2018. Nationally, the Port of Virginia ranked 6th highest.

GENERAL CARGO TONNAGE HANDLED BY THE PORT OF VIRGINIA, 2009-2018



Data source: Virginia Port Authority. Data does not include Virginia Inland Port tonnage.

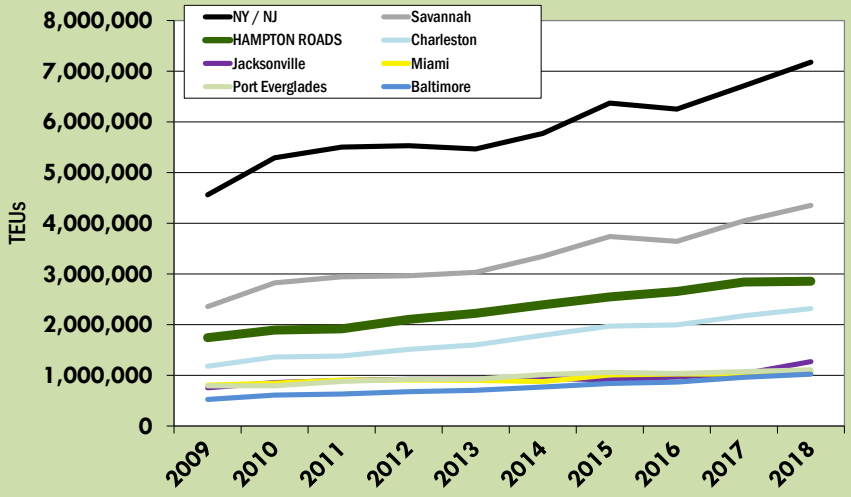
PORT DATA (continued)

Nearly 22 million tons of general cargo, primarily transported in containers, was handled by the Port of Virginia in 2018. Although only a slight increase from 2017, it is a record for the Port. The amount of general cargo handled by the Port of Virginia increased 47% between the height of the economic downturn in 2009 and 2018.

The maritime industry also measures containerized cargo using a standard called "20-foot container equivalent units", or TEUs. The Port of Virginia handled 2.86 million TEUs in 2018. This is up 64% from 1.75 million TEUs handled in 2009. The Port of Virginia ranked third highest among East Coast ports in the volume (in terms of TEUs) of containerized cargo handled in 2018, and sixth highest among all U.S. ports.

In 2018, 62% of the general cargo handled by the Port of Virginia arrived or departed by truck, 35% by rail, and 3%

GENERAL CARGO (in TEUs) HANDLED AT TOP EAST COAST PORTS, 2009-2018



Data sources: American Association of Port Authorities, various port facilities. TEUs are twenty-foot container equivalent units, a common method of measuring freight.

NEW DEVELOPMENTS

Capital Improvements – Work continues on a number of major projects at The Port of Virginia, including:

- NIT North Gate – A new 26-lane semi-automated gate complex that connects NIT directly to the recently-opened Intermodal Connector was completed in 2017.
- NIT - Rail improvements and converting the South Yard to automated rail mounted gantry cranes are underway that will allow the facility to handle 700,000 more TEUs annually. The project is expected to be complete in late 2019.


NIT NORTH GATE Image Source: VPA

- VIG – The Phase II Expansion project was completed in 2019, which includes an extended berth with new cranes, additional truck gates, and new container and rail yards. These improvements will allow VIG to handle over one million more TEUs annually.

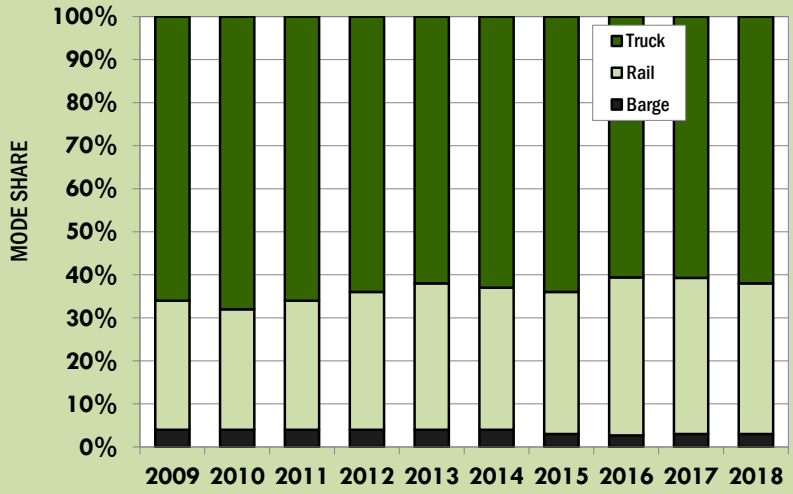
Wider, Deeper, Safer – In order to better accommodate the larger ships that have arrived in recent years, the Port of Virginia has planned the "Wider, Deeper, Safer" project which would deepen the channels from 50 feet to 55 feet and widen the channels to allow for two-way traffic of ultra-large container vessels. In 2018, the Port received full federal authorization to move ahead with the project, which is a key step in getting federal funding to match the $350 million in state funding allocated to the project.

by barge. The share of freight moved by rail through the Port of Virginia has increased, up from 30% in 2009.

The cruise industry also has a presence in Hampton Roads, with cruises calling at the Decker Half Moone Cruise Center in Norfolk. Carnival Cruise Lines resumed offering cruises from Norfolk as a home port in 2019 with eight cruises scheduled to the Caribbean. In addition a number of other cruise lines have and will continue to provide scheduled stops in Norfolk during their itineraries. A total of 22 cruise ships visited Norfolk in 2017 and 30 ships visited in 2018, and nearly 35 cruises are planning to call on the city in 2019.

HRTPO conducts a number of freight planning efforts, such as the Regional Freight Study, which was updated in 2017. More information is available at http://www.hrtpo.org/page/freight.

MODE SPLIT OF GENERAL CARGO HANDLED BY THE PORT OF VIRGINIA, 2009-2018



Data source: Port of Virginia.

BEHIND THE NUMBERS

COSCO DEVELOPMENT Image Source: VPA

The ships calling at the Port of Virginia have gotten much larger in recent years, largely due to the widening of the Panama Canal. In July 2016 the first ship with a capacity of 10,000 TEUs arrived at the port, but only ten months later, a 13,000 TEU ultra-large container vessel – The Cosco Development – called at the Port. In August 2017 the 14,400 TEU CMA-CGM Theodore Roosevelt visited VIG, followed by many other 14,000+ TEU ships.

Hampton Roads and the Port of Virginia are well-positioned to handle these larger ships. Shipping channels in the Hampton Roads harbor are currently dredged to a depth of 50 feet, which, along with no overhead restrictions, currently allows for the largest ships in the world to use the Port of Virginia. In addition, the Port received final federal authorization to widen and deepen the channels to 55 feet to allow for two-way traffic of ultra-large container vessels, which is deeper than any other East Coast port.

The recent improvements to Norfolk International Terminals and the Virginia International Gateway complex will also help the Port of Virginia handle this expected growth. Upon completion, both NIT and VIG will each be able to handle over 2 million TEUs, which is well above the 2.86 million TEUs that were handled in total by the Port of Virginia in 2018.

RAIL DATA

There are multiple passenger rail travel options in Hampton Roads, with Amtrak service provided to both the Peninsula and the Southside and the Tide light rail line in Norfolk.

A number of passenger rail options are available in Hampton Roads. Amtrak service is available on the Peninsula, and in December 2012 Amtrak began providing direct service to the Southside. A year earlier the Tide, a 7.4-mile light rail line operated by Hampton Roads Transit (HRT), began operation in the City of Norfolk (the Tide is addressed in the Public Transportation section of this report.)

AMTRAK STATION IN NORFOLK

Image Source: Amtrak

The number of passengers using Amtrak service in Hampton Roads has increased over the last decade, largely due to the new service to the Southside. There were a total of 201,200 passengers who boarded or departed Amtrak trains in Hampton Roads in Federal Fiscal Year (FFY) 2018, with 98,300 passengers at the Newport News station, 56,400 passengers

NOTABLE RAIL TRAVEL NUMBERS

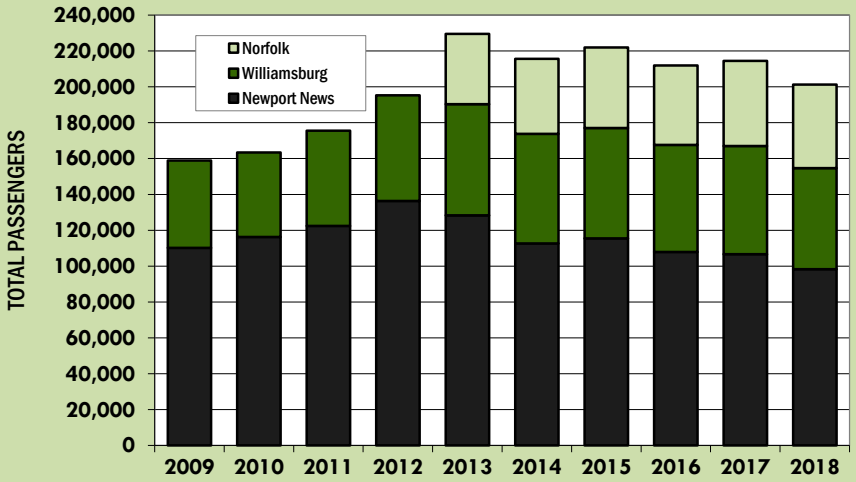
27% ▲

The increase in the number of passengers that boarded or departed Amtrak trains in Hampton Roads between Federal Fiscal Years 2009 and 2018.

44% ▼

The decrease in the number of crashes at highway-rail crossings in Hampton Roads from the 1999-2008 time period to the 2009-2018 period.

TOTAL PASSENGERS BOARDING OR DEPARTING AMTRAK TRAINS IN HAMPTON ROADS, FFY 2009-2018

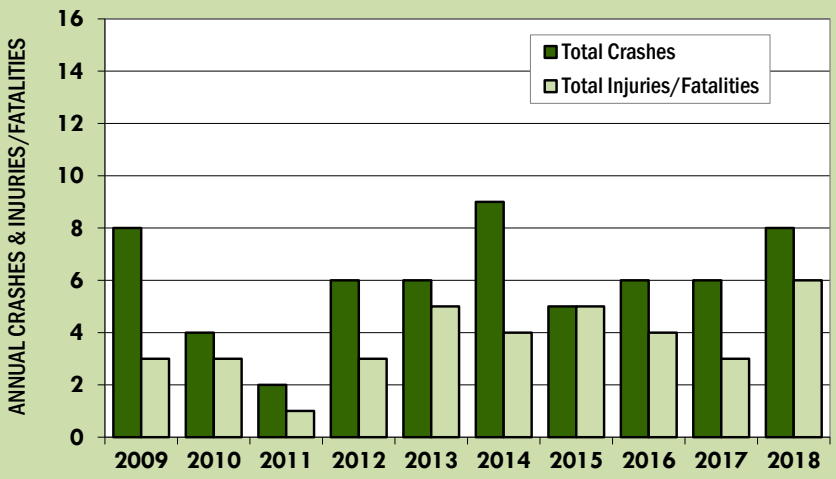


Data source: Amtrak. Federal Fiscal Years run from October to September.

at the Williamsburg station, and 46,600 passengers at the Norfolk station. The number of passengers boarding or departing Amtrak trains in Hampton Roads increased 27% between FFY 2009 and 2018, but has decreased 12% since 2013.

With the number of freight and passenger trains crossing the region each day, ensuring the safety of highway-rail crossings is a necessity. There were eight crashes between trains and vehicles at highway-rail crossings in Hampton Roads in 2018, resulting in five injuries and one fatality. Between 2009 and 2018, there were 60 crashes at highway-rail crossings in Hampton Roads, resulting in 6 fatalities and 31 injuries. The number of crashes at Hampton Roads highway-rail crossings has greatly decreased, down from 184 crashes in the 1990s and 102 crashes in the 2000s.

TOTAL CRASHES AND INJURIES/FATALITIES AT HIGHWAY-RAIL CROSSINGS IN HAMPTON ROADS, 2009-2018



Data source: Federal Railroad Administration.

NEW DEVELOPMENTS

Norfolk Amtrak Service Increase – In March 2019 Amtrak expanded passenger rail service to the Southside from one to two trains per day. Trains leave the Norfolk station near Harbor Park each day towards Petersburg and the Northeast corridor at 6:15 am and 9:00 am, and arrive each day at 7:00 pm and 10:30 pm. Plans are in place to expand service to Norfolk from two to three trains each day by 2022.

Newport News Multimodal Station – Construction is expected to begin soon on a new multi-modal station near Bland Boulevard in the City of Newport News. The station would replace the current Amtrak station near Mercury Boulevard and include new inter-city bus service, additional parking, and improved connections including HRT, shuttles to the Newport-News Williamsburg airport, and taxi service. Although there have been delays, construction on the $40 million facility is expected to be complete by the fall of 2021.

BRIDGES

The large number of rivers, bays, and streams makes bridges a prominent part of the Hampton Roads transportation network. Adequately funding the maintenance of these structures, however, will be difficult as bridges in Hampton Roads continue to age.

Bridges are a vital component of the Hampton Roads transportation network. Major spans such as the Hampton Roads Bridge-Tunnel, Monitor-Merrimac Memorial Bridge-Tunnel, Coleman Bridge, James River Bridge, and High Rise Bridge provide a connection between distinct areas of the region. Bridges on the Interstate system create a limited-access network designed to improve mobility throughout the region, while smaller structures such as culverts span the myriad of creeks, swamps, and streams in the region.

There are 1,264 bridges* in Hampton Roads. These important components of the roadway network, however, are aging. The median age of bridges in Hampton Roads is currently 41 years old, and 101 bridges (8%) are at least 70 years old.

All bridges in Hampton Roads are inspected regularly by qualified inspectors. Depending on the condition and design of each bridge, these inspections occur at intervals of two years or less. Based on these inspections, deficient bridges may be classified as "structurally deficient" or "functionally obsolete".

Structurally deficient bridges are structures with elements that need to be monitored and/or repaired. Structurally deficient bridges typically need to be rehabilitated or replaced to address deficiencies. It must be noted, however, that

* - Bridges are defined by the National Bridge Inventory as any structure that carries or spans vehicular traffic on a public roadway and has a length of more than 20 feet. Bridges less than or equal to 20 feet in length are not included in these statistics, nor are bridges on military bases and private property.

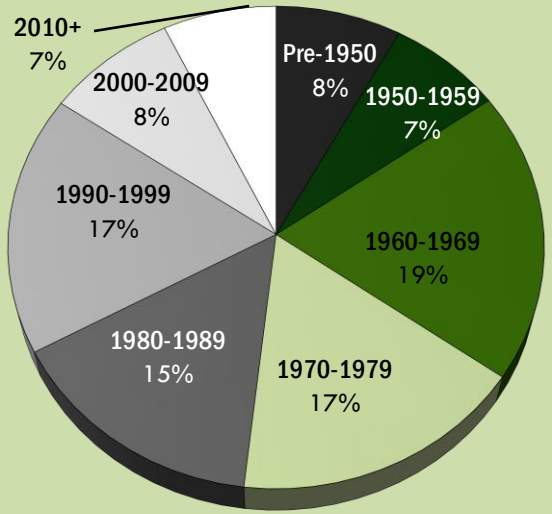
NOTABLE BRIDGE NUMBERS

4.7% The percentage of bridges in Hampton Roads that were classified as structurally deficient as of April 2019.

8% The percentage of bridges in Hampton Roads that are at least 70 years old as of 2019.

24th Hampton Roads rank among 39 large metropolitan areas with populations between one and four million people in terms of the percentage of structurally deficient bridges.

BRIDGES IN HAMPTON ROADS BY YEAR BUILT



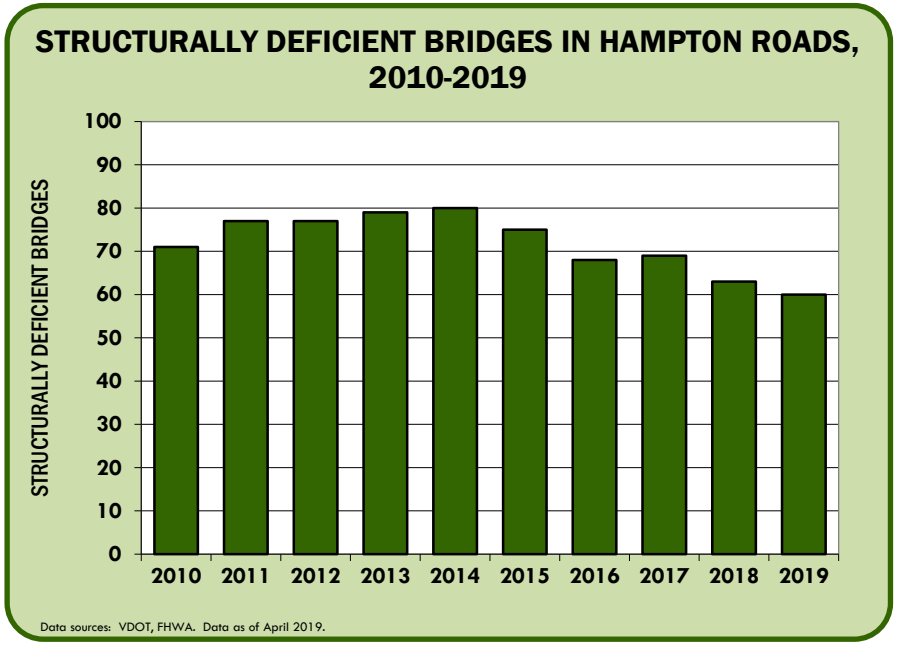
Data sources: VDOT, FHWA. Data as of April 2019.

structurally deficient bridges are not necessarily unsafe. Bridge inspectors will close or impose weight limits on any bridge that is judged to be unsafe.

Functionally obsolete bridges are structures that were built to standards that are no longer used today. These bridges have narrow lanes, no shoulders, low vertical clearances, difficult approaches, or may occasionally be flooded.

Bridges cannot be classified as both structurally deficient and functionally obsolete. Structures that would qualify as both are classified as structurally deficient.

There were 60 bridges (4.7%) that were classified as structurally deficient in Hampton Roads as of April 2019. This is down from 71 bridges (5.9%) that were classified as structurally deficient in 2010, and down from a high of 80



NEW DEVELOPMENTS

High Rise Bridge – Construction has begun on widening the I-64 corridor in Chesapeake, which will include the High Rise Bridge. The project will include a new 100-foot high fixed span located just to the south of the existing facility, which will remain in use. The project is expected to be complete in 2021.


Image Source: VDOT.


Image Source: City of Virginia Beach

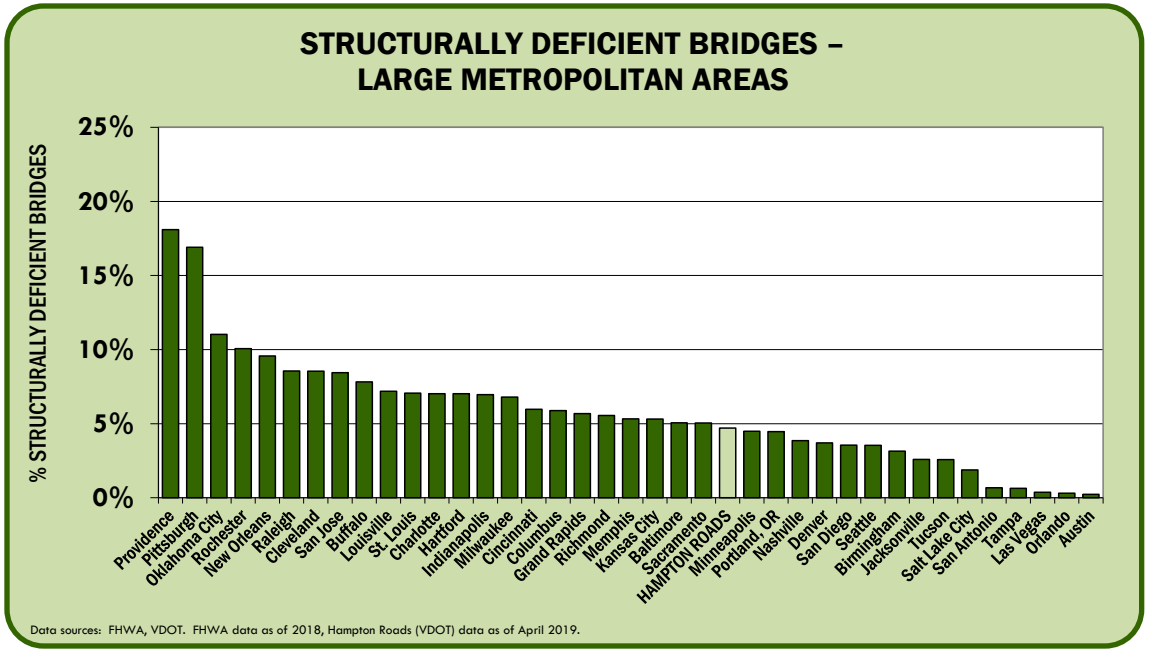
Lesner Bridge – Construction was recently completed on a replacement for the Lesner Bridge, which carries Shore Drive across Lynnhaven Inlet in Virginia Beach. The new facility was built to accommodate the possibility of 6 lanes in the future, provide an increased vertical clearance from 35 feet to 45 feet, provide a wider distance between bridge piers, and include new multi-use paths in both directions for pedestrians and cyclists.

bridges (6.6%) in 2014. Another 279 bridges (22.1%) in Hampton Roads were classified as functionally obsolete. Combining structurally deficient and functionally obsolete bridges, 339 bridges (26.8%) in Hampton Roads were deficient as of April 2019.

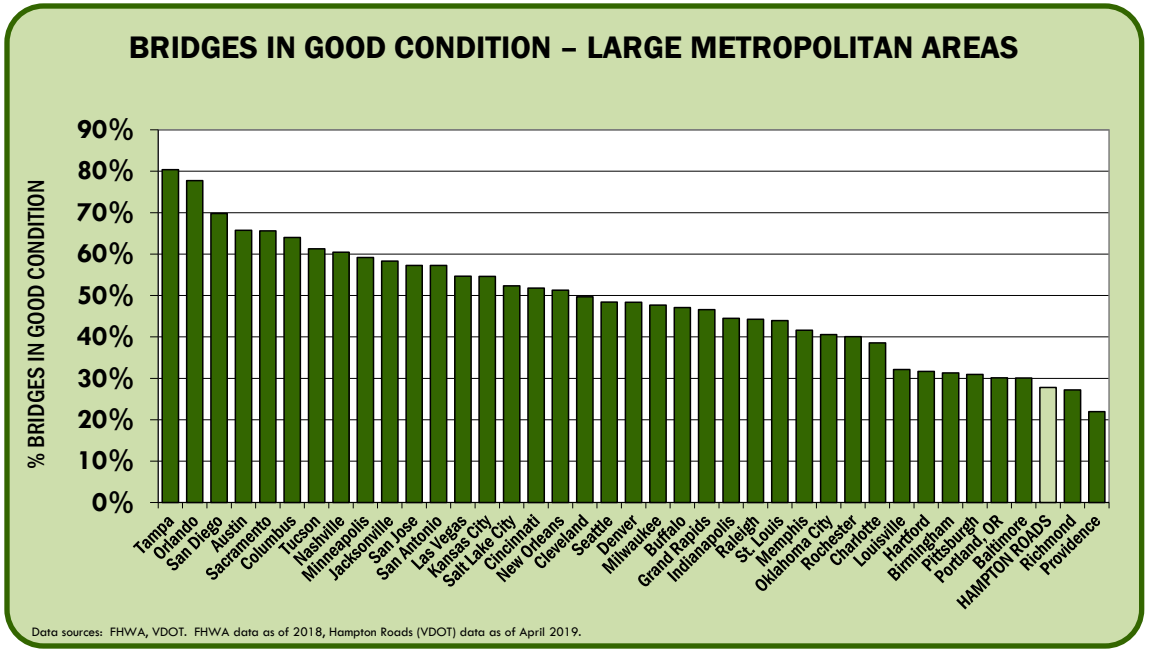
The percentage of bridges that are classified as structurally deficient in Hampton Roads is better than the average of other comparable metropolitan areas. Hampton Roads ranks 24th highest among 39 large metropolitan areas with populations between one and four million people in the percentage of structurally deficient bridges in each region.

However, Hampton Roads ranks much lower in terms of the percentage of bridges that are classified in "Good" condition using federal standards. At 27.8%, Hampton Roads ranks 3rd lowest among the 39 comparable metropolitan areas between one and four million people in terms of the percentage of bridges classified as being in good condition.

HRTPO released an update to the *Hampton Roads Regional Bridge Study* – which looks at various aspects of the region's bridges – in 2018. The Hampton Roads Regional Bridge Study is available on HRTPO's website at **http://www.hrtpo.org**.



Data sources: FHWA, VDOT. FHWA data as of 2018, Hampton Roads (VDOT) data as of April 2019.



Data sources: FHWA, VDOT. FHWA data as of 2018, Hampton Roads (VDOT) data as of April 2019.

PAVEMENT CONDITION

VDOT's pavement rehabilitation efforts have greatly improved the condition of state-maintained roadways in Hampton Roads, and pavement in the region is in better condition than in other areas of the Commonwealth.

VDOT annually prepares the State of the Pavement report, which details the condition and ride quality of state-maintained roadways. VDOT produces this report using data collected annually on each mile of Interstate and Primary roadway throughout the state and a sample of Secondary roadways. Based on this data, VDOT categorizes both the pavement condition and ride quality of state-maintained roadways.

