



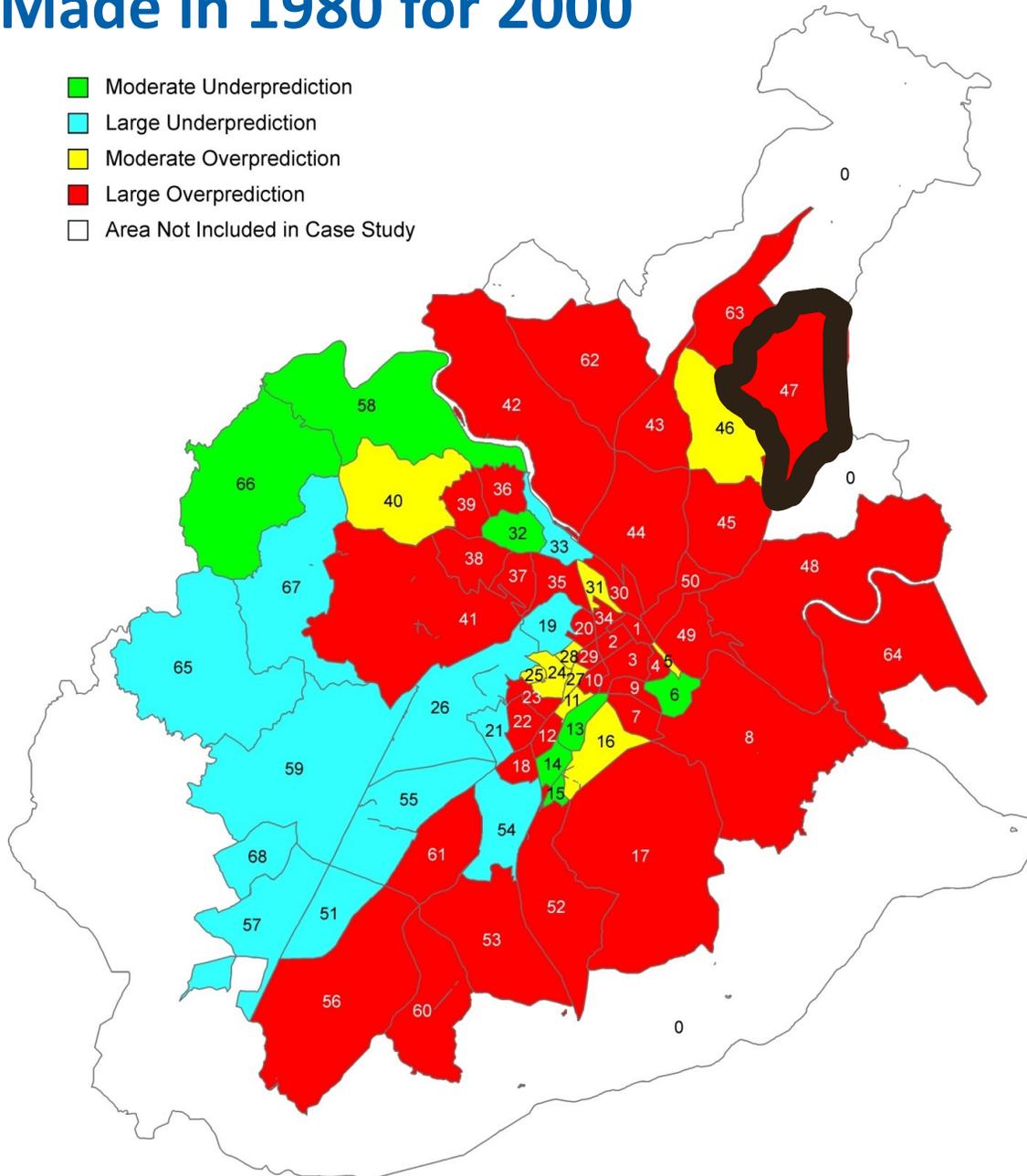
## **Socioeconomic Trends: Accuracy and Forecasts!**

February 4, 2015

John Miller

# Example 1: Lynchburg Area Population Forecasts Made in 1980 for 2000

- Moderate Underprediction
- Large Underprediction
- Moderate Overprediction
- Large Overprediction
- Area Not Included in Case Study



