

Tri-Cities MPO 2017  
Performance Measures Report

# Report Organization

- Introduction
- Bullet Point Results
- Things the MPO is Responsible For
- Things That Affect the MPO
- Context
  - Slides Showing How Transportation Fits in the World

# Performance Measures Tell Us

- Where we were,
- Where we are,
- Where we are headed, and
- What needs to be changed to go somewhere else.

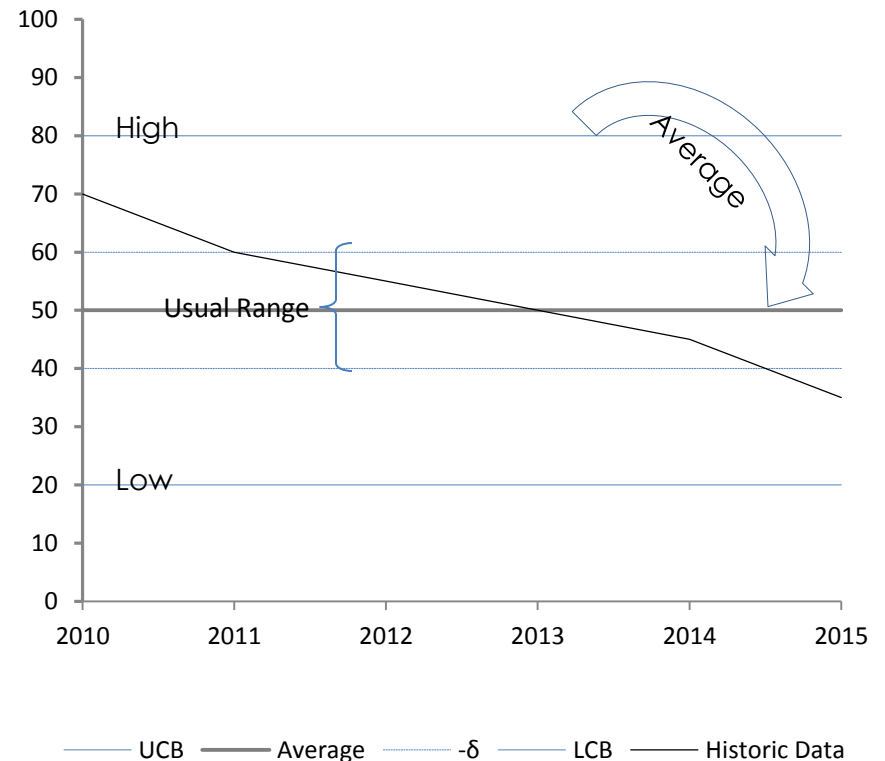
# As You Watch This Ask:

- Are we measuring the right things?
- Are we missing something?
- Are we headed in the right direction?
- What can we do to change the outcome?

# Control Charts

- Shows Change Over time
  - Average
  - Direction of Change
- Control Line
  - Upper: 80% of data is less than
  - $+\delta$ : 60% of data is smaller
  - Average – the 'X' axis
  - $-\delta$ : 40% of data is smaller
  - Lower: 20% of data is smaller

- Example



# Panel Charts

- Compare Several Measures on One Graph
- Sometimes Combined with Control Charts
- Red Ovals = Focus Areas

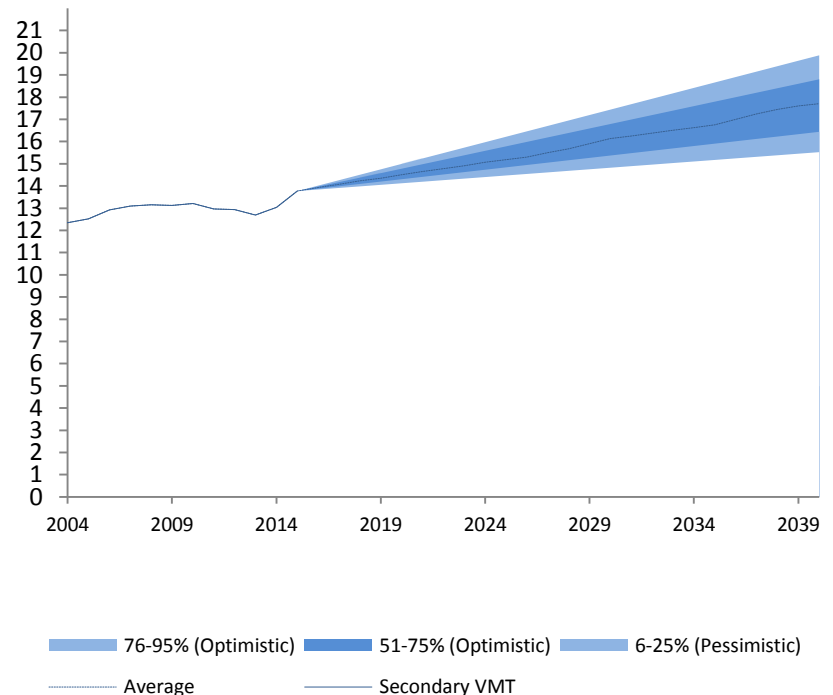
- Example Panel Chart



# Projections

- Shows Likely Outcomes
  - Based on History
  - & 1000 Random Estimates
- Historic Data is a solid line
- Darker Blue is more likely
  - 76% to 95% Light Blue
  - 25% to 75% Dark Blue (most likely)
  - 5% to 25% Light Blue

- Example



# Quick Results-Infrastructure

- Primary Bridge Condition is Below VDOT's Goal. This is driven by Dinwiddie County
- Interstate Pavement Condition is Below VDOT's Goal. This may be driven by Dinwiddie County
- Primary Pavement Condition is falling across the MPO
- The Age and Condition of the Bus Fleet is Stable



# Quick Results - Safety

- The MPO Fatality Rate is Lower than Virginia's
- Dinwiddie County and Prince George Counties have Higher Fatality Rates than the MPO or Virginia
- Most Accidents & Fatalities seem related to running off the road

# Quick Results-Travel Demand

- Automobile Travel is Growing Slowly
- Passenger Rail has Attracted More Riders Since Service to Hampton Roads was Added (2012)
- Transit Ridership Is Falling
  - Since 2012 for Fixed Route
  - Since 2008 for Demand Response

# Quick Results - Operations

- Highway Delay has been Stable since 2008
- Transit Efficiency has Fallen since 2012
- Transit Cost/Vehicle is Stable
- Mode Share is Stable

# Things the MPO can Affect

- System Condition
- Safety

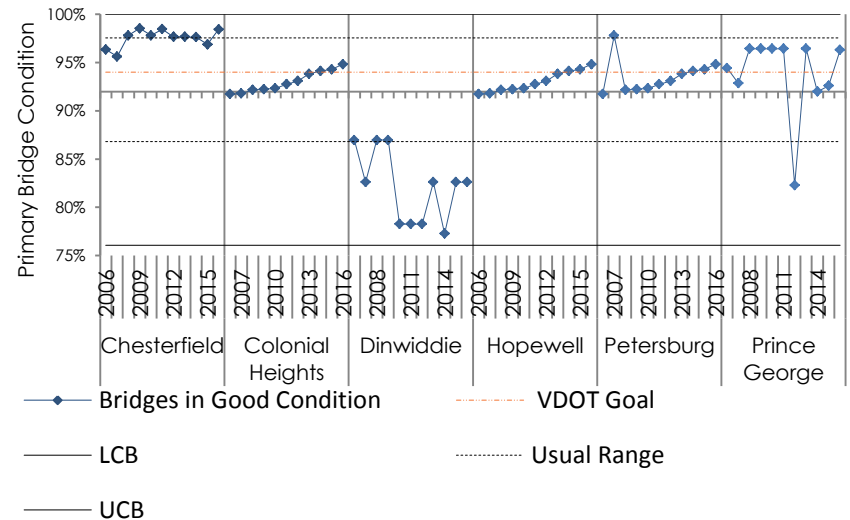
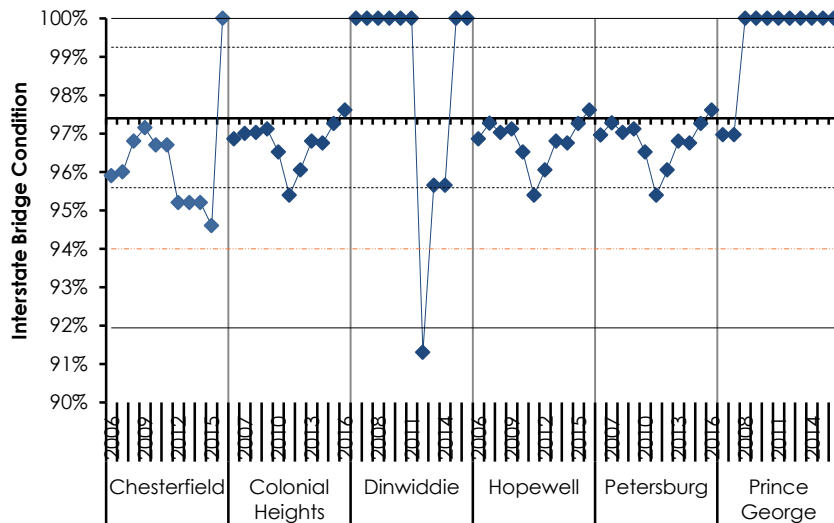
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Based on Information from 2016 and Earlier

# **SYSTEM CONDITION**

# Bridges

- VDOT Goal 94% in Good Condition
- Interstate MPO Average 97%

- VDOT Goal 94% in Good Condition
- Primary Bridges MPO Average 92%
- Dinwiddie County Average 82%