Pavement condition describes the amount of pavement distresses – such as cracking, patching, and rutting – on each roadway. The Critical Condition Index (CCI) is a measure that is calculated based on these distresses, and pavement condition is rated as excellent, good, fair, poor, or very poor based on the CCI. Roadways that are in poor or very poor condition are considered to be deficient, and VDOT has a goal that no more than 18% of Interstate and Primary roadway pavement condition be classified as deficient.

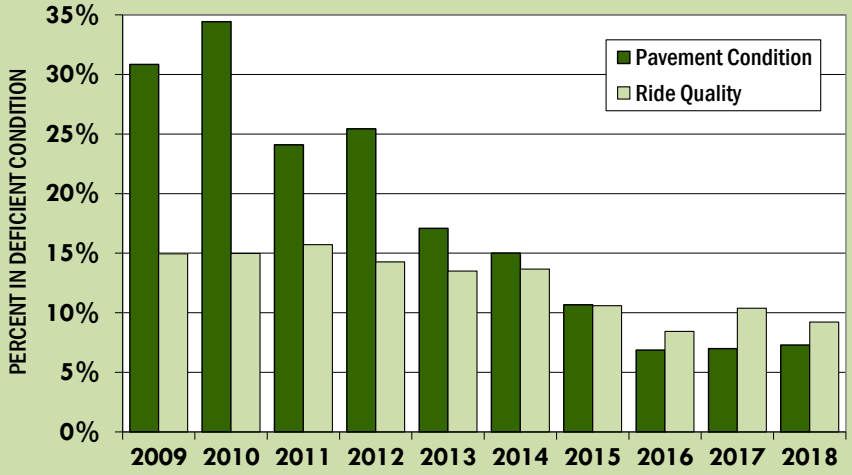
The percentage of state-maintained roadways in deficient condition in Hampton Roads has greatly improved in recent years. As recently as 2010, more than one third of state-maintained Interstate and Primary roadways in Hampton Roads had a deficient pavement condition. After extensive repaving efforts throughout the region, only 7% of state-maintained Interstate and Primary roadways in the Hampton Roads TPO had a deficient pavement condition in 2018.

NOTABLE PAVEMENT CONDITION NUMBERS

7% Percent of state-maintained Interstate and Primary roadway lane-miles in Hampton Roads that had a deficient pavement condition in 2018. This is down from 31% in 2009.

14th Hampton Roads rank among 39 large metropolitan areas with populations between one and four million people in terms of the percentage of roadways with pavement in poor condition in 2016.

PERCENT OF VDOT-MAINTAINED INTERSTATE AND PRIMARY ROADWAY PAVEMENT IN DEFICIENT CONDITION IN HAMPTON ROADS, 2009-2018



Data source: VDOT. Pavement with poor or very poor pavement condition or ride quality is considered deficient.

PAVEMENT CONDITION (continued)

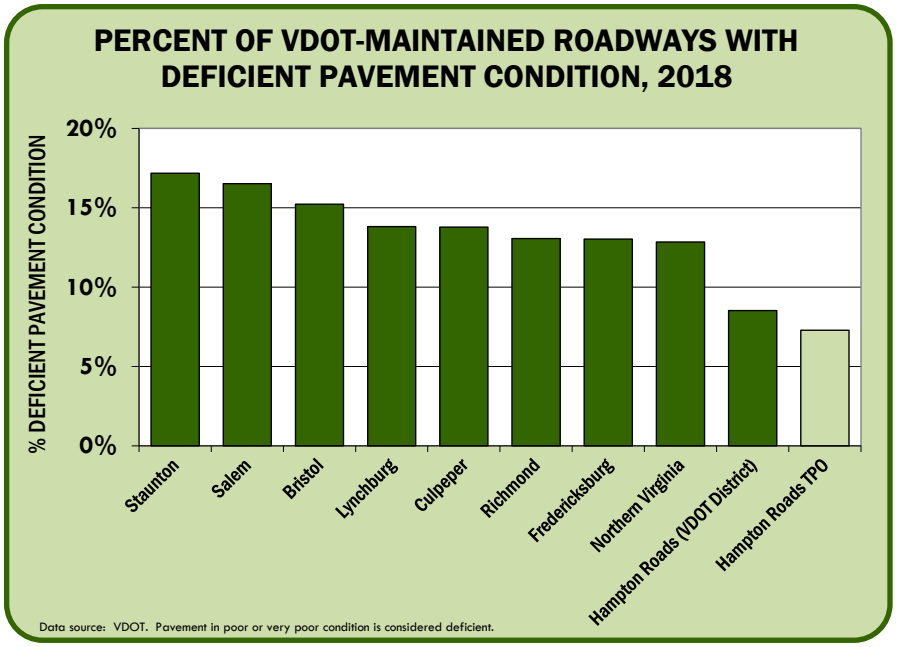
Interstates in Hampton Roads have particularly improved, with only 2% having a deficient pavement condition in 2018.

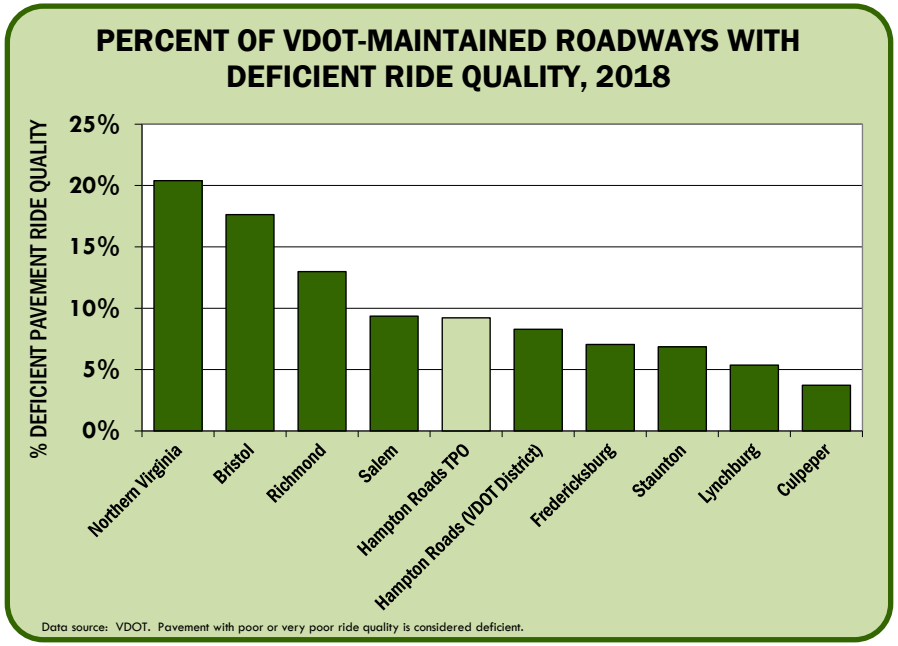
The pavement condition is now better in Hampton Roads than in every other area of the state. Looking only at state-maintained Interstate and Primary roadways, the 7% of lane-miles in Hampton Roads that have a deficient pavement condition is better than in all of the VDOT Districts throughout the state, with the amount of deficient pavement in all of the other districts ranging between 13% and 17% in 2018.

VDOT also collects data regarding the ride quality of roadway pavement. Ride quality describes the roughness of pavement based on a sum of the irregularities in the pavement surface. The International Roughness Index (IRI) is a measure that describes these irregularities, and ride quality is rated as excellent, good, fair, poor, or very poor based on the IRI. Roadways with a poor or very poor ride quality are considered to be deficient, and VDOT has a goal that no more than 15% of Interstate and Primary roadways be classified as deficient in terms of ride quality.

The ride quality of pavement in Hampton Roads has also improved in recent years. In 2018, 9% of state-maintained Interstate and Primary roadways in Hampton Roads had a deficient ride quality, down from 14% in 2014 and 16% in 2011.

The pavement ride quality is better in Hampton Roads than in the other large metropolitan areas of the state. The 9% of state-maintained Interstate and Primary lane-miles in Hampton Roads that have a deficient pavement ride quality ranks in the middle compared to VDOT Districts throughout the state but is



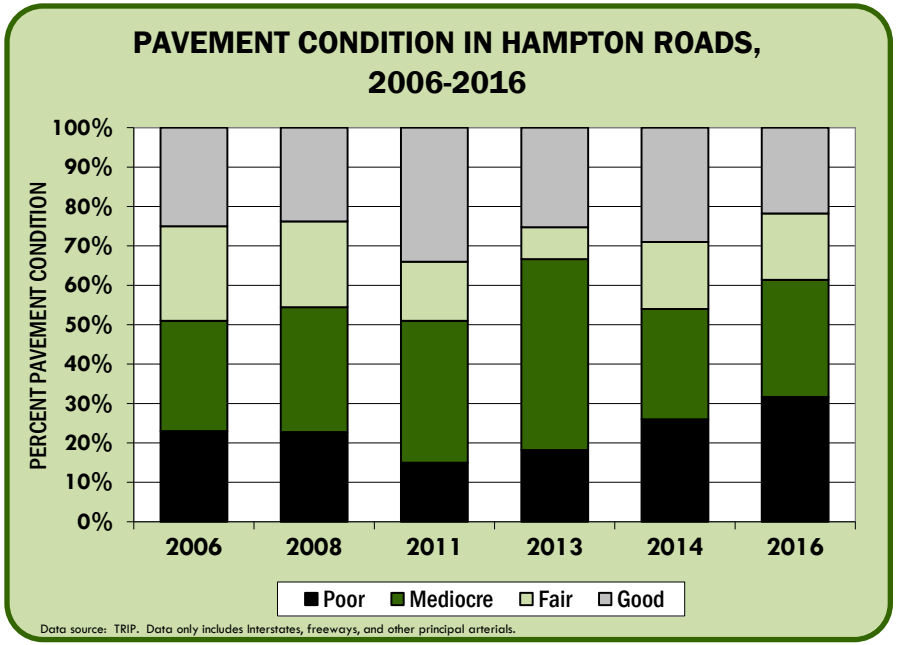


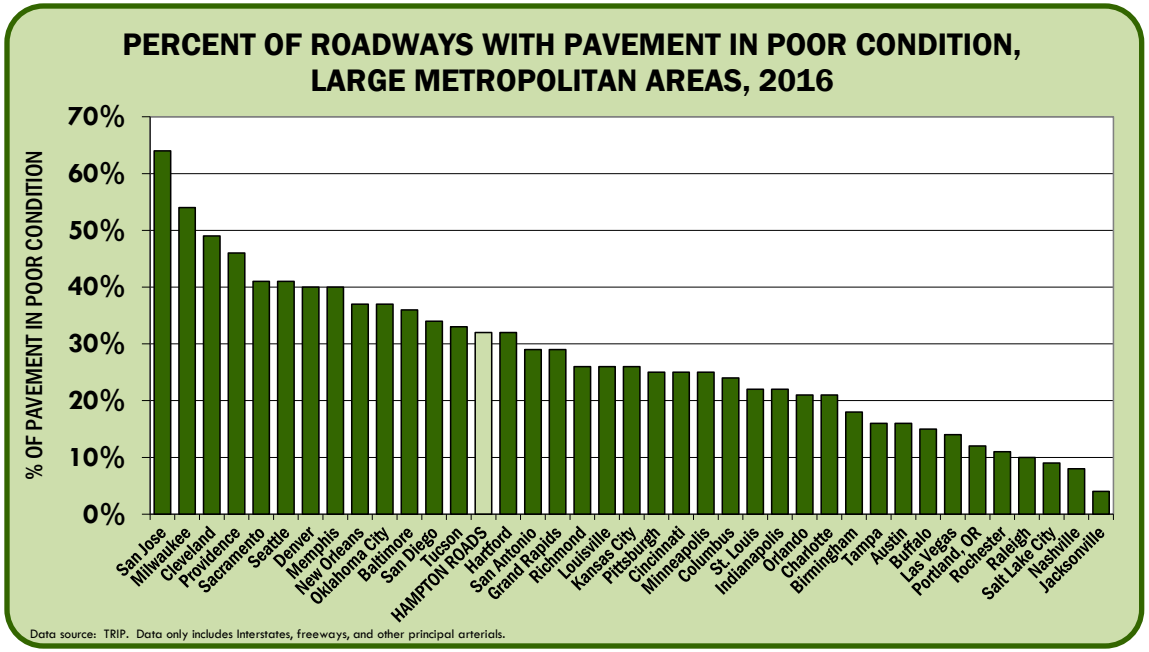
better than the Northern Virginia (20%) and Richmond (13%) VDOT Districts.

Another source of pavement condition data is produced by TRIP, which is an organization that researches, evaluates and distributes economic and technical data on surface transportation issues. TRIP regularly prepares an analysis of the pavement condition of major roadways in metropolitan areas and the costs that deteriorating roadways have on the public.

According to the most recent analysis from TRIP, 32% of the major roadways in Hampton Roads had pavement that was in poor condition in 2016. Another 30% of Hampton Roads roadways were rated as mediocre, 17% were rated as fair, and 22% were rated as good. The percent of pavement in poor condition in Hampton Roads was higher in 2016 than it was at any point throughout the previous decade according to TRIP.

Among the 39 large metropolitan areas with populations between one and four million people, Hampton Roads ranked 14th highest in terms of the percentage of roadways with pavement in poor condition in 2016. San Jose had more than twice the percentage of major roadways in poor condition than Hampton Roads.

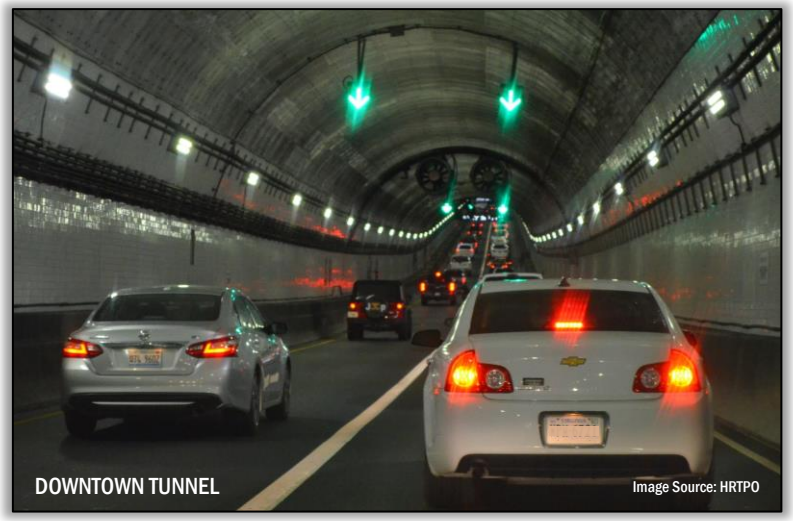




ROADWAY USAGE

After years of flat or decreasing roadway travel levels in Hampton Roads, regional traffic volumes started growing again in 2015, and have since surpassed the levels seen prior to the economic downturn.

The amount of roadway travel is measured in terms of vehicle-miles of travel, which is the total number of miles every vehicle in the region travels over a period of time. VDOT annually releases estimates of jurisdictional roadway travel levels based on traffic counts collected on a regular basis. VDOT estimates that there were nearly 41 million vehicle-miles of travel (VMT) on the typical day in Hampton Roads in 2018.



DOWNTOWN TUNNEL

Image Source: HRTPO

The amount of roadway travel in Hampton Roads has slightly increased over the last decade according to VDOT estimates. Between 2009 and 2018, there was a 1.3% increase in daily vehicular travel in Hampton Roads. However, roadway travel

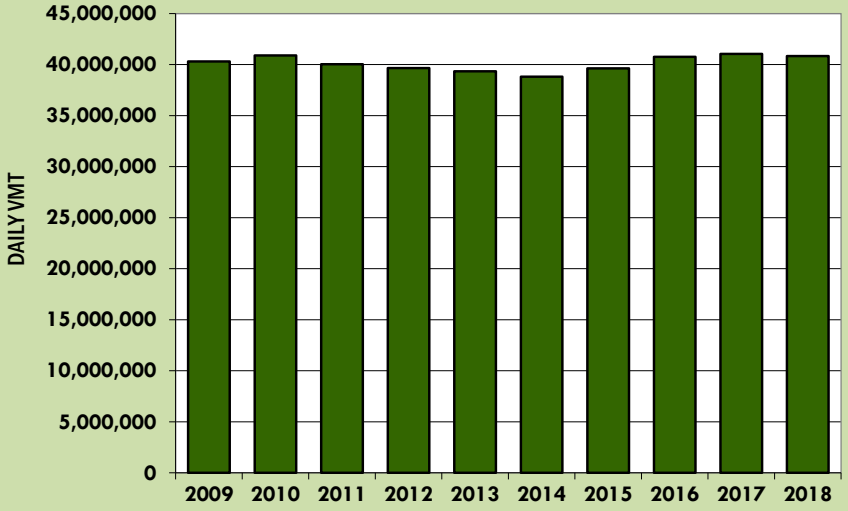
NOTABLE ROADWAY USAGE NUMBERS

1% The increase in daily roadway travel in Hampton Roads between 2009 and 2018 according to VDOT estimates.

5% The increase in the amount of daily roadway travel in Hampton Roads between 2014 and 2018 based on regional continuous count stations.

30th Hampton Roads rank among 39 large metropolitan areas with populations between one and four million people in terms of vehicular travel per capita in 2017.

DAILY VEHICLE-MILES OF TRAVEL (VMT) IN HAMPTON ROADS, 2009-2018



Data source: VDOT.

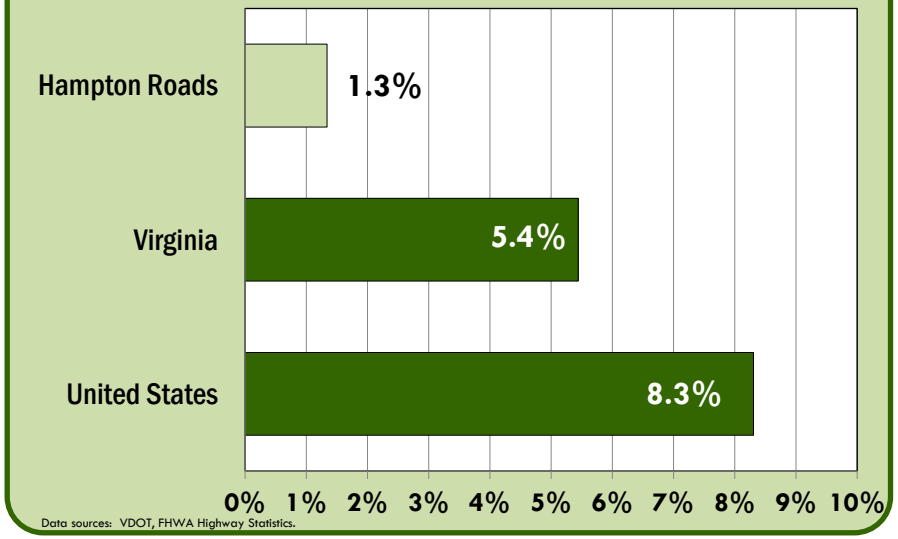
growth in the region has accelerated in recent years, with a 5.2% increase in regional roadway travel between 2014 and 2018.

Similar to Hampton Roads, both Virginia and the United States experienced a decrease in roadway travel throughout the economic downturn at the end of the last decade, but have seen increases in recent years. Between 2009 and 2018, roadway travel grew by 5.4% in Virginia and 8.3% across the country. However, roadway travel increased by 6.1% in the United States between 2014 and 2018 – reaching record high levels – and 5.4% in Virginia.

The increase in the Hampton Roads population outpaced the growth in regional roadway travel over the last decade. This combination produced a decrease in vehicular travel per capita. The vehicular travel per capita in Hampton Roads was 23.6 vehicle-miles per person per day in 2018, down 2.5% from 24.3 daily vehicle-miles per capita in 2009.

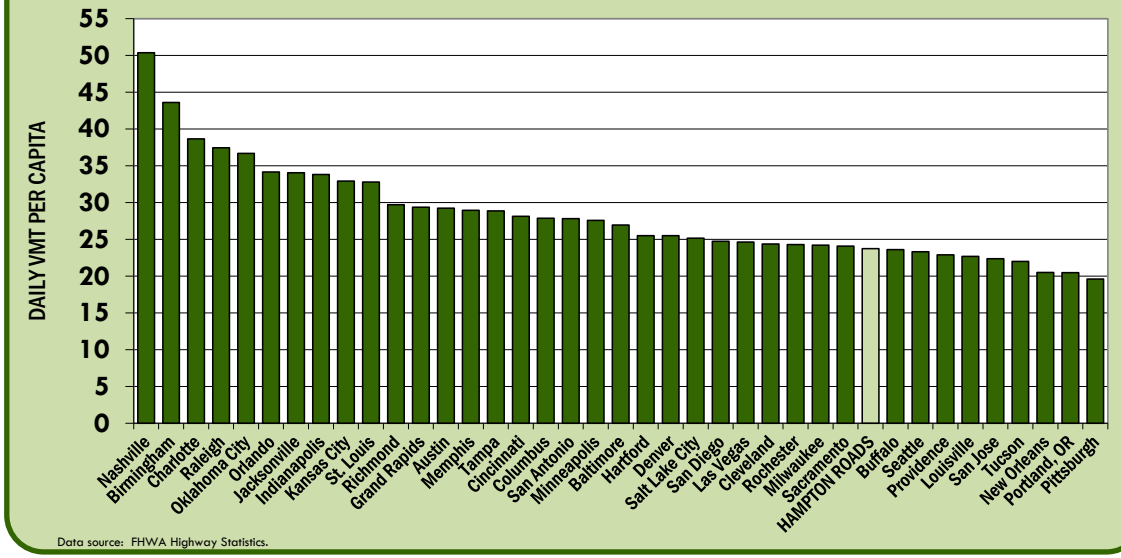
Among 39 large metropolitan areas in the United States with populations between one and four million people, Hampton Roads ranked 30th highest in vehicular travel per capita in 2017. Nashville experienced roadway travel levels that were more than twice the levels seen in Hampton Roads, and areas such as Birmingham and Charlotte had at least 15 more miles of travel daily per capita than Hampton Roads.

CHANGE IN VEHICLE-MILES OF TRAVEL IN HAMPTON ROADS, VIRGINIA, AND THE UNITED STATES, 2009 TO 2018



Data sources: VDOT, FHWA Highway Statistics.

DAILY VEHICLE-MILES OF TRAVEL PER CAPITA IN LARGE METROPOLITAN AREAS, 2017



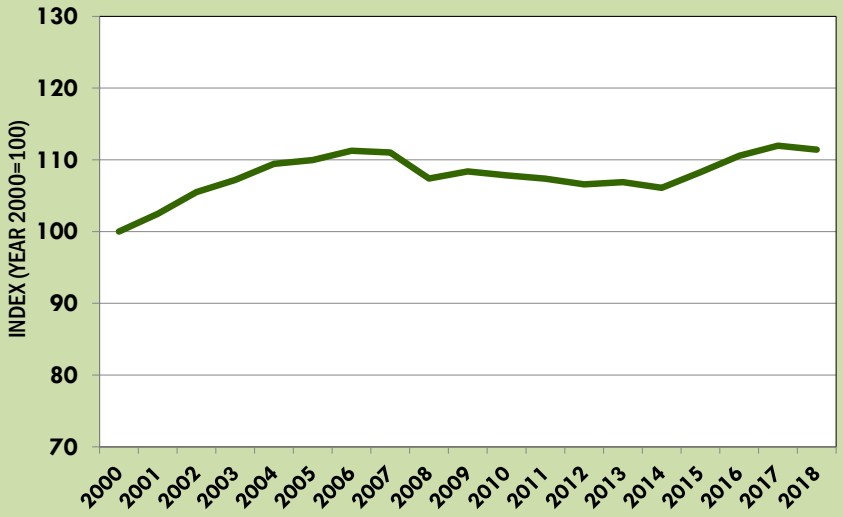
Data source: FHWA Highway Statistics.

ROADWAY USAGE (continued)

Another method of measuring the change in roadway travel is by using count stations that continuously collect traffic volume data throughout the entire year. In Hampton Roads there are approximately 80 locations equipped with continuous count stations, primarily on major roadways such as freeways and principal arterials. Based on the data collected at these locations, regional traffic volumes grew 11.4% between 2000 and 2018. However, after falling throughout the economic downturn and remaining largely flat earlier in this decade, regional traffic volumes increased 5.3% from 2014 to 2018. The increase in traffic volumes from 2015 to 2016 is the largest year-over-year increase in regional roadway travel since 2002.

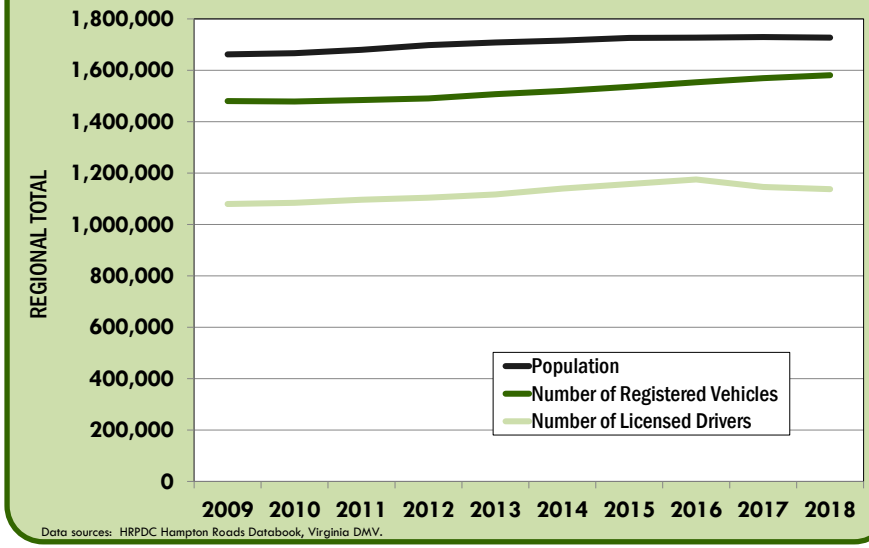
There were 1,581,000 vehicles registered in Hampton Roads in 2018, or 0.92 vehicles for every Hampton Roads resident. The growth in the number of registered vehicles between 2009 and 2018 (+6.8%) was higher than the growth in population (+3.9%) over this period.