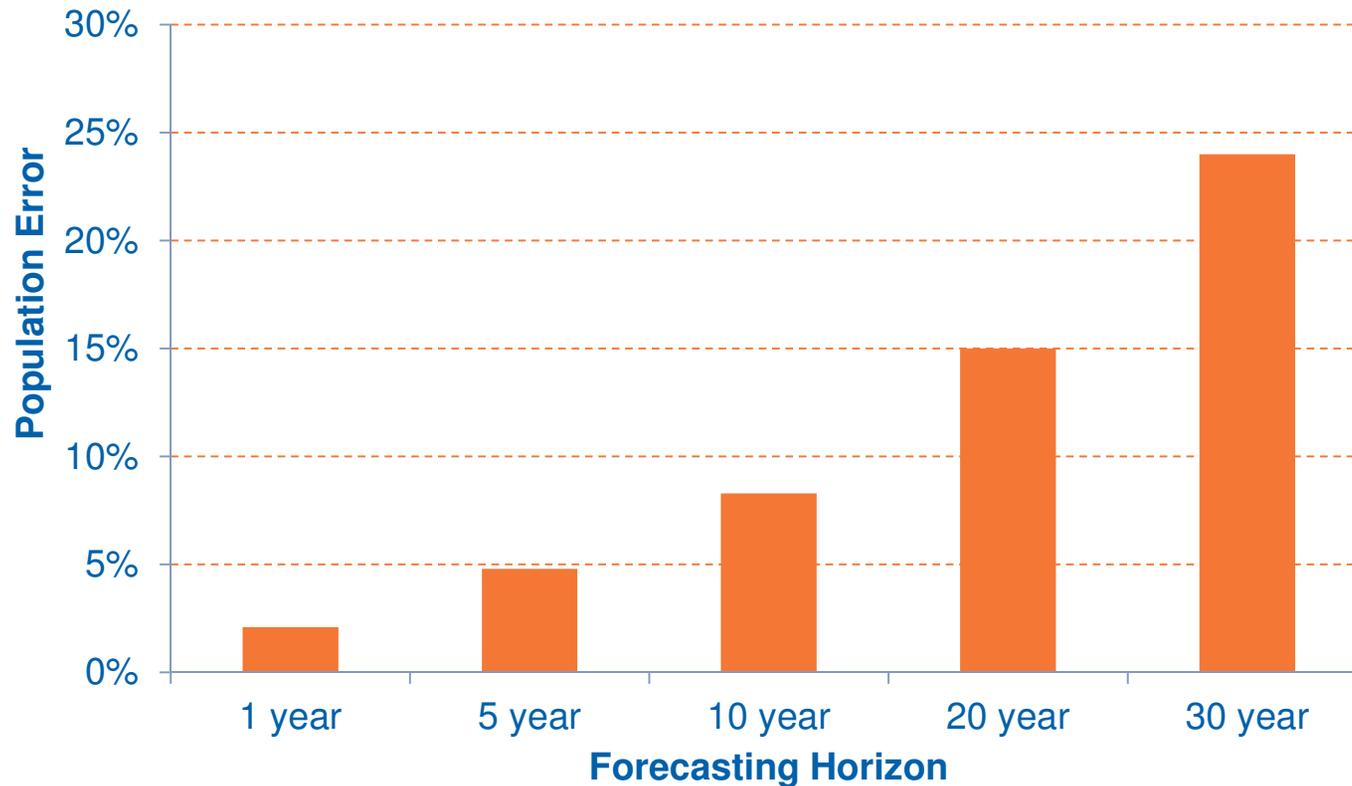
## Entire Region

Actual: 114,000  
 Forecast: 26,000  
 Error: 10%

## Individual zones

Error: 39%

## Example 2. Expected County Level Forecast Errors



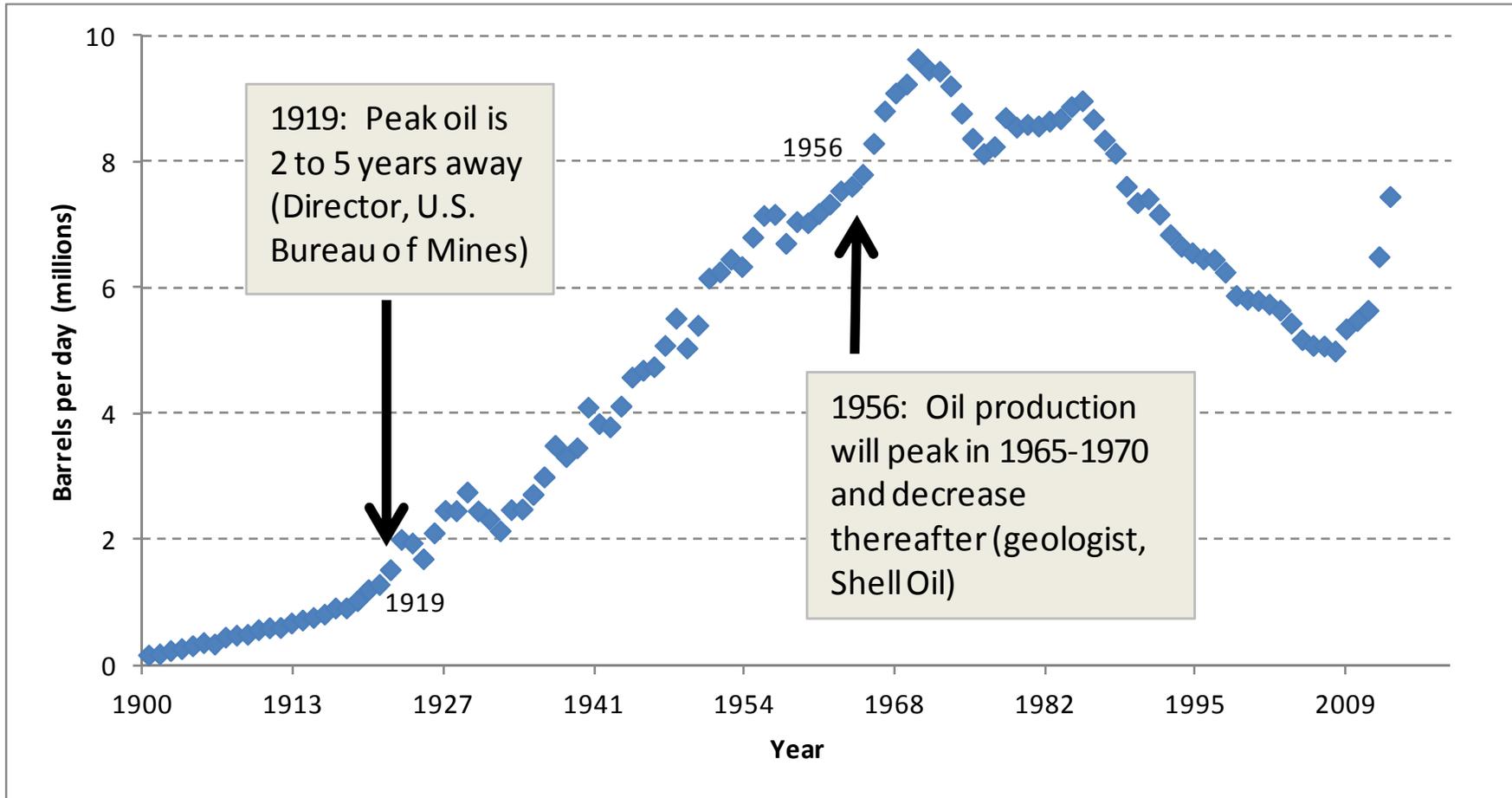
Drawn from: Woods & Poole, Economics, Inc. *Virginia, Maryland, and District of Columbia 2014 State Profile: State and County Projections to 2040*, Washington, D.C., 2014 and Weldon Cooper Center for Public Service, Inc. *Virginia Population Projections Methodology*, Charlottesville, 2012.