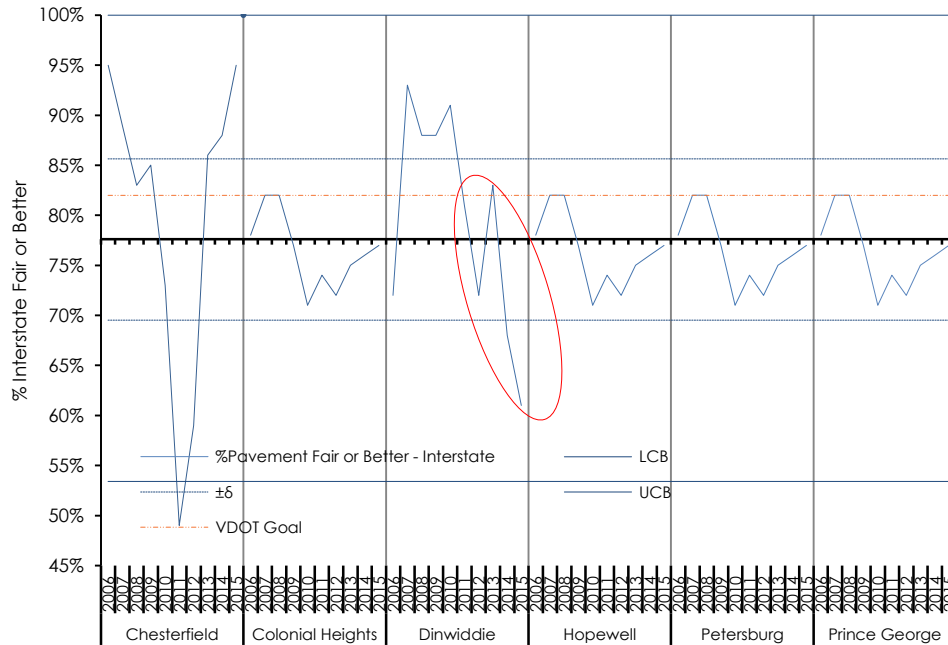


- ◆ % Bridges in Good Condition
- LCB
- UCB
- VDOT Goal
- ..... Usual Range

# Pavement

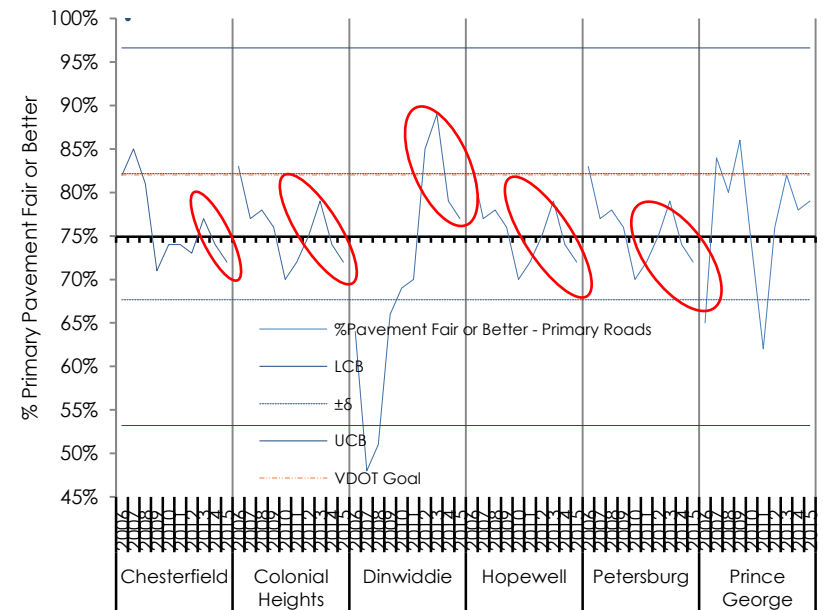
- Interstate

- Goal 82%
- Actual 77%
- Bad Trend in 1 Jurisdiction



- Primary

- Goal 82%
- Actual 75%
- Bad Trend in 5 of 6 Jurisdictions

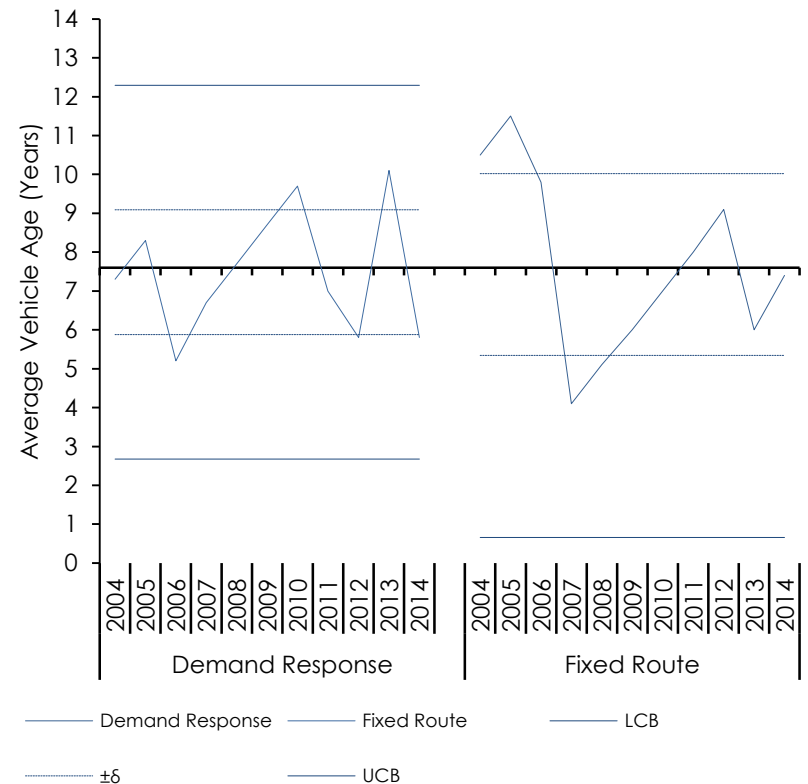


# Transit Vehicle Age

## Fleet Age as of 2014

- Fleet Average 7 Years 7 Months
- Demand Response 7 Years 6 Months
- Fixed Route 7 Years 8 Months

Source: National Transit Database

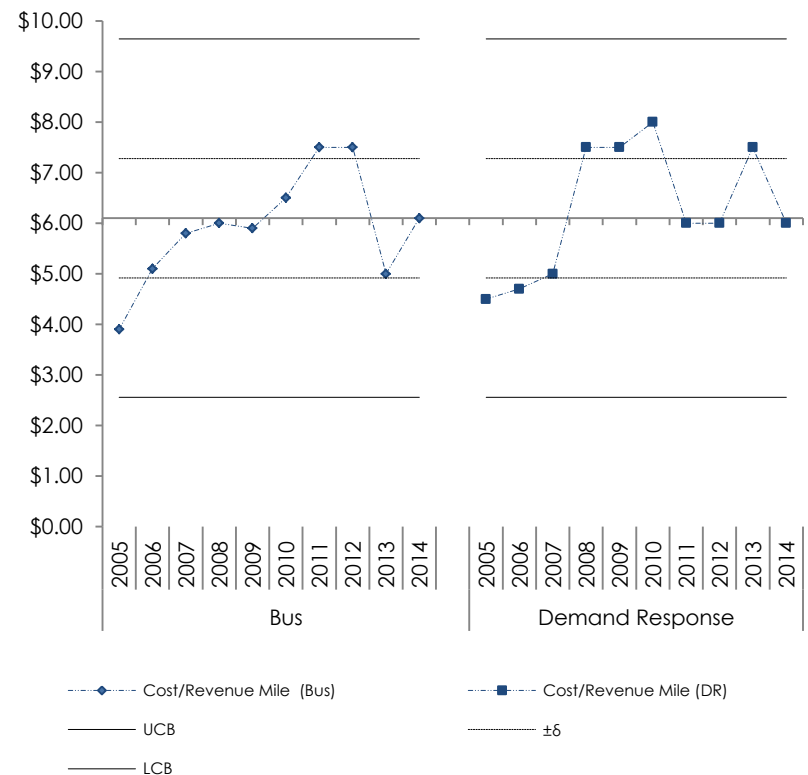




# Transit Cost/Revenue Mile

## Average Cost (2005-2014)

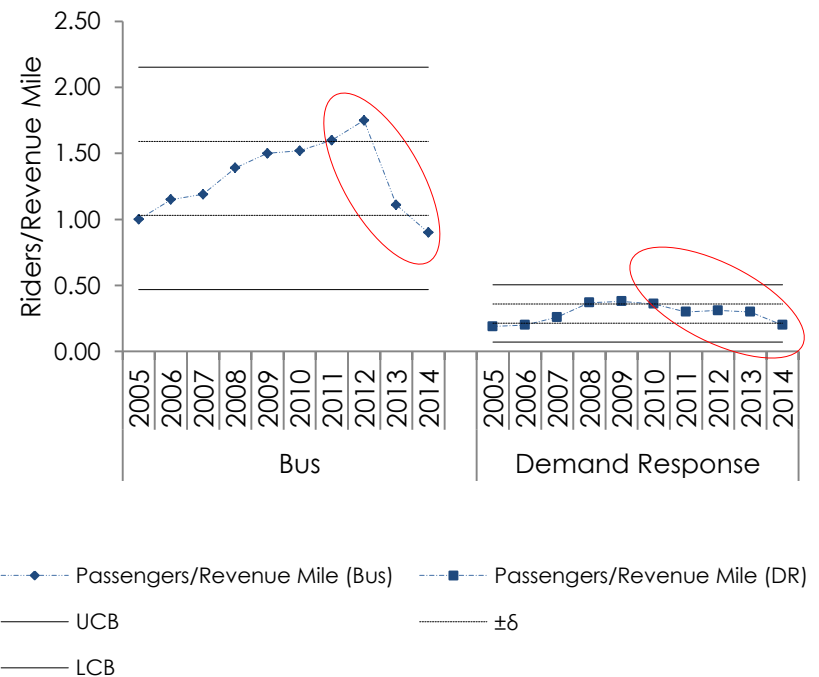
- Fixed Route has averaged \$5.93/mile
- Demand Response has Averaged \$6.27
- This is typical
- There is no clear cost trend



Source: National Transit Database

# Transit Efficiency

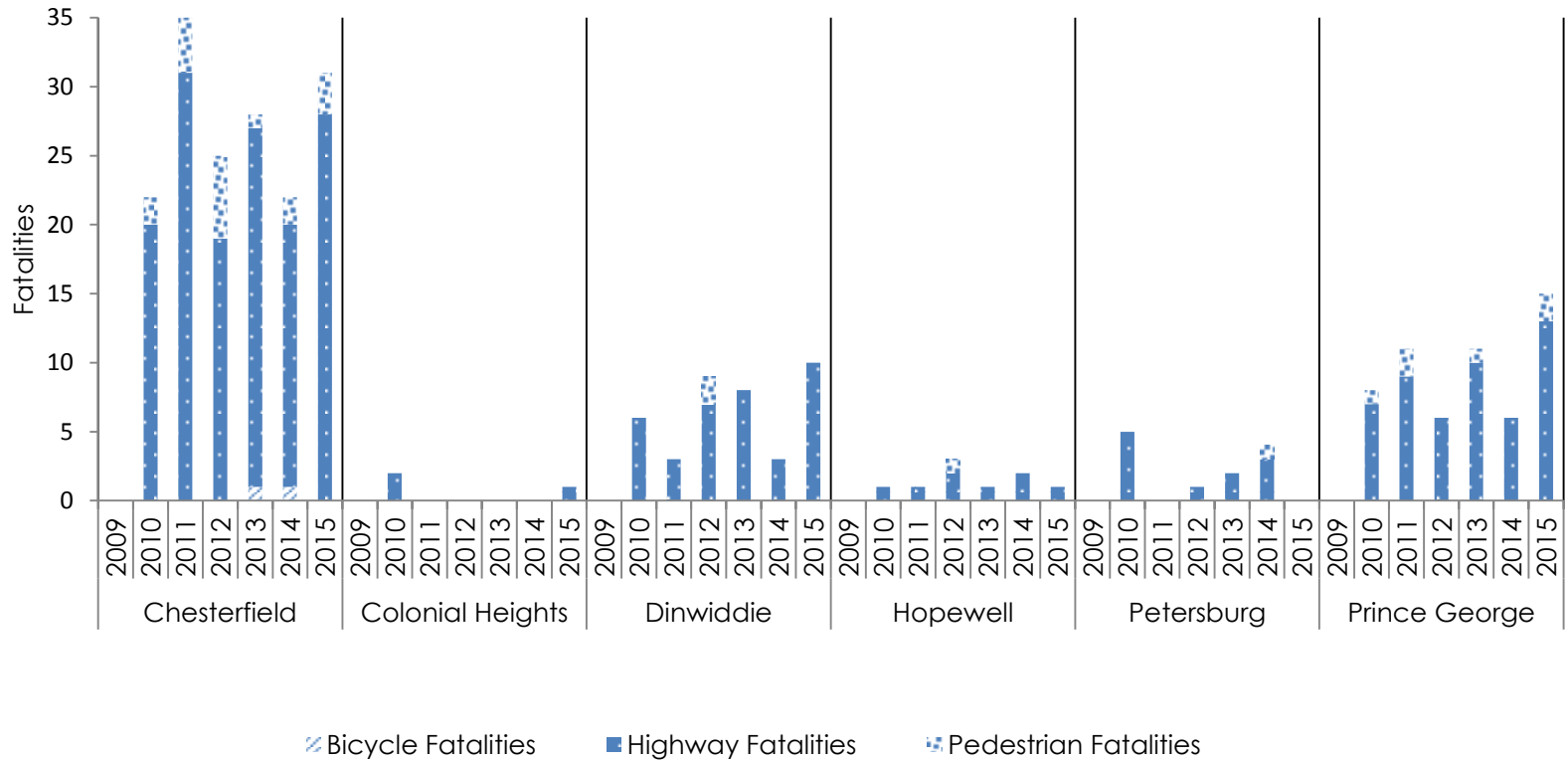
- **Average Riders per Mile (2005 - 2014)**
- Fixed Route 1.31 Riders/Mile
  - Bad Trend since 2012
- Demand Response 0.29 Riders/Mile
  - Bad Trend since 2009
  - Source National Transit Database