CHANGE IN REGIONAL ROADWAY TRAVEL BASED ON CONTINUOUS COUNT STATIONS, 2000-2018



Data sources: VDOT, CBBT, various localities.

POPULATION, REGISTERED VEHICLES, AND LICENSED DRIVERS IN HAMPTON ROADS, 2009-2018



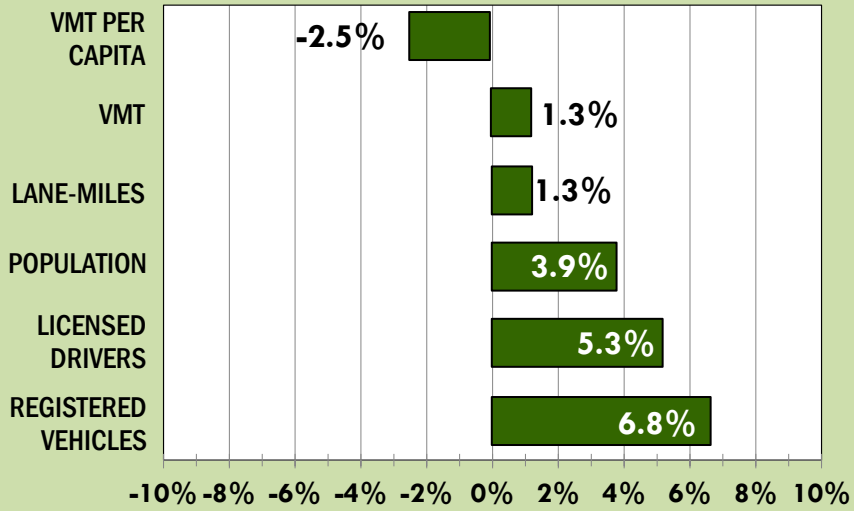
Data sources: HRPDC Hampton Roads Databook, Virginia DMV.

The growth in the number of licensed drivers in Hampton Roads has also outpaced population growth. There were 1,137,000 licensed drivers in Hampton Roads in 2018 – up 5.3% from 2009 – and there were 1.39 registered vehicles for every licensed driver. This is similar to the 1.37 registered vehicles per licensed driver in 2009.

Between 2009 and 2018, the amount of roadway capacity in Hampton Roads in terms of lane mileage* increased by 1.3%. This is lower than the growth in the regional population (+3.9%) but is equal to the change in regional vehicle-miles traveled (+1.3%).

* - A lane-mile is defined as the length of a roadway times the number of lanes and is commonly used to describe the amount of roadway capacity. A one mile section of a roadway that is 6 lanes wide comprises 6 lane-miles.

CHANGE IN VMT PER CAPITA, VMT, LANE-MILES, POPULATION, REGISTERED VEHICLES, AND LICENSED DRIVERS IN HAMPTON ROADS OVER THE LAST DECADE



Data sources: HRPDC Hampton Roads Databook, Virginia DMV, VDOT.

CONGESTION DATA

Based on travel speed data collected by TomTom and INRIX, roadway congestion in Hampton Roads is typical compared to many other large metropolitan areas throughout the country.

TomTom, a consumer electronics and navigation technology company, produces the TomTom Traffic Index, which provides a measure of traffic congestion in 80 metropolitan areas throughout the United States and over 400 areas worldwide. TomTom prepares this analysis using anonymous GPS data that they collect from navigation devices, vehicle in-dash systems, and smartphones applications.

The TomTom Traffic Index is a percentage that represents the amount of extra travel time experienced by drivers across the entire year. TomTom produces this regional index by establishing a baseline of travel times during uncongested, free flow conditions for each road segment in each metropolitan area and then comparing it with travel time data they collect 24 hours a day, 7 days a week throughout the entire year. The TomTom Traffic Index is similar to the travel time index produced by other entities.

A TomTom Traffic Index value of 10% means that the extra travel time during a typical trip during any time of the day is 10% more than an average trip would take during uncongested conditions. In addition to daily figures, TomTom also analyzes their travel time data for individual hours of each day as well as for the morning and evening peak periods.

The Hampton Roads TomTom Traffic Index was 16% in 2018, meaning the typical trip took on average 16% longer than the

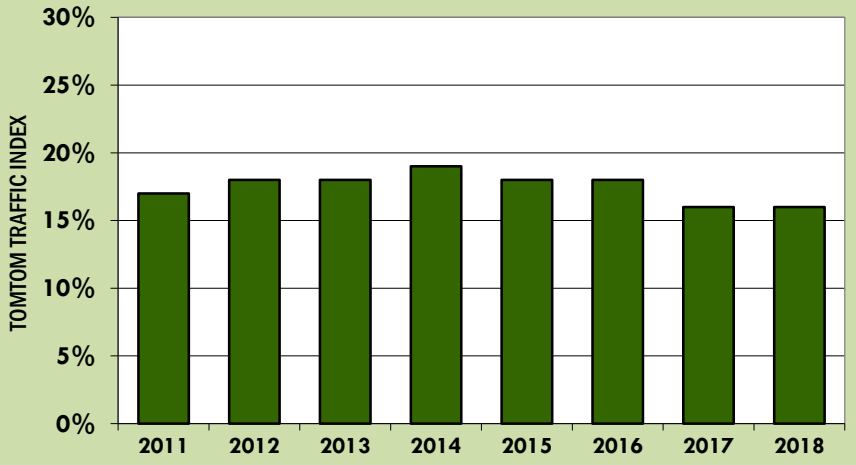
NOTABLE CONGESTION NUMBERS

16% The TomTom Travel Index in Hampton Roads in 2018, which means that the average trip throughout the day takes 16% longer than during uncongested conditions.

46 The average number of hours Hampton Roads auto commuters were stuck in congestion in 2017 according to TTI.

23rd Hampton Roads rank among large areas with populations between one and four million people in terms of the regional TomTom Traffic Index in 2018.

TOMTOM TRAFFIC INDEX IN HAMPTON ROADS, 2011-2018



Data source: TomTom.

same trip during uncongested conditions. The TomTom Traffic Index varied between 16% and 19% in Hampton Roads between 2011 and 2018.

The TomTom Traffic Index in Hampton Roads is similar to the index in many other large metropolitan areas. Among the 39 metropolitan areas with populations between one and four million people, Hampton Roads had the 23rd highest TomTom Traffic Index in 2018, just below the comparable area average of 18%.

Looking at the TomTom Traffic Index data on an hourly basis, the most congested periods in Hampton Roads occur on weekdays between 3:00 pm and 6:00 pm. The highest TomTom Traffic Index – 39% – occurs on Thursdays between 5:00 pm and 6:00 pm.

The overall Hampton Roads TomTom Traffic Index during the PM Peak Period was 36% in 2018. This ranked Hampton Roads 27th highest among the 39 metropolitan areas with populations between one and four million people.

Other agencies also produce reports on congestion levels in metropolitan areas. The Texas A&M Transportation Institute (TTI) publishes the Urban Mobility Report, which looks at traffic conditions in 494 urban areas across the United States. The 2019 report provides information on hours of delay, freeway travel time reliability, wasted fuel, and congestion costs based on INRIX speed data for the year 2017.

TOMTOM TRAFFIC INDEX BY HOUR, HAMPTON ROADS, 2018

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
12:00 AM	5%	4%	4%	4%	5%	5%	5%
	4%	4%	4%	4%	4%	4%	5%
02:00 AM	4%	3%	4%	3%	4%	4%	3%
	2%	1%	2%	2%	3%	2%	2%
04:00 AM	2%	0%	0%	0%	0%	0%	1%
	0%	4%	4%	4%	4%	3%	1%
06:00 AM	0%	11%	13%	12%	11%	8%	1%
	0%	20%	25%	22%	23%	16%	3%
08:00 AM	2%	19%	22%	19%	20%	15%	5%
	4%	12%	13%	12%	13%	12%	8%
10:00 AM	7%	11%	11%	11%	12%	13%	12%
	9%	13%	13%	13%	14%	17%	16%
12:00 PM	13%	15%	15%	16%	17%	21%	18%
	13%	14%	14%	15%	16%	21%	17%
02:00 PM	11%	16%	17%	18%	19%	25%	17%
	11%	23%	25%	26%	28%	33%	16%
04:00 PM	10%	28%	33%	34%	36%	37%	16%
	10%	30%	36%	36%	39%	36%	15%
06:00 PM	8%	15%	18%	18%	21%	22%	13%
	7%	9%	10%	10%	11%	14%	10%
08:00 PM	7%	8%	9%	9%	9%	11%	9%
	8%	8%	8%	9%	10%	9%	8%
10:00 PM	7%	7%	7%	8%	9%	8%	7%
	6%	5%	5%	6%	6%	7%	7%

Data source: TomTom.

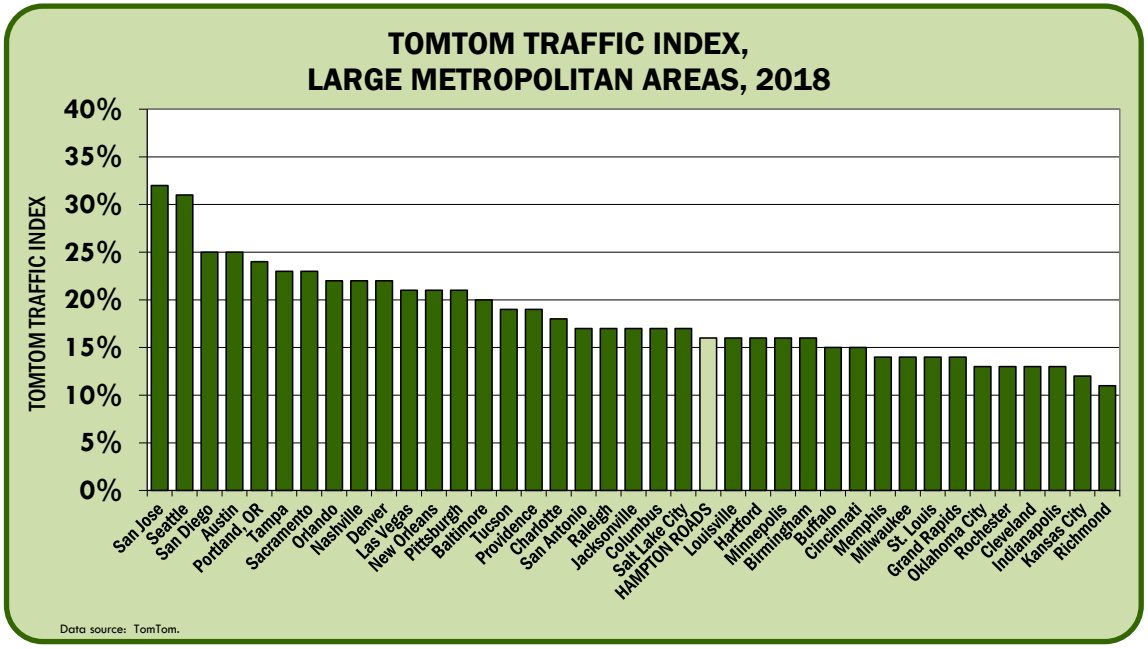
CONGESTION DATA (continued)

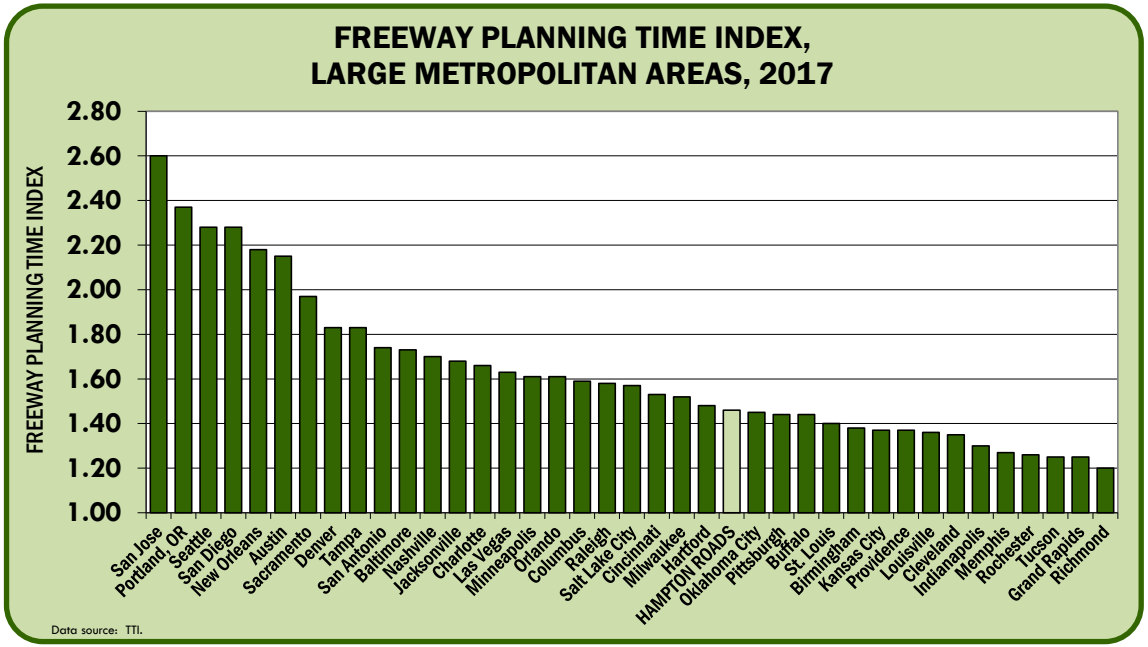
According to TTI, commuters traveling by automobile in Hampton Roads spent an average of 46 hours stuck in congestion in 2017. This resulted in 14 million gallons of excess fuel consumed and an average congestion cost of $690 per auto commuter due to wasted time and fuel. Among the 39 large metropolitan areas with populations between one and four million people, this ranked Hampton Roads 27th highest in hours of delay and 35th highest in average congestion costs.

Another measure included in the Urban Mobility Report is the freeway planning time index. The planning time index is a measure that describes the reliability of travel times. It represents the total time that needs to be allocated for a peak period trip so that the traveler would only be late 5% of the time.

The freeway planning time index was 1.46 in Hampton Roads in 2017 according to TTI. This means that for an average uncongested 20-minute trip, just over 29 minutes should be allocated during peak periods to be on time 95% of the time.

Among the metropolitan areas with populations between one and four million people, Hampton Roads had the 24th highest freeway planning time index in 2017 according to TTI.





COMMUTING

In spite of having one of the highest percentages of commuters that work in a jurisdiction that is different than the one they reside in, the travel time to work in Hampton Roads is lower than in many other metropolitan areas.

The United States Census Bureau annually collects and releases socioeconomic data through the American Community Survey (ACS). As part of the ACS, information regarding the commuting characteristics of residents, including commuting modes, travel time to work, and the localities where commuters work and live, is collected for each metropolitan area.

According to the ACS, the mean travel time to work in Hampton Roads was 24.4 minutes in 2017. Although this is up from 24.0 minutes in 2016, the regional mean travel time to work has largely remained between 23 and 25 minutes throughout the 2000s.

Among the 39 large metropolitan areas throughout the United States with a population between one and four million people, Hampton Roads has a relatively low travel time to work, ranking 28th highest in 2017. Since 2008, Hampton Roads has ranked between 25th highest and 31st highest in terms of travel time to work among the 39 large metropolitan areas.

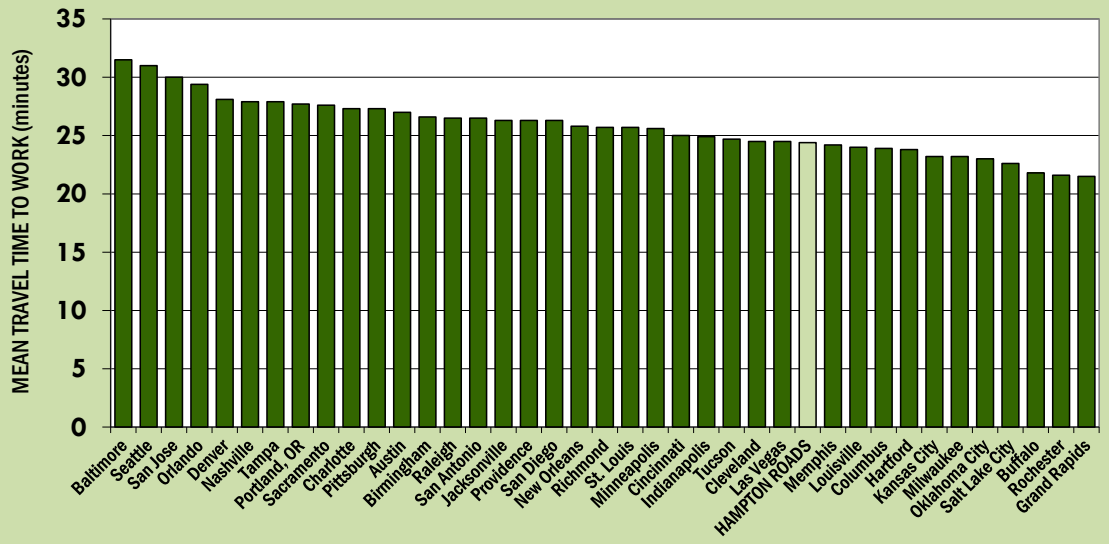
NOTABLE COMMUTING NUMBERS

81% The percentage of commuters in Hampton Roads that drove alone to work in 2017.

48% The percentage of workers in Hampton Roads that worked in a jurisdiction that was different from the one they resided in in 2017.

24.4 The mean travel time to work in minutes in Hampton Roads in 2017.

MEAN TRAVEL TIME TO WORK IN LARGE METROPOLITAN AREAS, 2017



Data source: US Census Bureau.

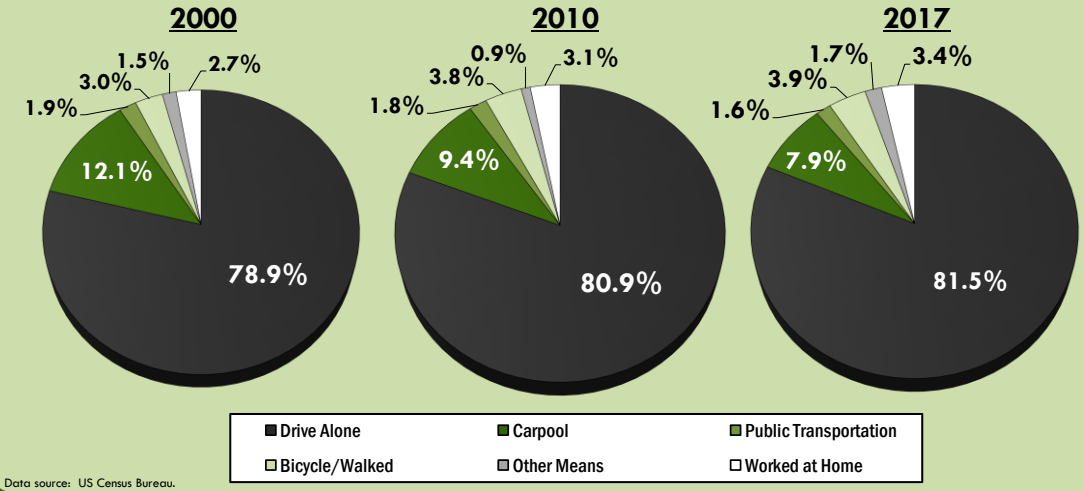
Many Hampton Roads residents, however, have longer commutes. In 2017, one out of every three Hampton Roads commuters (33%) traveled 30 minutes or longer to work, and 6% had commutes of an hour or more.

TRAFFIX VANPOOLING

Image Source: TRAFFIX

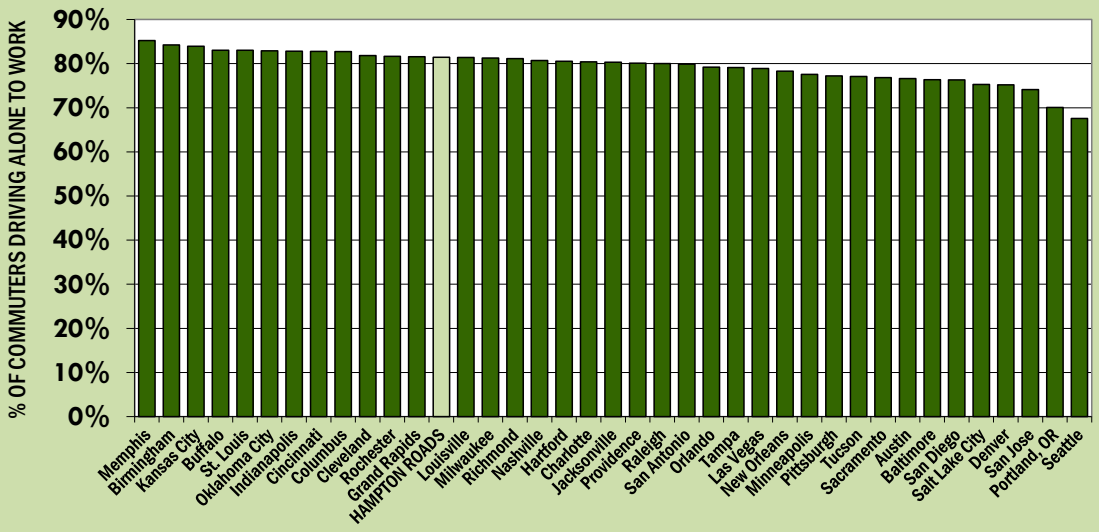
In 2017, 81.5% of commuters in Hampton Roads drove alone to work. While this is up from 73% in 1990 and 79% in 2000, it has varied between 79% and 83% since 2010. In turn, the percentage of commuters in Hampton Roads carpooling to work has decreased from 14% in 1990 to 12% in 2000 and to 8% in 2017. The percentage of commuters using public transportation in Hampton Roads has also decreased, while the percentage that commute via bicycling/walking has increased since 2000.

COMMUTING METHODS IN HAMPTON ROADS - 2000, 2010 & 2017



Data source: US Census Bureau.

PERCENTAGE OF COMMUTERS THAT DROVE ALONE TO WORK LARGE METROPOLITAN AREAS, 2017



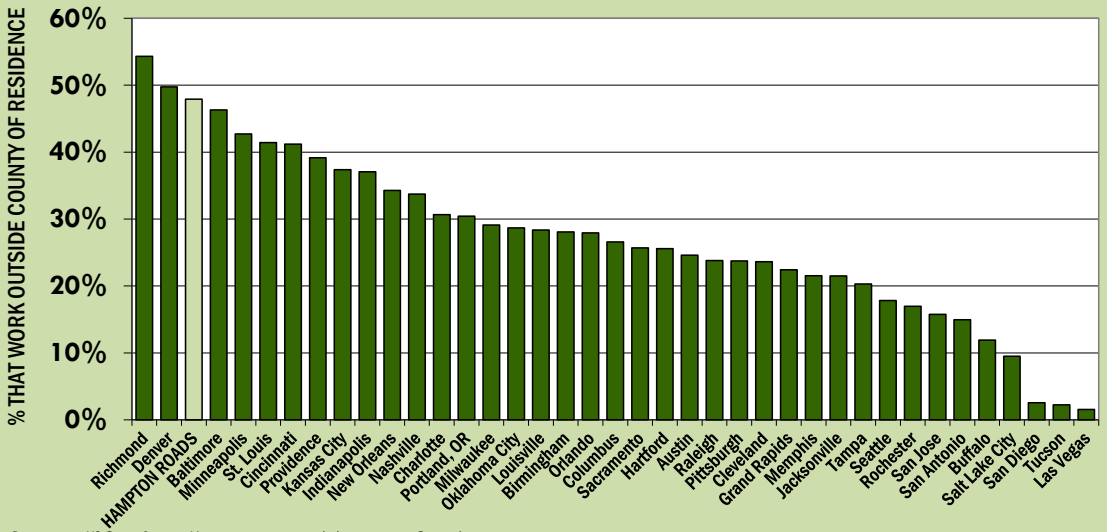
Data source: US Census Bureau.

The percentage of commuters driving alone to work in Hampton Roads is slightly higher than in other comparable areas. Hampton Roads ranked 13th highest among the 39 large metropolitan areas in terms of the percentage of commuters that drove alone to work in 2017, above the median of 80.3%.

An area where Hampton Roads ranks particularly high is in the percentage of workers that work outside of their locality of residence. In 2017, 48% of all workers in Hampton Roads worked in a jurisdiction that was different than the one they resided in. This percentage is higher than that seen in 1990 (44%) but slightly lower than the percentage seen in 2000 (49%), and lower than the high that was experienced in 2005 (50%). The percentage in Hampton Roads is higher than the percentage seen in most other areas, ranking 3rd highest among the 39 large metropolitan areas with populations between one and four million people.