## Example 3. Metropolitan Washington Forecasts made in 1990 for 2010

	Population	Employment
<b>Regional error</b>	<b>8%</b>	<b>12%</b>
<b>Jurisdiction error</b>	<b>11%</b>	<b>25%</b>

Calculated from the following source: National Capital Region Transportation Planning Board. *Accuracy of Growth Forecasts Made 20 Years Ago Varied From Jurisdiction to Jurisdiction*. TPB Weekly Report, Metropolitan Washington Council of Governments, January 8, 2013

## Example 4: Forecasts for Peak Oil Production Made in 1919 and 1956



Drawn from data available from the U.S. Energy Information Administration (U.S. Field Production of Crude Oil, 2014) and annotated based on information provided by R. Gold. ("Why Peak-Oil Predictions Haven't Come True—and Probably Won't." *The Wall Street Journal*, pp. R1-R2, Dow Jones & Company, Monday September 29, 2014.

# Summary about Forecasting Accuracy

It is easier to make forecasts for

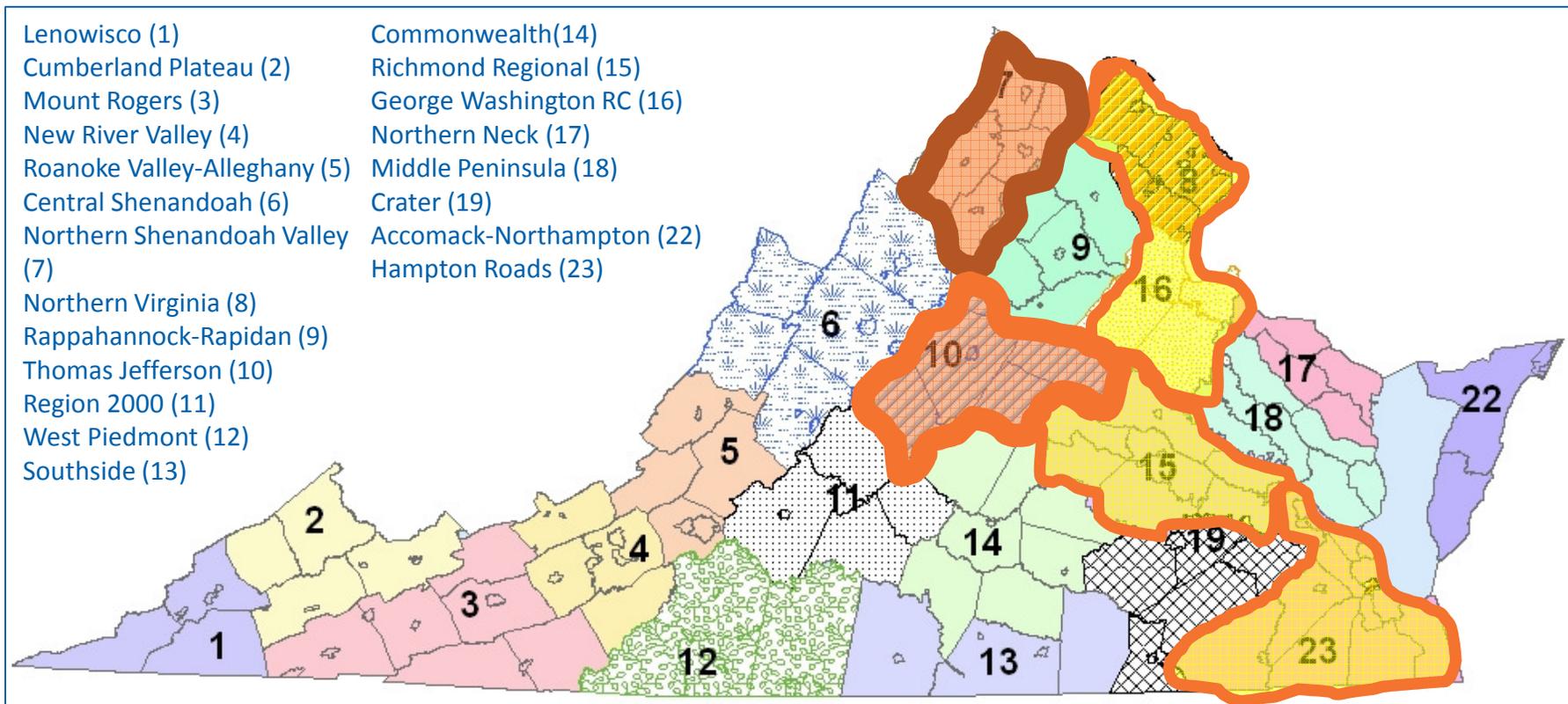
- ❑ A shorter time horizon than a longer one
- ❑ A larger geographical area than a smaller one
- ❑ A demographic trend than a behavioral trend
- ❑ A conventional technology than a new technology

Easier to Forecast	Harder to Forecast
Virginia's population in 2020	Proportion of Richmond residents taking a shared autonomous vehicle to the grocery store in 2040