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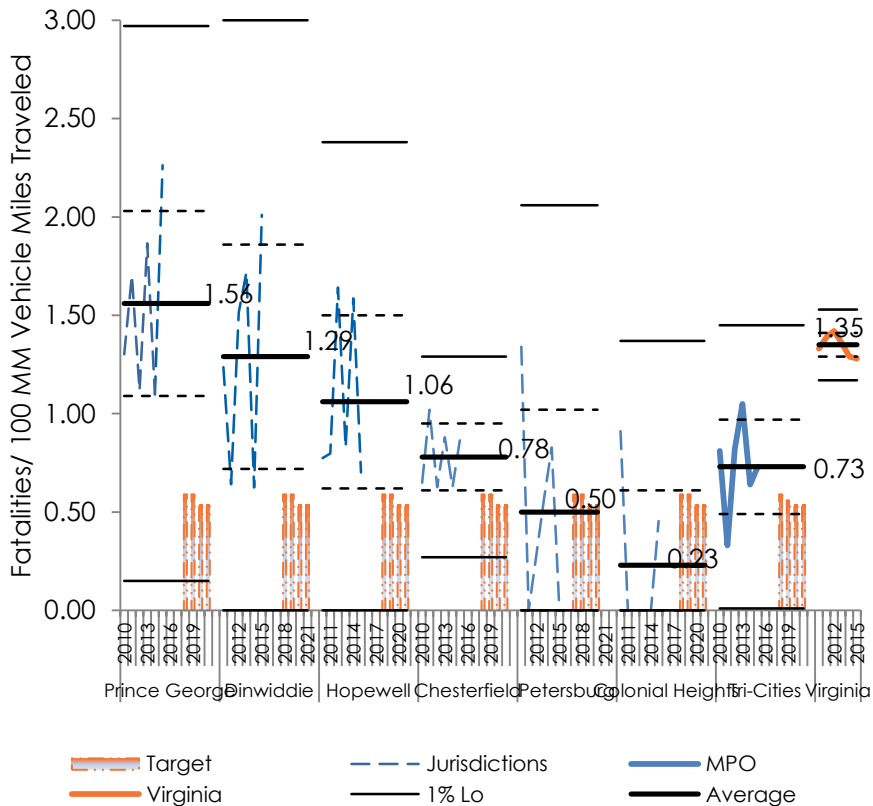
# **SAFETY**

# Fatalities by Jurisdiction

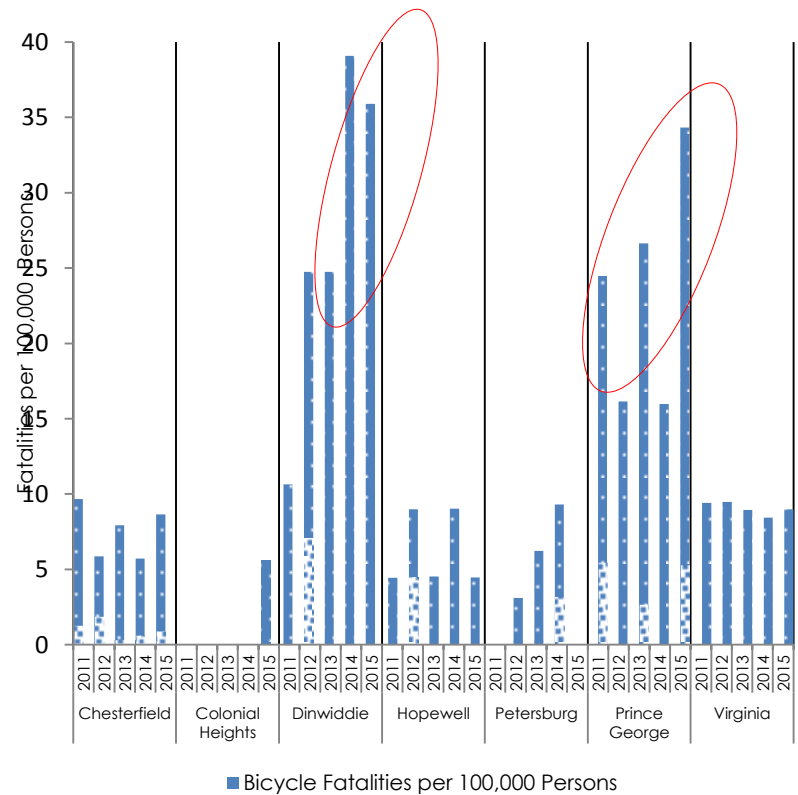


# Fatality Rates

Per 100,000,000 Miles Traveled



Per 100,000 persons



# Fixing the Problem

- Recommendations
  - Focus on Prince George, Dinwiddie and Hopewell
  - Improve Pavement Markings (Edges & Centers)
  - Improve Curve Delineation (Chevron Signs)
  - Improve Shoulders
  - Remove Obstacles from Recovery Area (poles, trees, objects)
  - Convert stop signs to oversize (48")

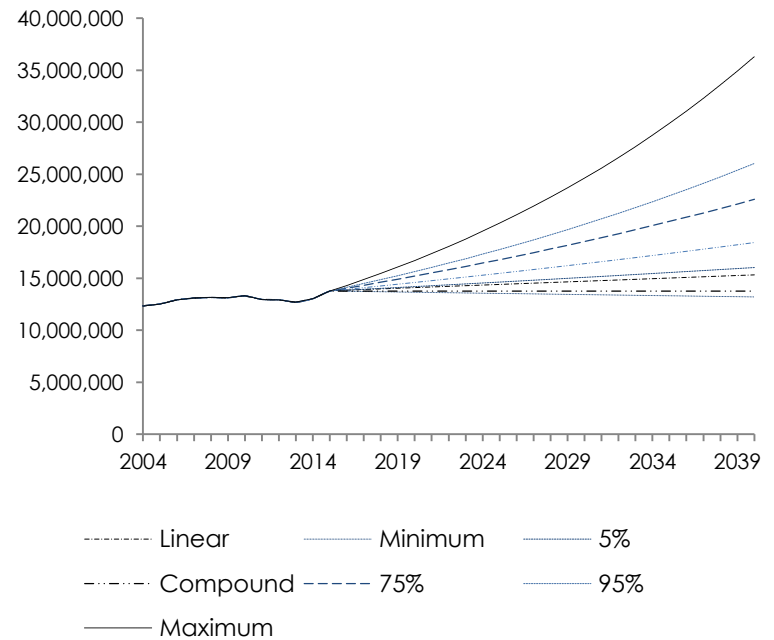
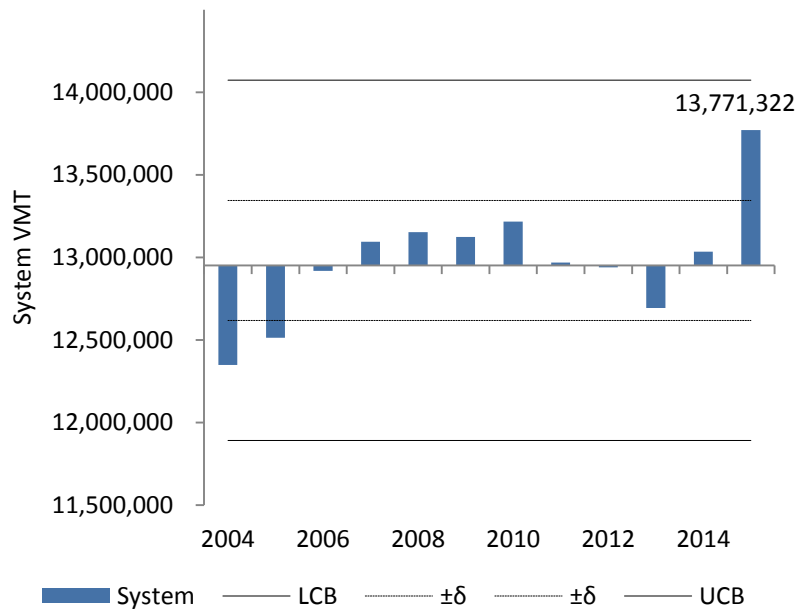
Tri-Cities MPO	Total Fatalities	Alcohol-Impaired Driving (BAC=.08+) Fatalities	Single Vehicle	Large Truck	Speeding	Rollover	Roadway Departure	Intersection Related	Passenger Car
Total Fatalities	1.00								
Alcohol-Impaired Driving (BAC=.08+) Fatalities	0.64	1.00							
Single Vehicle	0.88	0.63	1.00						
Large Truck	0.09	0.20	0.55	1.00					
Speeding	0.31	0.01	0.09	0.13	1.00				
Rollover	0.82	0.35	0.62	0.02	0.79	1.00			
Roadway Departure	0.99	0.72	0.91	0.17	0.30	0.80	1.00		
Intersection Related	0.04	0.63	0.11	0.27	0.47	0.36	0.02	1.00	
Passenger Car	0.36	0.95	0.36	0.11	0.13	0.09	0.45	0.81	1.00
Light Truck	0.99	0.71	0.86	0.06	0.24	0.77	0.99	0.09	0.46
Motorcyclist	0.69	0.06	0.57	0.09	0.65	0.86	0.63	0.73	0.36
Pedestrian	0.37	0.90	0.32	0.04	0.32	0.01	0.44	0.90	0.96
Bicyclist	0.00	0.39	0.13	0.05	0.91	0.56	0.03	0.72	0.48

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# **SYSTEM DEMAND**

# Daily VMT

- Historic Demand 12,950,000 VMT/Day
- Growth 1%/Yr.





