VTrans2035 Forecasts of Socioeconomic Activity and Travel Demand

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The Assignment

For year 2035, identify the following:

- Socioeconomic forecasts
- Travel forecasts
- External influences
- Potential policy responses

Methodology

Socioeconomic forecasts

- Population, employment, and jobs/household forecasts for year 2035 at the PDC level

Travel forecasts

- Highway DVMT
- Transit passenger trips

Methodology (cont'd)

External influences affecting forecasts

- Fuel prices
- Household income

Potential policy responses

1. Increase density to reduce CO_2 emissions.
2. Select the most cost-effective strategies regardless of mode.
3. Identify mobility options for those age 65+.

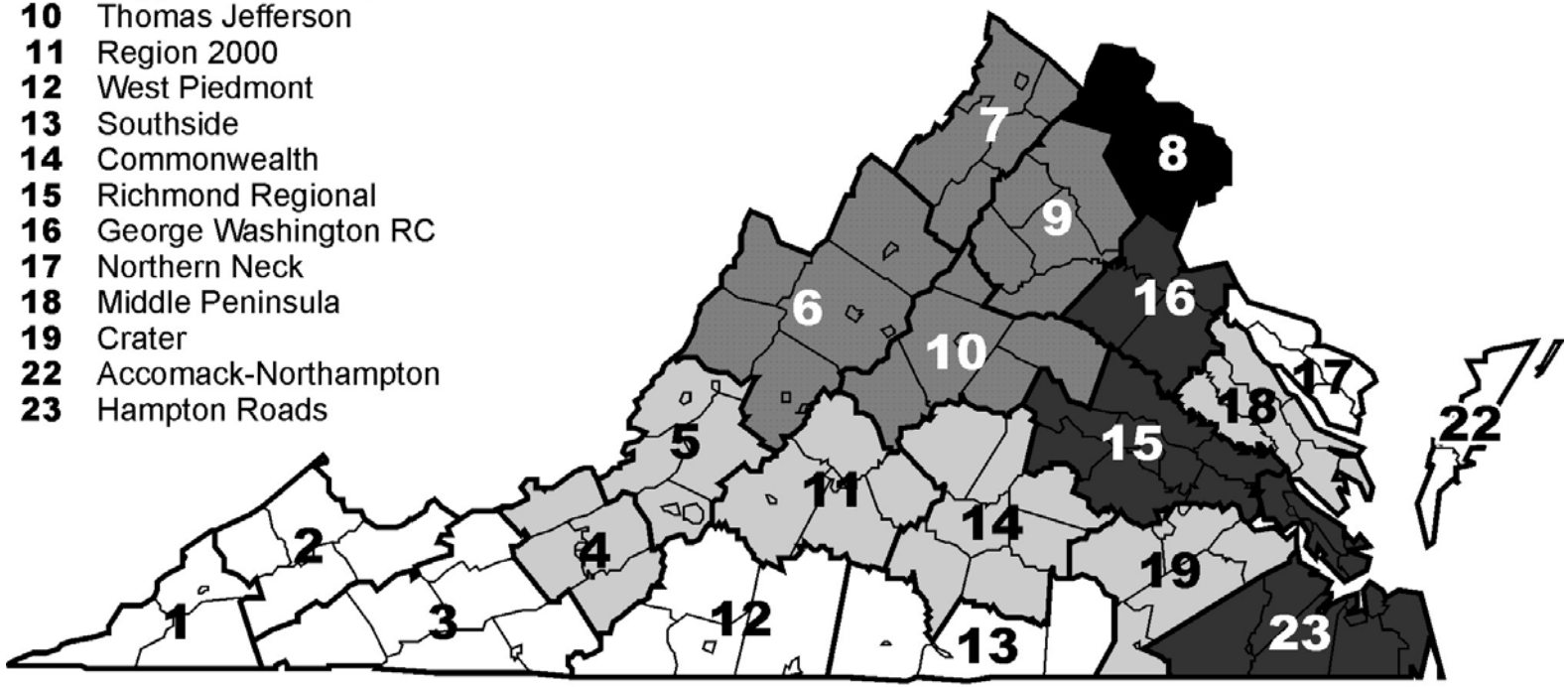
Socioeconomic Forecasts (State)

	2010	2035
Population (VEC)	8.01 M	10.28 M
Population (NPA)	8.06 M	10.93 M
Employment	5.21 M	7.75 M
Household Size	2.62	2.54

Population increase of 28% to 36%.

Socioeconomic Forecasts (Region)

1 Lenowisco
2 Cumberland Plateau
3 Mount Rogers
4 New River Valley
5 Roanoke Valley-Alleghany
6 Central Shenandoah
7 Northern Shenandoah Valley
8 Northern Virginia
9 Rappahannock-Rapidan
10 Thomas Jefferson
11 Region 2000
12 West Piedmont
13 Southside
14 Commonwealth
15 Richmond Regional
16 George Washington RC
17 Northern Neck
18 Middle Peninsula
19 Crater
22 Accomack-Northampton
23 Hampton Roads



Jobs/Housing Ratio

Useful because

- Accounts for role of both transportation and land use toward addressing congestion
- § 33.1-23.03 requires use of jobs/housing ratio

Limited because

- No standard indicates the ideal ratio.
- A single, aggregate ratio may not suffice.

