



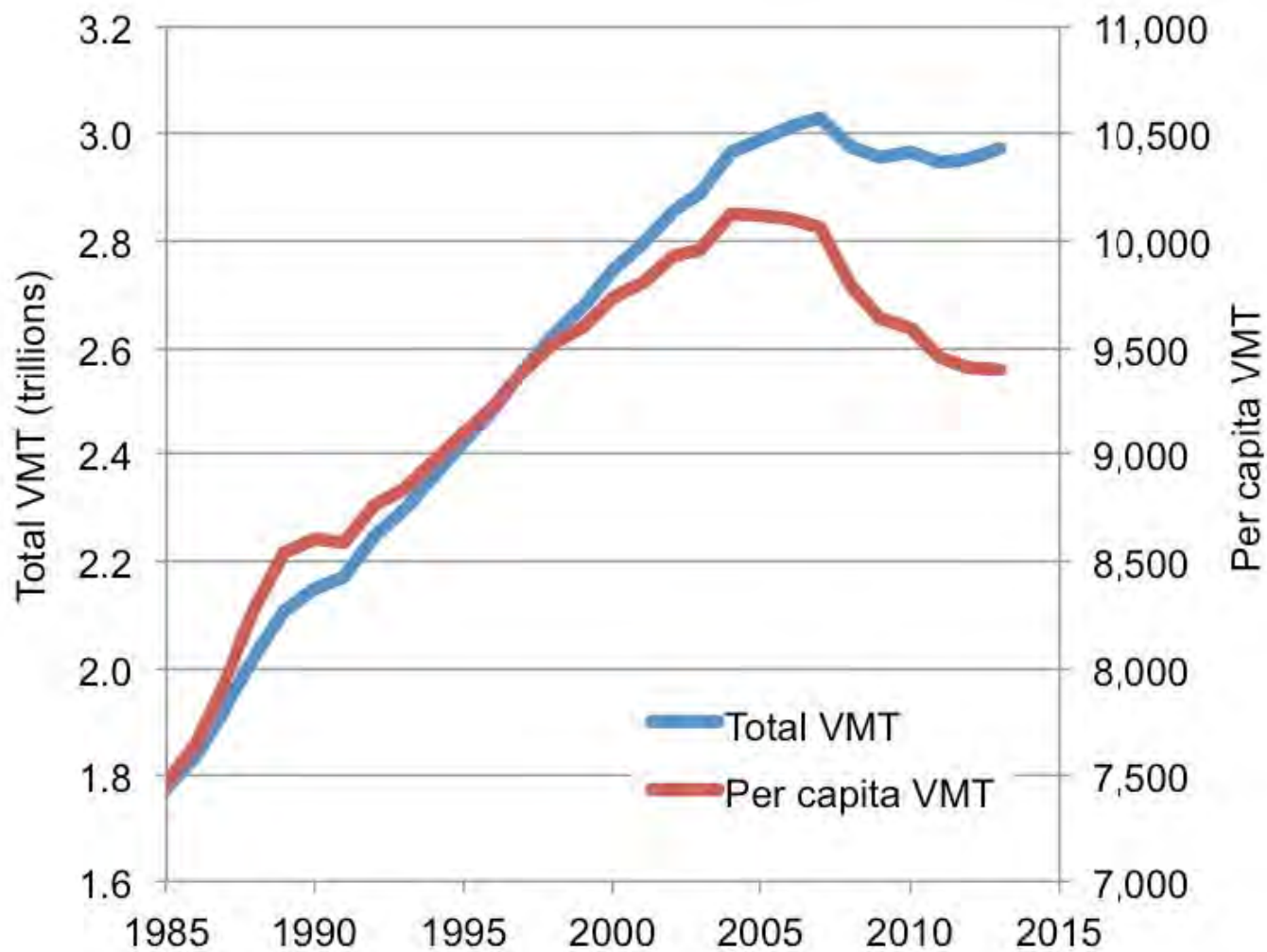
Exploring Regional Trends in Driving – Data and Analysis

DVRPC Regional Technical Committee

Jan. 6th, 2015

Christopher M. Puchalsky, Ph.D.

Declining VMT – National Trends



Source: SSTI

In the news and popular consciousness



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NEWS

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1 MONTH AVERAGE RETAIL PRICE CHART

REGULAR GAS PRICE (US \$/G)



DATE (MONTH/DAY/YEAR)	REGULAR GAS PRICE (US \$/G)
11/19	2.88
11/25	2.80
12/3	2.76
12/10	2.63
12/18	2.47

REGULAR GAS PRICE (US \$/G)

2014
DATE (MONTH/DAY/YEAR)

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In the news and popular consciousness



DENVER AND THE WEST

Denver metro drivers continue to turn away from cars

By Monte Whaley
The Denver Post

POSTED: 01/05/2015 12:01:00 AM MST | UPDATED: ABOUT 6 HOURS AGO

59 COMMENTS



Rick Plenge rides south on Broadway on Dec. 18 on one of the B-cycles that were located outside his office at 16th and Broadway in Denver. Plenge has logged more than 1,800 miles on B-cycle bikes this year. (Brent Lewis, *The Denver Post*)

In the news and popular consciousness

From *The Atlantic*
CITYLAB

NAVIGATOR CITYFIXER MAPS PHOTOS
COMMUTE WORK HOUSING WEATHER

It Turns Out That Millennials Do Drive

In many metros, young people today commute by car as often as they did in 1980.

ERIC JAFFE | [@e_jaffe](#) | Dec 8, 2014 | [79 Comments](#)