An important aspect of commuting is accessibility to jobs. Accessibility is the ease and feasibility of reaching destinations, and it combines mobility with the understanding that travel is driven by a desire to reach destinations. Accessibility can be measured for most transportation

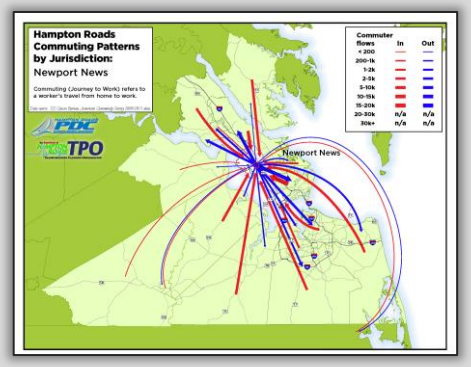
PERCENTAGE OF WORKERS THAT WORKED OUTSIDE COUNTY OF RESIDENCE, LARGE METROPOLITAN AREAS, 2017



Data source: US Census Bureau. Virginia cities are regarded as counties in Census data.

COMMUTING MAPS

Nearly half of all Hampton Roads commuters work in a jurisdiction that is different than the one they reside in. Because of this interconnectedness between the localities that constitute Hampton Roads, HRTPO staff – in coordination with Hampton Roads Planning District Commission (HRPDC) staff – prepared individual jurisdiction maps showing these commuting patterns that illustrate the journeys residents take each day to their place of work.



These maps are available at http://www.hrtpo.org/page/hampton-roads-journey-to-work-maps.

modes to the number of destinations reachable within a certain amount of travel time.

The Accessibility Observatory at the University of Minnesota regularly produces the **Access Across America** report. These reports estimate the accessibility to jobs by automobile, walking, biking, and public transportation for each of the 11 million census blocks in the country.

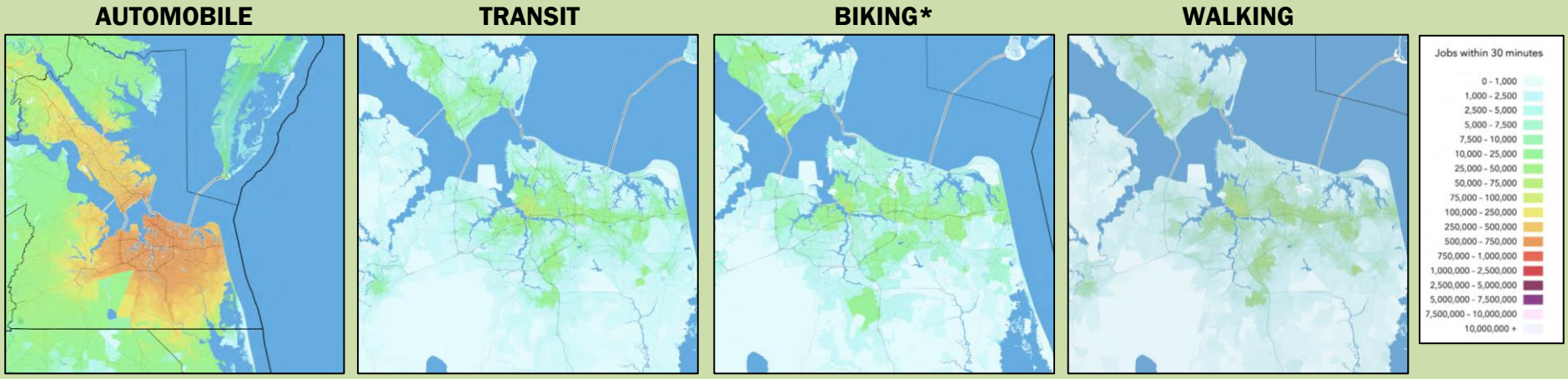
There are 707,752 jobs in Hampton Roads according to the Access Across America report. As shown to the right, nearly half of all jobs (48%) are within 30 minutes by driving, while less than 1% of all jobs are within 30 minutes by public transportation, biking, and walking.

NUMBER OF JOBS IN HAMPTON ROADS REACHABLE BY TRAVEL TIME, 2017

MODE	JOBS REACHABLE BY TRAVEL TIME THRESHOLD (MINUTES)					
	10	20	30	40	50	60
Automobile	36,215	181,882	339,490	473,903	575,621	659,585
	5.1%	25.7%	48.0%	67.0%	81.3%	93.2%
Public Transportation	284	1,492	4,649	10,542	19,919	33,168
	0.0%	0.2%	0.7%	1.5%	2.8%	4.7%
Biking*	1,757	4,359	5,512	6,005	6,195	6,289
	0.2%	0.6%	0.8%	0.8%	0.9%	0.9%
Walking	275	1,275	3,165	5,995	9,827	14,528
	0.0%	0.2%	0.4%	0.8%	1.4%	2.1%

Data source: University of Minnesota Accessibility Observatory. * - Biking reflects medium stress conditions, which includes using all bike infrastructure including separated bike lanes and paths, on-street unprotected bike lanes, certain shared lanes, and mixing with traffic on some non-arterial streets.

NUMBER OF JOBS IN HAMPTON ROADS WITHIN 30 MINUTES BY MODE, 2017



Data source: University of Minnesota Accessibility Observatory. * - Biking reflects medium stress conditions, which includes using all bike infrastructure including separated bike lanes and paths, on-street unprotected bike lanes, certain shared lanes, and mixing with traffic on some non-arterial streets.

In order to encourage commuting to work via carpool, Hampton Roads has a network of High Occupancy Vehicle (HOV) lanes. The lanes – which are restricted to vehicles with at least two occupants from 6:00 am – 8:00 am and 4:00 pm – 6:00 pm on weekdays – include:

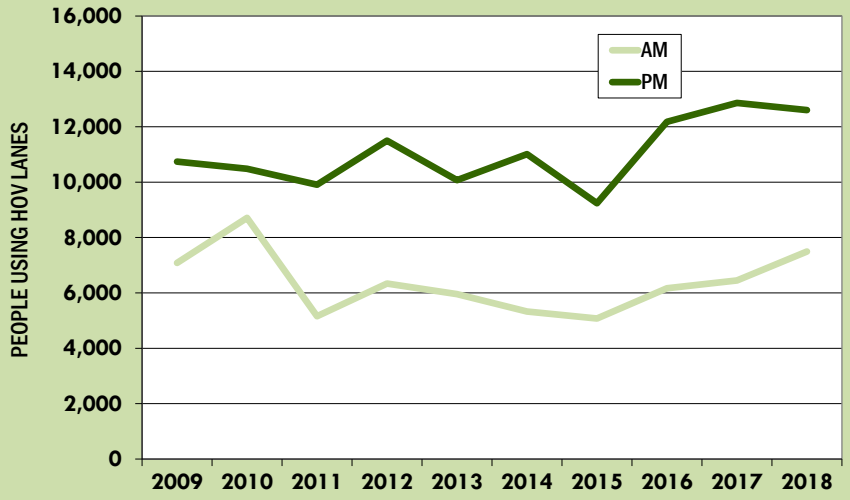
- I-64 Southside - Between Battlefield Boulevard and I-264
- I-64 Peninsula - Between Bland Boulevard and I-664
- I-264 - Between Downtown Norfolk and Rosemont Road in Virginia Beach
- I-564 - Between I-64 and the Naval Base

In addition, the barrier-separated reversible lanes on I-64 between I-564 and I-264 in Norfolk were converted to Express Lanes in 2018, as described in the callout box to the right.

Usage of the HOV lanes has varied over the last decade. Nearly 7,500 people used the regional HOV lanes during the AM restricted hours each weekday in 2018, and 12,600 people used the lanes during the PM restricted hours. Both the AM and PM HOV volumes have increased since 2015, although Express Lanes usage impacted the 2018 levels.

Many vehicles in the HOV lanes, however, do not include multiple occupants. The average vehicle occupancy in regional HOV lanes during restricted hours was 1.29 in 2018, indicating that many vehicles only have one occupant.

AVERAGE USAGE OF HOV LANES EACH WEEKDAY IN HAMPTON ROADS, 2009-2018



Data source: VDOT. 2018 data includes the Express Lanes.

NEW DEVELOPMENTS

Express Lanes – As of January 2018 VDOT has converted the I-64 barrier-separated reversible HOV lanes to High Occupancy Toll (HOT) or Express Lanes. During restricted periods (weekdays from 5 am to 9 am and from 2 pm to 6 pm), people driving alone can now use the I-64 Express Lanes by paying a toll that varies based on congestion levels. Vehicles with two or more people can continue to use the lanes for free with an E-Z Pass Flex device.

More information on the Express Lanes system is included in the Tolling section of this report.

ROADWAY SAFETY

The number of motor vehicle crashes in Hampton Roads decreased significantly at the end of the last decade. However, the trend has reversed with the number of crashes and injuries suffered in the region increasing throughout this decade.

There were a total of 26,916 crashes in Hampton Roads in 2018 according to data collected by the Virginia Department of Motor Vehicles. While this is much lower than the 32,000 crashes that occurred yearly in the middle of last decade, the number of crashes experienced in the region has increased most years this decade, and the number of crashes increased by 12% between 2009 and 2018.

The number of injuries resulting from traffic crashes has followed a similar trend to the number of crashes over the last decade. There were 16,448 injuries that resulted from traffic crashes in Hampton Roads in 2018. This is up 17% from the 14,004 injuries that occurred in 2009. The increase in the number of injuries in Hampton Roads over the last decade compares to a 6% increase that was experienced across the Commonwealth during this time.

The number of fatalities in Hampton Roads has fluctuated over the last decade. There were 139 fatalities resulting from traffic crashes in Hampton Roads in 2018. Although this is a decrease from the 155 fatalities experienced in Hampton Roads in 2017, it is 12% higher than the number of fatalities in 2009. The increase in the number of fatalities in Hampton Roads over the last decade was higher than the increase seen both across the state (+8%) and throughout the country (+8%).

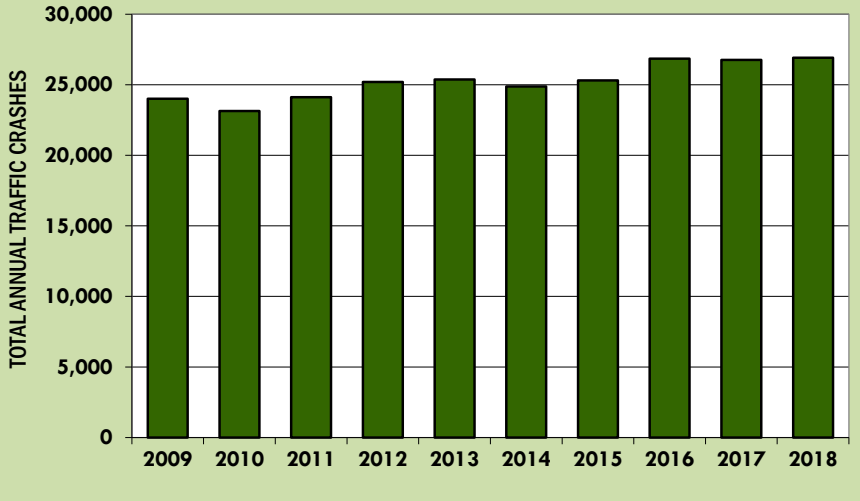
NOTABLE ROADWAY SAFETY NUMBERS

12% The increase in the annual number of crashes in Hampton Roads between 2009 and 2018.

17% The increase in the annual number of injuries in Hampton Roads between 2009 and 2018.

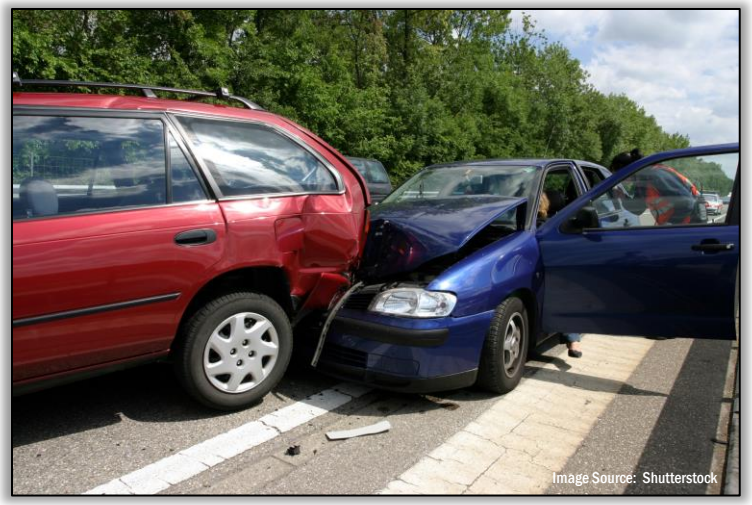
12% The increase in the annual number of fatalities in Hampton Roads between 2009 and 2018.

CRASHES IN HAMPTON ROADS, 2009-2018



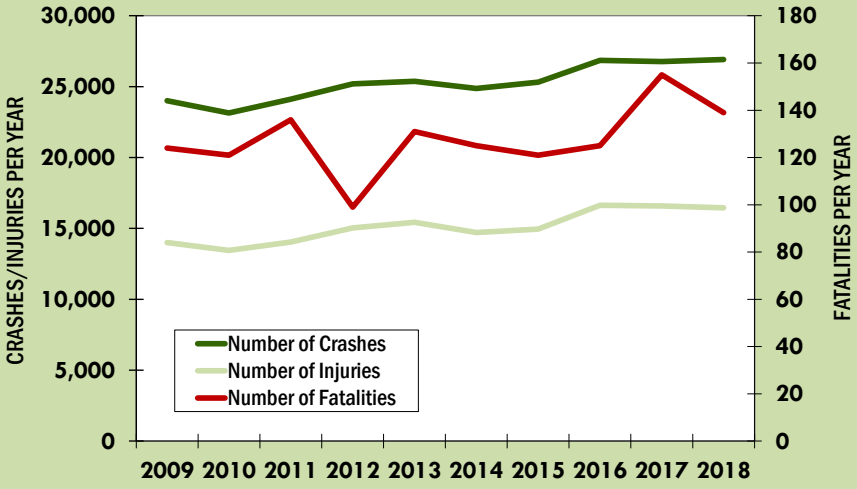
Data source: Virginia DMV.

The rate of crashes relative to the amount of travel has increased in Hampton Roads over the last decade. The crash rate in Hampton Roads increased from 1.63 crashes per million vehicle-miles of travel (VMT) in 2009 to 1.81 crashes per million VMT in 2018, an 11% increase. This increase in the crash rate is larger than the increase that was seen across Virginia (7%) during this period.



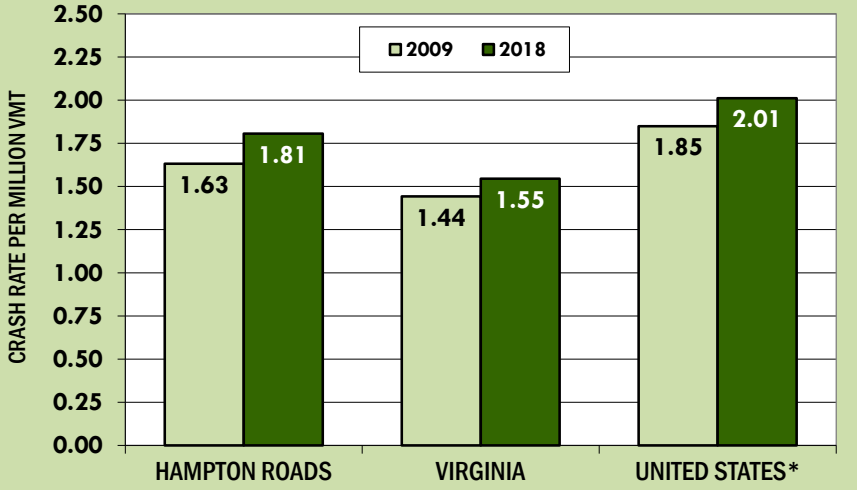
The crash rate in Hampton Roads was higher than the statewide rate in 2018. In addition, the crash rate in Hampton Roads was higher than the crash rate experienced in other metropolitan areas of Virginia including Northern Virginia (1.53 crashes per million VMT), Roanoke (1.64), and Richmond (1.80).

CRASHES, INJURIES, AND FATALITIES IN HAMPTON ROADS, 2009-2018



Data source: Virginia DMV.

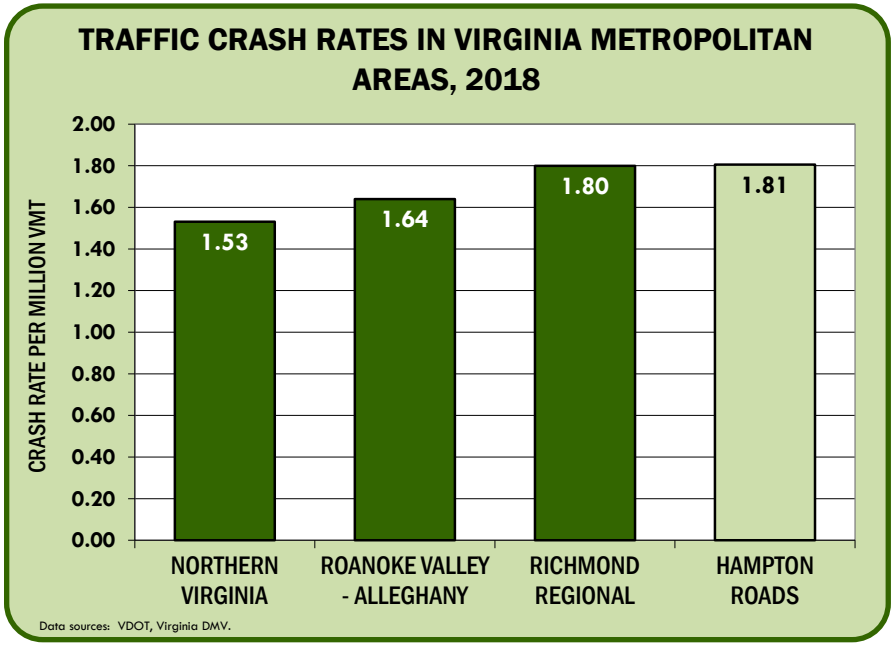
TRAFFIC CRASH RATES IN HAMPTON ROADS, VIRGINIA, AND THE UNITED STATES, 2009 and 2018

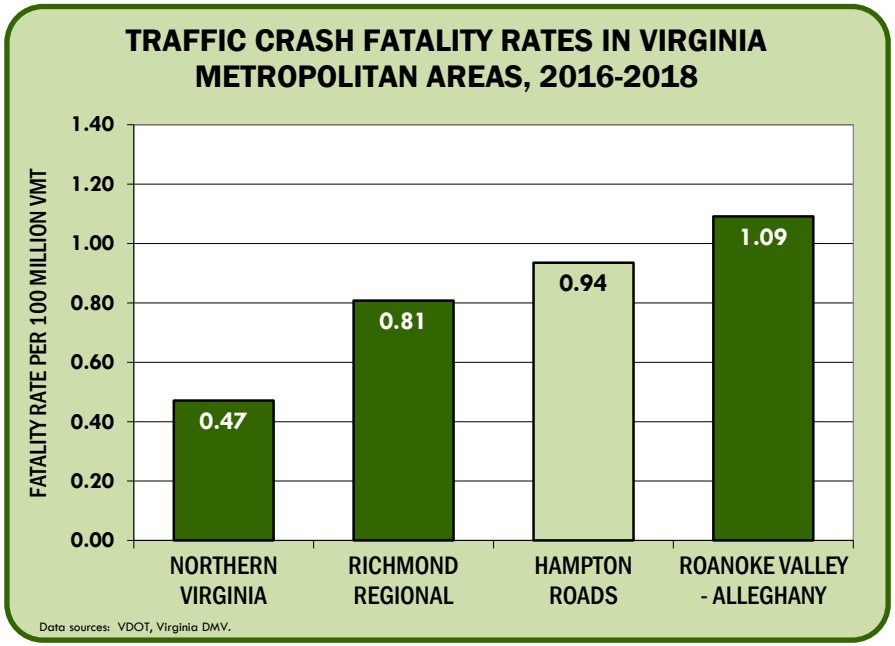


Data sources: VDOT, Virginia DMV, NHTSA.
* U.S. data reflects 2009 and 2017, and the methodology used by NHTSA to estimate the number of crashes in the U.S. was updated in 2016.

Unlike the crash rate, the fatality rate in Hampton Roads has decreased over the last decade. The Hampton Roads crash fatality rate was 0.94 fatalities per 100 million VMT in the three-year period from 2016 to 2018, down 4% from 0.97 fatalities per 100 million VMT in the 2007 to 2009 time period (fatality rates are often reported over three year periods due to the number of fatalities that occur in any given year). The fatality rate in Hampton Roads from 2016 to 2018 was twice the rate experienced in the Northern Virginia area (0.47 fatalities per 100 million VMT). The fatality rate was also higher than the rate in the Richmond area (0.81), but was much lower than the fatality rate in the Roanoke area (1.09).

Safety belt use has an impact on the severity of injuries and the number of fatalities resulting from crashes. In 2018, Virginia had an observed safety belt usage rate of 84.1% according to a study done for the DMV by Old Dominion University. Hampton Roads usage rates were higher than the statewide rate, with the cities on the Southside having an observed safety belt usage rate of 86.9% in 2018 and the localities on the





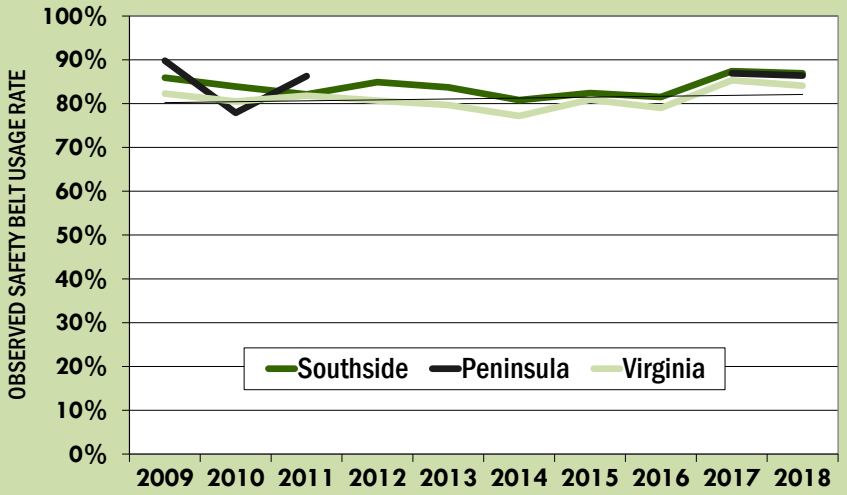
Peninsula having a usage rate of 86.4%. For the Southside Cities, the 86.9% usage rate is lower than the rate in 2017 but is higher than most other years throughout the last decade.

Virginia's safety belt usage rate in 2018 was lower than the national rate of 89.6%, and only seven states had a lower statewide usage rate than Virginia. This is largely due to Virginia not having a primary enforcement safety belt law, which allows law enforcement officers to ticket a driver for not wearing a safety belt without any other traffic offense occurring. Of the 35 states/districts that had primary enforcement safety belt laws in 2018, only three (Arkansas, Kansas, and Mississippi) had a lower safety belt usage rate than Virginia.


Image Source: EVMS

HRTPO prepares an analysis of regional roadway safety through the Hampton Roads Regional Safety Study. This study examines regional crash trends, the location of crashes throughout the region, and safety countermeasures. More information on the Hampton Roads Regional Safety Study is available at **http://www.hrtpo.org/page/roadway-safety**.

SAFETY BELT USAGE RATE IN SOUTHSIDE HAMPTON ROADS AND VIRGINIA, 2009-2018



Data source: Old Dominion University *Seat Belt Use in Virginia* report. Southside includes the area defined in the report as South East Cities, which includes Norfolk, Portsmouth, Virginia Beach, Chesapeake, and Suffolk. Peninsula includes the area defined in the report as York, which includes Williamsburg, Poquoson, Hampton, Newport News, and York County. Data for the Peninsula was not collected 2012-2016. The sampling methodology was updated in 2012 to match NHTSA standards, so caution should be exercised for comparisons with data prior to 2012 according to the study's authors.

TRUCK TRAVEL

Nearly 19,000 trucks enter and exit Hampton Roads each weekday, serving not only the third busiest port on the East Coast but also supporting the commerce and economic vitality of the region.

Freight movement is a critical component of the Hampton Roads economy, and trucks are the primary mode for moving freight to and from the Port of Virginia. Trucks also supply the goods used by each resident and business in the region.

In 2018, nearly 19,000 trucks entered or exited Hampton Roads through major gateways each weekday. The number of trucks passing through Hampton Roads gateways has increased each year since 2012. However, the number of trucks is still lower than the 20,000 trucks that passed through major regional gateways each weekday in 2007, prior to the start of the economic downturn.

The primary gateway for trucks entering or exiting Hampton Roads is I-64. An average of 6,600 trucks used I-64 to enter or exit the region each weekday in 2018, which accounted for 35% of the trucks passing through the region's major gateways. The share of trucks using I-64, however, has decreased, down from 38% in 2009. The next most heavily-used gateways to the region are Route 58 (4,300 trucks each weekday in 2018) and Route 460 (2,500 trucks). Both Route 58 and Route 460 have seen an increasing share of trucks entering and exiting the region over the last decade. Combined, I-64, Route 58, and Route 460 accounted for 70% of all trucks passing through the region's major gateways in 2018.