Jobs/Household Ratio

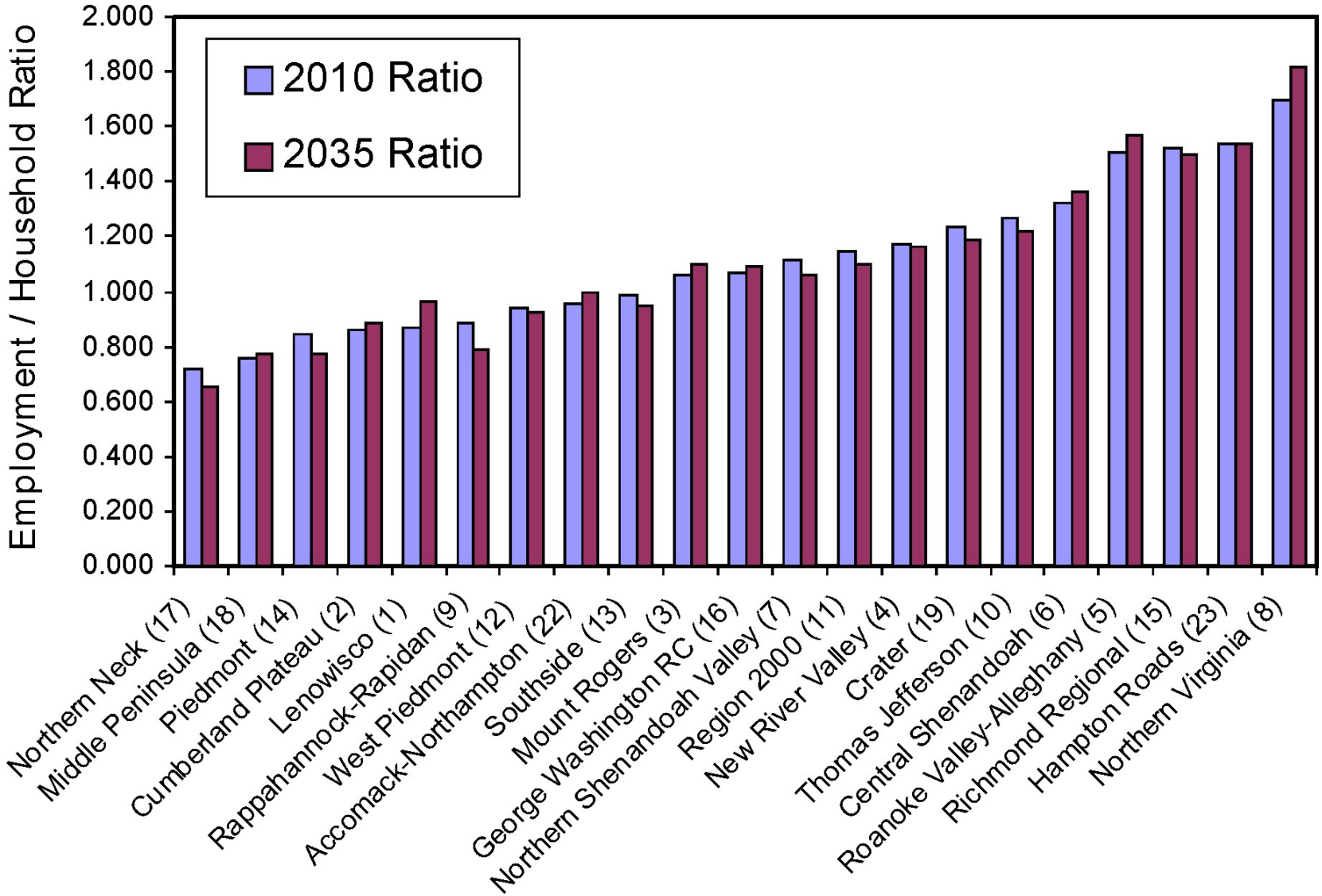
- Statewide increases from 2010 to 2035
  - Wage and salary employment 45%
  - Households 40%

- Notable Extremes

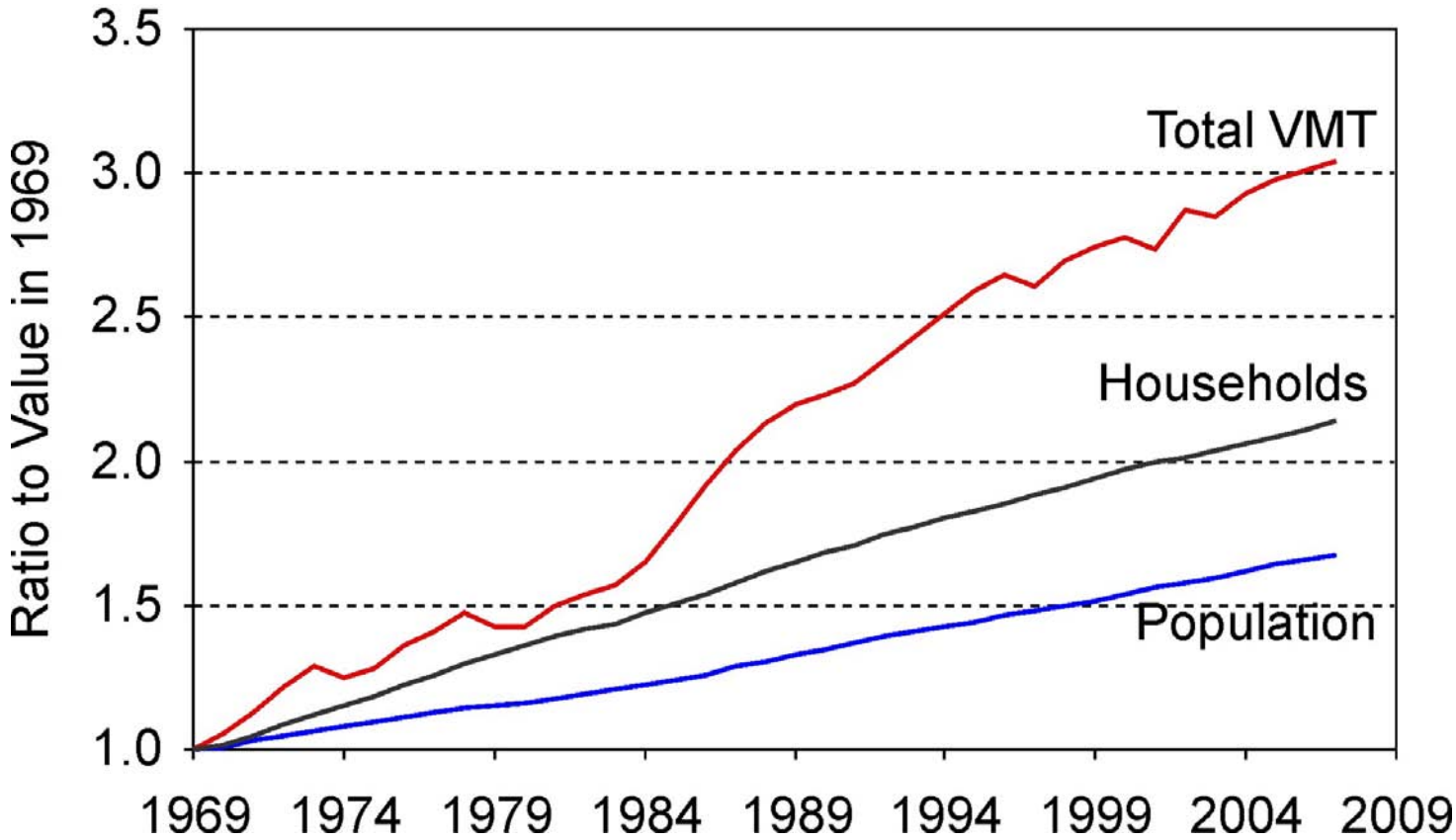
PDC	Employment	Households
Northern Neck	2,504	5,820
Northern Virginia	1,012,500	499,230