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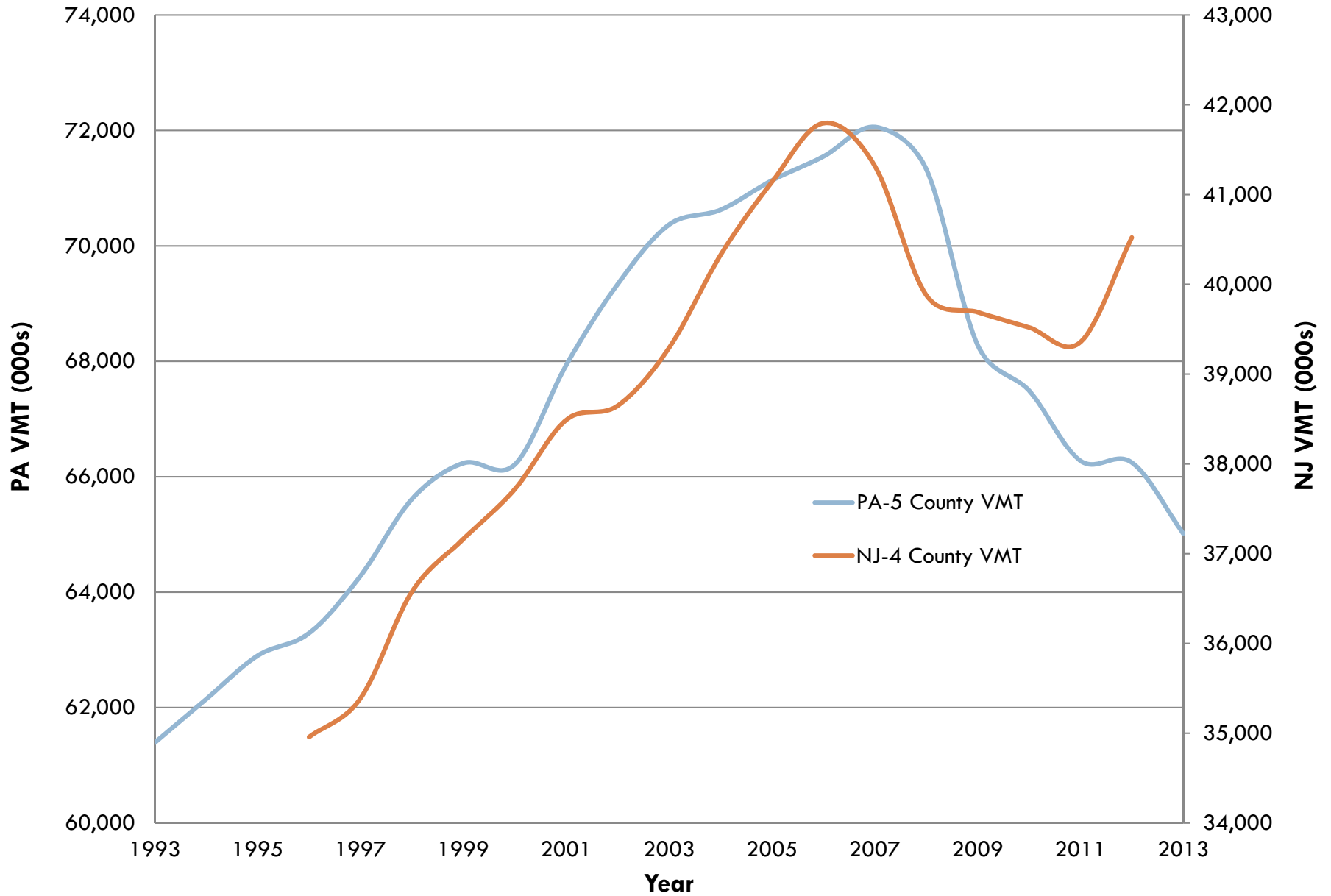
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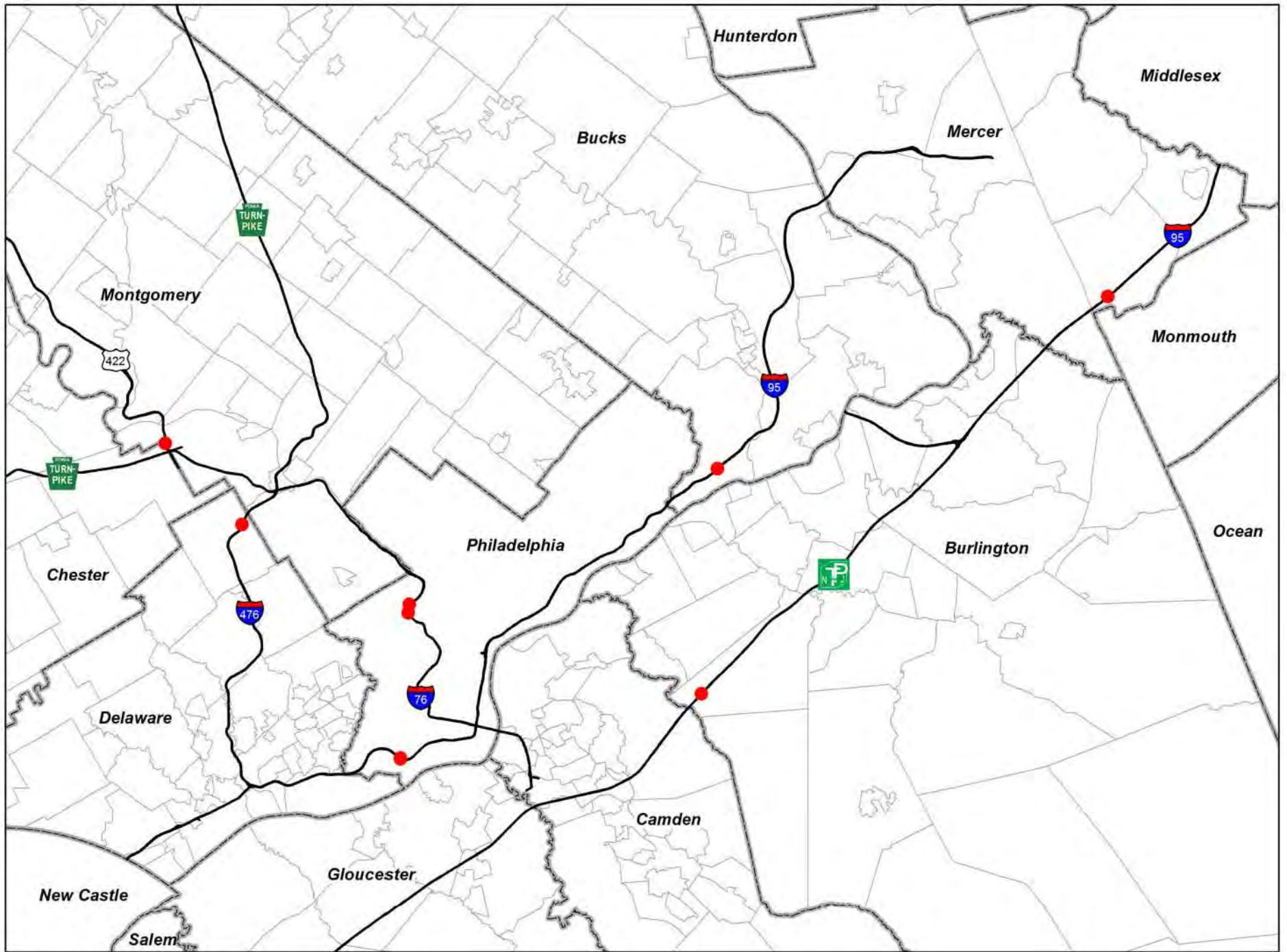


State Farm / Flickr

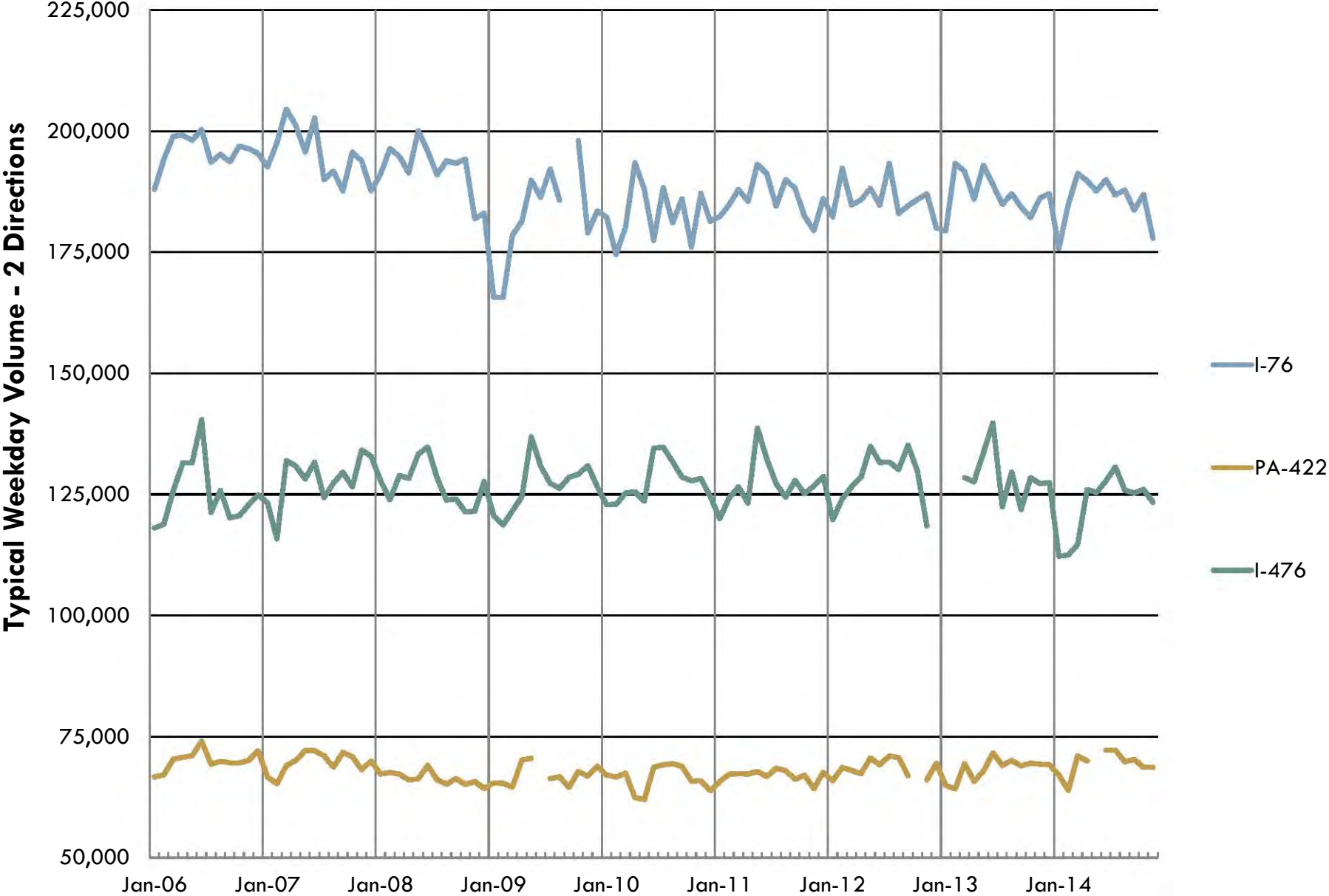
It's become an uncontested truth that young Americans dislike driving, and