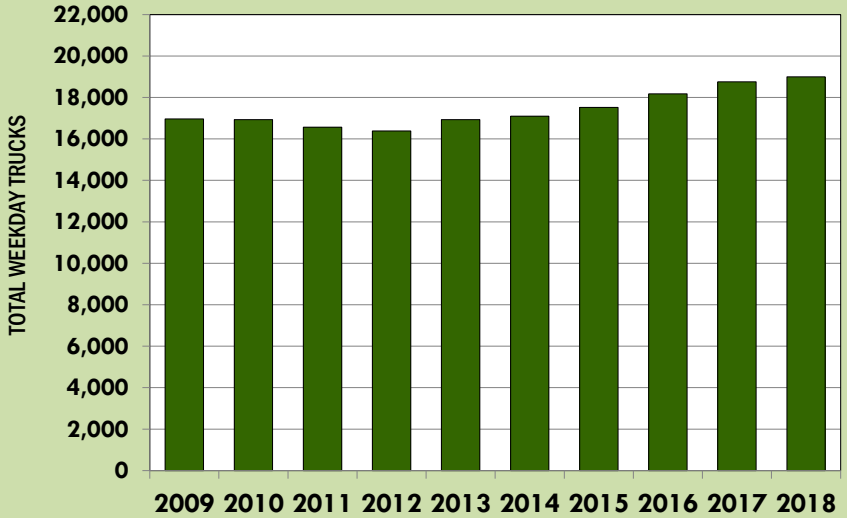
NOTABLE TRUCK TRAVEL NUMBERS

12% ▲ The increase in the amount of truck travel each day in Hampton Roads between 2009 and 2018.

12% ▲ The increase in the number of trucks that entered or exited Hampton Roads each weekday at major gateways between 2009 and 2018.

62% The percentage of all freight handled by the Port of Virginia that was transported by truck in 2018.

NUMBER OF TRUCKS PASSING THROUGH HAMPTON ROADS GATEWAYS EACH WEEKDAY, 2009-2018



Data sources: VDOT, CBBT.

TRUCK TRAVEL (continued)

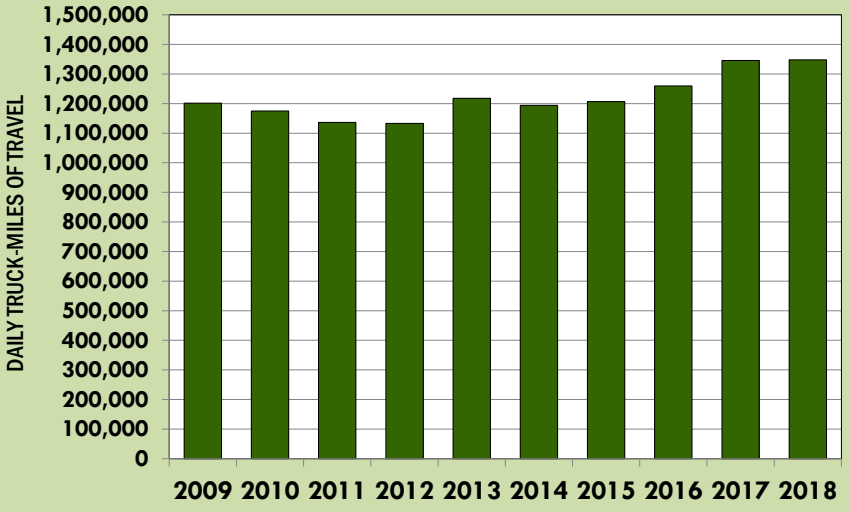
There was over 1.3 million miles of truck travel each day in Hampton Roads in 2018 according to VDOT, which accounted for 3.3% of the 41 million vehicle-miles of travel experienced each day throughout the region. Regional truck travel levels have increased from the lows seen at the height of the economic downturn, with truck travel in Hampton Roads increasing 12% between 2009 and 2018.

A major issue involving truck travel in Hampton Roads is overheight trucks at the tunnels. This is especially an issue at the westbound Hampton Roads Bridge-Tunnel (HRBT), which has a lower vertical clearance than other tunnels in the area. A total of 6,300 trucks were stopped, measured, and turned around at tunnels in Hampton Roads in 2018, which is down from 15,400 trucks in 2016 due to improvements at the Downtown and Midtown Tunnels. Of these 6,300 trucks, 5,000 occurred at the westbound Hampton Roads Bridge-Tunnel, and 2,486 of these HRBT turnarounds occurred at the tunnel entrance on the south island, which greatly impacts congestion and safety since traffic is stopped in both directions to complete the turnaround.


HAMPTON BOULEVARD

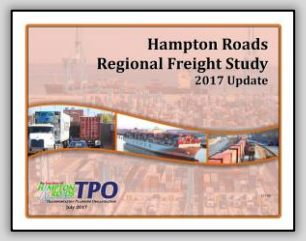
Image Source: HRTPO.

DAILY TRUCK TRAVEL IN HAMPTON ROADS, 2009-2018

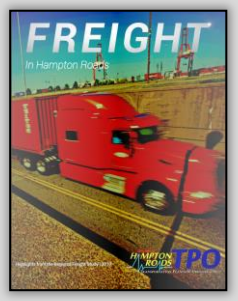


Data source: VDOT.

HRTPO REGIONAL FREIGHT STUDY



For the past two decades, the HRTPO has engaged in numerous freight planning activities, including the development of the **Hampton Roads Regional Freight Study**, which serves as a comprehensive resource document on the multimodal transportation system. This report details the movement of goods across all freight facilities – highways, ports, railways, and airports. Special emphasis is placed on freight moving by trucks across highways as they serve as the predominant mover of freight in the region.



As part of this effort, HRTPO also produced a **freight brochure**. The brochure details why freight is important to Hampton Roads, how freight arrives in the region, the impacts of congestion on the trucking industry, and many key freight-related facts.

PUBLIC TRANSPORTATION

Public transportation usage increased sharply in Hampton Roads throughout the economic downturn earlier this decade. Transit ridership levels, however, have decreased both in the region and nationwide each year since peaking in 2012.

Public transportation services in Hampton Roads are primarily provided by three agencies. The Williamsburg Area Transit Authority (WATA) provides transit service in James City County, Williamsburg, and northern York County, while Suffolk Transit provides transit service throughout that city. Hampton Roads Transit (HRT) provides service in the remaining urbanized areas on the Peninsula and Southside.

There were 15.8 million unlinked trips* taken on HRT, WATA, and Suffolk Transit public transportation services in Hampton Roads in 2018. This number includes ridership on regular and express buses, tourist oriented services, light rail, demand response/paratransit, vanpools, and the passenger ferry. These public transportation trips help reduce congestion in the region, resulting in 45 million fewer vehicle-miles traveled and $13.5 million saved in vehicle operating costs in 2015 according to estimates from a study prepared by the Economic Development Research Group.

The number of trips taken on public transportation in Hampton Roads increased significantly during the economic downturn, with a 28% increase in annual ridership levels from 2008 to 2012. However, ridership levels peaked in 2012 and have decreased each year since then. Ridership levels in 2018 were

* - An unlinked trip is a passenger trip made on one transit vehicle. If a passenger boards two buses to get from origin to destination that is considered to be two unlinked trips.

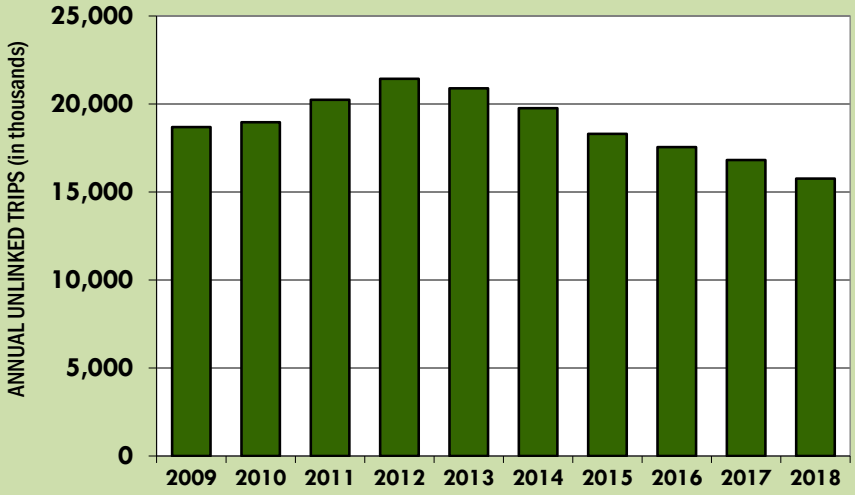
NOTABLE PUBLIC TRANSPORTATION NUMBERS

16%▼ The change in the annual number of passenger trips taken on public transportation in Hampton Roads from 2009 to 2018.

28th Hampton Roads rank among the 39 large metropolitan areas with populations between one and four million people in terms of public transportation use per capita in 2018.

30th Hampton Roads rank among the 39 large metropolitan areas in terms of transit operating and capital expenses per capita in the most recent National Transit Database data.

PASSENGER TRIPS TAKEN ON PUBLIC TRANSPORTATION IN HAMPTON ROADS, 2009-2018

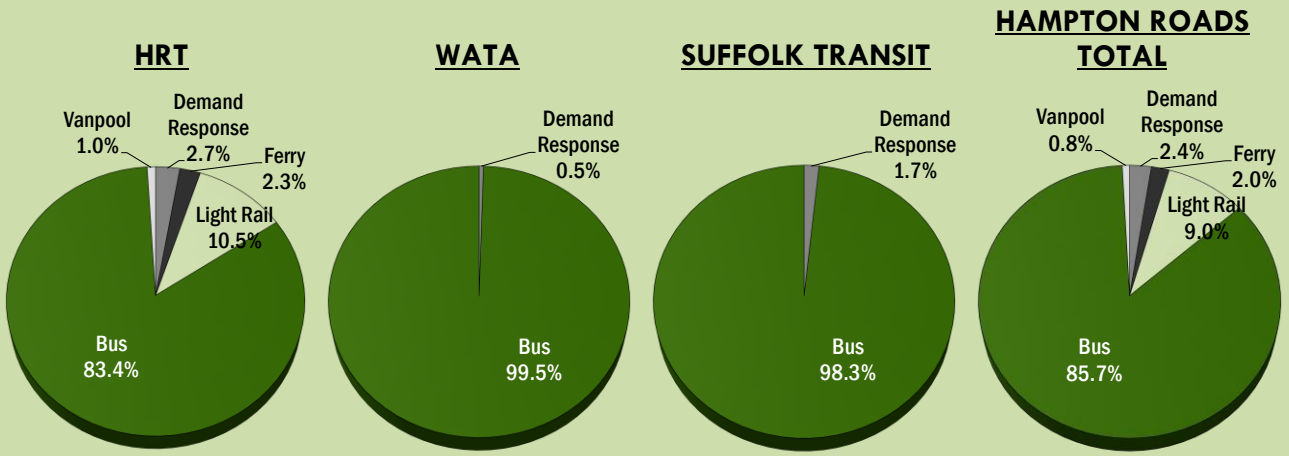


Data sources: HRT, WATA, Suffolk, American Public Transportation Association (APTA).

16% below the levels seen in 2009 and were 26% below the peak levels seen in 2012.

The vast majority of public transportation trips in Hampton Roads – 86% in 2018 – are taken on regular or express bus service. Light rail comprised 11% of all HRT transit trips and 9% of all regional transit trips, and all other modes (including ferry, demand response/paratransit services, and vanpools) comprised the remaining 5%.

TRANSIT USAGE BY MODE AND AGENCY IN HAMPTON ROADS, 2018



Data sources: HRT, WATA, Suffolk, and APTA.

PUBLIC TRANSPORTATION OPTIONS IN HAMPTON ROADS

A variety of public transportation options are available in Hampton Roads. These options include:

Conventional Bus

Conventional bus service is provided on an extensive regional network by HRT, WATA and Suffolk Transit.

Express Bus

Regional express bus service, known as the MAX, is provided by HRT between various locations on the Peninsula and Southside.

Tourist Oriented Services

Tourist-oriented service in Hampton Roads includes the VB WAVE at the Oceanfront, Colonial Williamsburg shuttle services, and the Williamsburg and Yorktown Trollies.

Light Rail

HRT began operating light rail service on a 7.4-mile line in Norfolk in 2011.

Ferries

Passenger ferry service is provided by HRT between Downtown Norfolk and Portsmouth, and vehicular ferry service is provided by VDOT across the James River between Surry Co. and Jamestown.

Commuting Alternatives

Commuting alternatives are provided by Traffix. These alternatives include ridesharing, telecommuting, van leasing, and guaranteed ride programs.

Paratransit

HRT, WATA, and Suffolk Transit offer demand response/ paratransit services using a variety of vehicles, including lift-equipped vans.

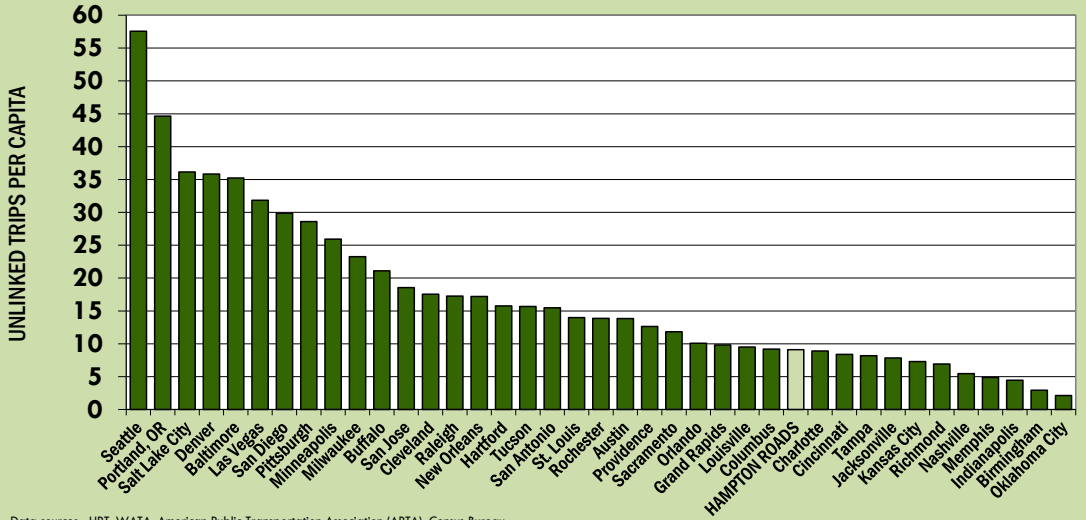
Public transportation usage in Hampton Roads lags behind other metropolitan areas. At 9.1 passenger trips on public transportation per capita in 2018, Hampton Roads ranked 28th highest among the 39 large metropolitan areas with populations between one and four million people. Metropolitan areas such as Seattle, Portland, Salt Lake City, Denver and Baltimore have transit usage rates per capita more than four times higher than Hampton Roads.


HRT BUSES

Image Source: HRT.

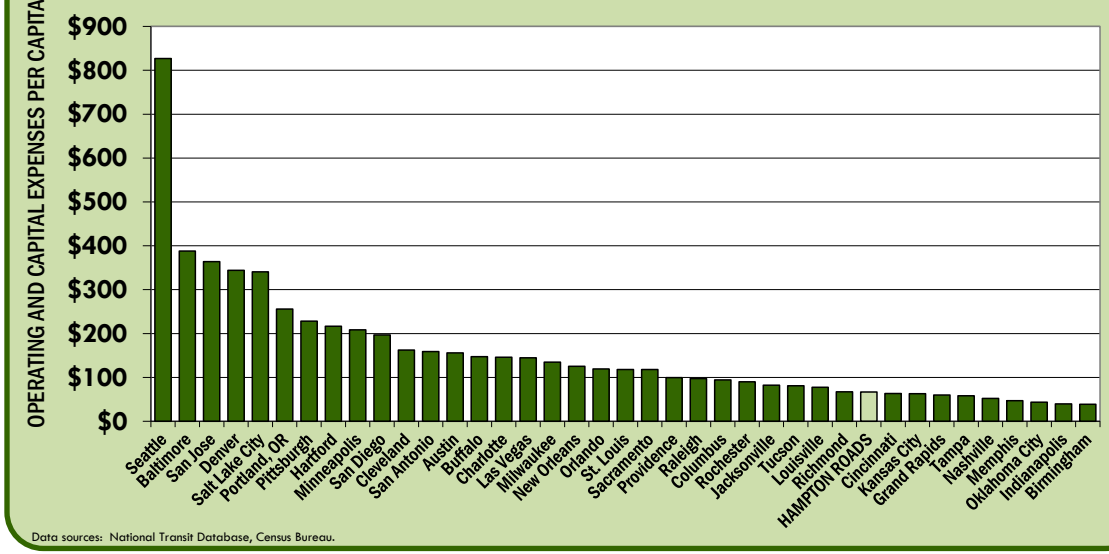
Hampton Roads spends less on public transportation on a per capita basis than many other comparable metropolitan areas. According to an analysis of the National Transit Database, $67 was spent per capita on transit operating and capital expenses in Hampton Roads in Reporting Year 2017. This ranked the region 30th highest among the 39 large metropolitan areas. Seattle spent more than 12 times

PASSENGER TRIPS PER CAPITA ON PUBLIC TRANSPORTATION IN LARGE METROPOLITAN AREAS, 2018



Data sources: HRT, WATA, American Public Transportation Association (APTA), Census Bureau.

TRANSIT OPERATING AND CAPITAL EXPENSES PER CAPITA IN LARGE METROPOLITAN AREAS, REPORTING YEAR 2017



Data sources: National Transit Database, Census Bureau.

more per capita on public transportation than was spent in Hampton Roads, while areas such as Baltimore, San Jose, Denver, and Salt Lake City spent more than five times more per capita.

This level of spending on public transportation in Hampton Roads has contributed to an older fleet of vehicles. The average age of HRT buses is 10 years as of 2019, which is four years beyond FTA's recommended average fleet age. However, HRT is planning to replace nearly half of its entire fleet of buses by 2023, which should lower the average age of HRT's bus fleet down to 7 years.

Much of WATA's fleet has been replaced in recent years, including six new buses in 2019. WATA's bus fleet has decreased in age from an average of 10 years in 2015 down to 6 years currently.

Transit buses are older in Hampton Roads than in other comparable metropolitan areas. Among large metropolitan areas throughout the country with populations between one and four million people, the median age of transit buses was 6.3 years in Reporting Year 2017 according to the National Transit Database. Only San

NEW DEVELOPMENTS

HRT Transit Transformation Project – Hampton Roads Transit (HRT) has embarked on the Transit Transformation Project. The purpose of this study is to evaluate the performance of the current bus system and design a new bus network that is more relevant and responsive to the needs of Hampton Roads citizens. This project is being conducted through extensive collaboration with regional stakeholders and the public. HRT expects to produce a draft set of potential system changes by Fall 2019. More information is available at **https://transformtransit.com**.

Norfolk Westside Transit Study – HRT completed the **Norfolk Westside Transit Study** in 2018. The purpose of this study – a joint effort between HRT and the City of Norfolk – was to explore potential connections to Naval Station Norfolk from the existing Tide light rail system along the western side of Norfolk. The results of the study indicate that based on limited ridership potential, high capital and operating costs, the potential to impact vehicular traffic patterns, and significant flooding challenges, a new high capacity transit alternative on the west side of Norfolk is not feasible.

Transit Development Plans – HRT has recently completed an update to its **Transit Development Plan**. The HRT Transit Development Plan evaluates and assesses the performance, connectivity, efficiency and effectiveness of HRT service. It also provides a fiscally-constrained, comprehensive vision for transit operations and capital improvements for the ten-year period of FY 2018 through FY 2027. WATA completed its most recent **TDP** in 2016.

Jose, Buffalo, and Charlotte had an average transit bus age that was older than the bus fleet in Hampton Roads.

AllTransit, which is a joint project of the Center for Neighborhood Technology and TransitCenter, has produced an analysis of transit in each area based on data assembled from 900 transit agencies. One measure produced by Alltransit – the AllTransit Performance Score – is an overall regional transit score that looks at connectivity, access to land area and jobs, and frequency of service. Examples of factors included in the score are connections to other routes, the number of workers using transit to travel, jobs accessible in a 30-minute transit ride, and jobs, workers, and households within ½ mile of transit.

Areas are given a score from 1 to 10, with higher scores indicating better performance according to AllTransit's analysis. Hampton Roads, with a score of 3.1, ranks 23rd highest among the 39 metropolitan areas with a population between one and four million people. This is higher than the Richmond (2.4), Raleigh (2.3), and Charlotte (1.8) areas.

BEHIND THE NUMBERS

Transit usage continued to decrease in Hampton Roads in 2018. However, this decrease is not unique to the region. Transit ridership has been decreasing in most metropolitan areas throughout the United States, and nationwide transit usage was down 2% from 2017 to 2018 according to the American Public Transportation Association. Since 2014, nationwide transit usage has fallen by 8%. There are a number of contributing factors for this decrease in transit usage, including:

- Ridehailing Services – On-demand transportation services such as Uber and Lyft have greatly expanded in recent years, at the expense of traditional services such as transit and taxi.
- Lower Driving Costs - Gas prices remain much lower than they were earlier this decade, making driving costs more economical.
- The Economy – Ridership increased both in Hampton Roads and nationwide earlier this decade through the economic downturn. With the economy improving in recent years, transit levels are returning to pre-recession levels.
- Active Transportation – Many areas are seeing increases in bicycling and walking, and have added infrastructure and amenities to improve these modes, such as protected bike lanes and bike sharing services. On-demand scooter rentals such as Lime and Bird are also becoming more prevalent.
- System Reliability – Many transit systems are aging, and some such as New York and Washington D.C. have had high profile reliability issues that have led to major service disruptions for maintenance.

ACTIVE TRANSPORTATION

Active Transportation Planning, which aims to improve the safety and mobility of all types of non-motorized transportation options, has expanded both in Hampton Roads and across the country in recent years.

Active transportation is defined as including all forms of human-powered transportation. The most common forms of active transportation are bicycling and walking, but it also includes using a wheelchair and activities such as in-line skating or skateboarding. Bicycle lanes, multi-use paths, sidewalks, crosswalks, and trails are all non-motorized transportation facilities designed to improve the mobility and safety of active transportation users.

FIRST LANDING STATE PARK Image Source: Va Beach

There are currently over 1,300 miles of shared use paths, bike lanes, paved shoulders, wide sidewalks, signed shared roadways, and trails

ACTIVE TRANSPORTATION FACILITY TYPES

There are various types of non-motorized facilities throughout Hampton Roads. Examples of these non-motorized facilities include:

Bike Lanes
A portion of the roadway is designated by signs and pavement markings for the preferential or exclusive use of bicycles.

Shared Use Paths
A facility physically separated from motorized vehicular traffic intended for the use of bicycles, pedestrians, and other active transportation users.

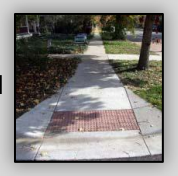
Paved Shoulders
A paved portion of a roadway to the right of the edge stripe on which bicyclists may ride. These areas are not to be marked as bike lanes.

Wide Outside Lanes
An outside travel lane with a width of at least 14 feet.

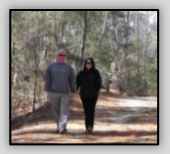
Signed Shared Roadway
A roadway designated by bike route signs that serve to provide continuity to other bicycle facilities.

Grade Separated Crossing
Facilities that are designed to continue non-motorized facilities through high volume roadways, railroads, or natural barriers.

Sidewalks
Non-motorized facilities between the curb line and adjacent property line that are designed primarily for foot traffic and users with smaller wheeled devices.



Trails
Routes developed primarily for outdoor recreational purposes.



that comprise the bicycle and pedestrian network across Hampton Roads. These non-motorized facilities vary greatly, from secluded park trails to dedicated bike lanes along major roadways to popular multi-use paths such as the 52-mile Virginia Capital Trail.


VIRGINIA BEACH OCEANFRONT Image Source: HRTPO.

In recent years, several Active Transportation facilities have been added throughout Hampton Roads. Examples of these facilities include sections of the Suffolk Seaboard Coastline Trail, the addition of bike lanes along Shore Drive in Virginia Beach, road diets on various roadways including Ocean View Avenue, and the Bike Loop in the Ghent section of Norfolk.

NEW DEVELOPMENTS

Pace Bike Share – In 2018, the City of Norfolk became the home of a bike rental service. The Pace Bike Share service does not require docks and can be rented via smartphone. More than 250 bikes are located throughout the city in Downtown, the NEON art district, Ghent and Old Dominion University.

Norfolk Bike Loop – The City of Norfolk created a 4-mile bike loop along 35th Street, Llewellyn Avenue, Olney Road, 26th Street, 27th Street, and Colley Avenue. Construction of the dedicated facility – which is comprised of various types of bicycle facilities – was completed in late 2016.

Suffolk Seaboard Coastline Trail – The Suffolk Seaboard Coastline Trail is envisioned as an 11 mile trail that will connect Downtown Suffolk with the City of Chesapeake. The first portion of the trail, a 2.3-mile section near the village of Driver, opened in 2015 and another 1.1-mile section of the trail between Shoulders Hill Road and the Chesapeake City Line was completed in early 2017. Another phase spanning between Nansemond Parkway and Suburban Drive is funded and expected to be completed in 2022, and a continuation of the trail into the City of Chesapeake will begin construction in Fall 2019.

Regional Trails – Planning is underway on a number of facilities throughout the region. The South Hampton Roads Trail is planned as a 41 mile trail connecting Suffolk with the Virginia Beach Oceanfront. Over three miles of the trail, overlapping the Suffolk Seaboard Coastline Trail, is complete. Plans are also underway for portions of this trail in Chesapeake and Portsmouth. Planning is also underway on the Birthplace of America Trail, which is described later in this section.