- Four PDCs have a jobs/HH ratio above the statewide average in 2010 and 2035.

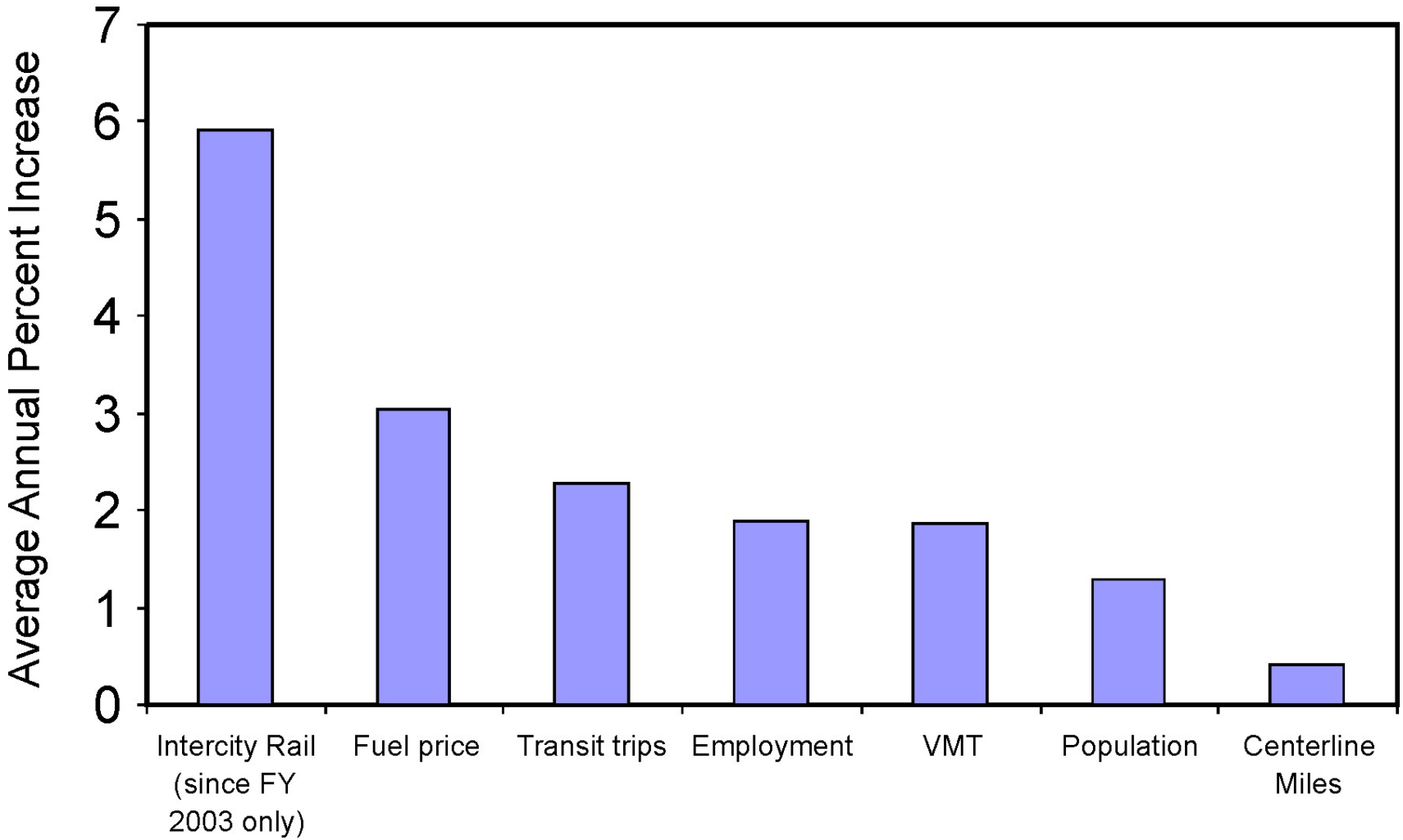
Jobs/Housing Ratio