# Daily Traveled Miles per Person

VMT per person is a rough measure of economic activity

Since 2004 Daily VMT has averaged 31.4 miles per person in the MPO

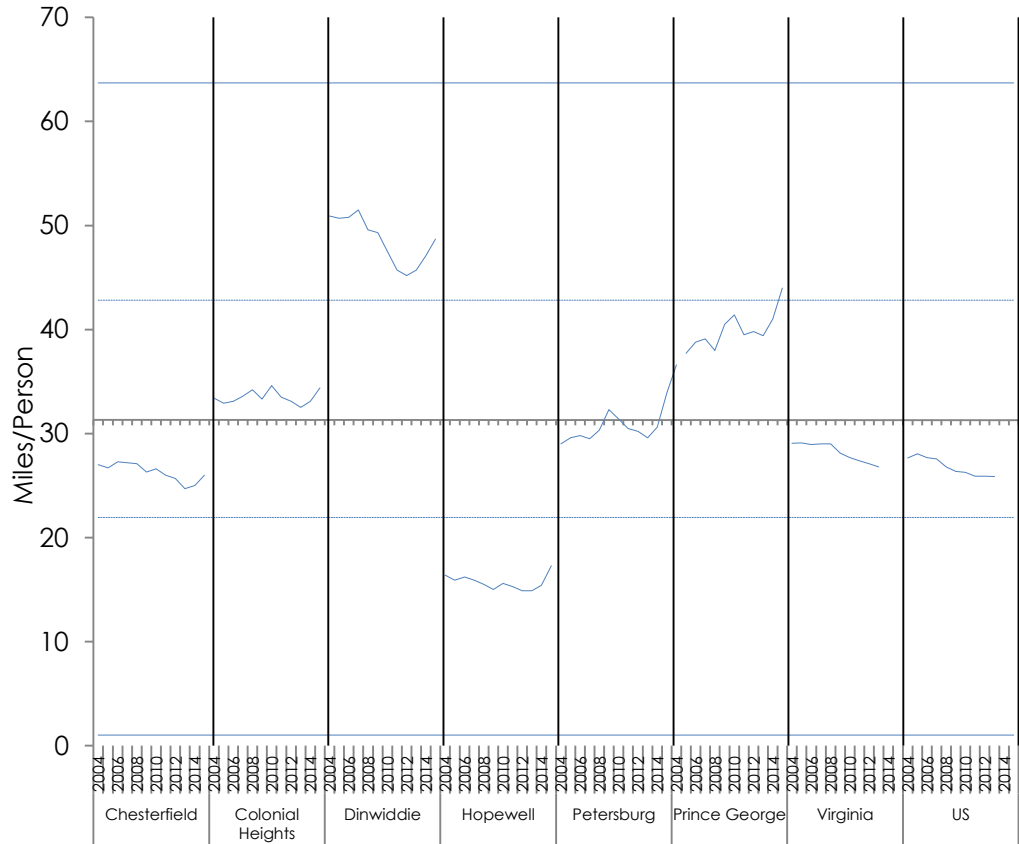
In Virginia the average has been 28.2 miles per person

In the US the average has been 26.8 miles per person

Nationally (far right panel) trending down

VA also trending down

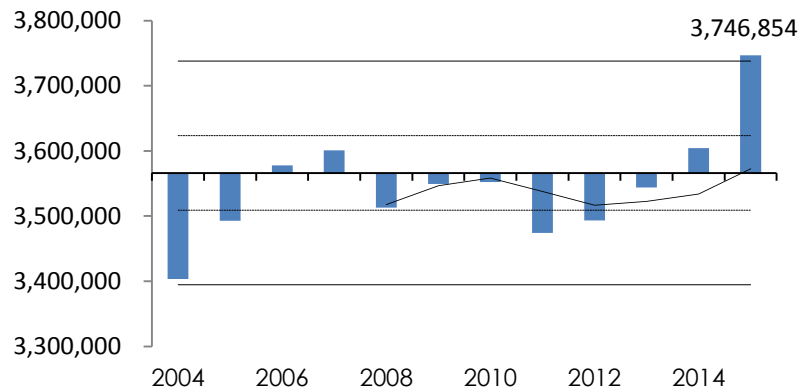
MPO trending Up Since 2014



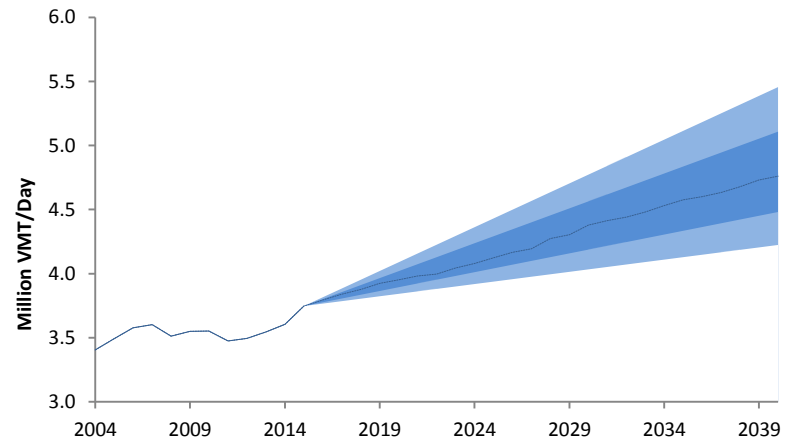
— VMT/Person — LCB — ±δ — UCB

# Interstate VMT

- Historic Demand 13,800,000 VMT/Day
- Average Growth 1%/Yr.



■ Interstate VMT — LCB ±6 — UCB — 5 Yr. Avg.

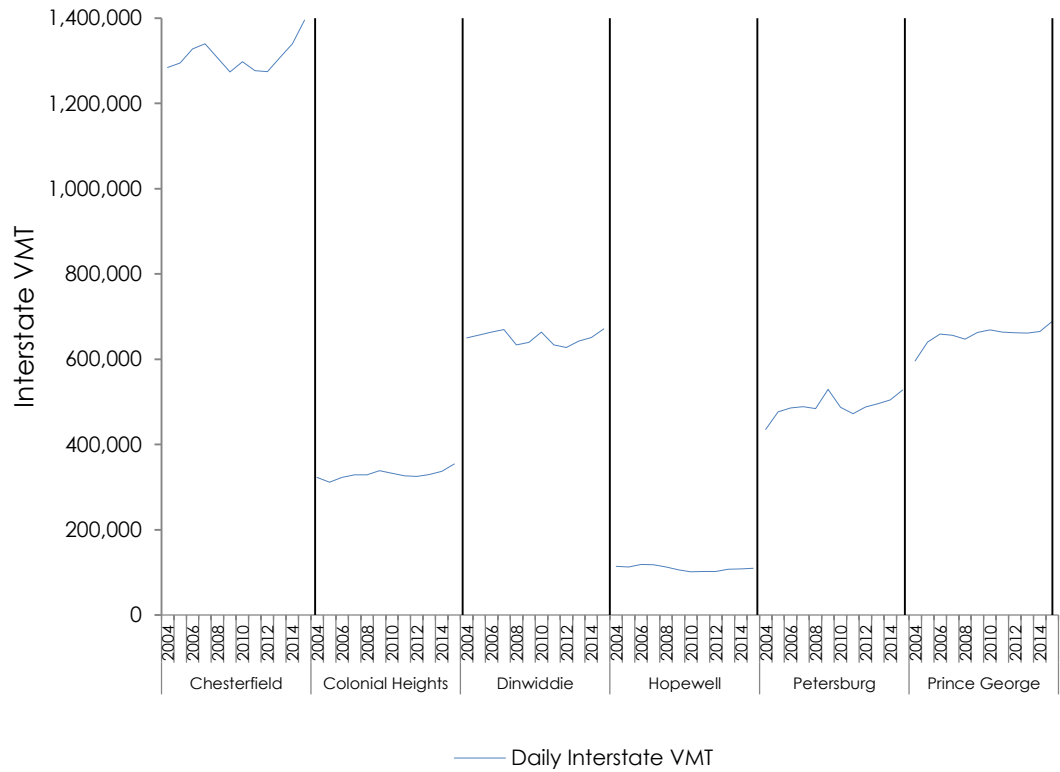


■ 76-95% (Optimistic) ■ 51-75% (Optimistic) ■ 6-25% (Pessimistic)  
 0-5% (v. Pessimistic) — Average — Interstate VMT

# Interstate VMT by Jurisdiction

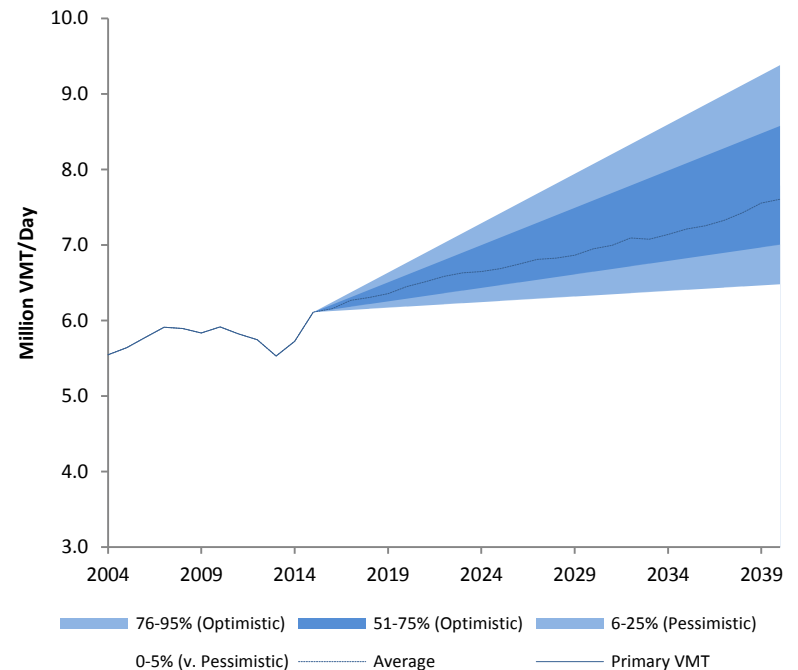
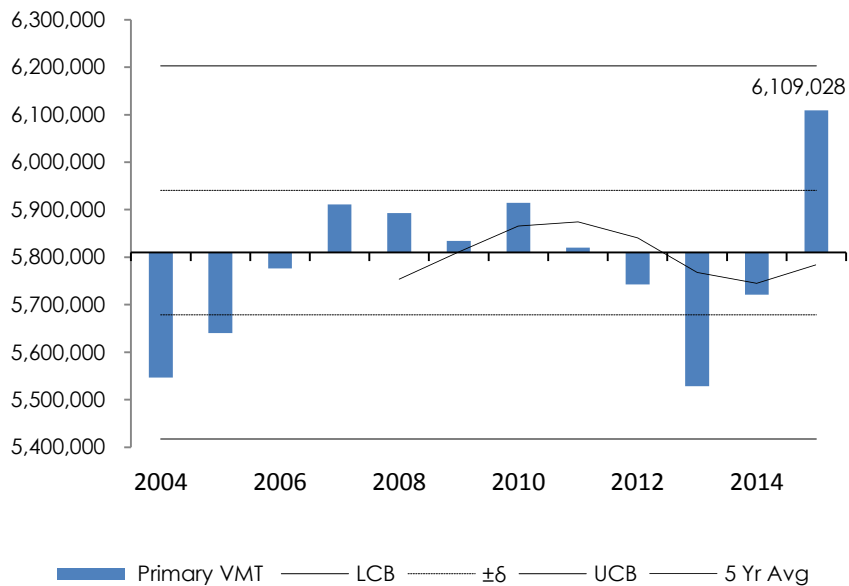
VMT Growth on the Freeways is Flat except in the circled jurisdictions