Regional VMT Trends 1993-2013

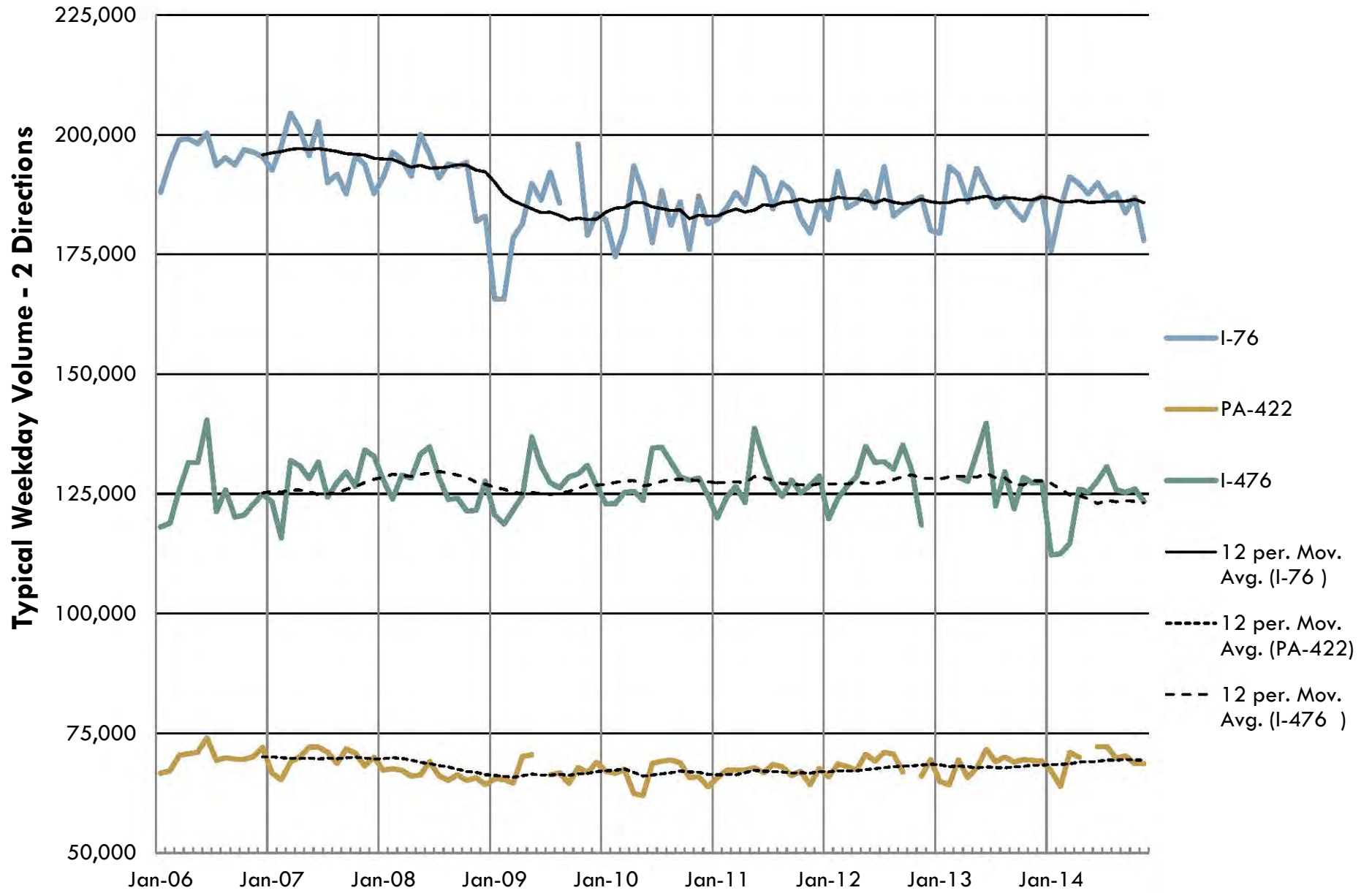




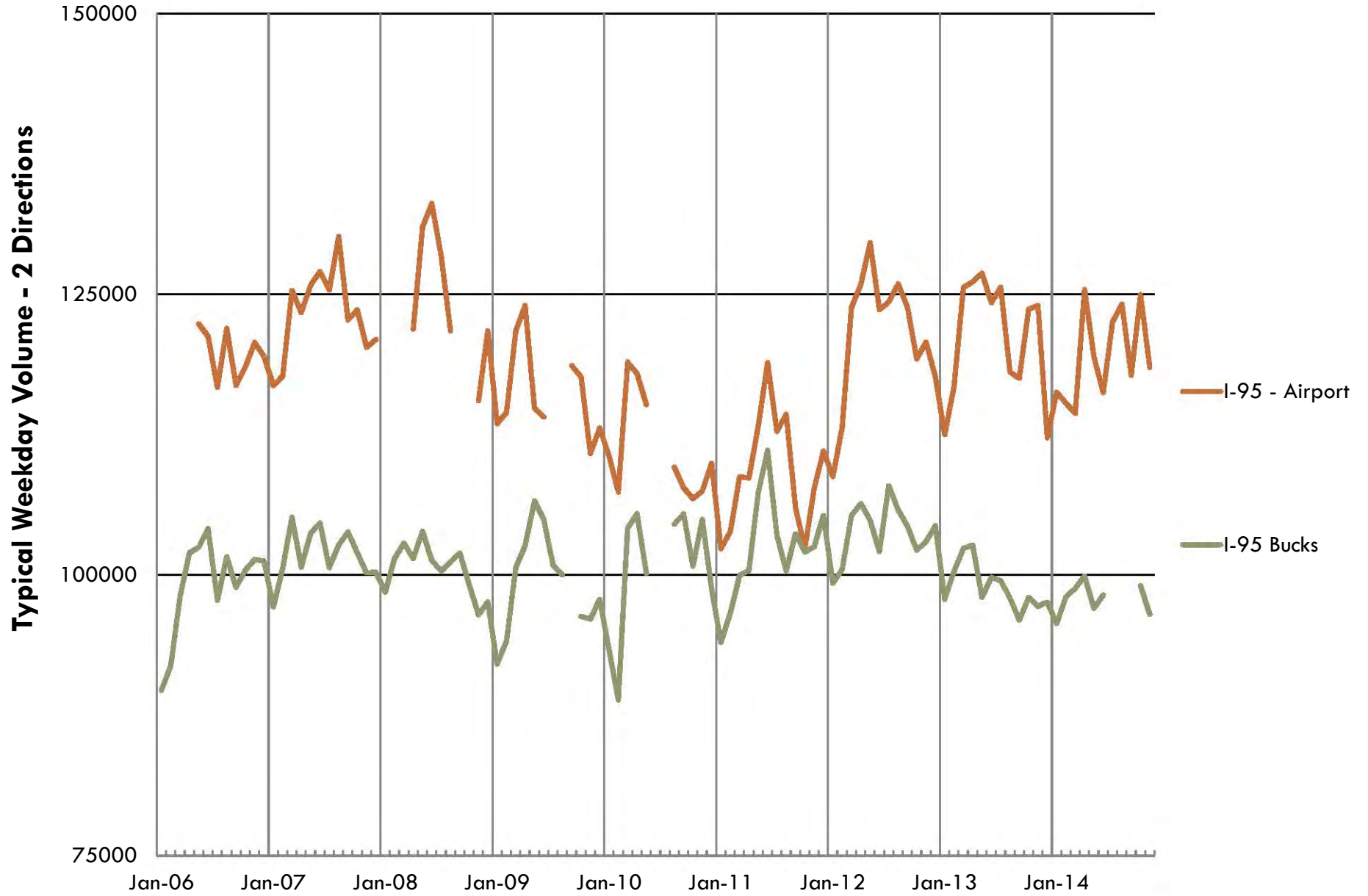
Major Highway Volumes 2006-2014



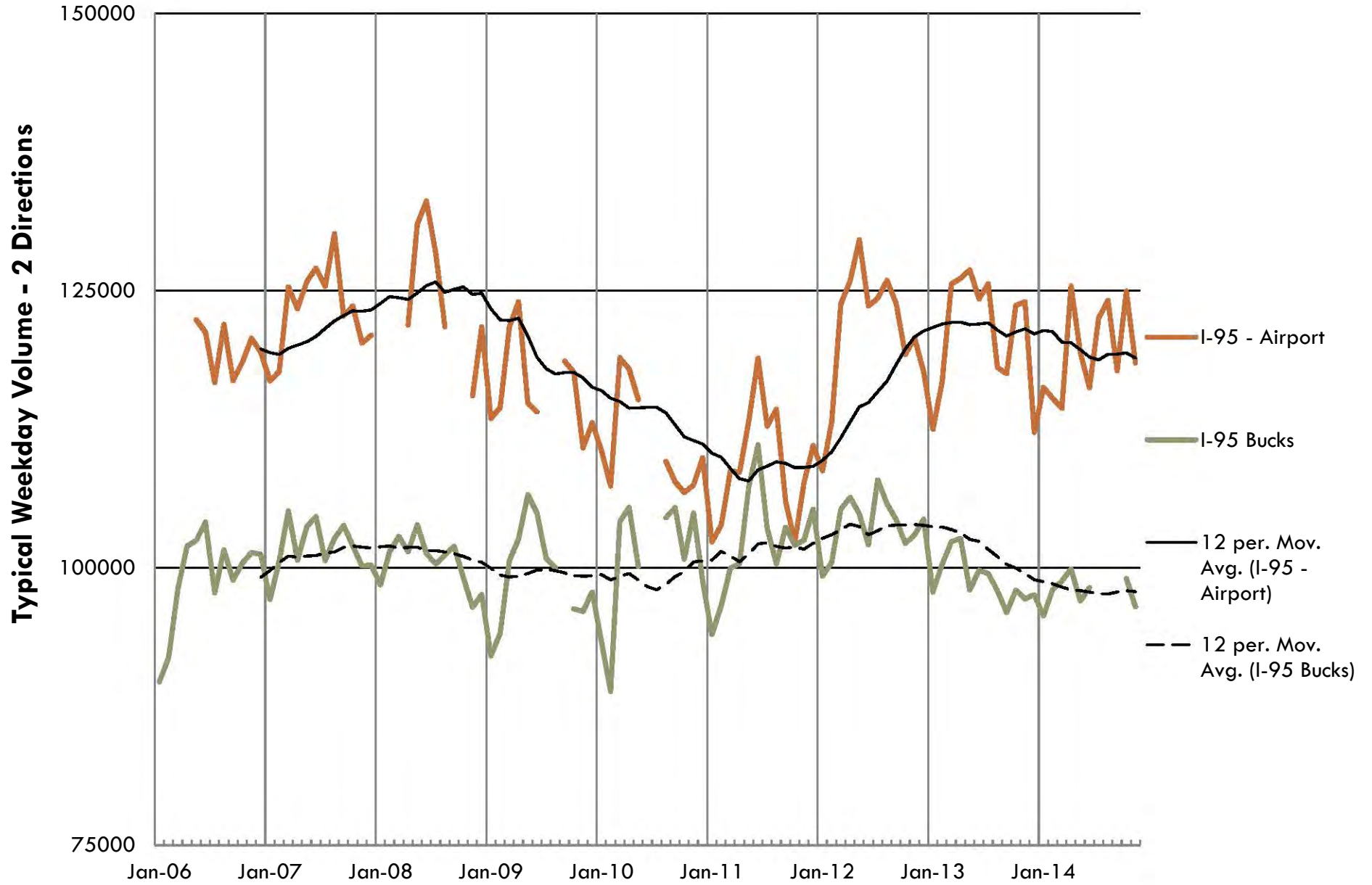
Major Highway Volumes 2006-2014