## Where is Growth Headed by 2040?

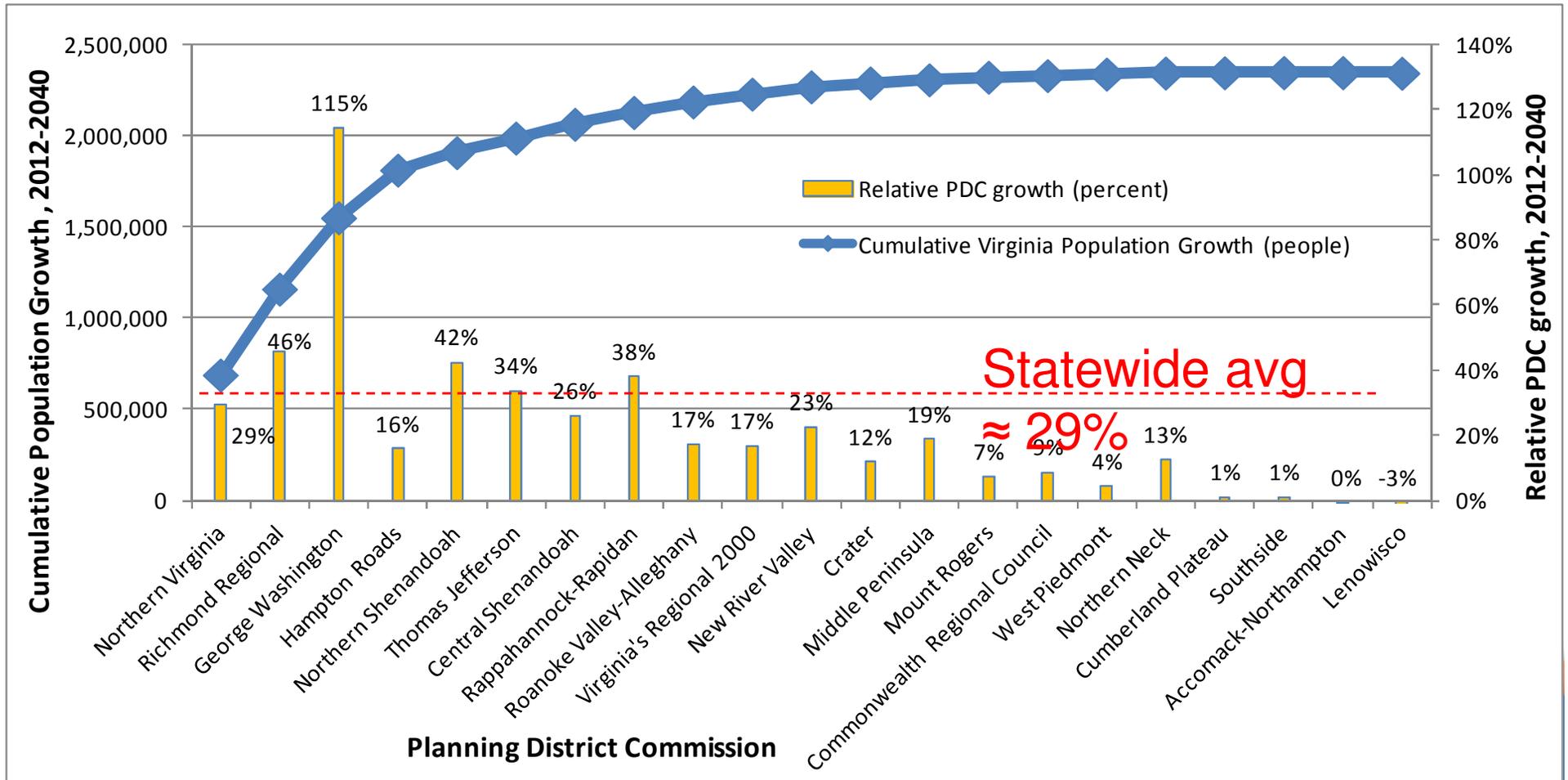
77% of Growth in 4 PDCs

85% of Growth in 6 PDCs



Take-away: Between 2.3 million and 3.5 million new people in these 6 PDCs

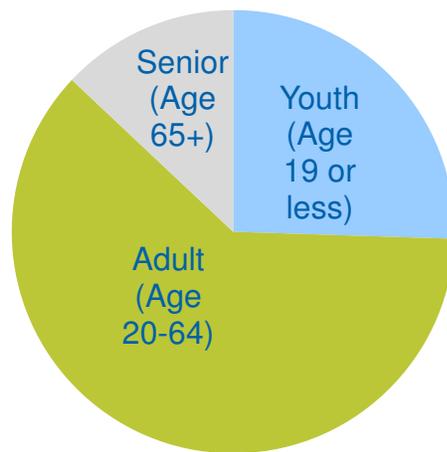
# Projected Population Growth is not Uniform by Location



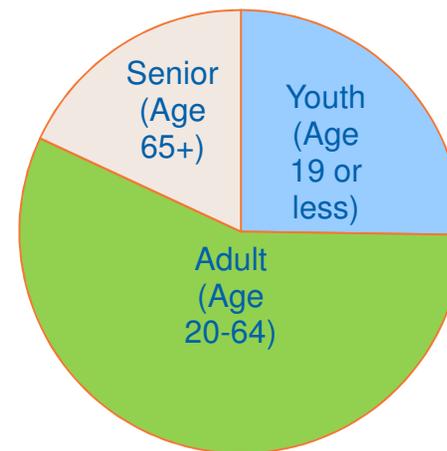
8 Take-away—an “average” growth forecast for Virginia does not tell the full story

## Growth is Not Uniform by Age Group

Ages	2012 Population	2040 Population	Change
Youth (0-19)	2.1M	2.7M	27%
Senior (65+)	1.1M	1.9M	79%