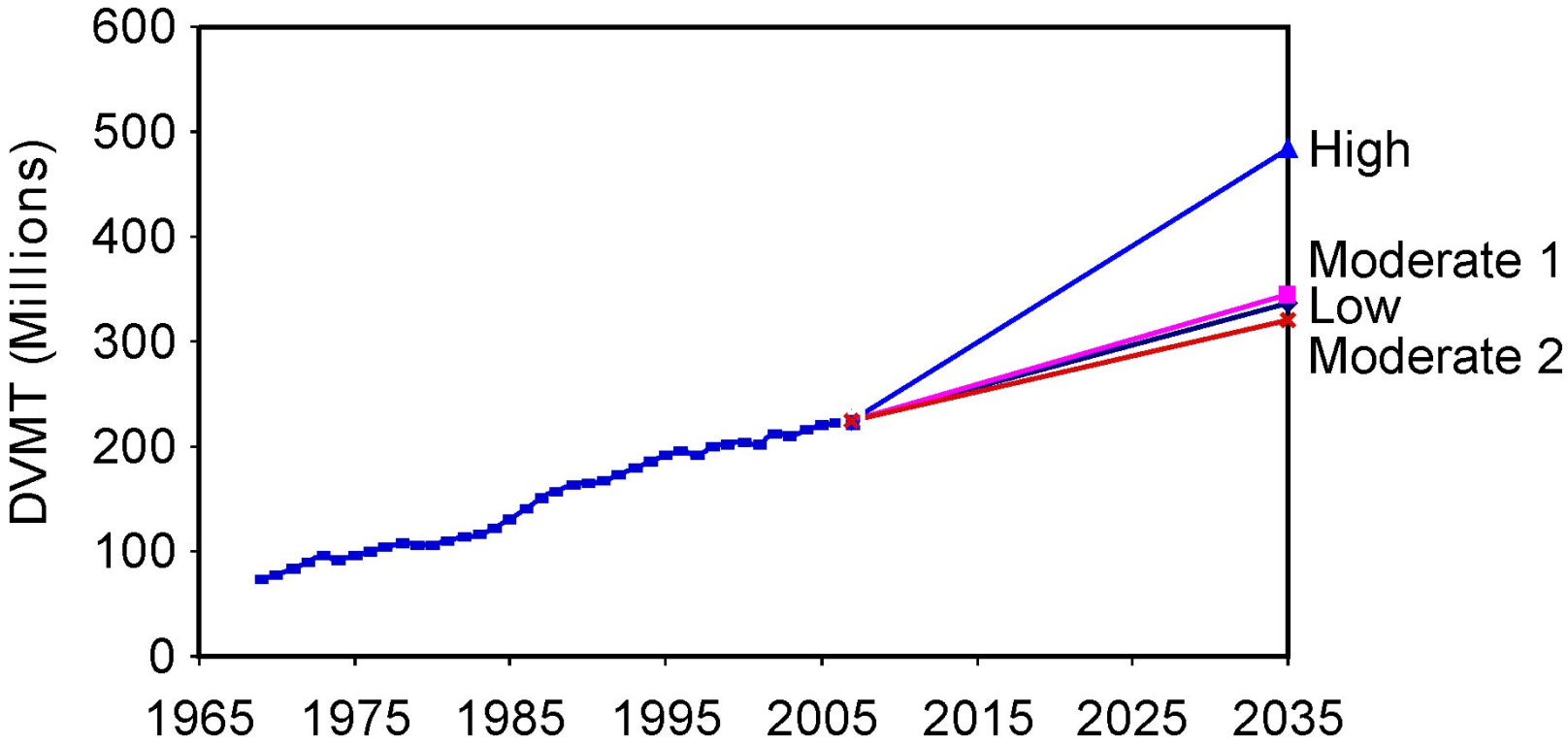
DVMT, Households, and Population, 1969-2007



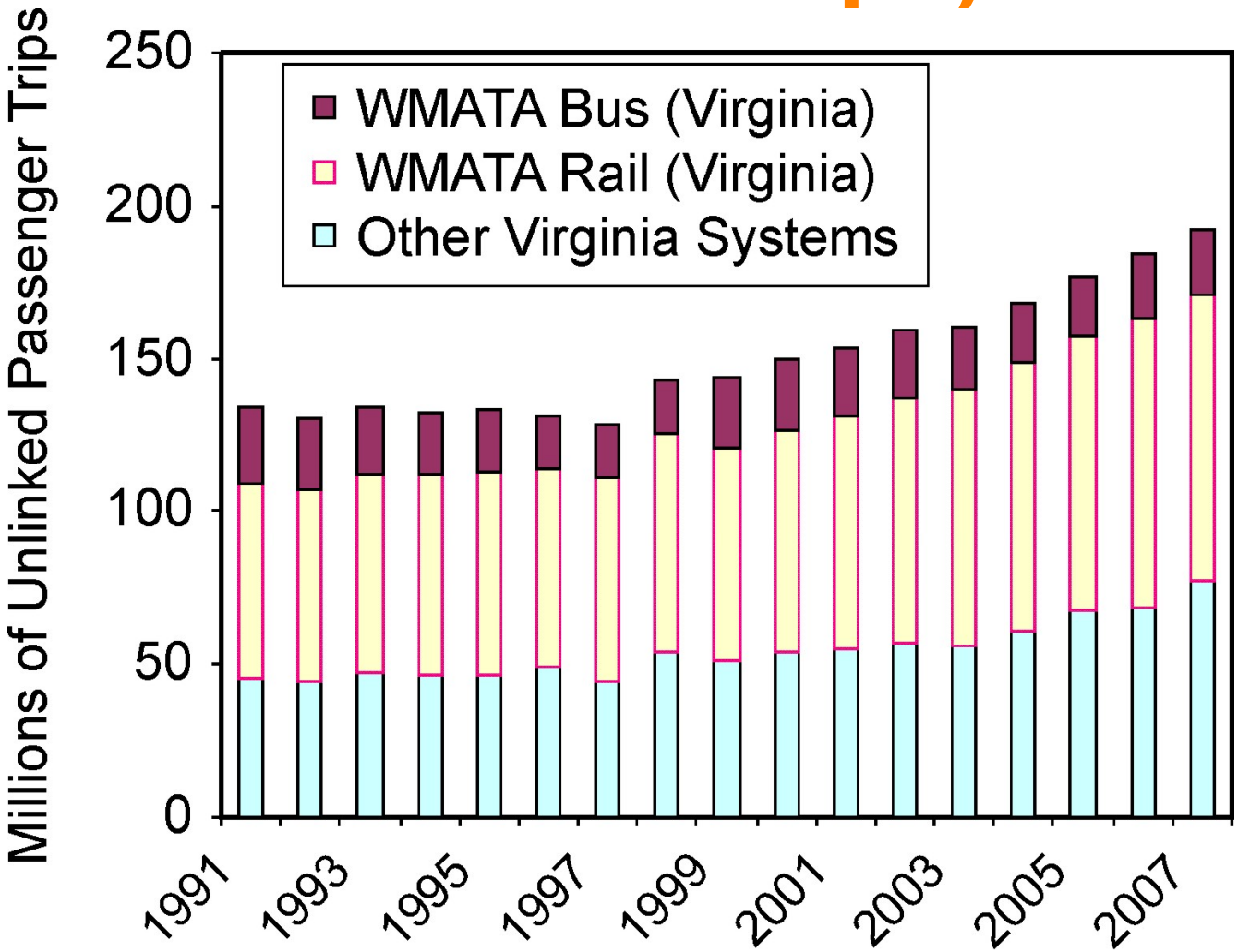
Average Annual Percent Increase, 1991-2007