Includes all VMT in Chesterfield County



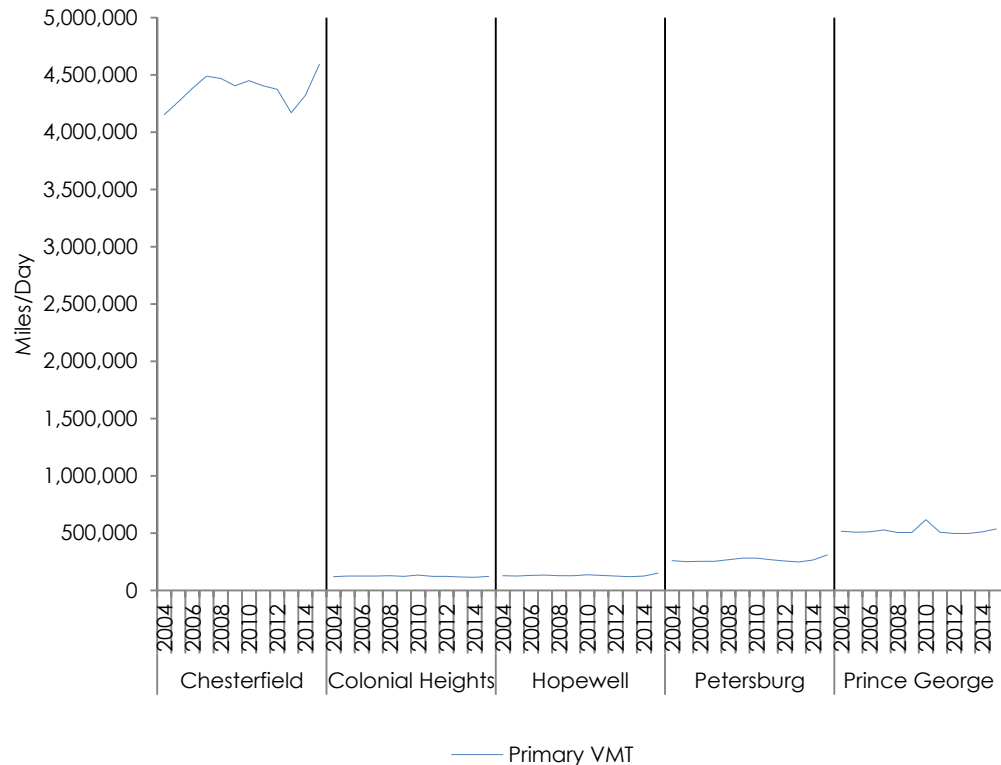
# Daily Primary Rd. VMT

- Historic Demand 5,810,000 VMT/Day
- Average Growth 1%



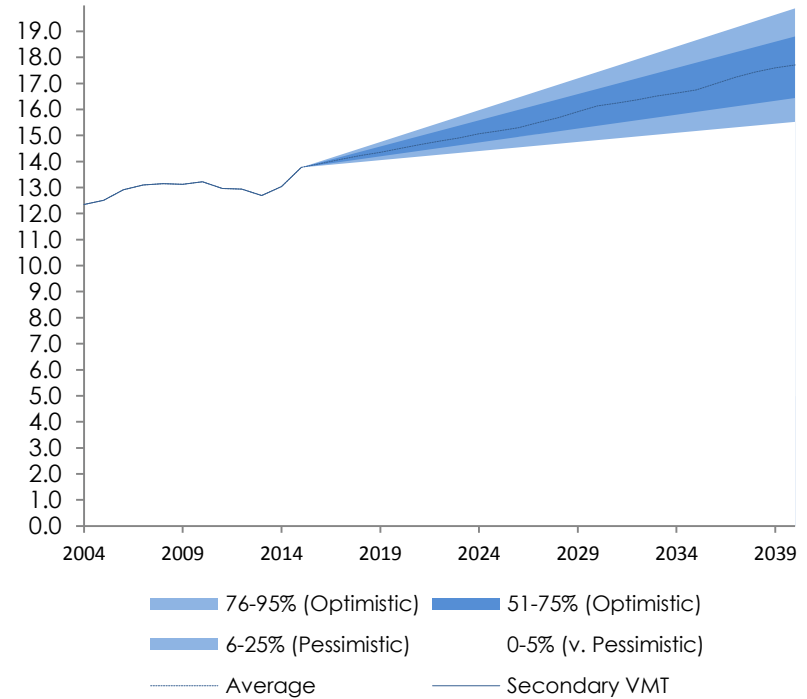
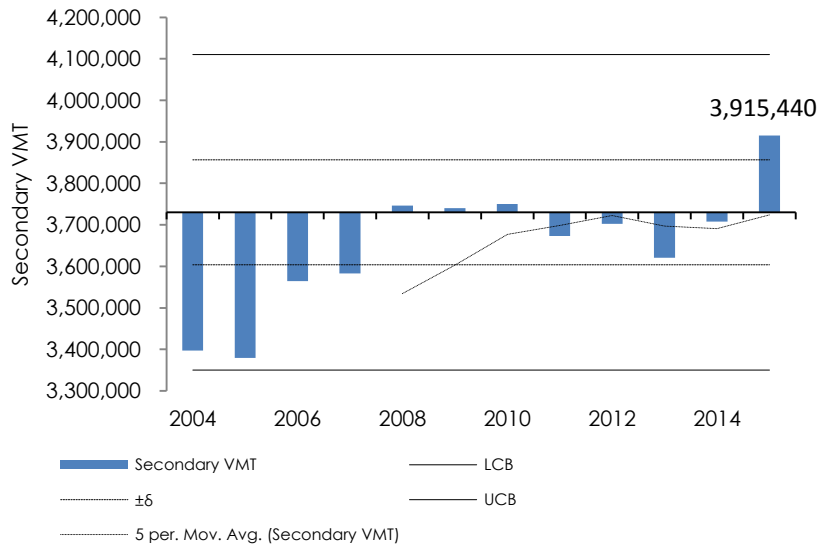
# Primary Rd. VMT by Jurisdiction

VMT Growth is Flat Except for Chesterfield  
County



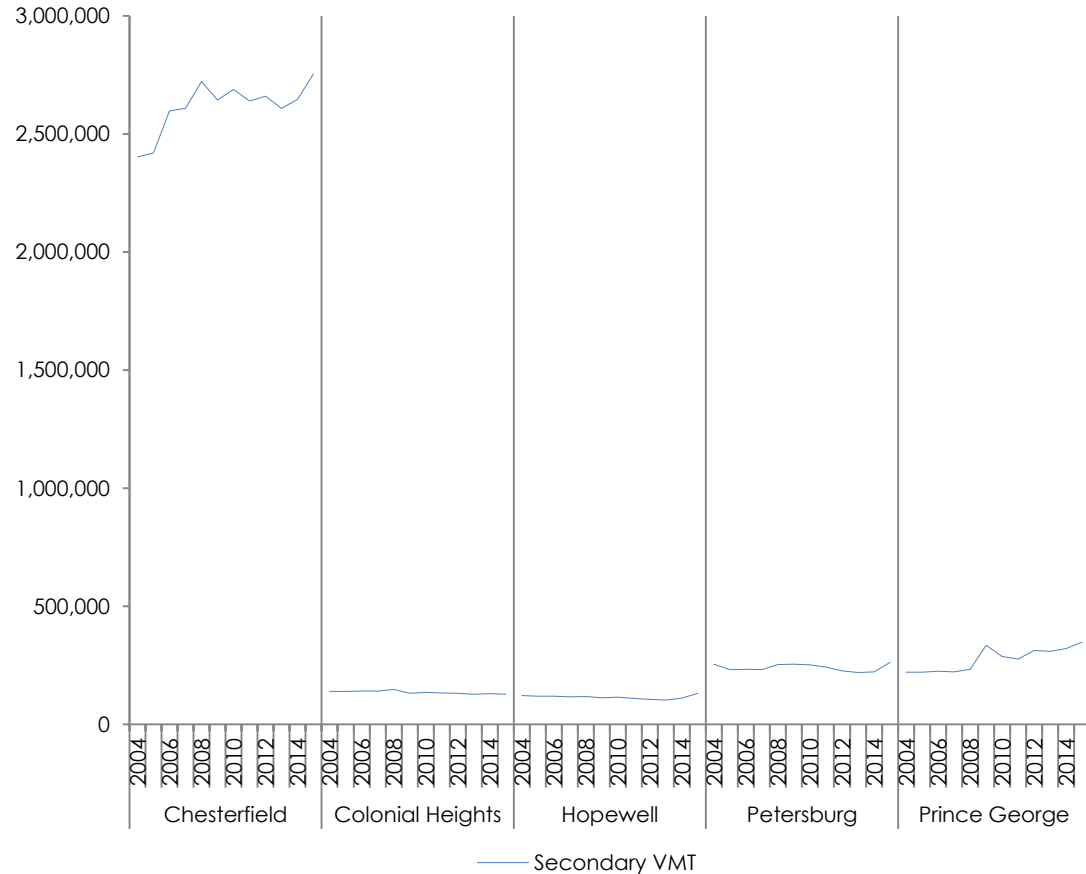
# Daily Secondary Rd. VMT

- Historic Demand 3,900,000 VMT
- Average Growth 1%/Yr.