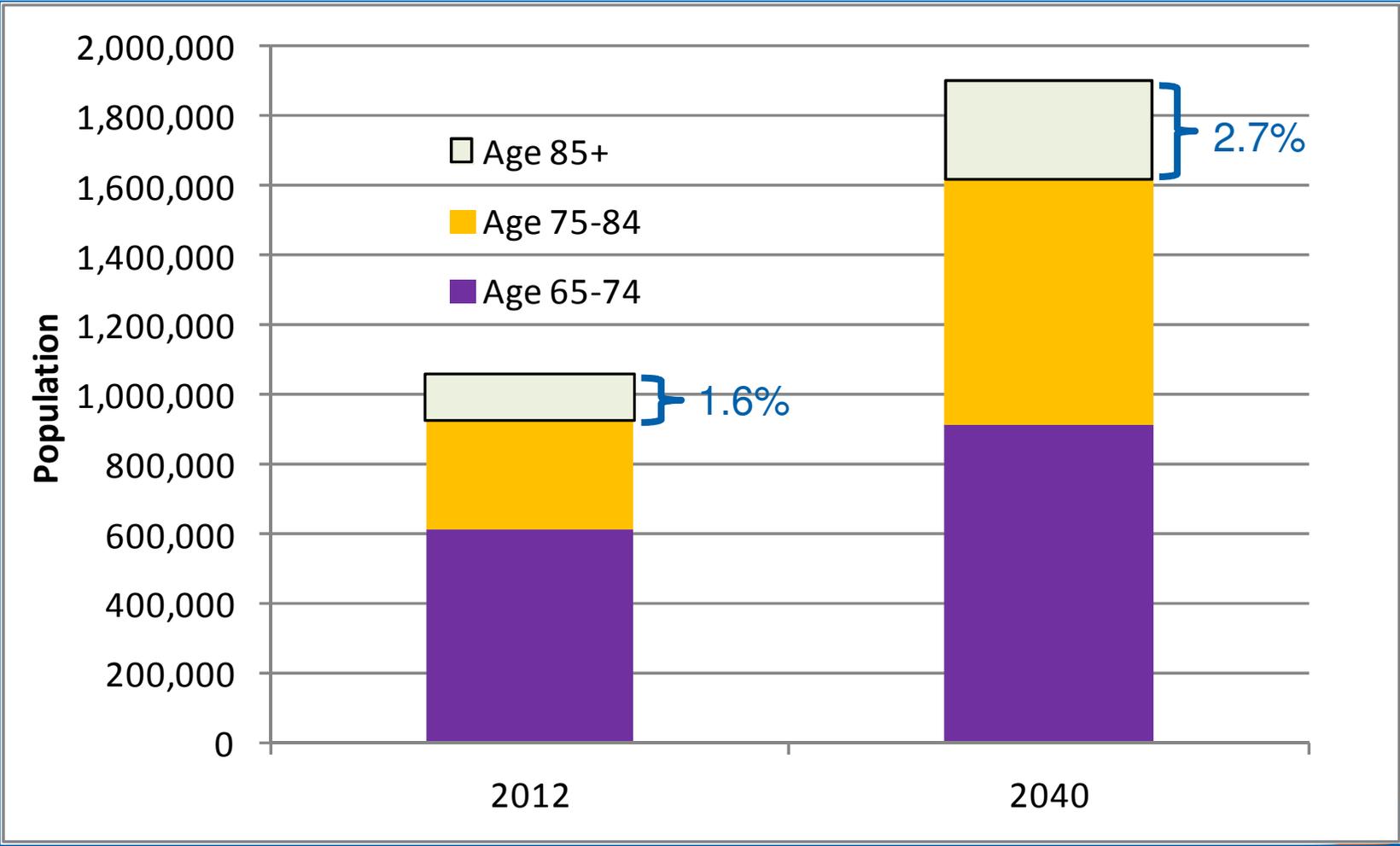
2012



2040

Data Obtained from the Weldon Cooper Center for Public Service, Demographics & Workforce Group. *2020, 2030, and 2040 Population Projections by Age and Sex for Virginia and its PDCs and Member Localities*, Charlottesville, 2012.

# Mature Seniors are Growing Faster than Youthful Seniors

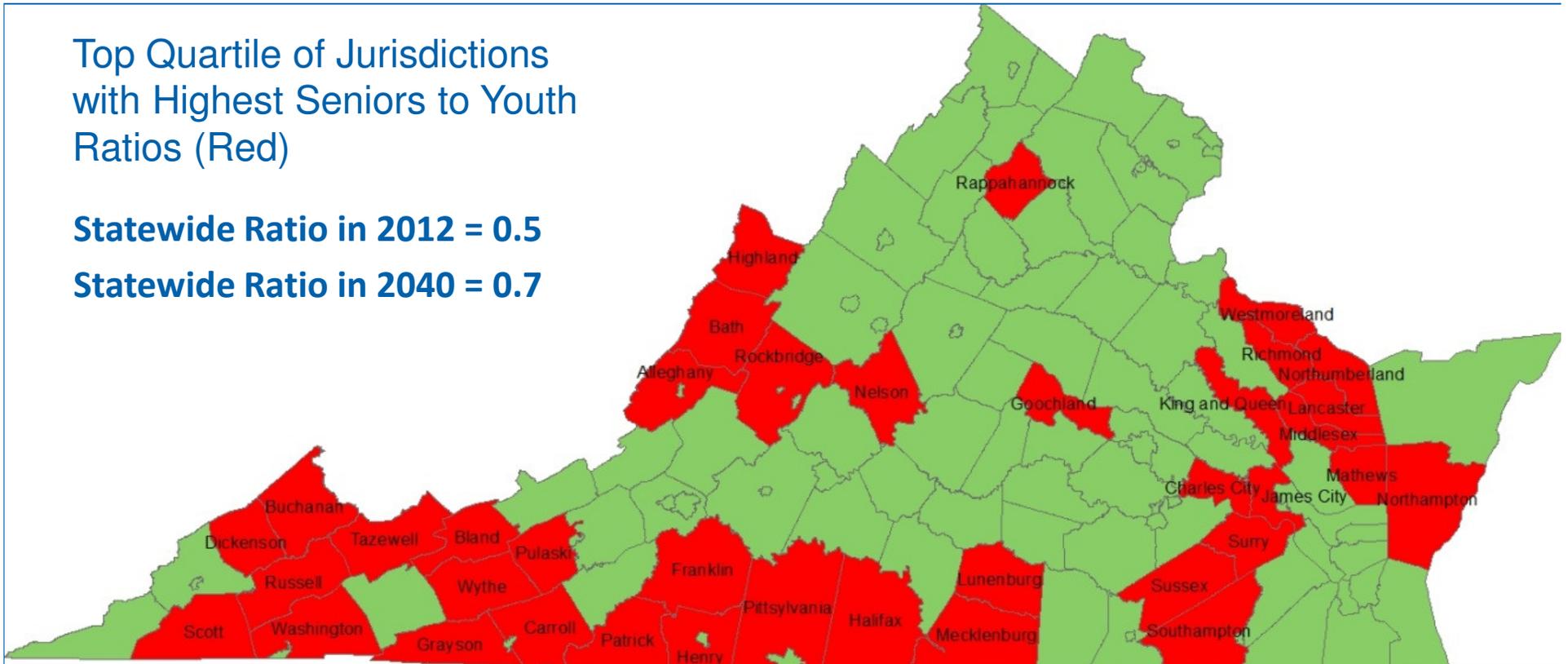


# 2040 Ratios of Seniors to Youth

Top Quartile of Jurisdictions  
with Highest Seniors to Youth  
Ratios (Red)