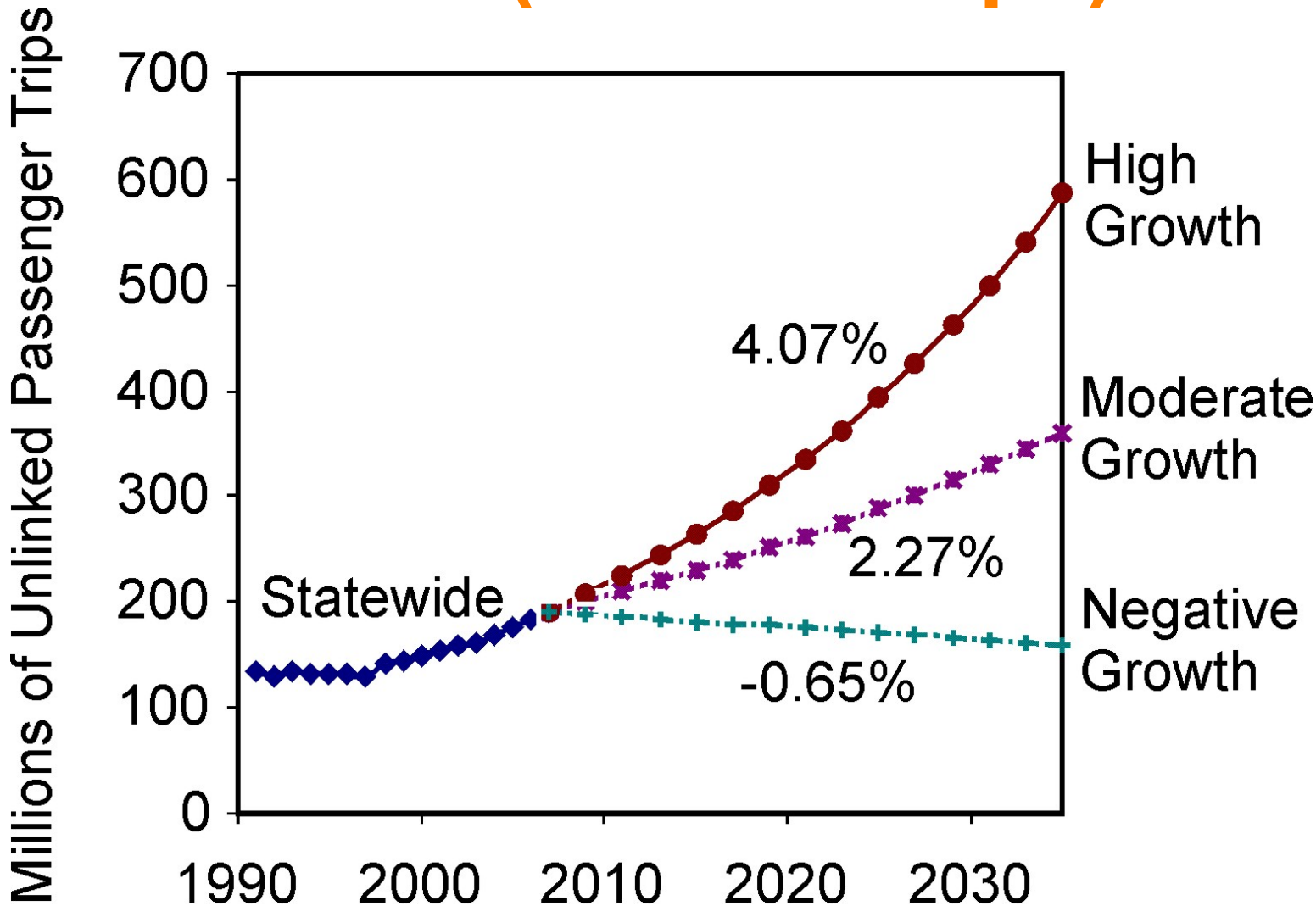
Travel Forecasts (DVMT)



Travel Forecasts (Transit Trips)



Travel Forecasts (Transit Trips)



External Influences (Transit Trips)

Fuel price of course affects transit ridership

- Moderate growth: 360 M DVMT
- $1 fuel: 332 M DVMT
- $10 fuel 471 M DVMT

- Impact of fuel is less than that of the negative growth and high growth scenarios

External Influences (VMT)

High income growth:	474 DVMT
Low fuel cost:	402 DVMT
Moderate growth:	345 DVMT
Low income growth:	216 DVMT
High fuel cost:	119 DVMT

Greatest impact is from a high fuel cost.