# Secondary Rd. Travel by Jurisdiction

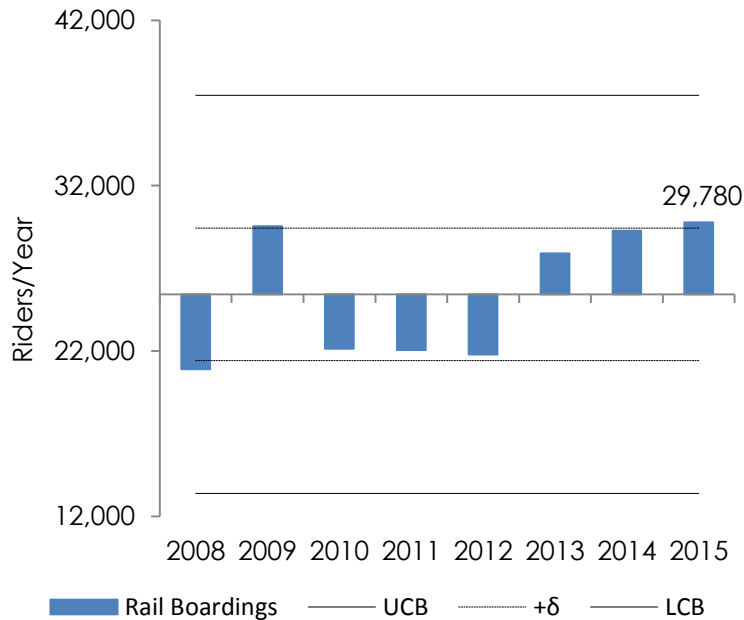
VMT Growth on Secondary Routes is Generally Flat  
Includes All of Chesterfield County



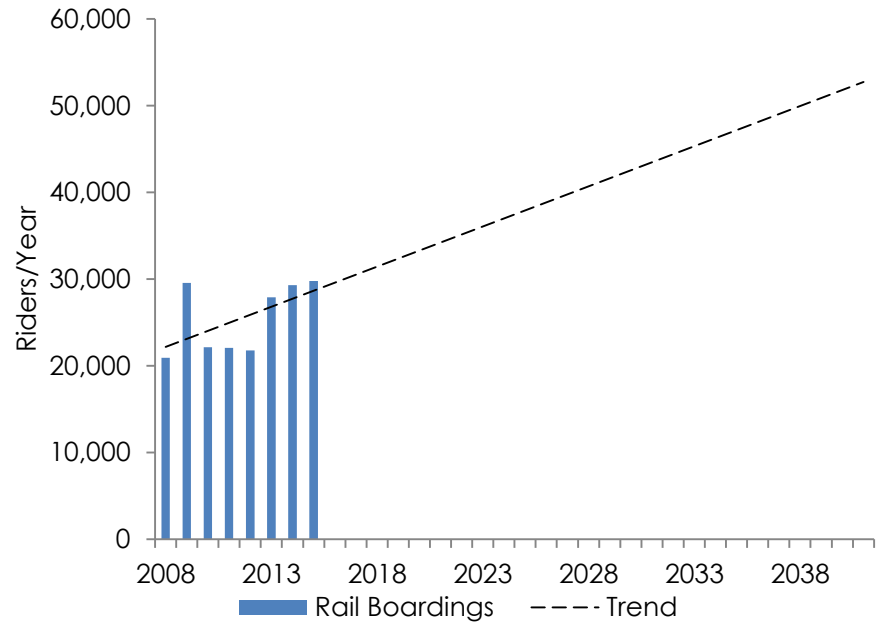
# AMTRAK Boardings & Alightings

- **Historic**

- Two daily trains to Hampton Roads were added after 2012
- More Trains Attract More Riders



- **Projected**



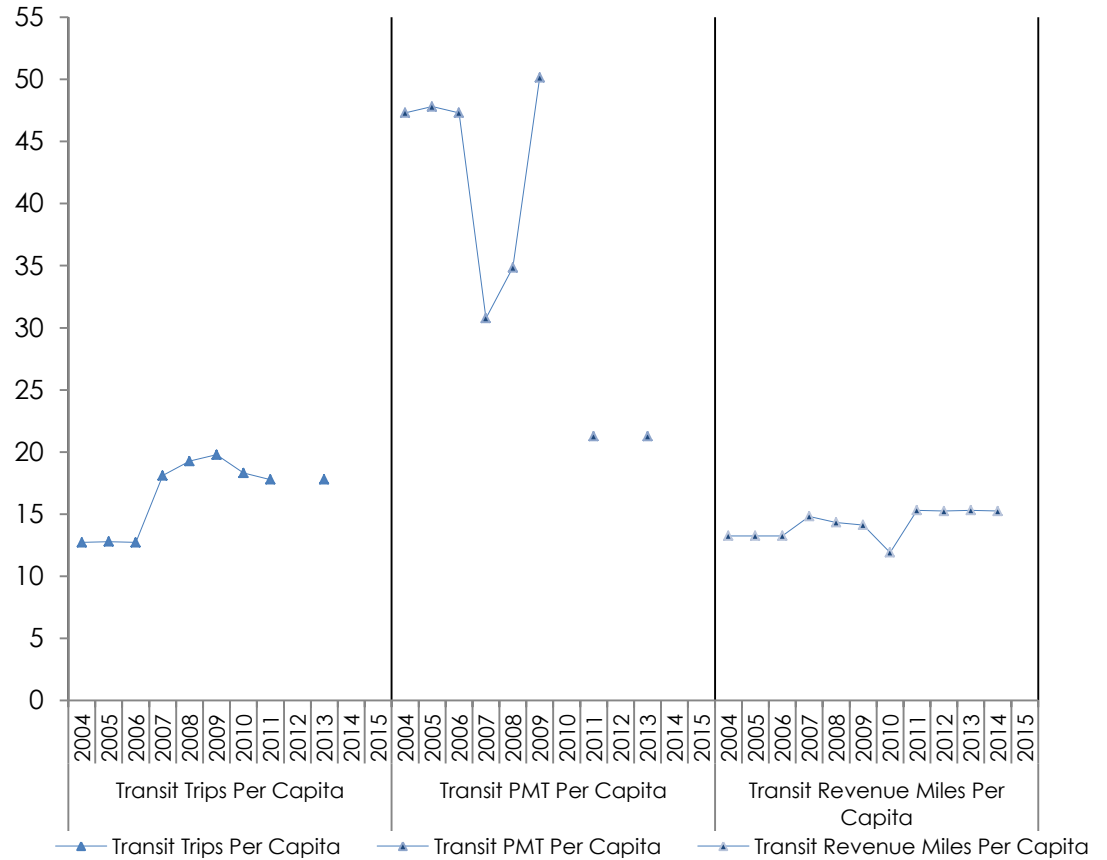


# Transit

Trips/person – Constant

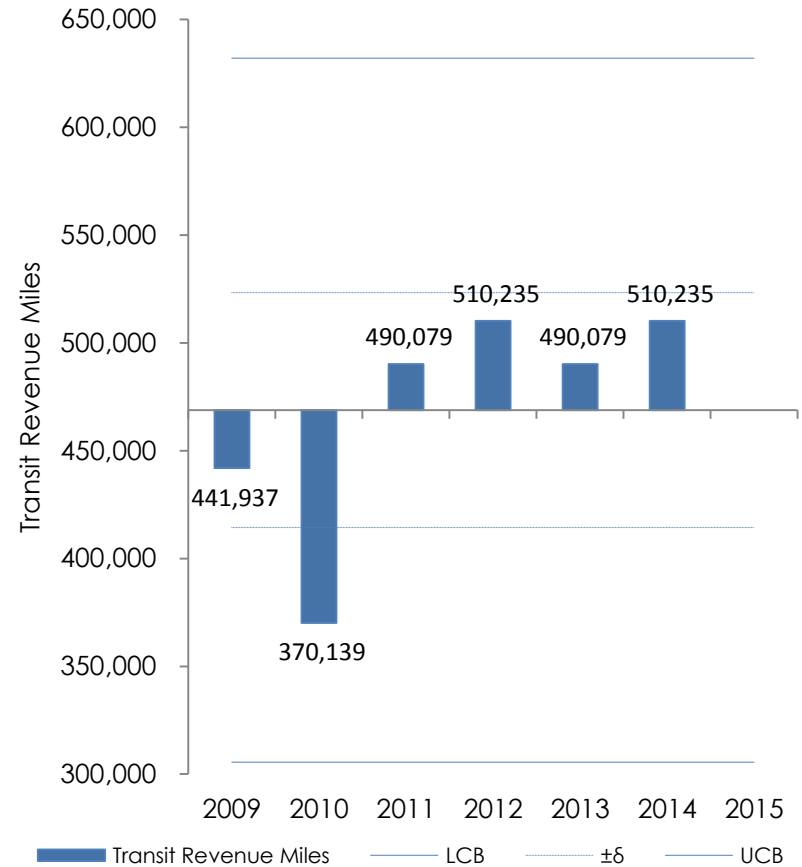
Miles Traveled/person- fell in 2011 because of route changes

Revenue Miles/Person - Constant



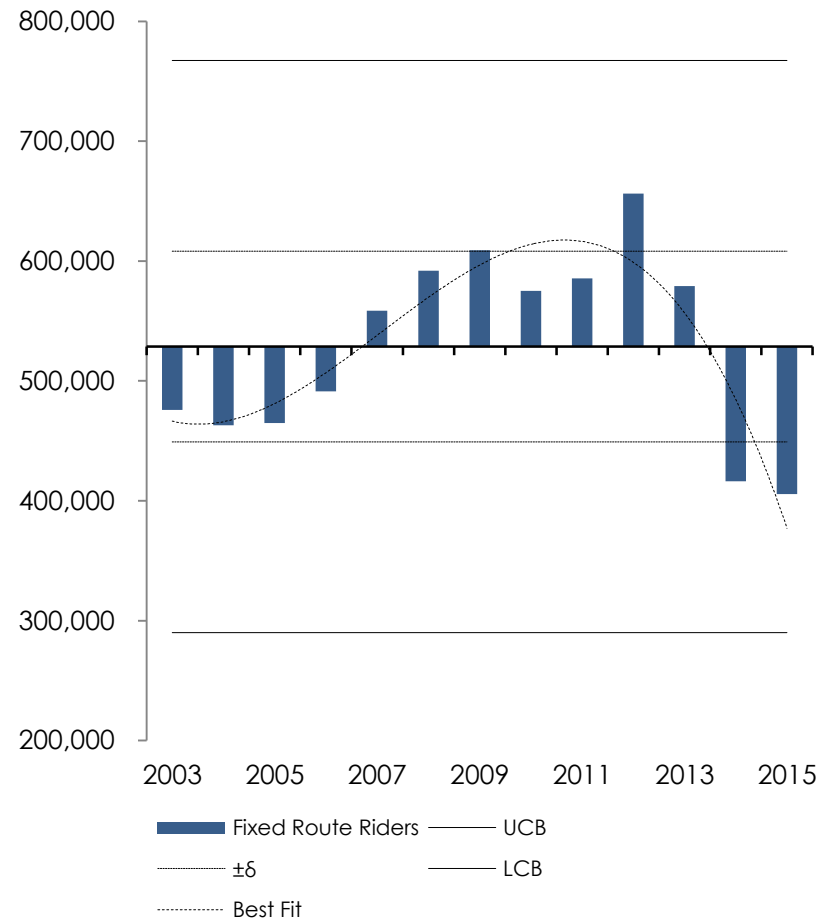
# PAT Revenue Miles

- PAT Average ~ 469,000 revenue miles per year
- Maximum Vehicles in Service is 17