ACTIVE TRANSPORTATION (continued)

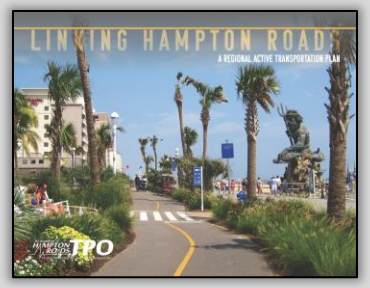
Most jurisdictions in Hampton Roads have created plans that are specifically dedicated to active transportation. Examples include:

- A **bicycle advisory committee** that helped prepare a Regional Bicycle Facilities Plan and Bikeway Map in the Historic Triangle (James City County, Williamsburg, and York County)
- Virginia Beach's **Bikeways and Trails Plan**
- Norfolk's **Bicycle and Pedestrian Strategic Plan**
- Hampton's **Bike Walk Hampton** Strategic Bicycle and Pedestrian Plan
- Suffolk's **Bicycle and Pedestrian Master Plan**
- Isle of Wight County's **Pedestrian and Bicycle Facilities Master Plan**
- Southampton County's **Active Transportation Plan**
- Surry County's **Comprehensive Bicycle and Pedestrian Plan**

HRTPO is also currently developing a Regional Active Transportation Plan, as described further in the box to the right.

HRTPO ACTIVE TRANSPORTATION EFFORTS

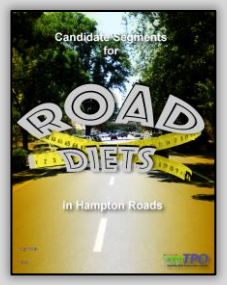
HRTPO has expanded incorporating active transportation into its planning process in recent years. Recent HRTPO active transportation efforts include:



Regional Active Transportation Plan – HRTPO has begun developing a regional active transportation plan for the Hampton Roads region. The purpose of this regional plan is to provide a clear structure for the development of new facilities, programs, and policies that will link the region by developing greater active transportation facilities and promoting active and healthy lifestyles throughout the region. A number of draft chapters of the Linking Hampton Roads Plan have been completed and are available at **https://www.hrtpo.org/page/active-transportation**.

Birthplace of America Trail – The HRTPO has proposed a route for an off-road paved multi-use path connecting the Hampton Roads region to the Virginia Capital Trail. This is described in detail later in this section.

HRTPO Active Transportation Subcommittee – In 2016, HRTPO created a subcommittee to discuss extending the Virginia Capital Trail southeastward from its current Jamestown terminus to Fort Monroe and the western terminus of the proposed South Hampton Roads Trail in Suffolk. Based on the success of the Birthplace of America Trail effort, HRTPO formed an Active Transportation Subcommittee in 2017.



Road Diets – A "road diet" is a method of converting a road into a street by reducing the number of lanes and creating on-street parking, bike lanes, wider sidewalks, and/or two-way left turn lanes. To help localities find roadways to investigate for a possible road diet, HRTPO staff determined criteria in which road diets may be desirable and prepared a list of suitable segments in Hampton Roads in this study.

Signature Paths Study – The purpose of **this study** – which was completed in 2016 – was to locate inactive railroad right-of-ways in the region and analyze the costs and benefits of converting them to multi-use trails.

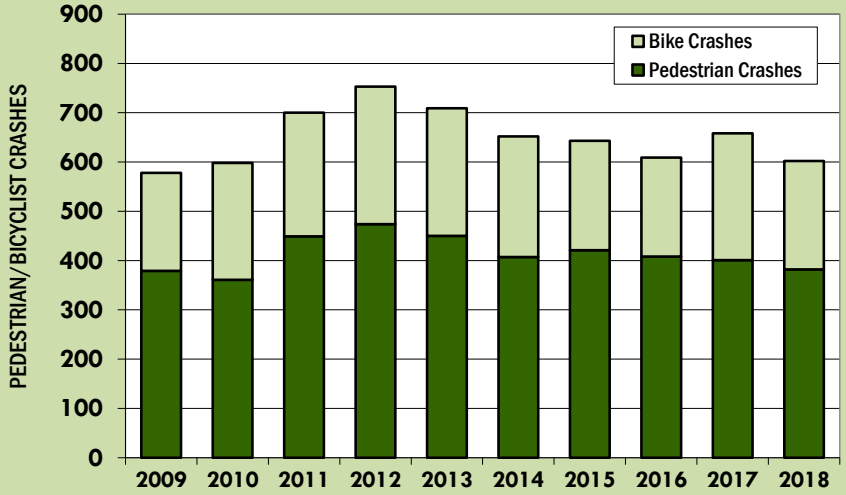
ACTIVE TRANSPORTATION (continued)

In addition, VDOT has developed statewide active transportation plans. The **State Bicycle Policy Plan** – adopted in 2011 – includes policy recommendations that will guide the planning, design, construction, operation and maintenance of bicycle facilities. The **State Pedestrian Policy Plan** – adopted in 2014 – establishes a vision for the future of walking in Virginia. The plan is a guide for officials, organizations, and individuals to improve pedestrian policy and accommodations. VDOT has also recently developed a **Pedestrian Safety Action Plan**. Much of the planning for these efforts has been conducted through the Virginia Statewide Bicycle and Pedestrian Advisory Committee (BPAC), and the Hampton Roads Pedestrian and Bicycle Advisory Committee (PABAC).

Although it is difficult to measure the total amount of walking and bicycling, the percentage of people that commute to work by mode is measured by the Census Bureau. In Hampton Roads, 3.9% of workers walked or rode bicycles to commute to work in 2017. This percentage is similar to the percentage seen in the region in 2010 (3.8%), but increased from 3.0% walking or biking to work in 2000.

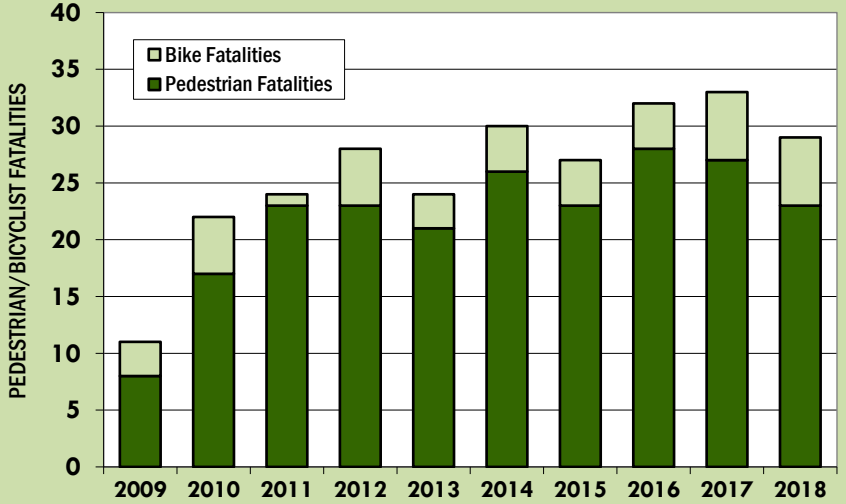
Pedestrians and bicyclists are the most vulnerable users of the transportation system, and insuring their safety is critical. There were 602 active transportation crashes – 382 involving pedestrians and 220 involving bicyclists – in Hampton Roads in 2018. These crashes resulted in a total of 29 fatalities, 23 of which were pedestrians and 6 of which were bicyclists. The number of crashes involving pedestrians and bicyclists in Hampton Roads has decreased most years since 2012, but is 4% higher than the number seen in 2009. The number of pedestrian and bicyclist fatalities in Hampton Roads, however, increased 163% from 2009 to 2018. Pedestrian and bicyclist crashes comprised

CRASHES INVOLVING PEDESTRIANS OR BICYCLISTS IN HAMPTON ROADS, 2009-2018



Data source: Virginia DMV.

PEDESTRIAN/BICYCLIST FATALITIES IN HAMPTON ROADS, 2009-2018

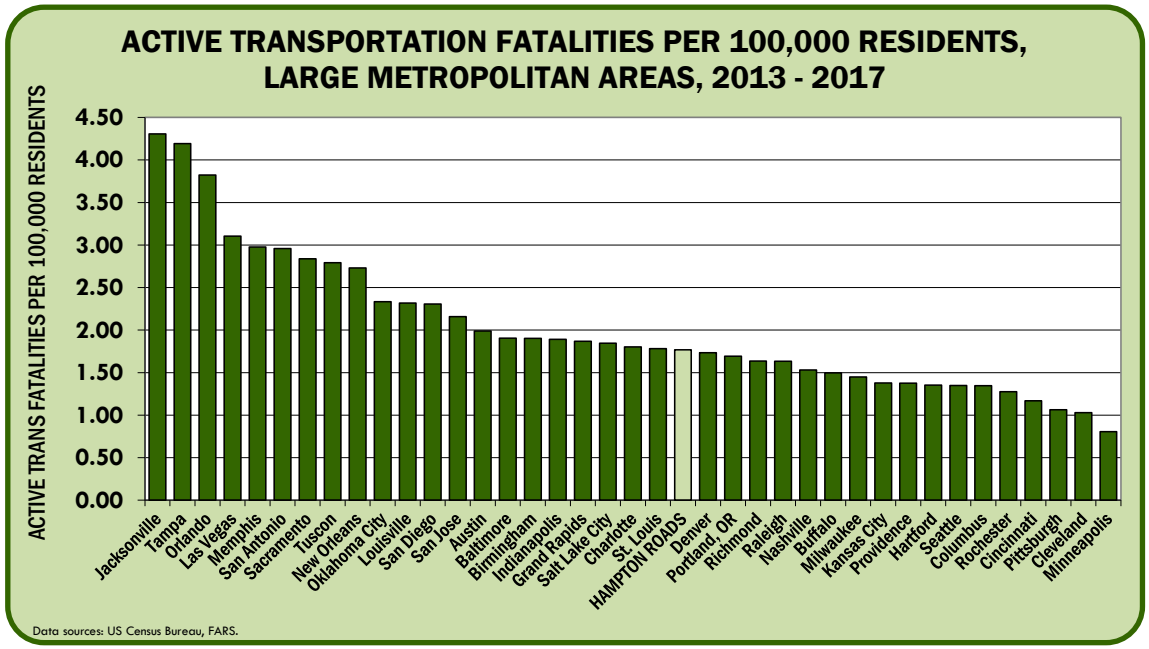


Data source: Virginia DMV.

3% of the total crashes in Hampton Roads between 2009 and 2018, but comprised 20% of all roadway fatalities in the region during this time.

The rate of active transportation fatalities in Hampton Roads is typical of other comparable areas. Hampton Roads ranked 22nd highest among the 39 large metropolitan areas between one and four million people in terms of the rate of active transportation fatalities per resident for the years 2013 - 2017.

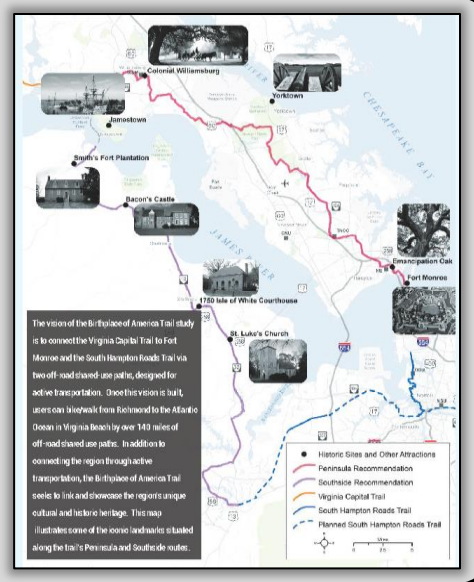
More information on HRTPO's expanding Active Transportation planning efforts is available at **http://www.hrtpo.org/page/active-transportation**.



BIRTHPLACE OF AMERICA TRAIL

HRTPO staff, with assistance from VDOT and a subcommittee made up of localities and local agencies, has been involved in studying the Birthplace of America Trail (BOAT). The BOAT is envisioned as an extension of the Virginia Capital Trail from its current terminus at Jamestown to Fort Monroe and the western terminus of the South Hampton Roads Trail, which would provide a connection all the way to the Virginia Beach Oceanfront. Once built, the Virginia Capital Trail, Birthplace of America Trail, and South Hampton Roads Trail will connect Richmond to Coastal Virginia with over 140 miles of separated, paved off-road trails.

The **Birthplace of America Trail study** was adopted by the HRTPO Board in July 2017. With the study adopted, HRTPO staff and localities are working towards finding funding for constructing and marketing the trail.



TRANSPORTATION FINANCING

In recent years, legislation has been passed by the Virginia General Assembly that comprehensively reforms how transportation projects are funded and selected, and created funding sources specifically devoted to constructing major projects in areas of the state including Hampton Roads.

With statewide transportation funding levels falling well behind needs, the Virginia General Assembly passed House Bill (HB) 2313 in 2013. HB 2313 comprehensively reformed how transportation is funded throughout the Commonwealth and increased funding levels.

Funding for many aspects of the statewide transportation system is allocated by the Commonwealth Transportation Board (CTB), including the construction and maintenance of Virginia's highway system, transportation operations, debt payments, administration, and support for ports, aviation, public transportation, space flight, and rail. For Fiscal Year 2020, the CTB approved a $7.19 billion statewide transportation budget, which is significantly larger than the $6.15 billion budget in FY 2019. The CTB projects that a total of $43.0 billion will be available in the statewide transportation budget for FY 2020-2025, which is 25% higher than the budgets from FY 2014-2019.

HB 2313 also created a dedicated regional funding stream for Hampton Roads. Increases in regional sales and fuel wholesale taxes has generated $981 million as of May 2019, and is projected to produce $1.3 billion in FY 2020-2025 for use on major regional roadway, bridge, and tunnel projects in the region.

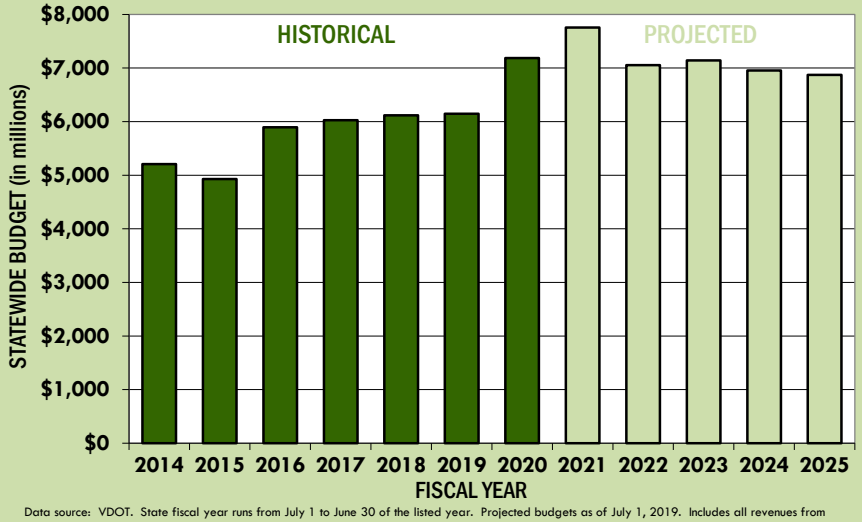
NOTABLE TRANSPORTATION FINANCING NUMBERS

25% ▲ The projected increase in Virginia's statewide transportation budget from Fiscal Years (FY) 2014-2019 to FY 2020-2025.

38% ▲ The projected increase in funding that will be available for new highway construction statewide from FY 2014-2019 to FY 2020-2025.

41st Virginia's rank among the 50 states and D.C. in terms of average taxes and fees collected on each gallon of unleaded gasoline as of July 1st, 2019.

HISTORICAL AND PROJECTED STATE TRANSPORTATION BUDGET, FY 2014-2025



Data source: VDOT. State fiscal year runs from July 1 to June 30 of the listed year. Projected budgets as of July 1, 2019. Includes all revenues from HB2313, including regional revenues.

TRANSPORTATION FINANCING (continued)

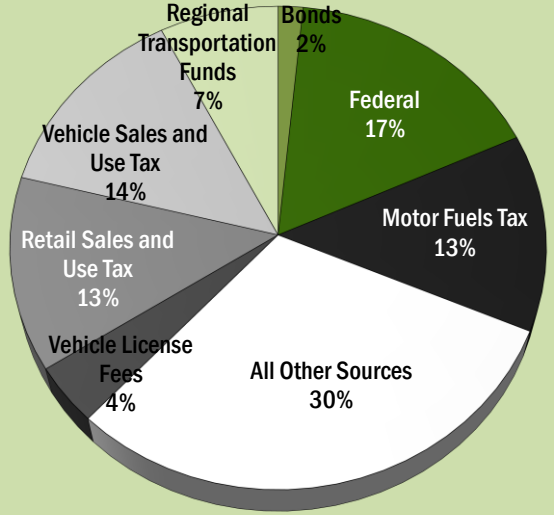
The amount of revenue by source for Virginia's transportation budget has changed based on HB 2313. The motor fuel tax was the most impacted source, decreasing from 20% of transportation revenues in FY 2013 to 13% in FY 2020. Federal sources, the vehicle sales and use tax, the retail sales and use tax, and the tax on motor fuels all comprise between 13%-17% of Virginia's transportation revenues in FY 2020. The regional transportation taxes levied in Hampton Roads and Northern Virginia comprise another 7% of Virginia's transportation revenue.

The amount of money necessary to operate and maintain Virginia's aging roadways and bridges continues to increase. Between FY 2020-2025, $13.7 billion will be allocated statewide to maintenance and operations. This is up 11% from the $12.3 billion allocated between FY 2014-2019.

The amount of funding available for new roadway construction is projected to increase in the short term before decreasing in future years. Including the regional roadway funds, $17.8 billion is projected to be available for new roadway construction in Virginia between FY 2020-2025. This is up from the $12.9 billion in funding that was allocated to construction in FY 2014-2019.

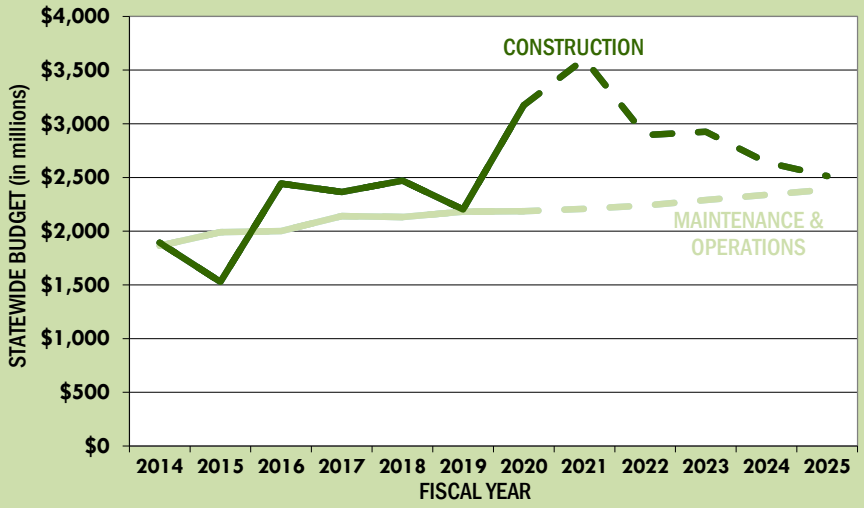
Historically, the amount of funding allocated to roadways in Virginia has lagged behind other states. Using the most recent data available from the U.S. Census Bureau (2016), Virginia ranked 24th highest among the 50 states and the District of Columbia in highway expenditures per capita. Over the previous decade, Virginia ranked as low as 44th, which occurred in 2010. This improvement is largely due to the implementation of HB 2313 in 2013.

TRANSPORTATION REVENUES IN VIRGINIA BY SOURCE, FISCAL YEAR 2020



Data source: VDOT.

HISTORICAL AND PROJECTED STATEWIDE FUNDING MAINTENANCE VS. CONSTRUCTION, FY 2014-2025

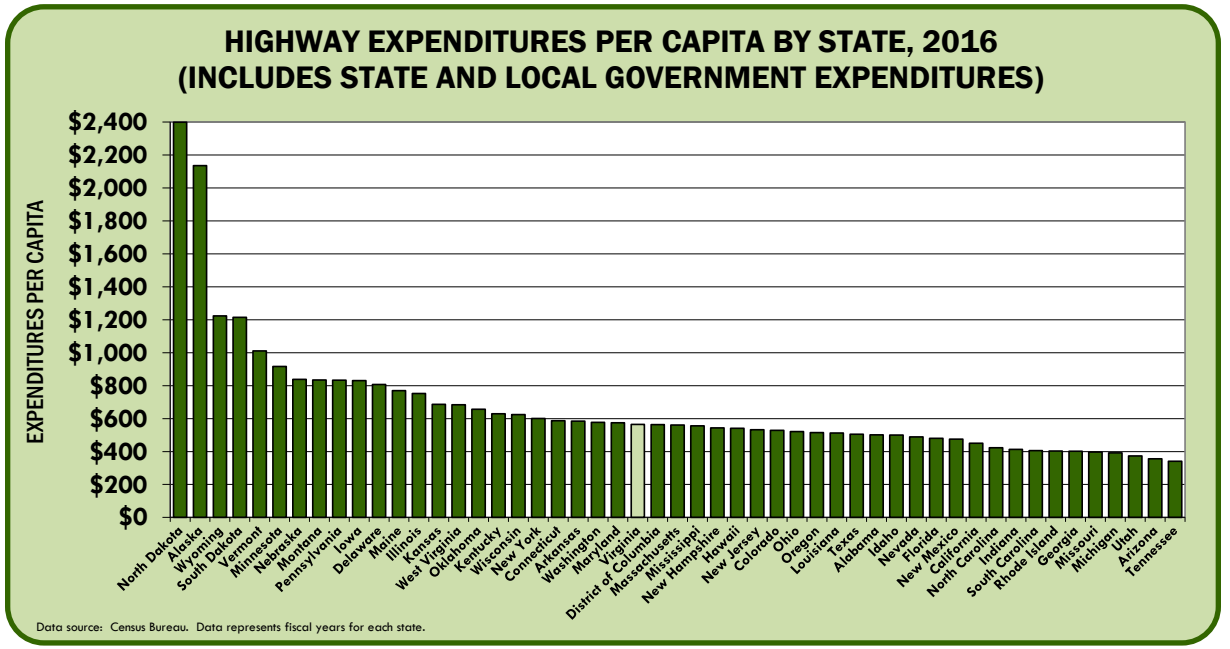


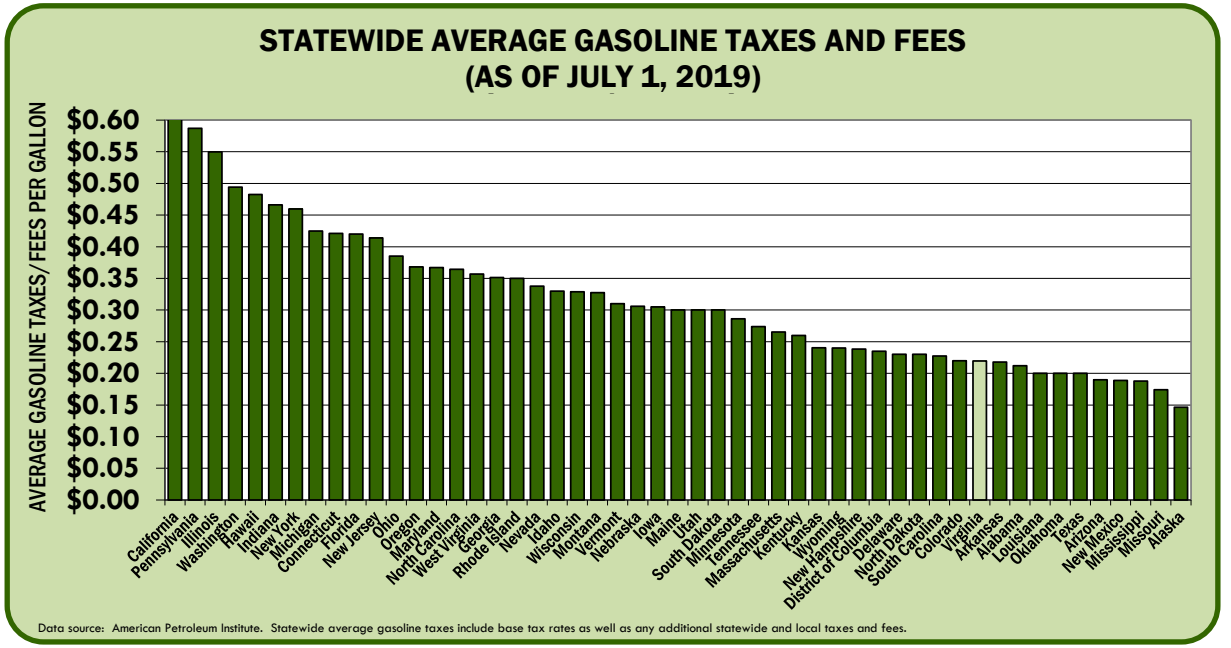
Data source: VDOT. FY 2020-2025 data is projected as of July 1, 2019. Includes all revenues from HB 2313, including regional revenues.

TRANSPORTATION FINANCING (continued)

The level of gasoline taxes and fees collected in Virginia has been lower than in most other states, and this continues in spite of the recent tax increases. The current gasoline tax is comprised of 5.1% of the statewide average wholesale price of gasoline, 0.6 cents per gallon statewide for the petroleum underground storage tank fund, and an additional 2.1% regional tax on gasoline in Hampton Roads and Northern Virginia. Floors have been put in place to guarantee revenues on both the statewide tax and – as of July 2018 – the regional taxes. The tax increased by 5 cents per gallon in January 2015, when Congress failed to pass legislation permitting Virginia to require internet businesses to collect state and local taxes.