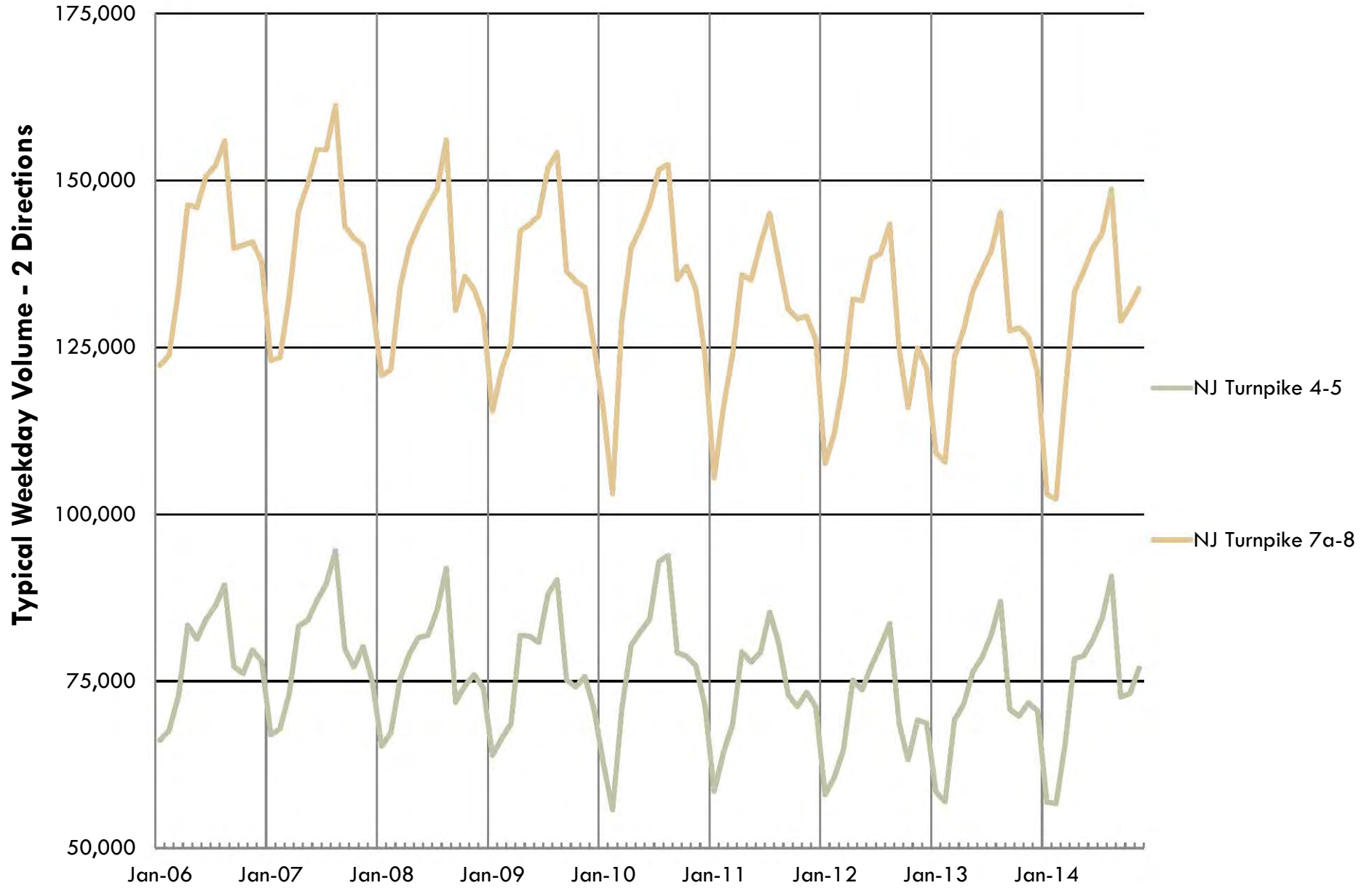
Major Highway Volumes 2006-2014



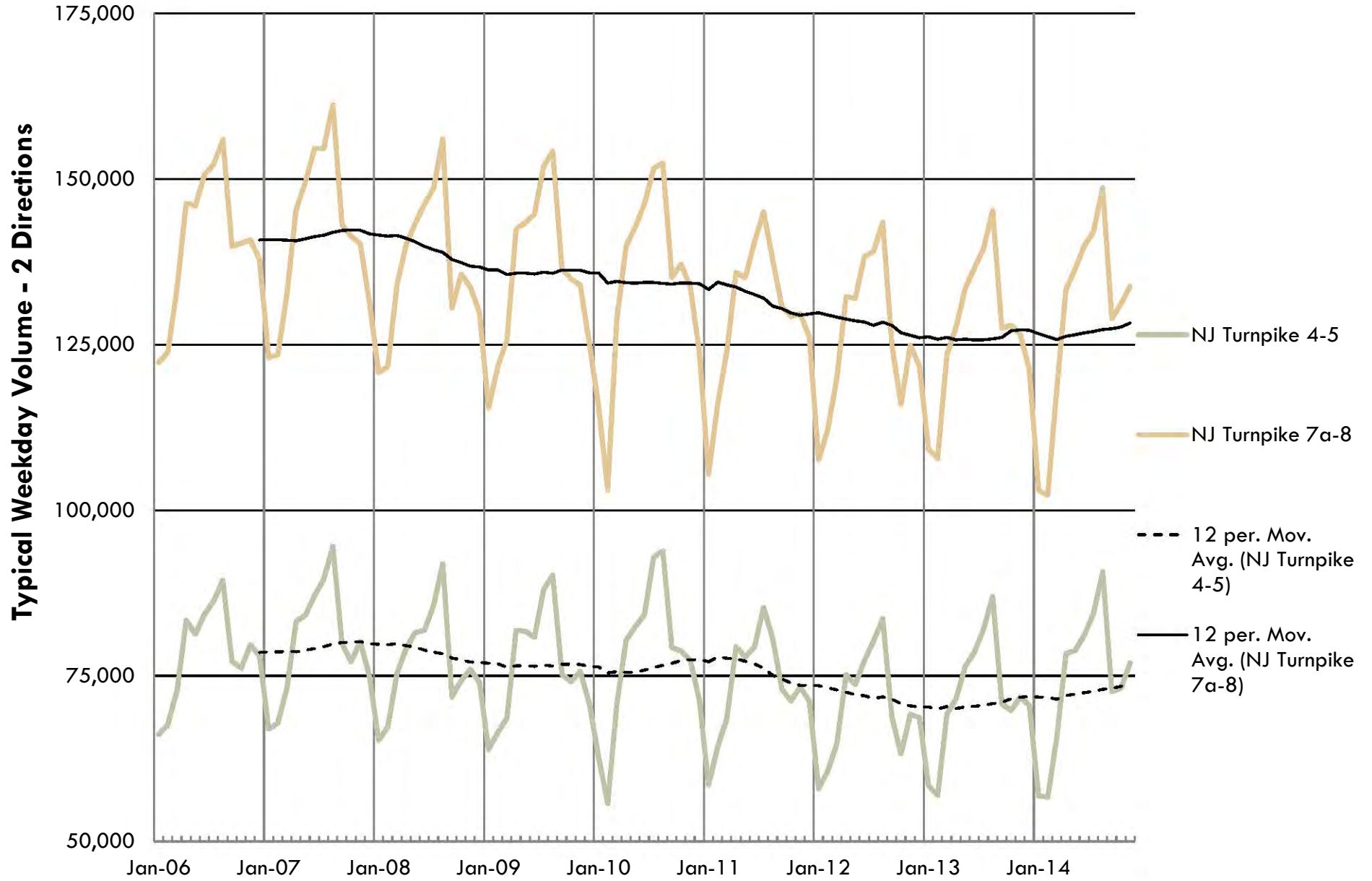
Major Highway Volumes 2006-2014



Major Highway Volumes 2006-2014



Major Highway Volumes 2006-2014



VMT changes – it's complicated!