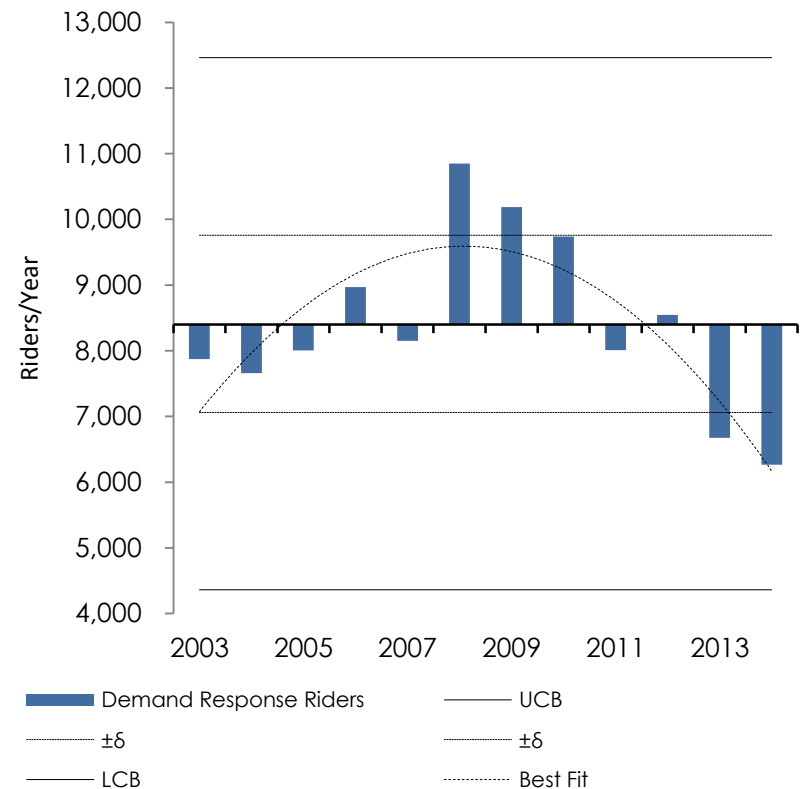
# Fixed Route Riders

- 528,600 Riders per Year Average
- Peak Ridership in 2012
- Declining Through 2015



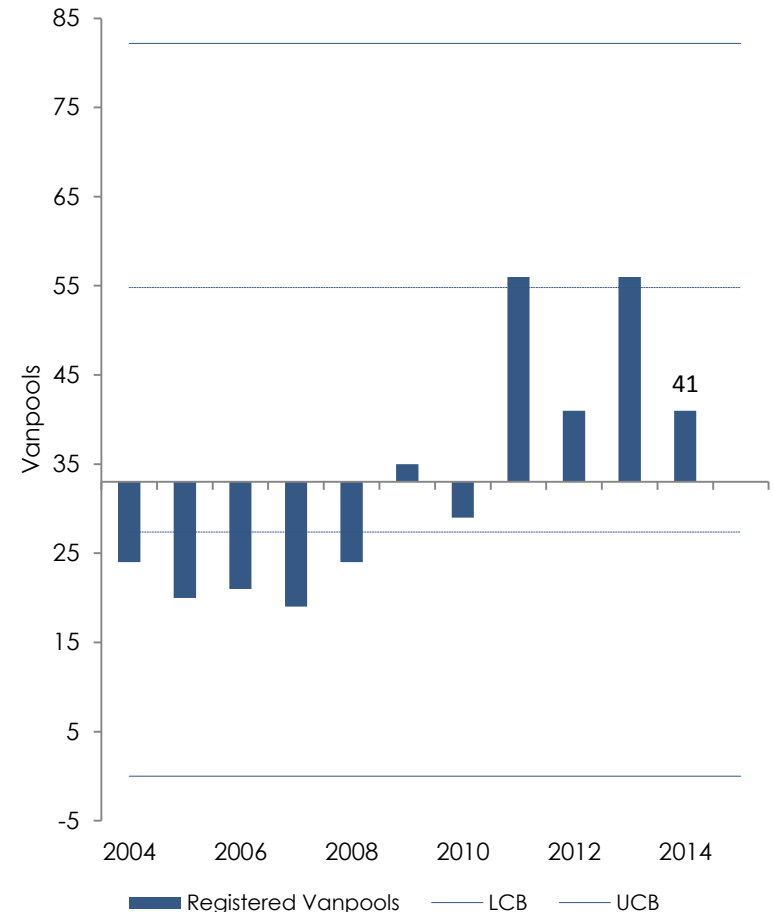
# Demand Response Riders

- 8,400 riders per year  
Average
- Peak Ridership ~2008
- Declining Through 2015



# Vanpools

- The number of carpools registered is steady between 35 and 40
- Informal Pooling is more common
- Around ten percent of commuters use a car or vanpool



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# CONTEXT

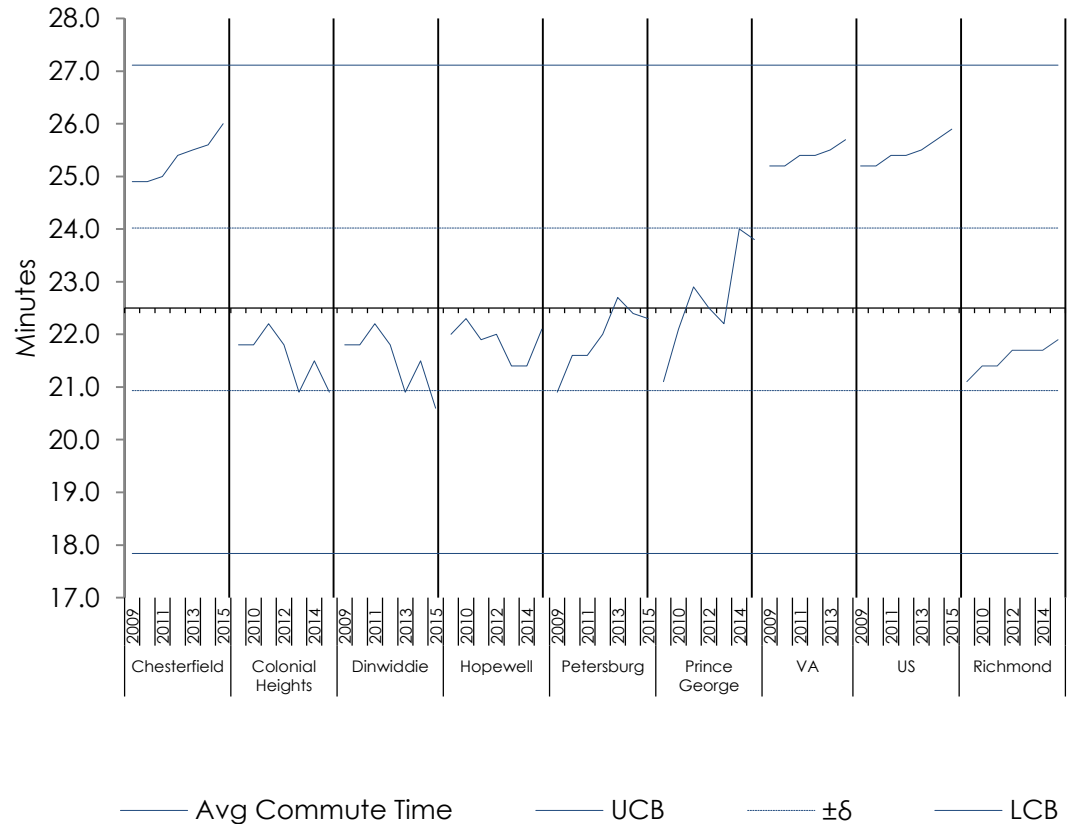
# Average Time to Work

22 ½ minutes in the MPO  
 Almost 26 minutes Nationally

Except for Chesterfield County

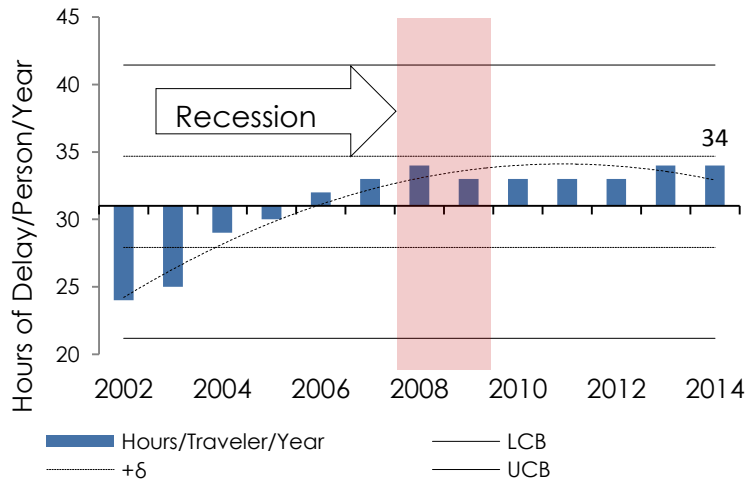
MPO Commutes shorter than VA or the US & are close to Richmond's

As the economy improves commute times are getting longer

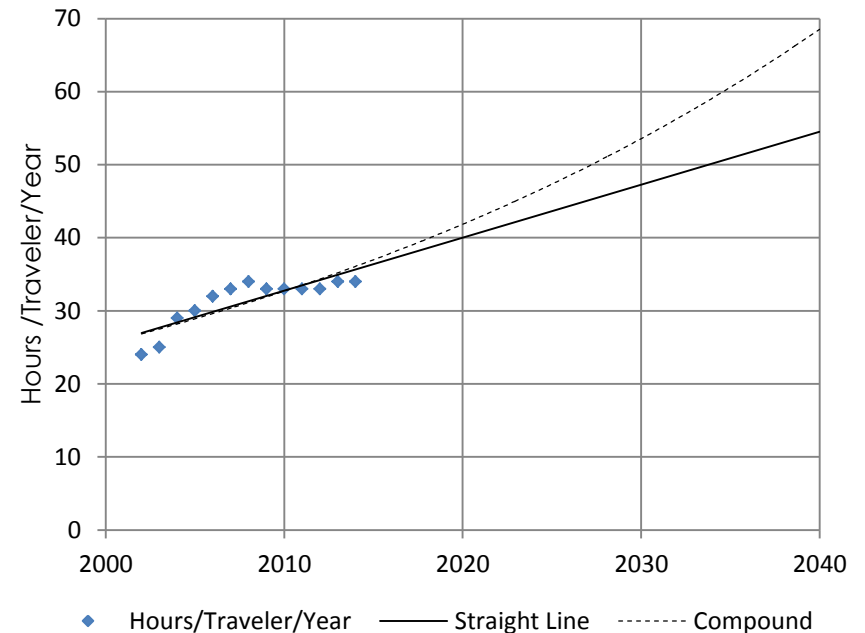


# Commuter Delay per Year

- 2015
  - 34 hours/commuter/year or
  - 4.25 workdays/commuter/year
  - ~ 8 minutes/commuter/day
- Average ~31 hours commuter/day since 2002
  - ~7 Minutes/Commuter/Day