As of July 2019 the average statewide tax on each gallon of unleaded gasoline in Virginia was 22.0 cents and 26.0 cents for each gallon of diesel. Virginia's tax rate on unleaded fuel remains lower than most other states. Virginia had the 41st highest statewide average taxes and fees collected on each gallon of unleaded gasoline among the 50 states and the District of Columbia as of July 2019.





FUEL PRICES

After dropping as low as $1.50 per gallon in early 2016, fuel prices have increased both in Hampton Roads and throughout the country. However, in spite of having additional regional fuel taxes, fuel prices in Hampton Roads remain lower than in most comparable areas.

The average cost of a gallon of regular unleaded fuel in Hampton Roads was $2.44 on July 1, 2019. This is 16 cents per gallon lower than one year earlier but is 46 cents per gallon higher than January 1, 2019. Average fuel prices in Hampton Roads topped $3.50 per gallon every summer between 2011 and 2014, but bottomed out just below $1.50 per gallon in February 2016.

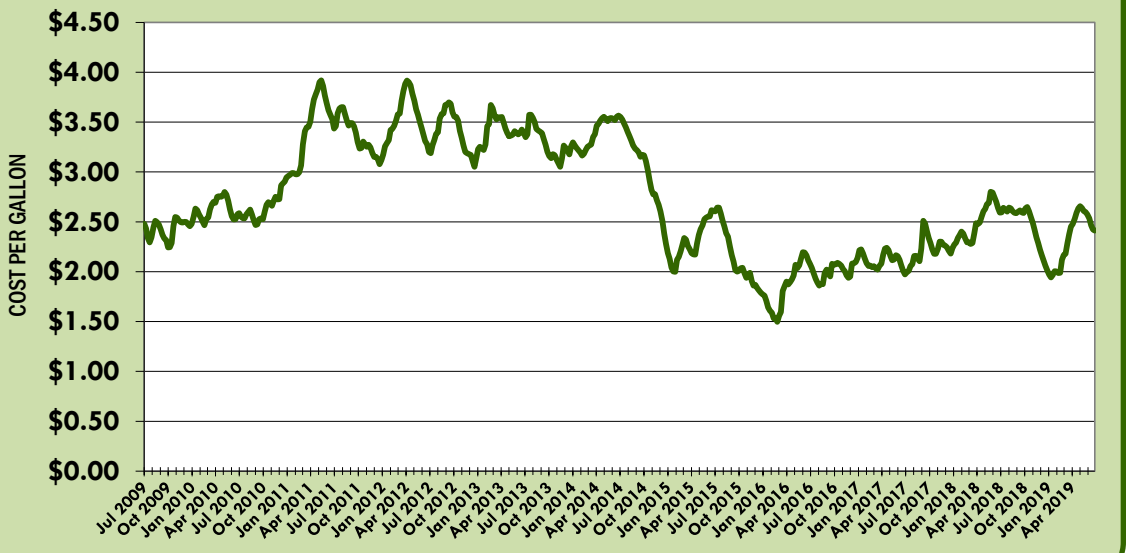
Fuel prices in Hampton Roads are comparable to other metropolitan areas throughout Virginia, despite the higher regional taxes imposed on fuel in the region under HB 2313. Fuel prices were on average two cents per gallon lower in Richmond, one cent per gallon lower in Roanoke, and equal in Charlottesville

NOTABLE FUEL PRICES NUMBERS

6% ▼ The decrease in the cost of a gallon of unleaded fuel in Hampton Roads between July 1, 2018, and July 1, 2019.

31st Hampton Roads rank, among the 39 large metropolitan areas with populations between one and four million people, in terms of the cost per gallon of regular unleaded fuel as of July 1st, 2019.

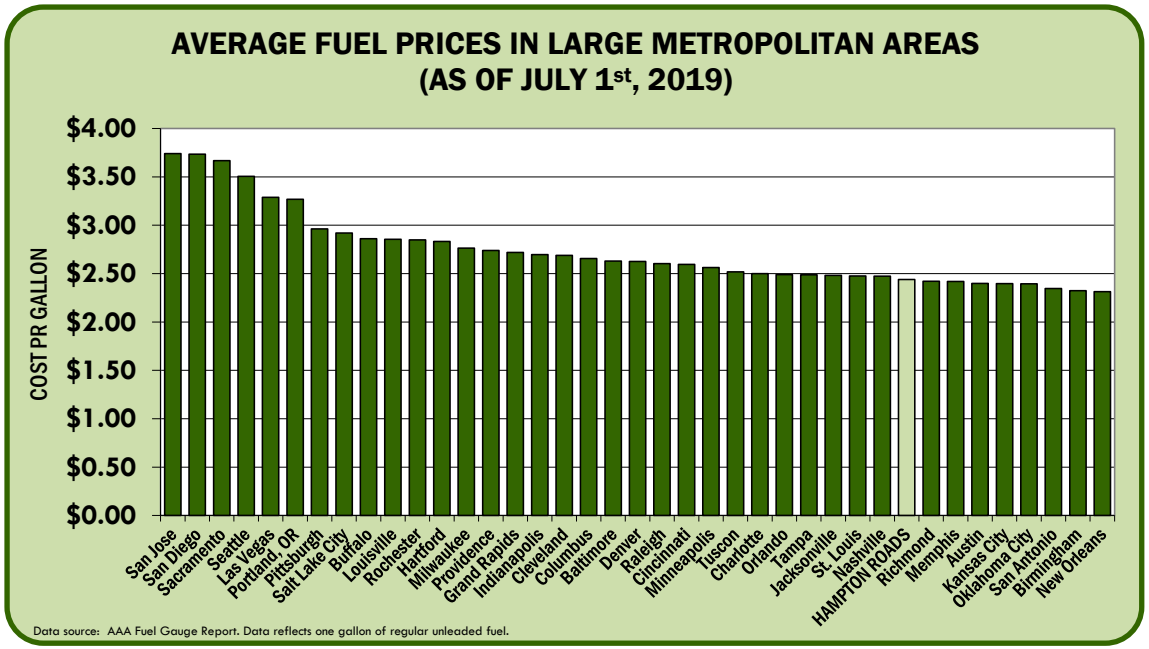
AVERAGE FUEL PRICES IN HAMPTON ROADS, JULY 2009 - JUNE 2019



Data source: AAA Fuel Gauge Report. Data reflects one gallon of regular unleaded fuel.

as of July 1st, 2019. However, fuel prices in Northern Virginia, which also imposes regional taxes, were 16 cents per gallon higher than in Hampton Roads. Statewide, the average cost of fuel was $2.45 per gallon on July 1st, 2019, one cent higher than the rate in Hampton Roads.

Fuel prices in Hampton Roads are also below national averages. Among the 39 metropolitan areas with a population between one and four million people, Hampton Roads had the ninth lowest average fuel price as of July 1st, 2019. Fuel prices in Hampton Roads were 29 cents per gallon lower than the large metropolitan area average.



BEHIND THE NUMBERS

House Bill 2313 changed the way gasoline is taxed in Virginia by replacing the previous statewide gasoline tax with a smaller fuel wholesale tax, and by imposing an additional 2.1% regional tax on the gasoline wholesale price in Hampton Roads and Northern Virginia. This additional tax on fuel has raised $229 million in Hampton Roads as of May 2019.

In spite of the additional regional fuel taxes, fuel prices in Hampton Roads have actually decreased relative to comparable metropolitan areas throughout the country. Prior to HB 2313, fuel prices in Hampton Roads were 10 cents per gallon lower than the comparable large metropolitan area average. With the additional fuel taxes in place in Hampton Roads, fuel prices in the region were 29 cents per gallon lower than the comparable area average as of July 2019.

In addition, as stated previously in this section, fuel prices as of July 1st, 2019 in Hampton Roads were comparable to those in the Charlottesville, Richmond, and Roanoke areas, in spite of no additional regional fuel taxes being collected in those areas.

TOLLING

In spite of new funding mechanisms, tolling is an important funding source for many facilities throughout Hampton Roads, and the amount of tolls collected annually in the region has more than tripled over the last decade.

Although the amount of funding dedicated to transportation improvements in Hampton Roads has increased in recent years with the creation of the Hampton Roads Transportation Fund and additional state funding, tolls are also used as a funding mechanism on some local roadway facilities.

Eight facilities throughout Hampton Roads currently charge tolls, as shown in the map to the right. Recently, tolls were implemented at the Midtown and Downtown Tunnels in 2014 as part of the Midtown Tunnel widening/MLK Freeway Extension Project and at the Veterans Bridge in Chesapeake in 2017 when the Steel Bridge was replaced with a widened fixed span.

In 2018 the reversible HOV lanes on I-64 in the City of Norfolk were converted to Express Lanes. Whereas previously only those traveling with 2 or more people could legally use the reversible lanes during peak travel periods, the conversion to Express Lanes allows those traveling alone to use the lanes if they pay a toll via E-Z Pass. The tolls for those traveling alone vary based on the amount of congestion on the facility and can change every 10 minutes.

ROADWAY FACILITIES IN HAMPTON ROADS WITH TOLLS (AS OF JULY 2019)

In 2018 approximately $180 million was collected in tolls at these eight facilities. By comparison, only about $55 million was collected at toll facilities in Hampton Roads a decade earlier, most of which was collected at the Chesapeake Bay Bridge-Tunnel.

CHESAPEAKE BAY BRIDGE-TUNNEL Image Source: HRTPO

CURRENT TOLL RATES (as of JULY 2019)

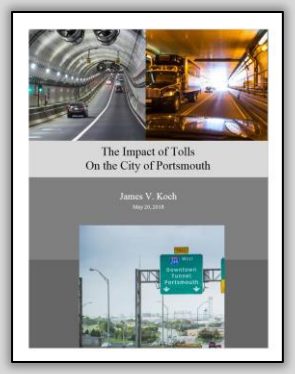
FACILITY	PASSENGER VEHICLES				HEAVY VEHICLES			
	E-ZPass		NON E-Z PASS		E-ZPass		NON E-Z PASS	
	PEAK*	NON-PEAK	PEAK*	NON-PEAK	PEAK*	NON-PEAK	PEAK*	NON-PEAK
Midtown Tunnel	$2.20	$1.79	$3.98-$5.76	$3.57-$5.35	$8.80	$5.36	$10.58-$12.36	$7.14-$8.92
Downtown Tunnel	$2.20	$1.79	$3.98-$5.76	$3.57-$5.35	$8.80	$5.36	$10.58-$12.36	$7.14-$8.92
Chesapeake Bay Bridge-Tunnel	$18.00	$14.00	$18.00	$14.00	$21.00 - $52.00		$21.00 - $52.00	
Chesapeake Expressway	$8.00	$3.00	$8.00	$3.00	$9.00	$4.00	$9.00	$4.00
Coleman Bridge	$0.85		$2.00		$3.00 - $4.00		$3.00 - $4.00	
South Norfolk Jordan Bridge	$2.45		$5.25		$8.75	$5.35	$12.30	$8.90
Veterans Bridge	$1.16		$3.16		$2.90		$4.90	
I-64 Express Lanes	Variable	-	Variable	-	Not permitted			

Data sources: VDOT, ERC, City of Chesapeake, CBBT, SNJB.

Peak Times:
- Downtown and Midtown Tunnel: Monday – Friday from 5:30 am to 9:00 am and 2:30 pm – 7:00 pm.
- Chesapeake Bay Bridge-Tunnel: Friday – Sunday between May 15 and September 15.
- Chesapeake Expressway: Saturday – Sunday between Memorial Day and Labor Day.

IMPACT OF TOLLS ON PORTSMOUTH STUDY

Dr. James Koch, ODU Professor of Economics and President Emeritus, recently prepared an analysis of *The Impact of Tolls on the City of Portsmouth*. **This report**, which is an update to an initial report that was prepared when tolls were first implemented in 2014, concluded that Portsmouth continues to be negatively impacted by the tolls at the Midtown and Downtown Tunnels. The analysis determined that taxable sales across Portsmouth have been reduced by more than $8.8 million annually, which led to a $300,000 reduction in tax collections in the city in 2017. The report also noted that tolls impact Portsmouth twice as much as the City of Norfolk, nearly four times as much as the City of Suffolk, and more than six times as much as the City of Virginia Beach. Finally, the report noted that there is no evidence that the tolls have adversely impacted the residential real estate market in Portsmouth, and it is too early to tell if they will have a negative impact on real estate valuations.



One bright spot in the updated report for the City of Portsmouth is that the negative impact of the tolls at the Midtown and Downtown Tunnels on the city has declined as traffic volumes increased at the tunnels between 2014 and 2017.

ROADWAY PROJECTS

Not only have a number of critical projects been completed throughout the region in recent years, but with additional funding being provided through the Hampton Roads Transportation Accountability Commission, several generational projects are either underway or will soon begin construction.

The list of recently completed roadway projects vary greatly in size and type, including constructing new roadways, widening existing roadways, constructing new tunnels, replacing bridges, and smaller projects such as constructing turn lanes or adding traffic signals.

A total of 37 major roadway projects have been completed throughout Hampton Roads since the beginning of 2012. These projects include constructing a new tube at the Midtown Tunnel; replacing the Gilmerton, Lesner, Steel (Veterans), and South Norfolk Jordan Bridges; constructing a new railroad overpass into Norfolk International Terminals; and opening new facilities such as the Intermodal Connector, MLK Freeway Extension, City Center Boulevard, Nimmo Parkway, and the completion of Lynnhaven Parkway. Many sections of roadway were widened, including the first two phases of I-64 on the Peninsula, Fort Eustis Boulevard, George Washington Highway, Holland Road, Military Highway (including a new continuous-flow intersection at Northampton Boulevard), Princess Anne Road, Saunders Road, Turnpike Road, and Witchduck Road.

MAJOR ROADWAY PROJECTS COMPLETED IN HAMPTON ROADS, JANUARY 2012 – JUNE 2019

FACILITY	LOCATION	IMPROVEMENT TYPE	COMPLETION DATE
City Center Boulevard	Warwick Blvd to Jefferson Ave	New 4 lane facility	2015
Commander Shepard Boulevard	Big Bethel Rd to North Campus Pkwy	New 4 lane facility	2014
Dominion Boulevard	GW Hwy to Cedar Rd	Widen to 4 lanes	2017
Dominion Boulevard	Cedar Rd to Great Bridge Blvd	Widen to 4 lanes	2017
Fort Eustis Boulevard	Jefferson Ave to Route 17	Widen to 4 lanes	2012
George Washington Memorial Highway	Hampton Hwy to Wolf Trap Rd	Widen to 6 lanes	2016
George Washington Memorial Highway	Mill Creek Pkwy to Willowood Dr	Widen to 4 lanes	2012
Hampton Boulevard	Railroad into Norfolk International Terminals	New overpass	2015
Holland Road	Nimmo Pkwy to Dam Neck Rd	Widen to 4 lanes	2018
I-64	Northampton Boulevard	Interchange Improvements	2018
I-64	Norview Ave	Ramp improvement	2013
I-64	Route 199 (Exit 242) to Yorktown Rd	Widen to 6 lanes	2019
I-64	Yorktown Road to Bland Boulevard	Widen to 6 lanes	2017
I-64 Express Lanes	Reversible HOV lanes	Conversion to Express Lanes	2018
I-264	London Bridge Rd	New Interchange	2012
Intermodal Connector	I-564 to Naval Station Norfolk/NIT	New 4 lane facility	2018
Ironbound Road	Strawberry Plains Rd to Longhill Connector Rd	Widen to 4 lanes	2013
Lynnhaven Parkway	Centerville Tpke to Indian River Rd	New 4 lane facility	2017
Midtown Tunnel	Between Portsmouth and Norfolk	Widen to 4 lanes	2017
Military Highway	Gilmerton Bridge	Replace Bridge	2013
Military Highway	Lowery Rd to Northampton Blvd	Widen to 8 lanes	2018
Military Highway	Northampton Blvd/Princess Anne Rd	Intersection Redesign	2018
Military Highway	Northampton Blvd to Robin Hood Rd	Widen to 6 lanes	2018
MLK Freeway	I-264 to High St	New 4 lane facility	2016
Nansemond Parkway	Shoulders Hill Rd to Chesapeake CL	Widen to 4 lanes	2018
Nimmo Parkway	Princess Anne Rd to Holland Rd	New 4 lane facility	2012
Nimmo Parkway	Holland Rd to General Booth Blvd	New 4 lane facility	2014
Portsmouth Boulevard	Suffolk CL to Jolliff Rd	Widen to 4 lanes	2018
Princess Anne Road	Dam Neck Rd to Nimmo Pkwy	Widen to 4 lanes	2014
Princess Anne Road	Witchduck Rd	Intersection Relocation	2012
Route 58	Business Route 58 East of Courtland	New interchange	2018
Saunders Road	Newport News CL to Big Bethel Rd	Widen to 4 lanes	2016
Shore Drive	Lesner Bridge	Replace Bridge	2018
South Norfolk Jordan Bridge	Between Portsmouth and Chesapeake	Replace Bridge	2012
Turnpike Road	Frederick Blvd to Constitution Ave	Widen to 4 lanes	2018
Wesleyan Drive	Northampton Blvd to Baker Rd	Widen to 4 lanes	2013
Witchduck Road	Princess Anne Rd to I-264	Widen to 6 lanes	2012

ROADWAY PROJECTS (continued)

A number of major roadway projects are currently underway throughout the region. These projects include widening I-64 and the High Rise Bridge in Chesapeake, widening of Phase III of I-64 on the Peninsula, improving the I-64/I-264 Interchange in Norfolk and Virginia Beach, and adding a parallel tunnel at the Chesapeake Bay Bridge-Tunnel. A number of other roadway widening and improvement projects are also underway including Atkinson Boulevard, the Indian River Road/Kempsville Road intersection, and Witchduck Road.

I-64/I-264 INTERCHANGE Image Source: VDOT

Upcoming roadway projects throughout Hampton Roads are programmed in VDOT's Six-Year Improvement Program (SYIP) and HRTPO's Transportation Improvement Program (TIP). Examples of major roadway projects that are expected to begin construction over the next six years include the widening of the Hampton

PROGRAMMED MAJOR ROADWAY PROJECTS IN HAMPTON ROADS

FACILITY	LOCATION	IMPROVEMENT TYPE	PROJECTED COMPLETION DATE
Atkinson Boulevard	Warwick Blvd to Jefferson Ave	New 4 lane facility	2020
Centerville Turnpike	Kempsville Rd to Indian River Rd	Widen to 4 lanes	2023
Centerville Turnpike	Chesapeake CL to Kempsville Rd	Widen to 4 lanes	2026
Centerville Turnpike	Centerville Turnpike Bridge	Rehabilitate Bridge	2019
Chesapeake Bay Bridge-Tunnel	Thimble Shoal Tunnel	Widen to 4 lanes	2023
Cleveland Street	Witchduck Rd to Independence Blvd	Widen to 4 lanes	2025
Coliseum Drive Extension	Hampton Roads Center Pkwy to Butler Farm Rd	New 4 lane facility	2021
Croaker Road	Route 60 to Rochambeau Dr	Widen to 4 lanes	2026
Elbow Road	Indian River Road to Salem Road	Widen to 4 lanes	2025
Elbow Road	Salem Road to VB Amphitheater	Widen to 4 lanes	2027
First Colonial Road	Laskin Rd to I-264	Widen to 6 lanes	2023
George Washington Highway	Deep Creek Bridge	Widen to 4 lanes	2022
George Washington Memorial Highway	Farmwood Rd to Hook Rd	Widen to 6 lanes	2028
George Washington Memorial Highway	Wolf Trap Rd to Old York-Hampton Hwy	Widen to 6 lanes	2025
High Street	Churchland Bridge	Replace/Rehabilitate Bridge	2022
I-64	Route 199 (Exit 234) to Route 199 (Exit 242)	Widen to 6 lanes	2021
I-64/Hampton Roads Bridge-Tunnel	Settlers Landing Rd to I-564	Widen to 6/8 lanes	2025
I-64/High Rise Bridge	I-264/I-664 and I-464/Chesapeake Expressway	Widen to 6 lanes	2021
I-264 Eastbound	I-64 off ramp to east of Witchduck Road	Widening	2019/2021
I-664 Northbound	Route 13/58/460 to Dock Landing Road	Widening	2019
Independence Boulevard	Denbigh Blvd to Fort Eustis Blvd	New 2 lane facility	2022
Indian River Road	Kempsville Rd	Intersection Redesign	2020
Indian River Road	Lynnhaven Pkwy to Elbow Rd	Relocated 4 lane facility	2024
Laskin Road	Freemac Rd to Birdneck Rd	Widen to 6 lanes	2023
Laskin Road	Republic Rd to Fremac Rd	Widen to 8 lanes	2023
Longhill Road	Route 199 to Olde Towne Rd	Widen to 4 lanes	2021
Nansemond Road	Commonwealth Railway	New underpass	2024
Nike Park Road Extension	Reynolds Dr to Route 17	New 2 lane facility	2022
Princess Anne Road	General Booth Blvd to Upton Dr	Widen to 4 lanes	2021
Route 58	West of Manning Bridge Rd to Suffolk Bypass	Widen to 6 lanes	2022
Skiffes Creek Connector	Route 60 to Route 143	New facility	2022
Victory Boulevard	Route 17 to Hampton Hwy	Widen to 6 lanes	2024
Virginia Beach Boulevard	George St to Newtown Rd	Widen to 6 lanes	2028
Witchduck Road	I-264 to Virginia Beach Blvd	Widen to 6 lanes	2020
Wythe Creek Road	Commander Shepard Blvd to Alphus St	Widen to 3 lanes	2024

Data sources: VDOT, HRTPO, various localities. Projected completion date as of July 2019.

Roads Bridge-Tunnel, replacement and widening of the Deep Creek Bridge, constructing the Skiffes Creek Connector, and widening sections of Centerville Turnpike, First Colonial Road, George Washington Highway, Laskin Road, Route 58/Holland Road, Victory Boulevard, and Wythe Creek Road.

More information on programmed roadway improvement projects is included in the SYIP and TIP. VDOT's SYIP can be accessed at http://syip.virginiadot.org. HRTPO has developed a website devoted to the TIP (http://www.hrtpotip.org) that includes the TIP document, details on programmed roadway projects, an overview of the TIP development process, and an Interactive Project Map.

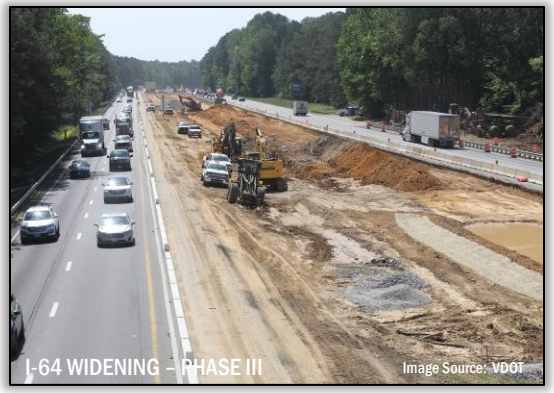

I-64 WIDENING – PHASE III

Image Source: VDOT

NEW DEVELOPMENTS

SMART SCALE – Signed into law in 2014, House Bill (HB) 2 was created to ensure that limited tax dollars are invested in the projects that meet the most critical transportation needs in Virginia. Starting with the FY 2017 SYIP, transportation projects are scored using a prioritization process – referred to as SMART SCALE – that is based on an objective analysis of congestion mitigation, economic development, safety, environmental quality, accessibility, and land use. Each eligible candidate project is scored and ranked, and the Commonwealth Transportation Board (CTB) uses this information when selecting projects for inclusion in the Six-Year Improvement Program.

More information on SMART SCALE is available at http://vasmartscale.org.

Hampton Roads Bridge-Tunnel (HRBT) – After decades of looking at ways to increase roadway capacity across the Hampton Roads Harbor, widening of the Hampton Roads Bridge-Tunnel will begin within the next year. The project will include the addition of twin 2-lane bored tunnels to the west of the existing tunnels and the widening of the adjacent 4-lane segments of the I-64 corridor. The contract for the $3.8 billion project was awarded to Hampton Roads Connector Partners in early 2019, and the project is expected to be complete by November 2025.

More information on the project is available at http://www.hrbtexpansion.org.

TRANSPORTATION OPERATIONS

Hampton Roads continues to be a leader in managing the regional transportation system through transportation operations, which is a cost-effective method of maximizing the safety and capacity of the existing network.

The safety, security, and mobility of roadway users are enhanced by the active management of the regional transportation system. Transportation operations is a cost-effective strategy for improving the transportation network as funding for new roadway construction becomes more competitive and constructing major roadway projects becomes more challenging. Transportation operations involves trained and coordinated personnel managing the system with Intelligent Transportation Systems (ITS) technologies. Examples of transportation operations include incident management (such as VDOT's Safety Service Patrol), traffic signal coordination, E-Z Pass electronic toll collection, changeable message signs, and traveler information.