Long term choices:

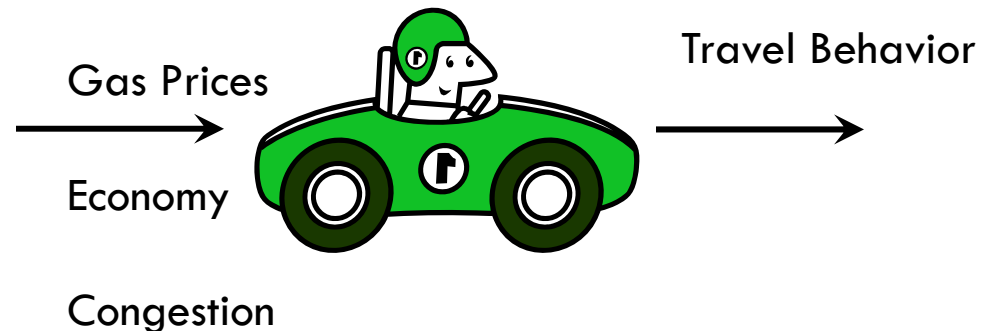
- *Home location*

Medium term choices:

- *Work location*
- *Auto ownership*

Short term choices:

- *Mode choice*
- *Do I travel? Trip Chain? Shorter distance?*

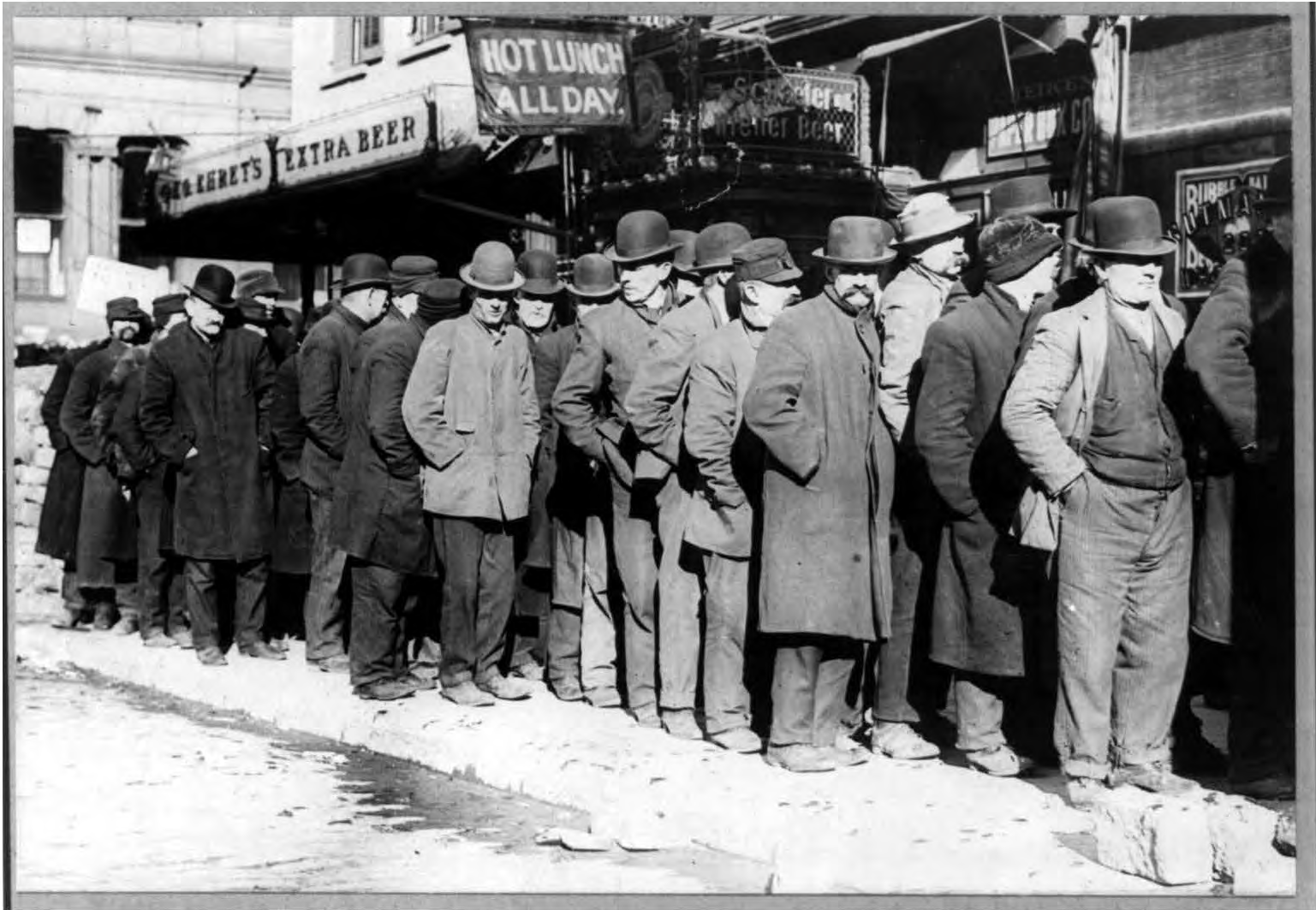


What is causing it?

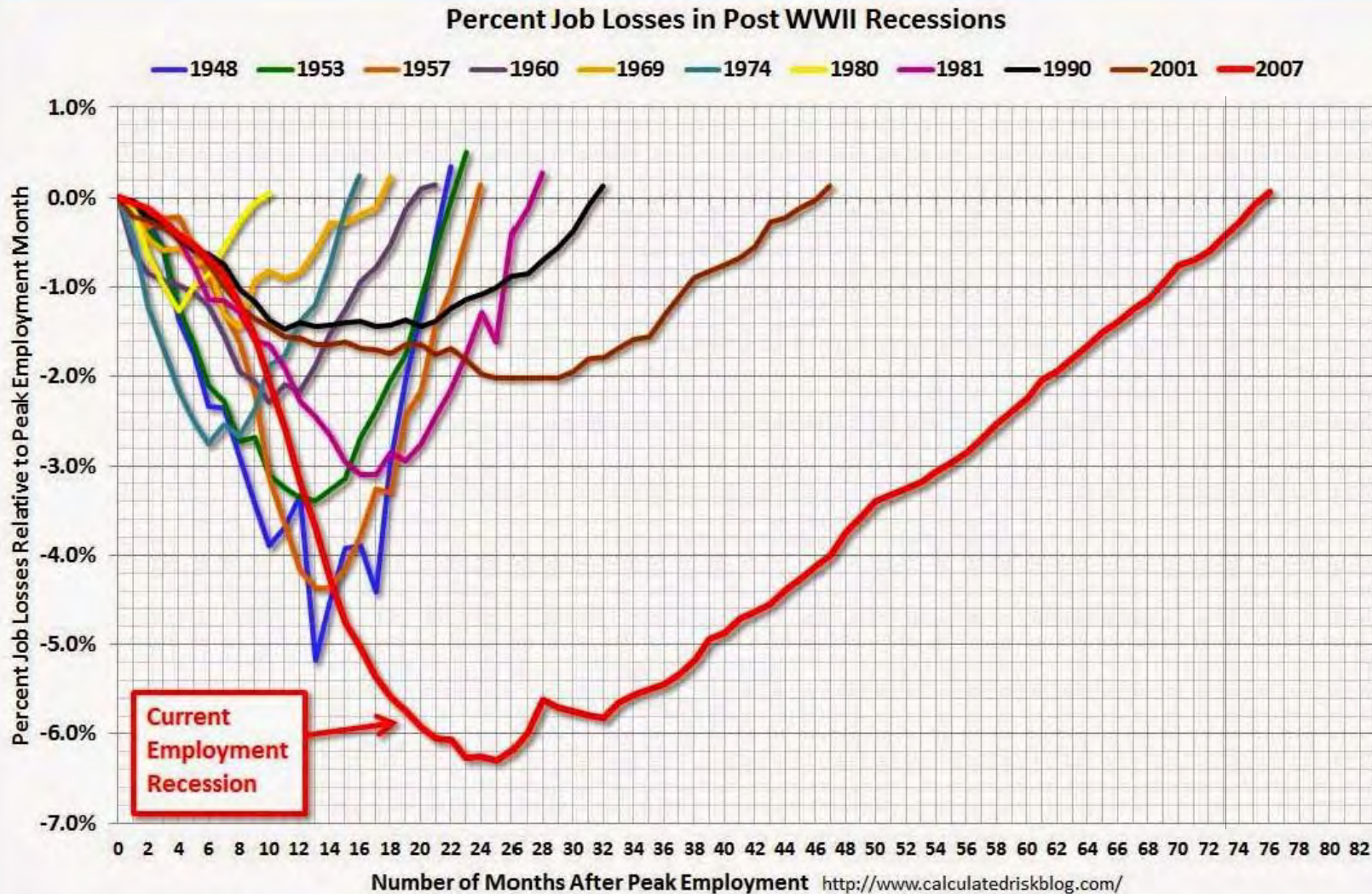


IMHO (in my humble opinion):