- By 2040
  - 55 to 70 hours or
  - ~13 to 16 minutes /commuter/day





# Mode Share

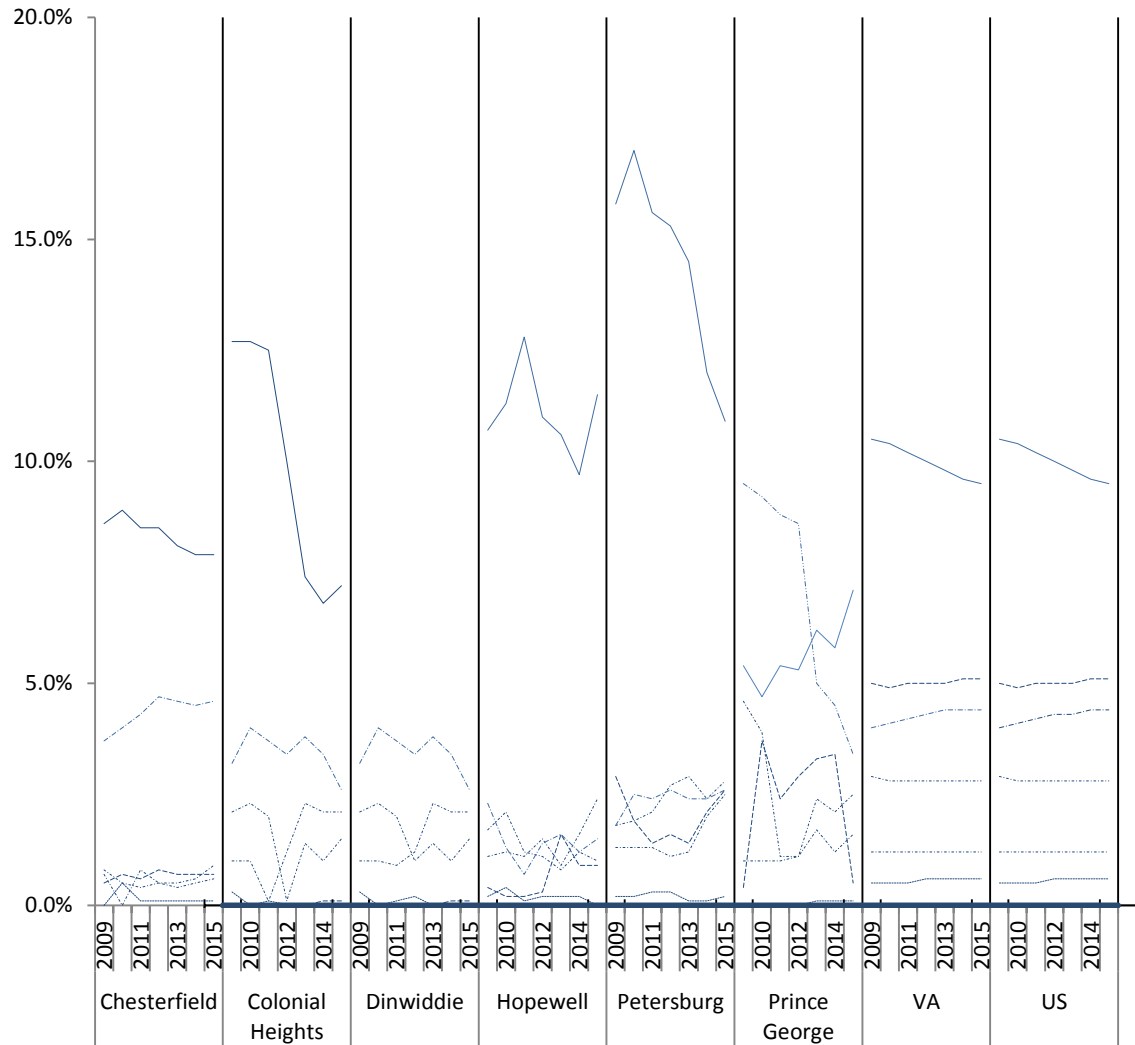
This Chart shows the percent of workers who do not drive alone.

Within the MPO more than eighty percent of workers drive alone

This is consistent with the percentages in Virginia and Nationally

The second strongest travel choice is carpooling

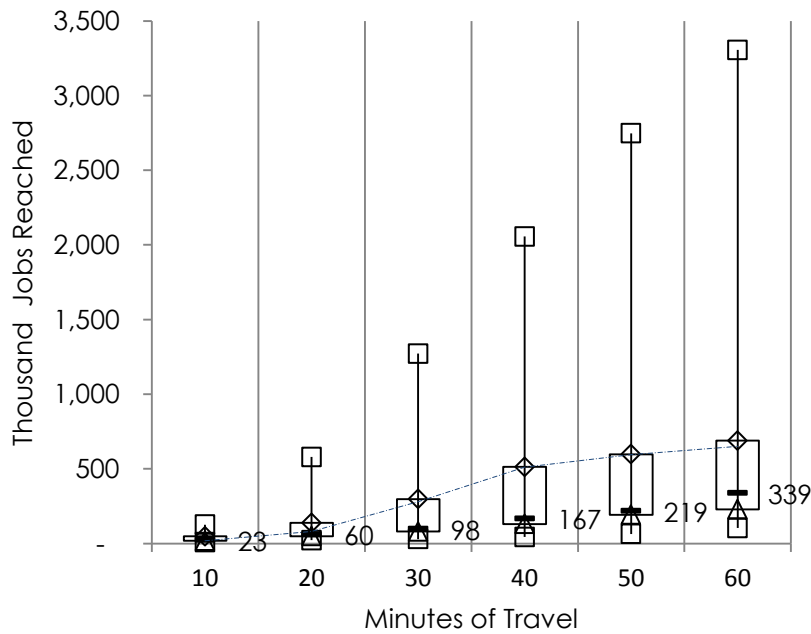
As the economy improve more workers drive alone



— % Bicycling      — % Carpooling      - - - % Public Transport      ····· % Taxis & Other  
 ····· % Taxis & Other      ····· % Walking      - - - % Work at Home

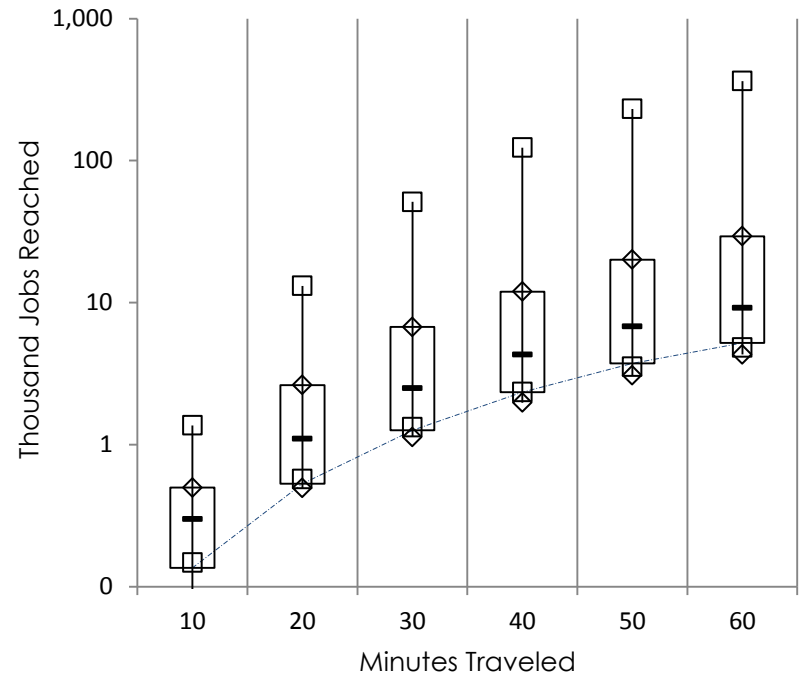
# Jobs Accessible by Travel Time

## Va. Jobs Accessible by Automobile



- ◇ 75th Percentile
- Median
- △ 25th Percentile
- Max
- Min
- Tri-Cities

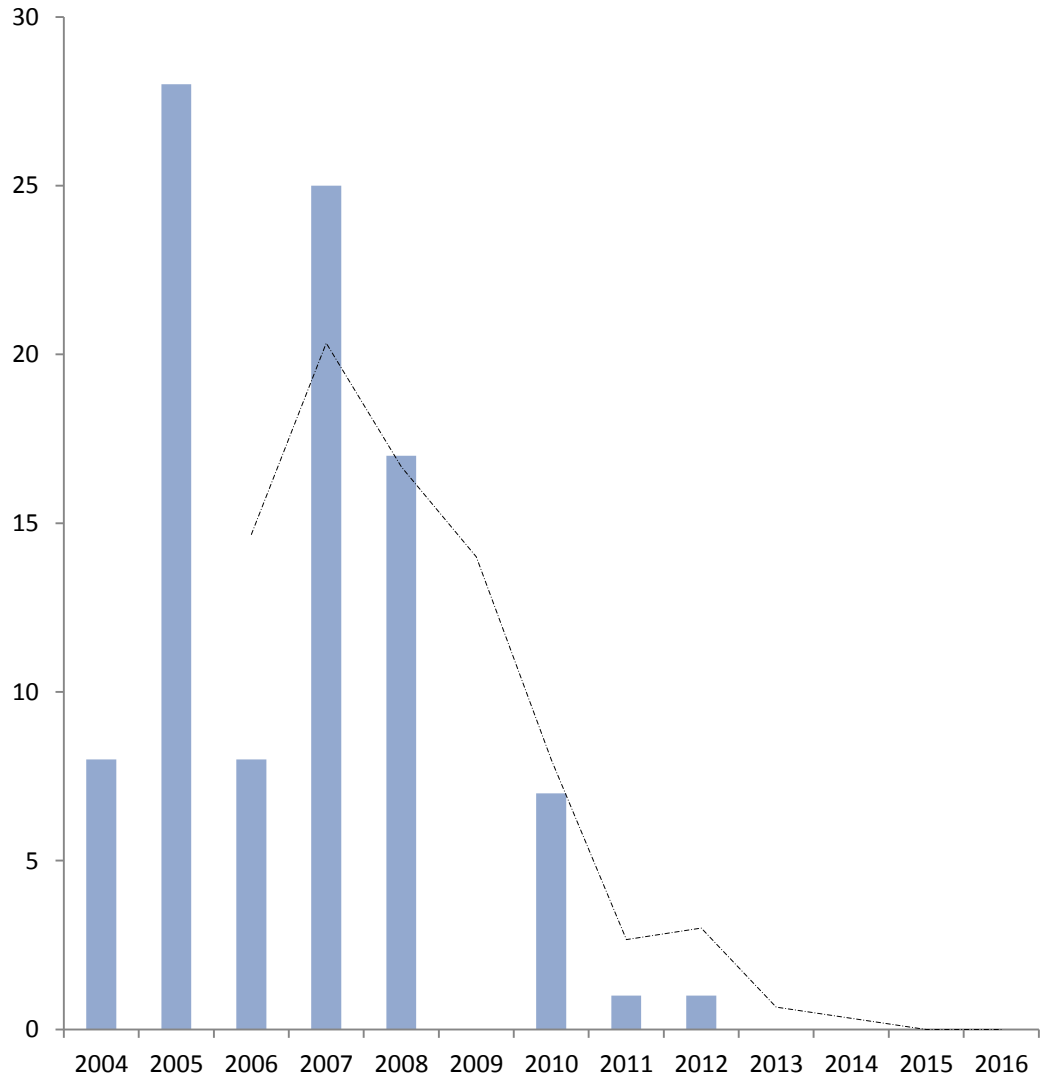
## Va. Jobs Accessible by Transit



- ◇ 75th Percentile
- ◇ Min
- Max
- 25th Percentile
- Median
- Tri-Cities

# Ozone Exceedance Days

The eight hour ozone standard is 70 parts per billion  
There are four monitors watching the Urban Area  
The region has exceeded the Ozone Standard since 2013



# Ozone

The Ozone Standard is Stated in Terms of the 4<sup>th</sup> Highest Hour of the Year

The blue background shows how the standard has changed over time. The current standard is 70 parts per billion

Four monitors cover the MPO area to check ozone. The graph on the right shows the 4<sup>th</sup> highest hour at each monitor for the past five years.

Because the mode share has been stable for years most of the reduction in transportation emissions is because of cleaner cars and trucks.

- Measured Ozone