Next greatest impact is change in income.

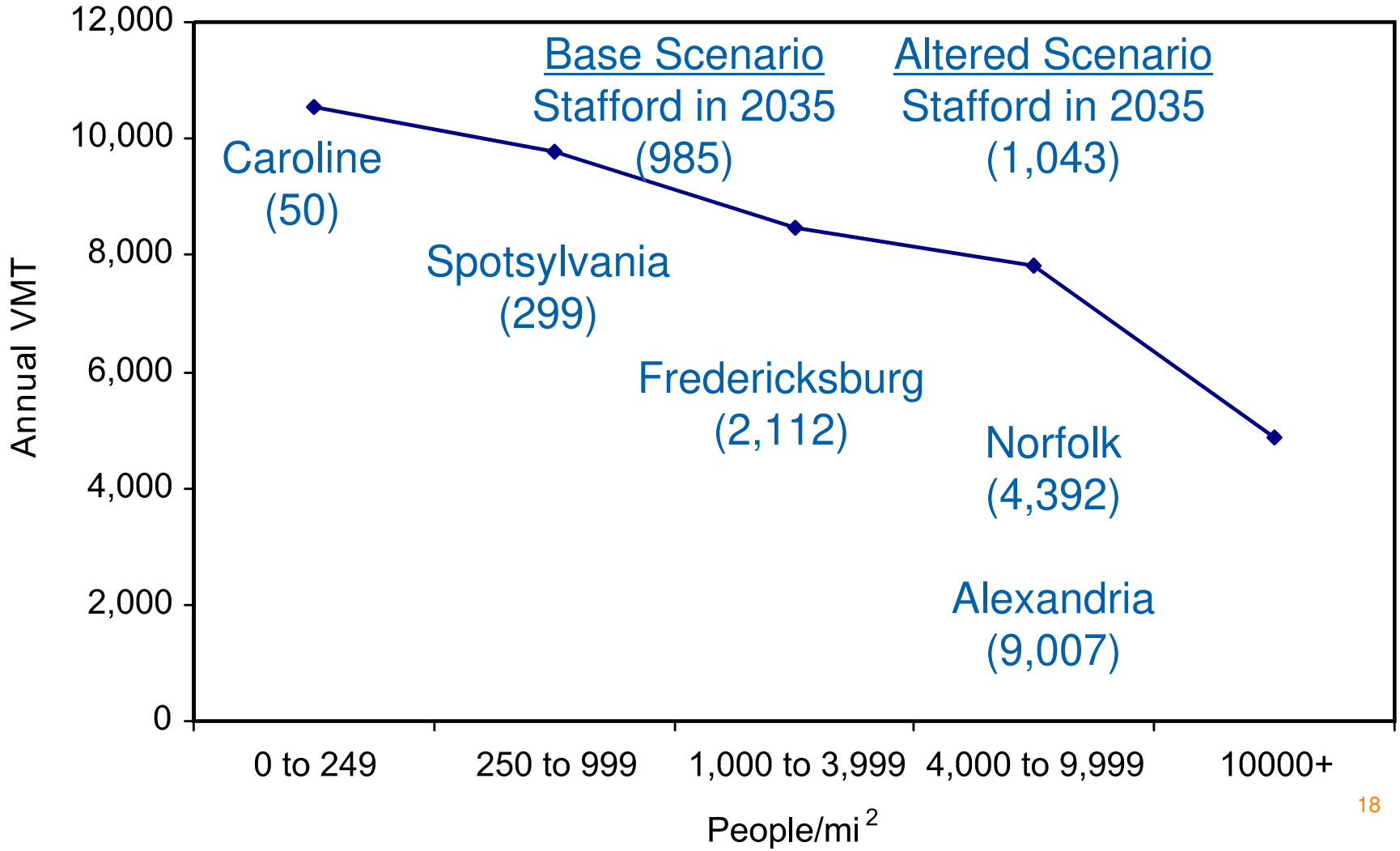
Policy Response 1

Higher density may reduce DVMT

For each PDC, estimate 2035 DVMT twice:

- Base Scenario: Expected population growth
- Altered Scenario: Shift population growth to the higher density jurisdictions

Policy Response 1: Increase Density



Policy Response 1 (cont'd)