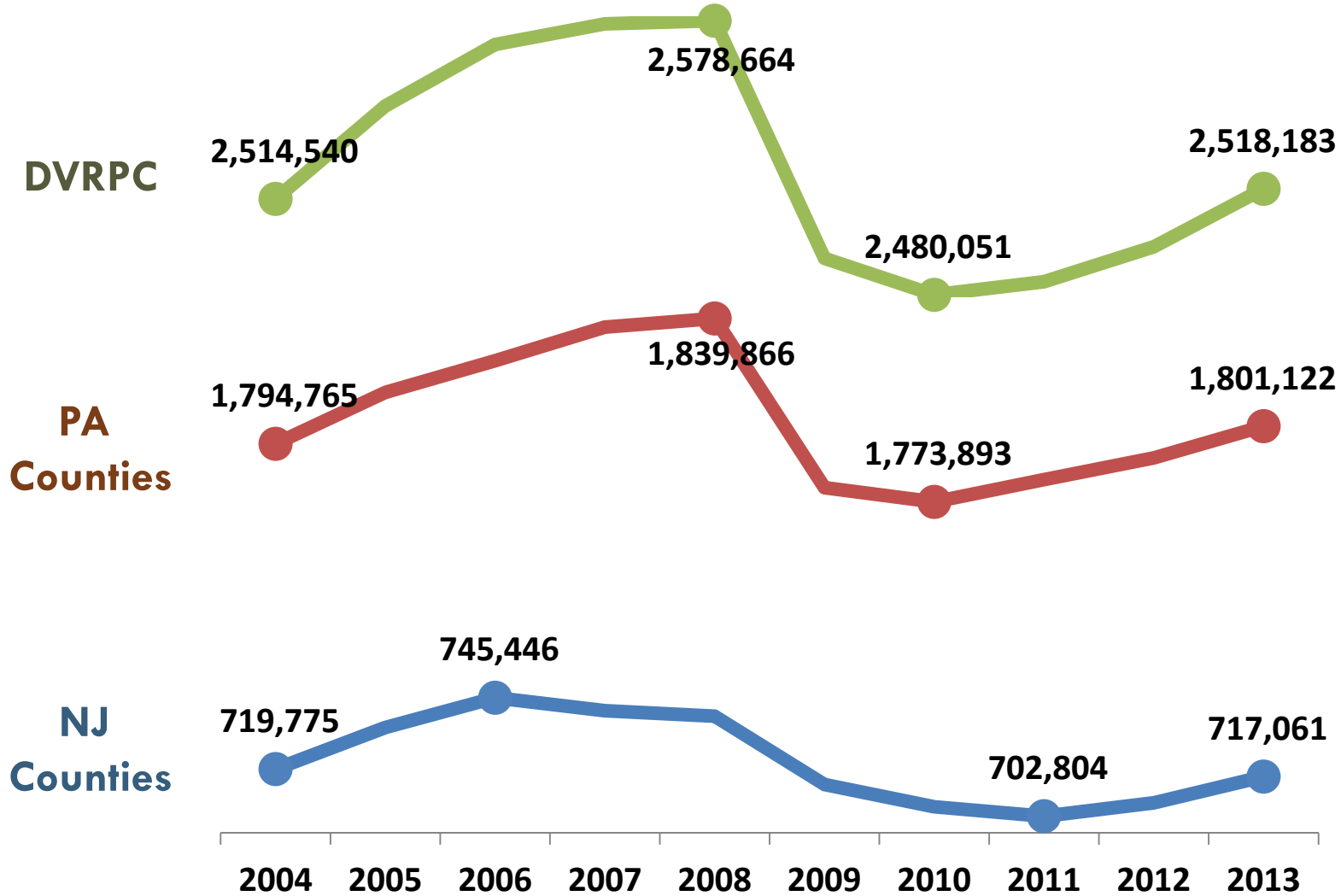
- The recession
- Energy prices
- Aging boomers
- Changing location and mode preferences
- The recession