Statewide Ratio in 2012 = 0.5

Statewide Ratio in 2040 = 0.7



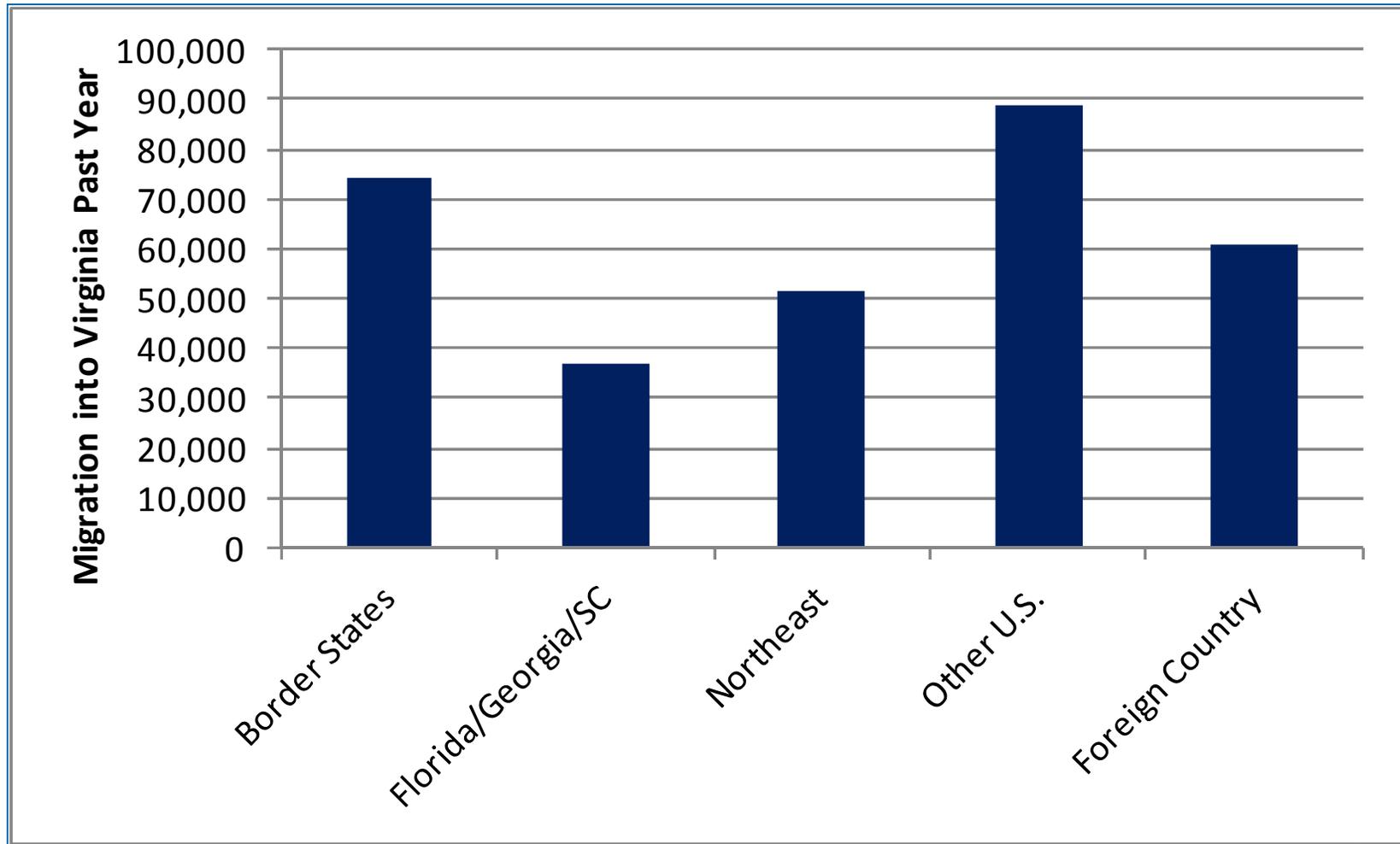
Example in 2040:

Age 65+            6,300

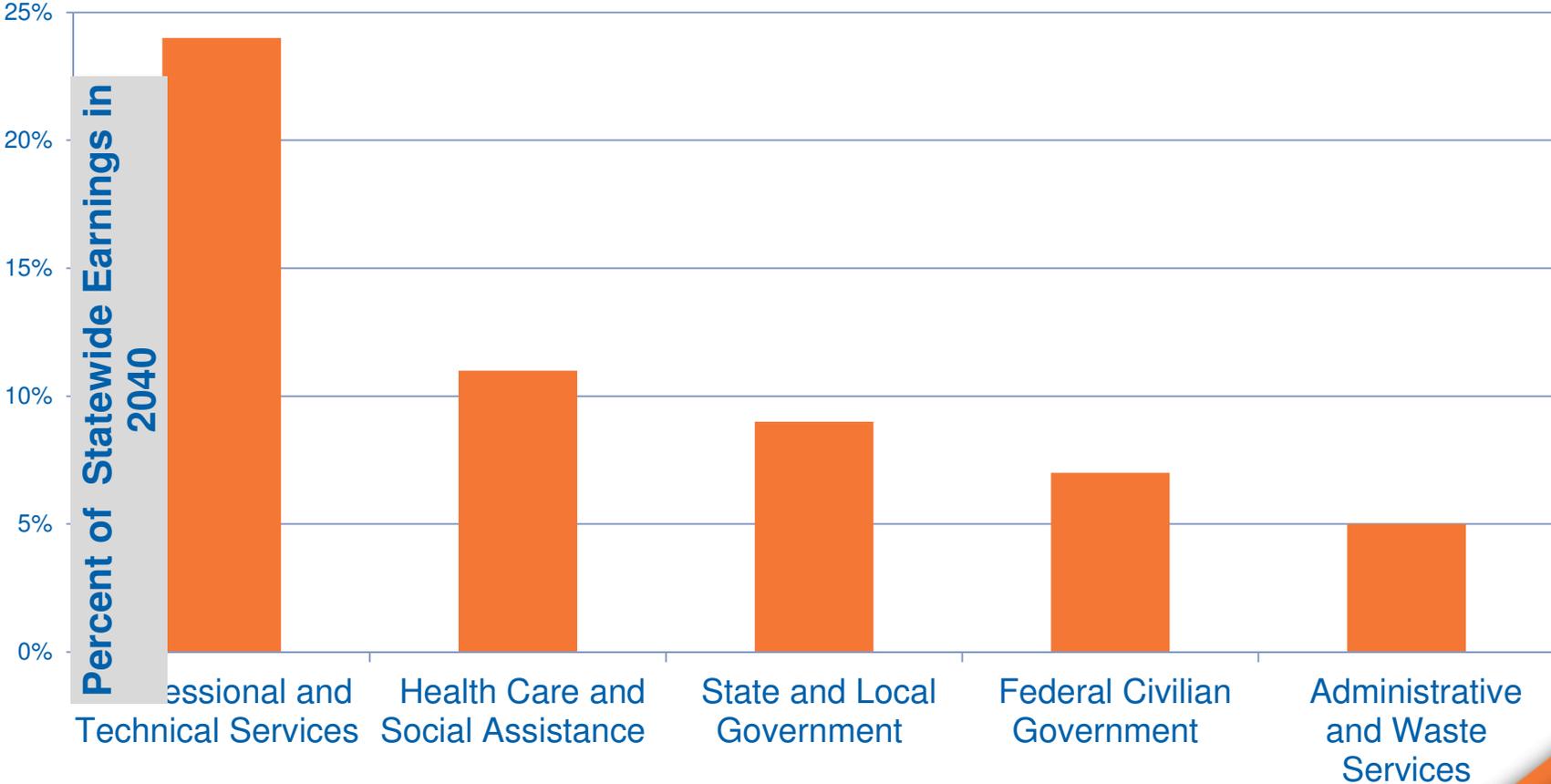
Age 19 or less: 22,000

Ratio:                ≈ 0.3

## About Half our Population Growth Depends on Domestic Migration and International Immigration



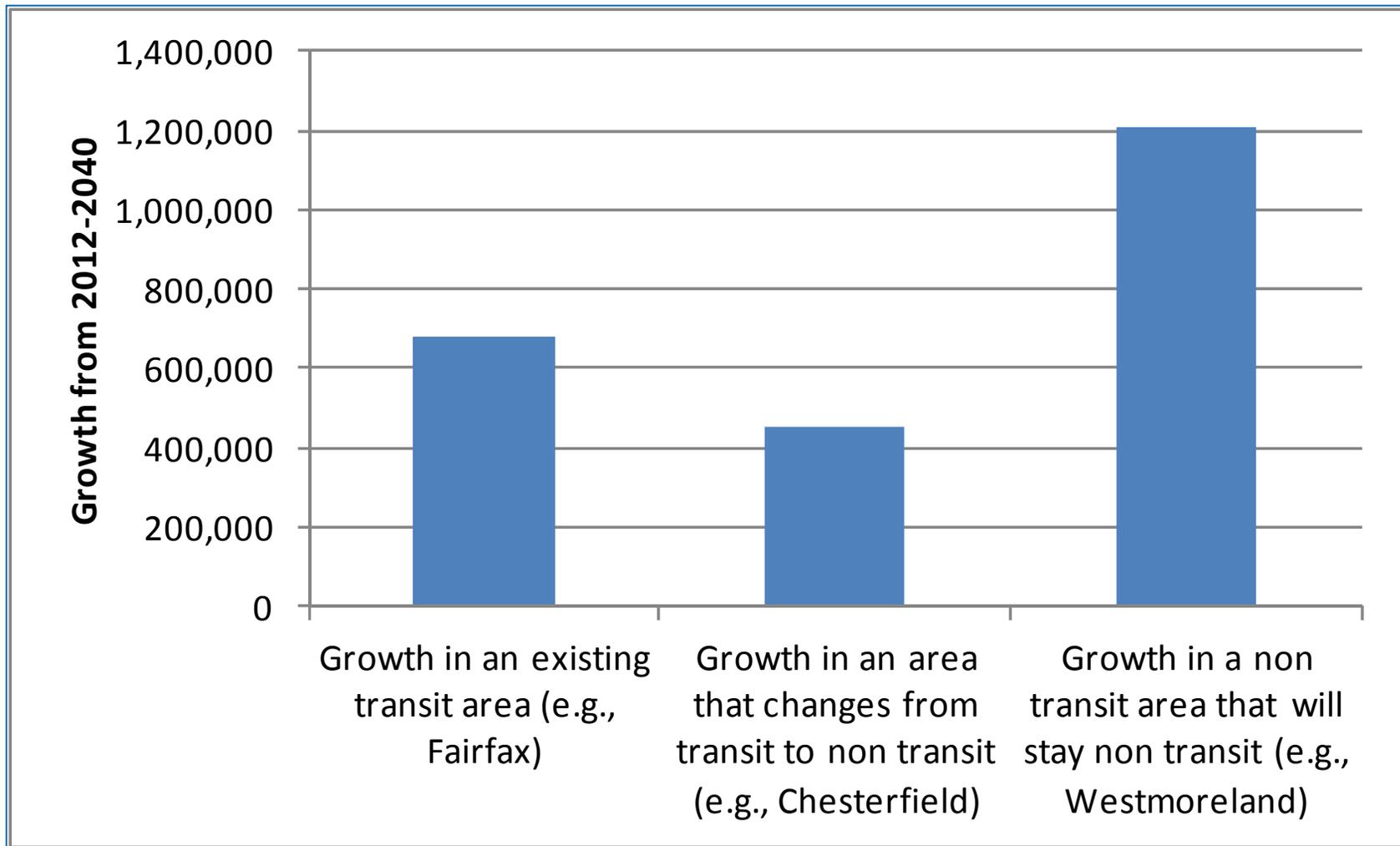
# 2040 Employment by Earnings



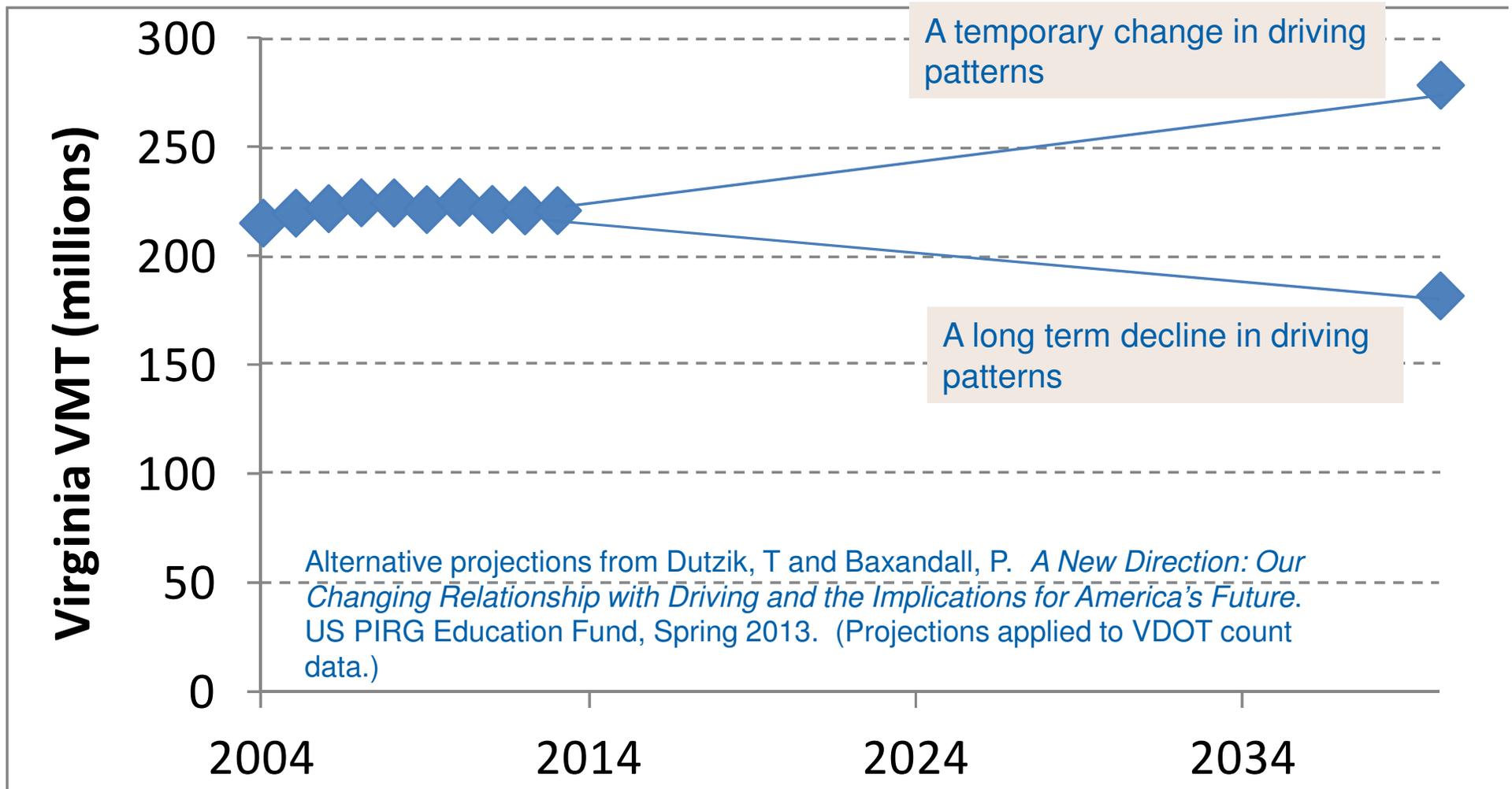
Source: Woods and Poole. 2014 State Profile: District of Columbia, Maryland, and Virginia, Virginia State Profile CD, Washington, D.C., 2014.)



## Growth in Diverse Types of Areas



# Changes in VMT



## Trend Summary

1. **Forecast uncertainty is large, both for population forecasts (trends) and travel impacts (behaviors)**
2. **Four PDCs account for three quarters of Virginia's 2.3-3.5 million additional people. Growth is uneven by jurisdiction**
3. **Half our growth depends on people moving to Virginia**
4. **More than a 1/3 of Virginia's growth is attributable to persons age 65+. Mature seniors are growing faster than youthful seniors.**
5. **Professional and technical services is one projected driver of the economy in 2040.**
6. **Roughly half the population growth is expected in areas that, in 2040, would have densities of at least 1200 people/mi<sup>2</sup>**

**For questions, comments, or suggestions:**

**John Miller**

**434-293-1999**

**[John.Miller@vdot.virginia.gov](mailto:John.Miller@vdot.virginia.gov)**

**Virginia Center for Transportation Innovation and Research**

**530 Edgemont Road**

**Charlottesville, Virginia 22903**