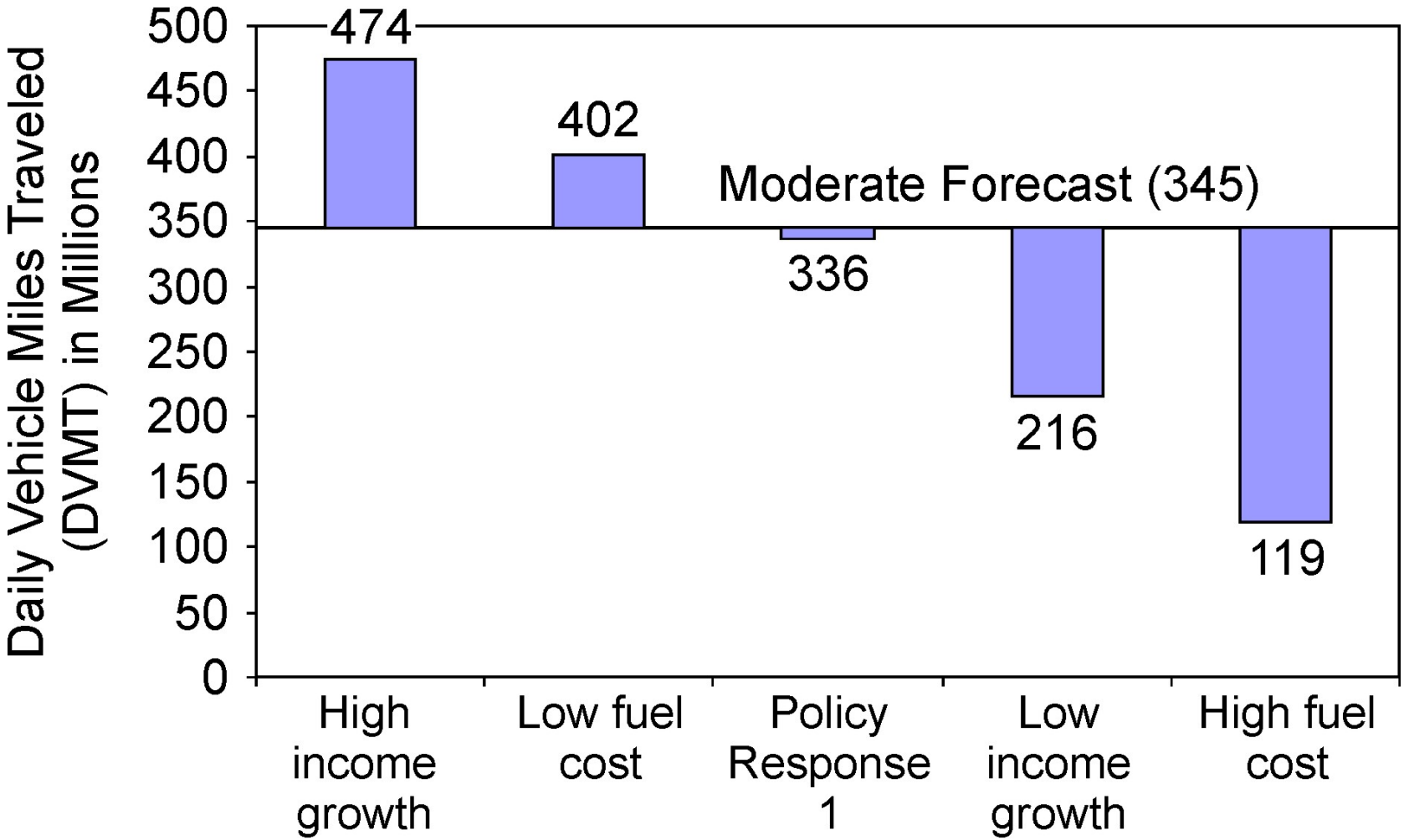
Jurisdiction	Base Scenario	Altered scenario
Caroline County	36,967	28,030
King George County	35,861	23,830
Spotsylvania County and Fredericksburg City	299,150	304,479
Stafford County	266,320	281,959
Total	638,298	638,298

Reductions from *all four PDCs* eliminate:

9.1 M DVMT (2.6% of total)

1.5 million metric tons of CO_2

External Influences (VMT)