What is causing it? - Recession

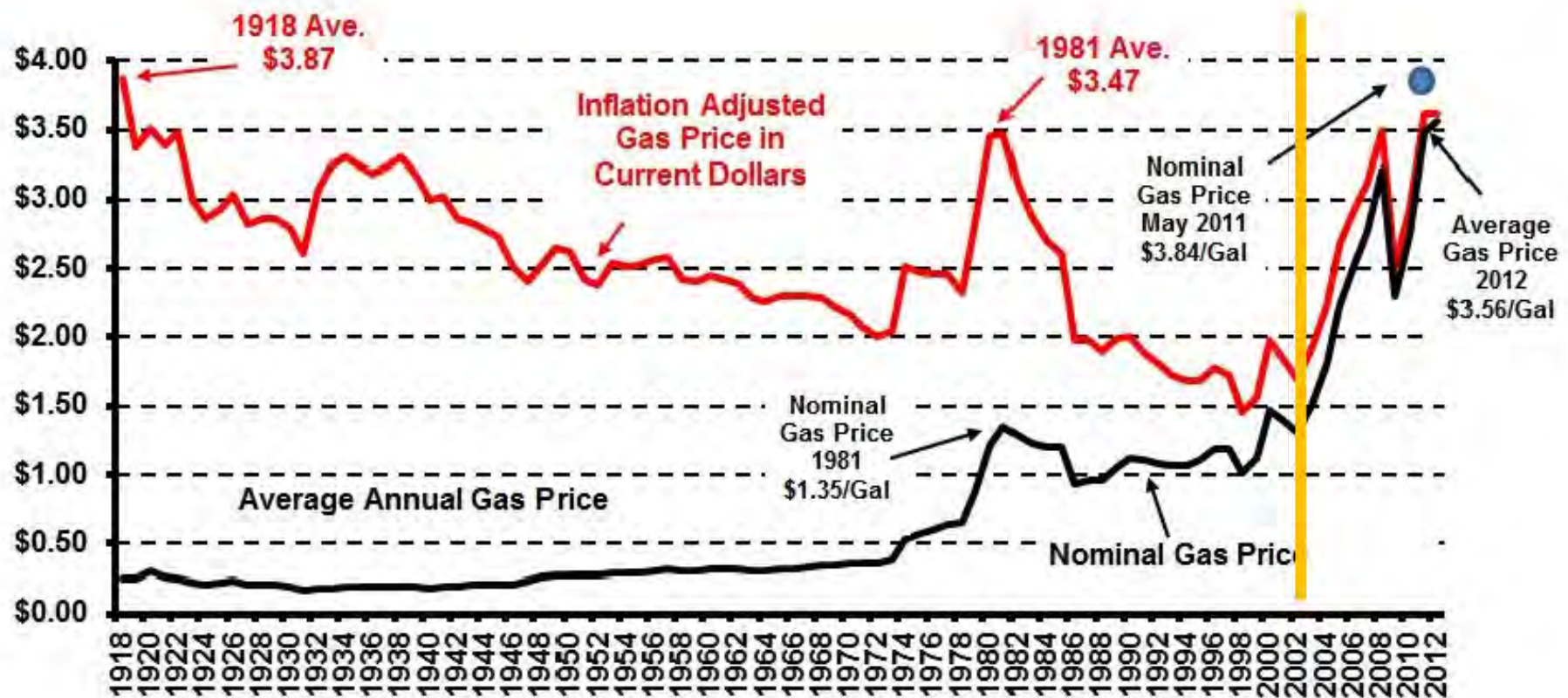


Employment



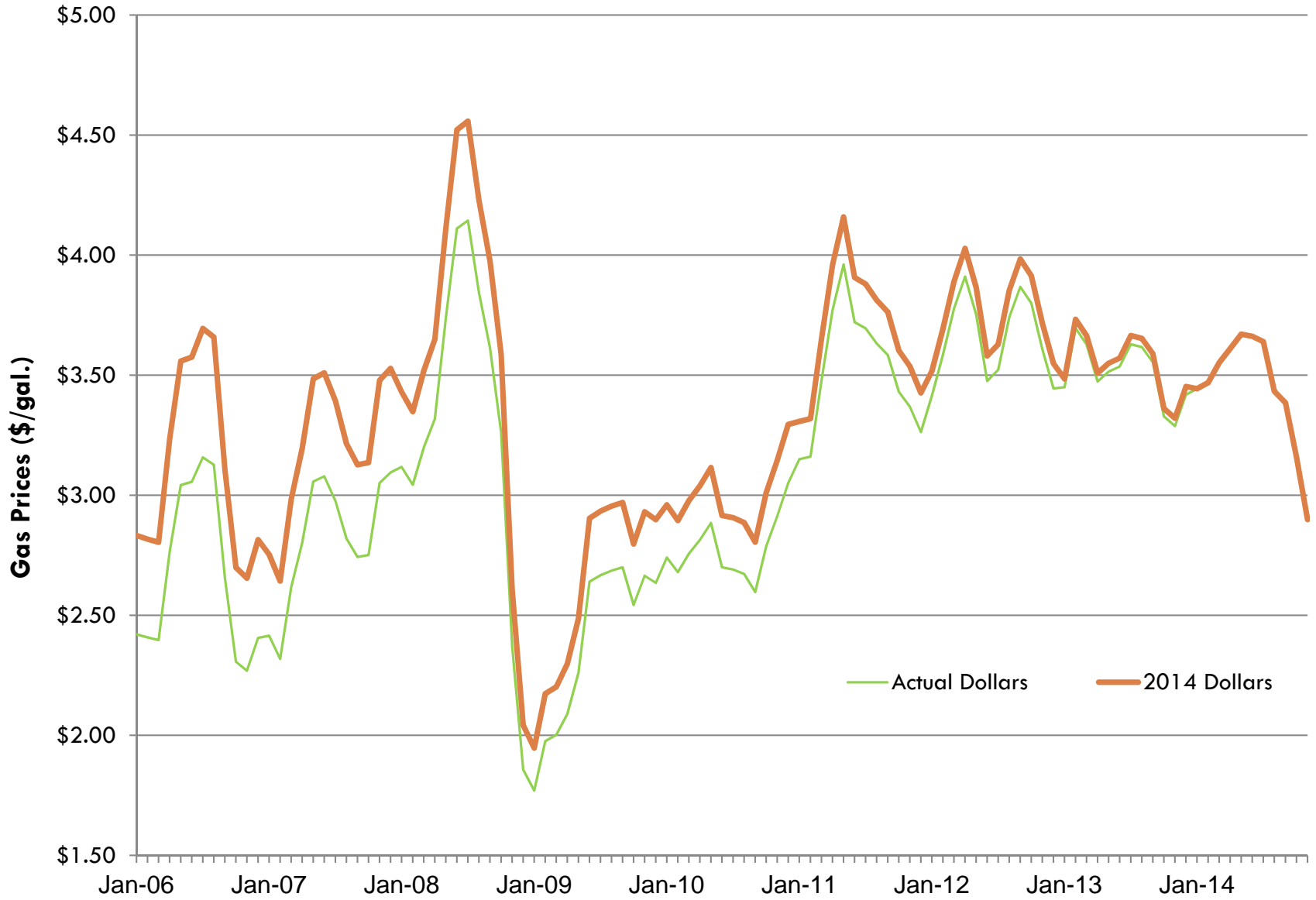
Source: Bureau of Labor Statistics

What is causing it? – Gas prices



Source: US Energy Information Admin., BLS as compiled by Timothy McMahon, inflationdata.com

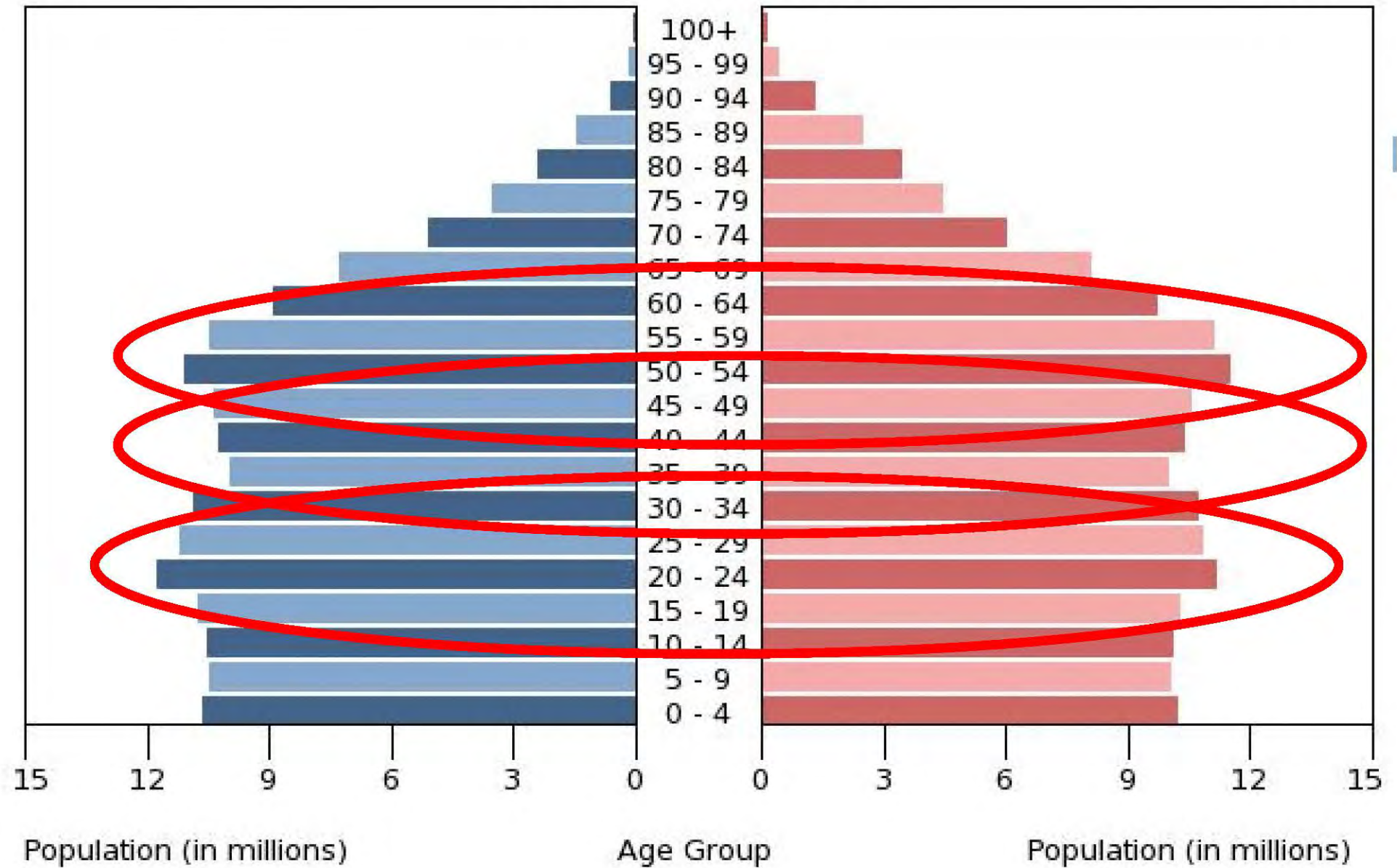
Greater Philadelphia Regional Gas Prices (2006-2014)