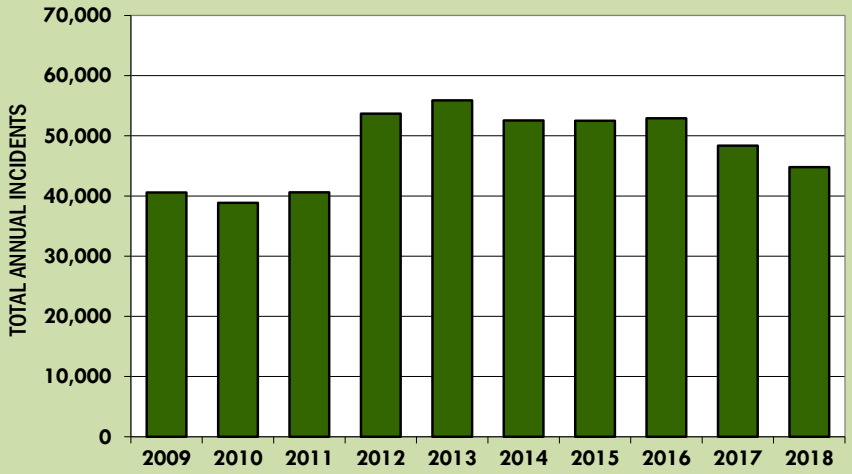
In Hampton Roads, the freeway system is managed by the VDOT Eastern Region Transportation Operations Center (TOC). The Eastern Region TOC monitors traffic conditions throughout the region, maintains and operates ITS infrastructure on the regional Interstate system, responds to and clears crashes and other types of incidents with the Safety Service Patrol, and informs travelers of roadway conditions via changeable message signs, highway advisory radio, and the 511 Virginia phone, smartphone app, social media, and other online services.

VDOT EASTERN REGION TOC

The VDOT Eastern Region (Hampton Roads) Transportation Operations Center serves as the backbone for transportation operations in the region. Some facts about the TOC and its Safety Service Patrol:

- Covers **141 miles,** nearly the entire regional Interstate system.
- Includes over **300 closed-circuit cameras, 200 dynamic message signs,** 5 reversible roadway gate entrances, and hundreds of vehicle detection devices, all linked together by fiber optic cable.
- Drove over **3 million miles** and responded to nearly **45,000 incidents** in 2018.

TOTAL INCIDENTS RESPONDED TO BY THE HAMPTON ROADS TOC SAFETY SERVICE PATROL, 2009-2018



Data source: VDOT.

In addition to VDOT's Hampton Roads Transportation Operations Center, most cities in the region maintain their own traffic management centers. These centers operate local traffic signal systems, changeable message signs, and cameras. Data and video can also be shared from these centers.

Another service provided by VDOT to improve mobility is 511 Virginia. 511 Virginia provides real-time traveler information via phone, email, Twitter, text message, smartphone app, and the http://www.511virginia.org website. 511 Virginia includes information on road conditions, traffic speeds, work zones, camera images, changeable sign messages, weather closures, truck parking, and incidents. Information is also provided on tourist destinations, rest areas, airports, ridesharing, and transit throughout Virginia. Customizable route information is also available.

Traveler information is also provided on many platforms by private sector companies. Examples

ITS TECHNOLOGIES IN HAMPTON ROADS

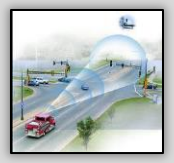
Hampton Roads has been a national leader in the use of Intelligent Transportation Systems (ITS). Nearly every mile of Interstate in the region is instrumented with ITS technologies, and cities throughout the region maintain ITS infrastructure as well. The following are examples of ITS technologies in use throughout Hampton Roads:

Transportation Operations Centers (TOCs)
Centers that incorporate various ITS technologies to assist staff with traffic monitoring, incident response, and information dissemination.

Vehicle Detection Devices
Records traffic volumes and speeds. Also notifies TOC staff of congestion and incidents.

Reversible Roadway Gates
Allows traffic on limited-access roadways to be reversed based on commuting patterns, maximizing the use of the existing roadway.

Emergency Vehicle Signal Preemption
Changes the traffic signal when emergency vehicles approach, improving safety and response time.



Advanced Signal Systems
Improves the coordination and timing of traffic signals in a corridor or throughout an entire city, reducing the number of stops and delays.

Shoulder/Lane Control
Allows the shoulder to be opened to vehicles during peak travel periods.

CCTV Cameras
Provides roadway images to transportation operations centers and the public.

Electronic Toll Collection
Allows travelers to pass quickly through toll gantries, avoiding backups due to paying tolls.

511 Virginia
Provides up-to-date traveler information via smart phones, the internet, and other methods.

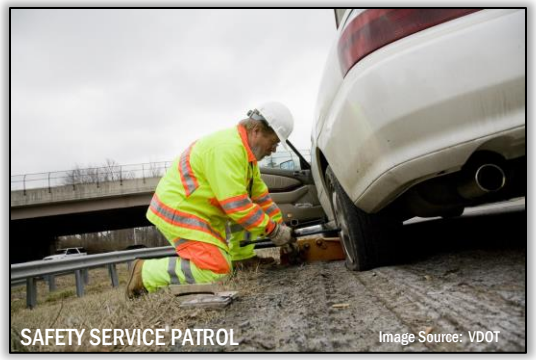
Changeable Message Signs
Provides up-to-date information to the traveling public.

Transit Automatic Vehicle Location (AVL)
Provides the location of transit vehicles, aiding on-time performance.

Highway Advisory Radio
Provides up-to-date traveler information through radio broadcasts on 1680 AM.

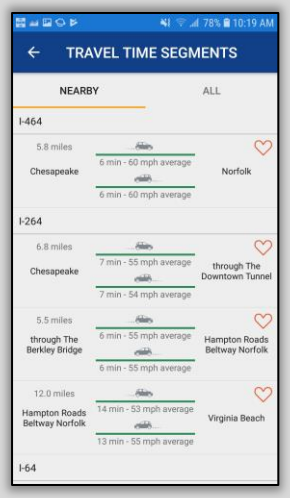
Overheight Detection
Detects overheight vehicles to prevent damage to the region's tunnels and bridges.

include Google and Bing Maps, INRIX, Waze (which is also available through the 511 Virginia website), and local television and radio stations.



Regional transportation operations planning and coordination is conducted through multiple committees including the Hampton Roads Transportation Operations (HRTO) Subcommittee. The HRTO Subcommittee facilitates peer-to-peer information sharing and advises the HRTPO Transportation Technical Advisory Committee on transportation operations issues. HRTO is comprised of professionals from each city, VDOT, transit agencies, Virginia Port Authority, and other invited participants such as local police and fire/EMS personnel. More information on regional operations efforts is available at http://www.hrtpo.org/page/operations-and-its.

NEW DEVELOPMENTS



511 Virginia – In late 2017 VDOT released a major update to its 511 Virginia traveler information smartphone app. The app includes a list of travel times, maps, camera images, Reach the Beach information, weather information, truck parking availability, and the 511 Virginia Twitter feed. The recent update also includes turn-by-turn navigation via Waze as well as push notifications of traffic alerts.

VDOT SmarterRoads Data Portal – VDOT launched "SmarterRoads", a cloud-based data portal that provides free, widespread access to a wealth of VDOT roadway and transportation information. Current datasets that are available include traffic volumes, crashes, sensors, incidents, sign messages and locations, tolling and trip pricing, weather events, and signal phasing and timing data.

Through the creation of the SmarterRoads portal, VDOT is assisting Connected and Automated Vehicle technology development by sharing operations data with third-party sector business, application developers and university partners.

Instant Tow – In April 2017 VDOT initiated a quick incident clearance policy called Operation Instant Tow in the Hampton Roads area. In this program, a tow truck is dispatched simultaneously with the initial Virginia State Police (VSP) trooper to specific incident types, thus saving critical clearance time. Prior to this program, tow dispatch occurred after a VSP trooper responded to and verified the incident.

The objective of Operation Instant Tow is to reduce incident clearance time by 15 minutes, which will help mitigate congestion and reduce the likelihood of additional secondary incidents.

AIR QUALITY

Through a number of national, statewide, and regional efforts, the air quality of Hampton Roads has improved over the last decade, and is better than the air in all of the other comparable areas.

The Environmental Protection Agency (EPA) regulates the amount of airborne pollutants in each region. These airborne pollutants come from a variety of stationary sources such as factories and power plants, and mobile sources such as passenger cars, trucks, trains, and ships.

Ground-level ozone and other pollutants are measured in Hampton Roads at three ambient air quality stations maintained and monitored by the Virginia Department of Environmental Quality (DEQ). These stations are located in Downtown Hampton, the Holland community in Suffolk, and the Tidewater Community College campus site in Northern Suffolk.

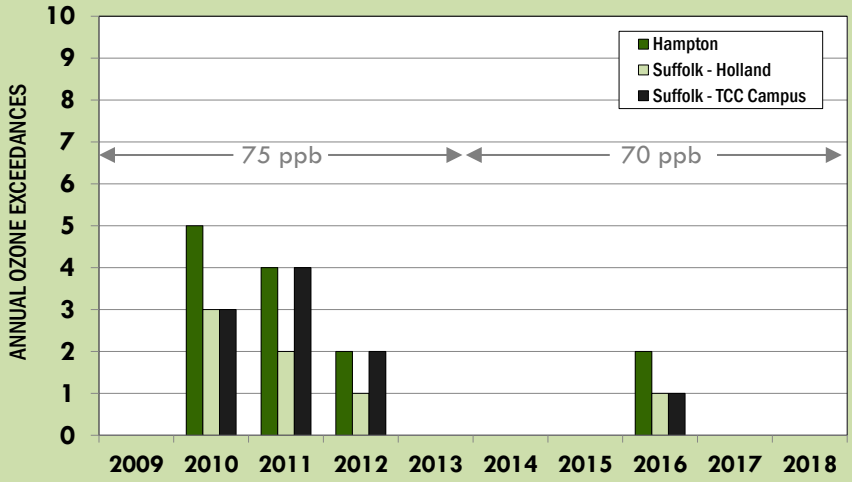
Each metropolitan area is designated as being in attainment or non-attainment of federal ozone air quality standards based on the amount of ground-level ozone recorded at monitoring stations and the National Ambient Air Quality Standards. EPA determines these designations based on an eight-hour standard, under which violations are determined using the fourth-highest daily maximum eight-hour average ozone concentration over the course of the year, averaged over a three-year period. According to EPA regulations, if an area is in non-attainment, the area's Long-Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP) must be tested for conformity with the state's air quality plan.

NOTABLE AIR QUALITY NUMBERS

0 The number of eight hour ozone exceedances at Hampton Roads air quality monitoring stations in 2018.

1st Hampton Roads rank, among the 39 large metropolitan areas with populations between one and four million people, in terms of the best fourth-highest daily maximum 8-hour ozone averages in 2017.

EIGHT HOUR OZONE EXCEEDANCES AT REGIONAL AIR QUALITY MONITORING STATIONS, 2009-2018



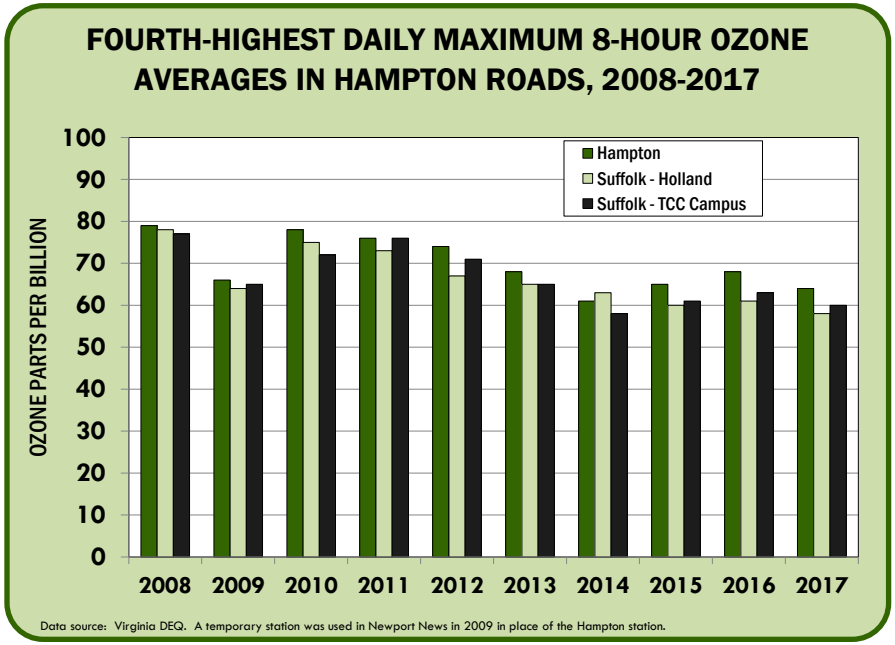
Data source: Virginia DEQ. The EPA has lowered the ozone exceedance standard level from 75 ppb to 70 ppb starting with the 2014 data.

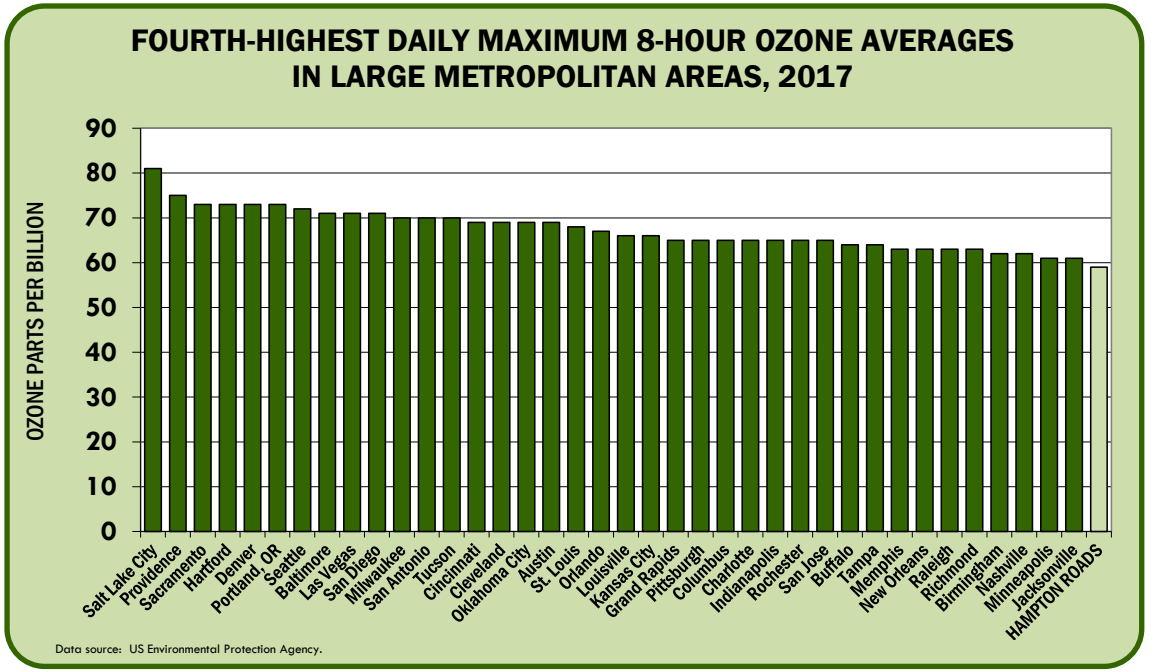
AIR QUALITY (continued)

Prior to 2008, regions were classified as non-attainment if the fourth-highest eight-hour ozone averages were greater than 84 parts per billion (ppb) at any of the regional monitoring stations over a three-year period. This standard was lowered to 75 ppb in 2008. In 2015, EPA revised ozone standard levels down to 70 ppb, based on their review of scientific research on ozone's effects on public health. The lower standards took effect in 2017, using the previous three-year (2014-2016) ozone data.

In Hampton Roads, the 2015-2017 three-year ozone averages at the three monitoring stations were between 59 and 65 ppb, all below the 70 ppb threshold. Based on these readings, Hampton Roads is currently designated as an ozone attainment/maintenance area.

The air quality in Hampton Roads is better than the air quality in all other comparable metropolitan areas based on the eight-hour ozone standard. The fourth-highest eight-hour ozone level was 59 ppb in Hampton Roads in 2017 according to EPA data, which ranked the region the best among the 39 large metropolitan areas with populations between one and four million people.





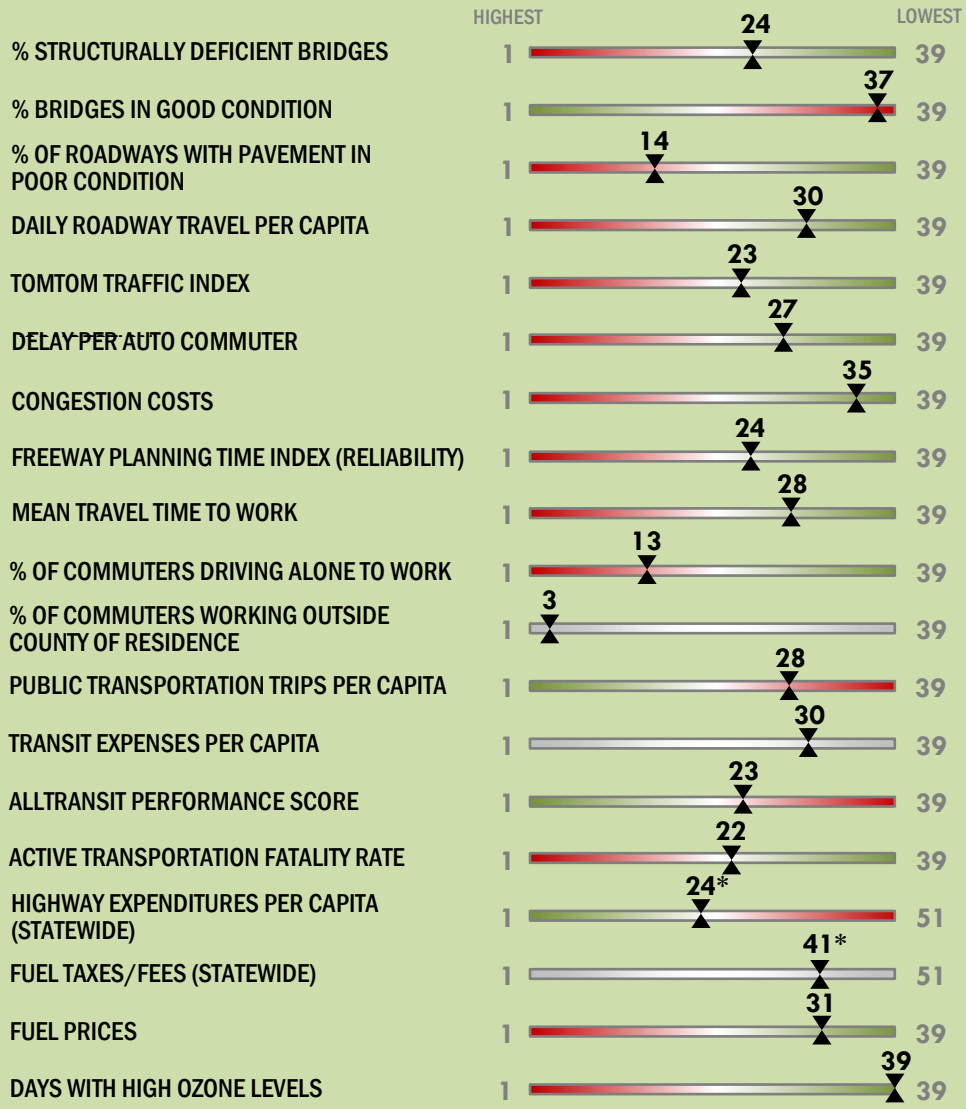
NATIONAL RANKING SUMMARY

In many sections of this report, Hampton Roads is compared to other large metropolitan areas throughout the United States with populations between one and four million people. Many of these 38 other metropolitan areas have similar transportation issues to the Hampton Roads area, from congestion to funding shortfalls.

The figure to the right summarizes where Hampton Roads ranks in various transportation measures compared to the other large metropolitan areas, or in some cases where Virginia ranks compared to other states, based on the most recent data available.

Measures for which Hampton Roads ranked in the "green" indicate the region fared better than most of the comparable large metropolitan areas, whereas measures for which Hampton Roads is in the "red" indicate the region fared worse than the comparable areas.

HAMPTON ROADS CURRENT RANK AMONG LARGE METROPOLITAN AREAS



*Statewide Ranking

ADDITIONAL INFORMATION

The information provided in this report was compiled from a variety of sources. Data from each section of the report can be accessed from the locations described below for additional information:

Air Travel – The Federal Aviation Administration (FAA) updates air passenger data for both the nation and individual airports at http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger. Further information on airfares and capacity is available at http://www.transtats.bts.gov. Passenger data is also provided by each of the Hampton Roads airports at http://www.norfolkairport.com and http://www.flyphf.com.

Port Data – The Virginia Port Authority maintains up-to-date statistics regarding the Port of Virginia on their website http://www.portofvirginia.com. The Virginia Maritime Association also maintains extensive information regarding all aspects of the port. Their website is http://www.vamaritime.com. National port activity information is collected by the American Association of Port Authorities and is available at http://www.aapa-ports.org.

Rail Travel – Amtrak maintains a list of passenger volumes by station at their website https://www.amtrak.com/state-fact-sheets. Information regarding high speed rail and other rail improvements throughout Virginia is available from the Virginia Department of Rail and Public Transportation at http://www.drpt.virginia.gov.

Bridges – VDOT maintains information on their website regarding most bridges throughout Virginia. This information is available at http://www.virginiadot.org/info/Bridge.asp.

Pavement Condition – VDOT releases pavement condition data on an annual basis as part of the State of the Pavement report. This report is available at http://www.virginiadot.org/info/state_of_the_pavement.asp.

TRIP is an organization that researches, evaluates and distributes economic and technical data on surface transportation issues. TRIP regularly releases an analysis of the condition of major roadways in metropolitan areas and the costs that deteriorating roadways have on the public. This analysis is available at http://www.tripnet.org.

Roadway Usage – The Highway Statistics Series contains data on motor fuel, motor vehicles, driver licensing, highway finance, highway mileage, and federal aid for highways. The reports are released annually by the Federal Highway Administration and are located at https://www.fhwa.dot.gov/policyinformation/statistics.cfm.

VDOT also releases roadway usage data on an annual basis for every Virginia jurisdiction. This data is available at http://www.virginiadot.org/info/ct-TrafficCounts.asp.

Congestion – TomTom prepares a measure called the TomTom Traffic Index to describe congestion levels. More information is located at https://www.tomtom.com/en_us/traffic-index.

The Texas Transportation Institute (TTI) at Texas A&M University releases the Urban Mobility Report, a study of mobility and traffic congestion on freeways and major streets in urbanized areas. The report is located at http://mobility.tamu.edu.

Commuting – The Bureau of the Census annually collects and distributes socioeconomic data via the American Community Survey (ACS). The ACS includes commuting characteristics data for each city and region. Data from the American Community Survey is available at http://www.census.gov/acs.

The Accessibility Observatory at the University of Minnesota regularly produces the Access Across America report. These reports estimate the accessibility to jobs by automobile, walking, biking, and public transportation for each of the 11 million census blocks in the country. The Access Across America reports are available at http://access.umn.edu.

ADDITIONAL INFORMATION (continued)

Roadway Safety – The Virginia Department of Motor Vehicles (DMV) annually releases the Virginia Traffic Crash Facts document, which is a comprehensive overview of traffic crashes occurring throughout Virginia. The DMV also maintains crash query and mapping tools on their website. These documents and crash tools are located at https://www.dmv.virginia.gov/safety/#crash_data/index.asp.

Truck Travel – VDOT releases truck travel data on an annual basis for every Virginia jurisdiction. This data is available at http://www.virginiadot.org/info/ct-TrafficCounts.asp.

Public Transportation – The Federal Transit Administration releases data on public transportation via the National Transit Database (NTD) program. The NTD is located at https://www.transit.dot.gov/ntd. The American Public Transportation Association also includes transit data on their website at http://www.apta.com. HRT and WATA also include public transportation statistics on their websites at http://www.gohrt.com and http://www.gowata.org.

AllTransit provides information on the performance of transit for each metropolitan area. More information on AllTransit is available at http://alltransit.cnt.org.

Bike and Pedestrian Facilities – A wide variety of information regarding bicycling and walking in Virginia is provided by VDOT at http://www.virginiadot.org/programs/bikeped/default.asp. The DMV also maintains bicyclist and pedestrian crash data at https://www.dmv.virginia.gov/safety/#crash_data/index.asp.

Transportation Financing – Information regarding transportation financing in Virginia is available at http://www.virginiadot.org and http://www.ctb.virginia.gov. A list of fuel taxes and fees by state is available on the American Petroleum Institute website http://www.api.org.

Fuel Prices – National, statewide, and regional fuel prices are available via AAA at http://gasprices.aaa.com.

Roadway Projects – Information regarding transportation projects in Virginia's Six-Year Improvement Program is available at http://syip.virginiadot.org. HRTPO maintains the regional Transportation Improvement Program, which can be accessed at http://www.hrtpotip.org.

Transportation Operations – VDOT maintains ITS infrastructure and manages traffic on the regional freeway system. More information is available at http://www.virginiadot.org.

Air Quality – Virginia's Department of Environmental Quality maintains information regarding national air quality standards and regional air quality data. Their website is https://www.deq.state.va.us. National air quality information is available from the Environmental Protection Agency's website at http://www.epa.gov.

For additional information regarding this report, previous Congestion Management Process studies, or other transportation questions or concerns, please contact:

Hampton Roads Transportation Planning Organization
723 Woodlake Drive
Chesapeake, Virginia 23320
757.420.8300
http://www.hrtpo.org

PUBLIC REVIEW AND COMMENTS

As part of the Hampton Roads Transportation Planning Organization's (HRTPO) efforts to provide opportunities for the public and stakeholders to review and comment on this draft report prior to the final product being published, a public review period was conducted from September 4, 2019, through September 18, 2019. No public comments were received.