Policy Response 2: Select Most Cost-Effective Strategies

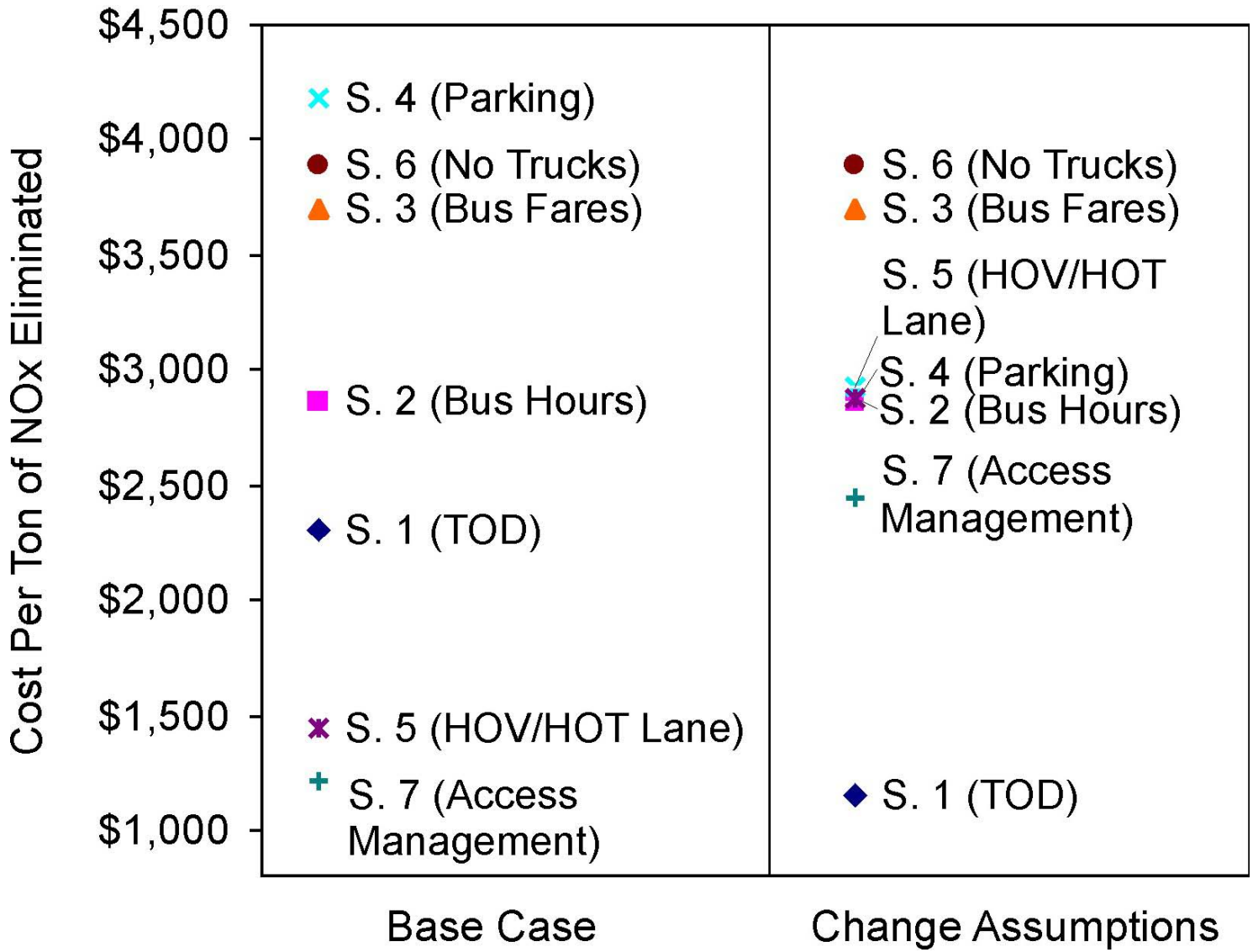
Goal

Reduce NO_x emissions for a congested 4-mile arterial facility, 20 mph speeds

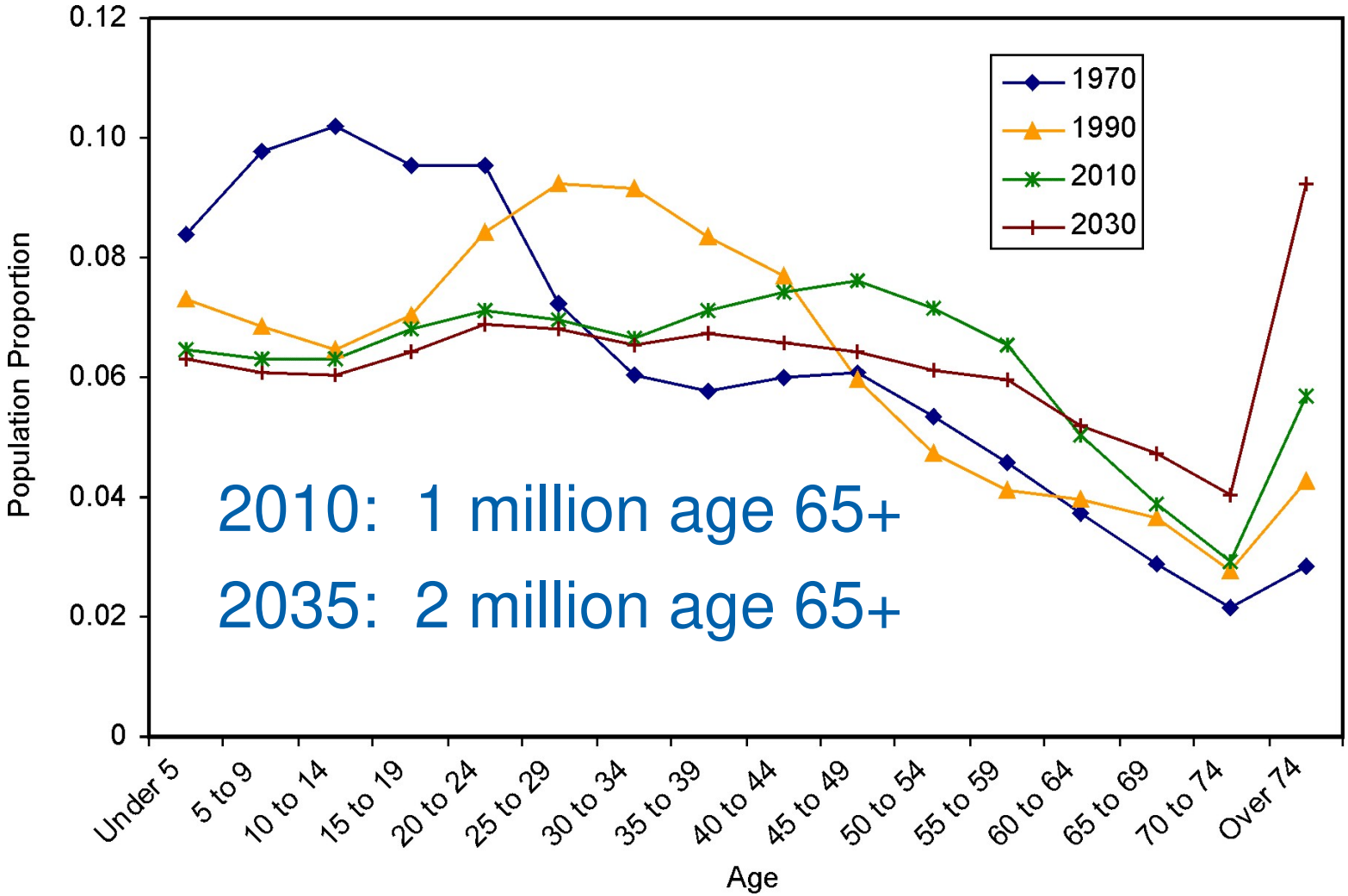
Strategies

1. Support transit-oriented development (TOD).
2. Increase transit service hours of operation.
3. Reduce transit fares by 50%.
4. Provide parking subsidy for carpoolers.
5. Build reversible HOV/HOT lane (allow trucks).
6. Build reversible HOV/HOT lane (no trucks).
7. Build reverse frontage roads.

Policy Response 2 (cont.)



Policy Response 3: Identify Mobility Options for Age 65+



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- Roadway design practices tailored to needs of older drivers.
- Initiatives to support persons who wish to continue driving
- Other options
  - Age-friendly land uses
  - Mobility alternatives

Conclusions

1. Virginia socioeconomic and travel activity will increase from 2010 to 2035.

2. There are no “silver bullets.”

3. Selection of strategies based on a single goal and without modal constraint may have merit.

4. Potential policy responses are diverse and require different disciplines.