Male

United States - 2014

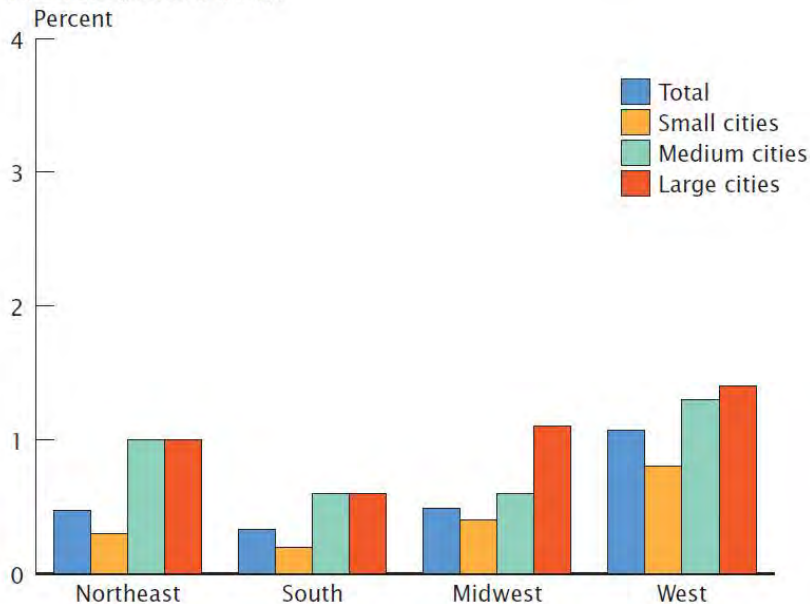
Female



Increase in Transit, Bike, and Walk

Figure 5.
Bicycling to Work by Region and City Size:
2008–2012

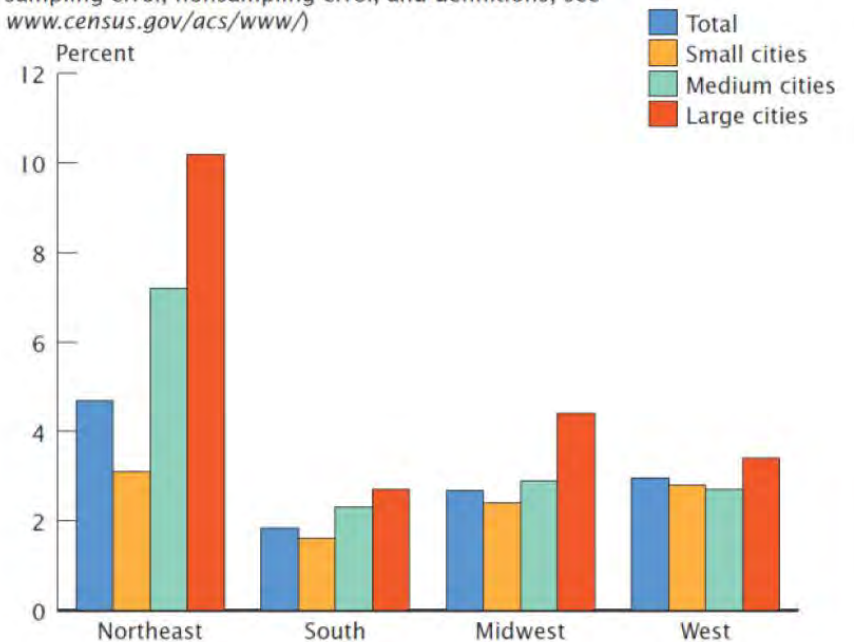
(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see www.census.gov/acs/www/)



Source: U.S. Census Bureau, American Community Survey, 2008–2012.

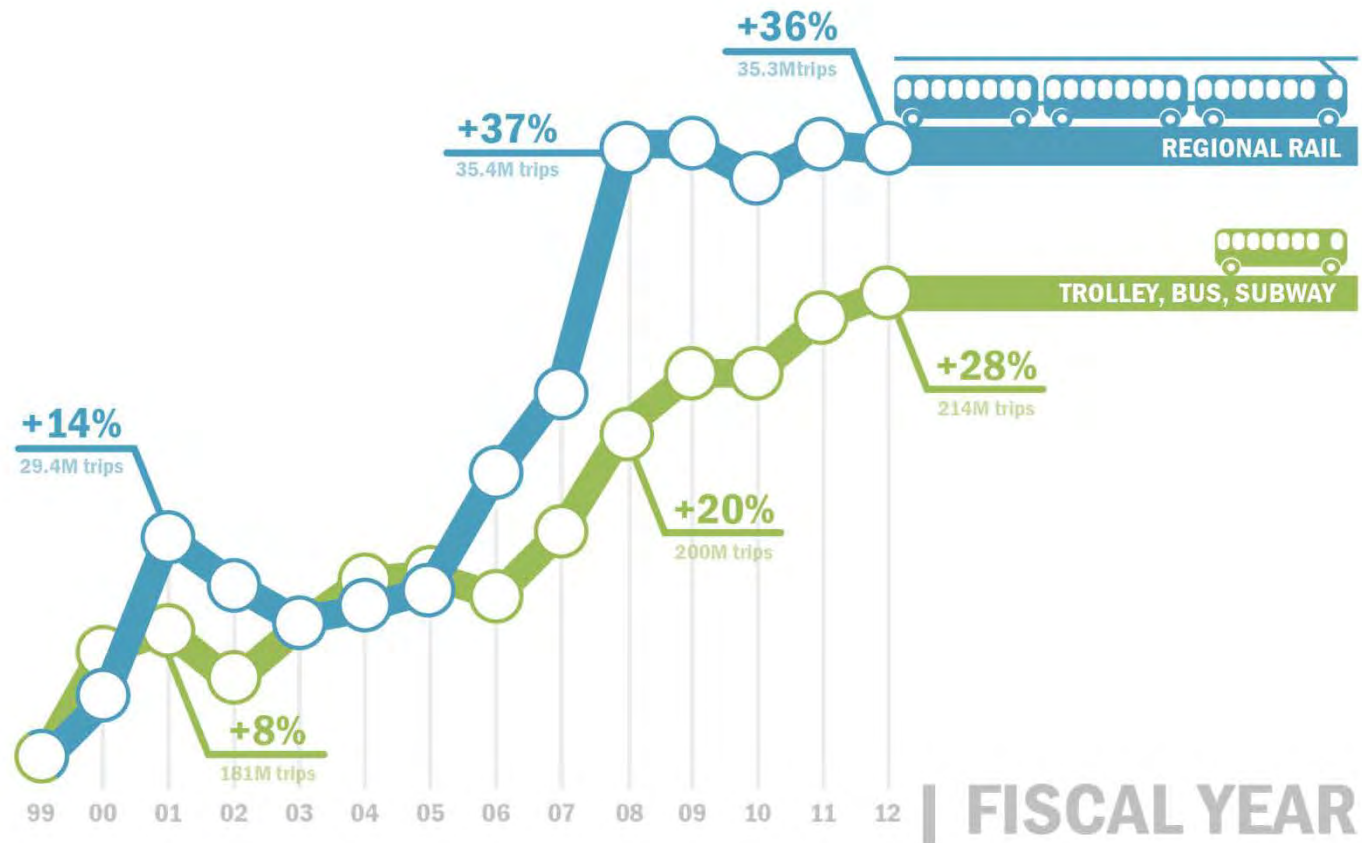
Figure 4.
Walking to Work by Region and City Size:
2008–2012

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see www.census.gov/acs/www/)



Source: U.S. Census Bureau, American Community Survey, 2008–2012.

Increase in Transit, Bike, and Walk

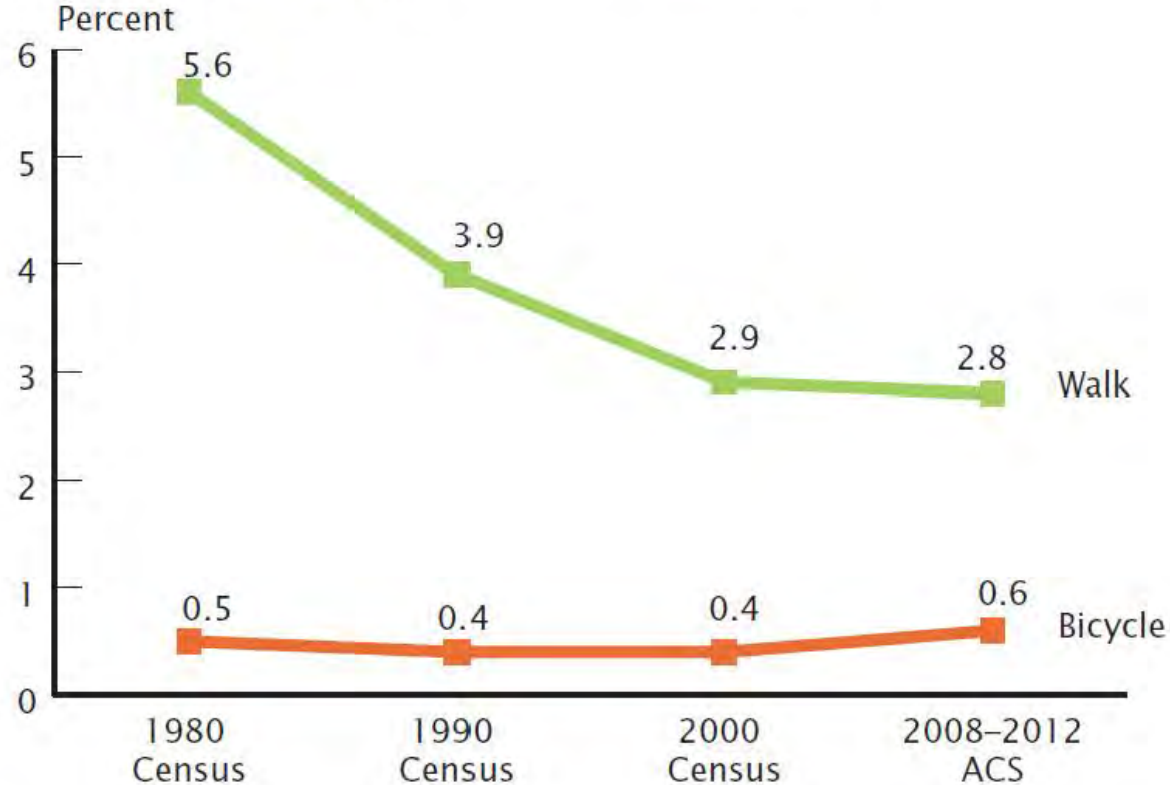


REGIONAL RAIL HAS INCREASED RIDERSHIP BY 36% (9.4M PASSENGER TRIPS) SINCE 1999
TROLLEY, BUS, AND SUBWAY HAVE INCREASED RIDERSHIP BY 28% (47M PASSENGER TRIPS) SINCE 1999

Increase in Transit, Bike, and Walk

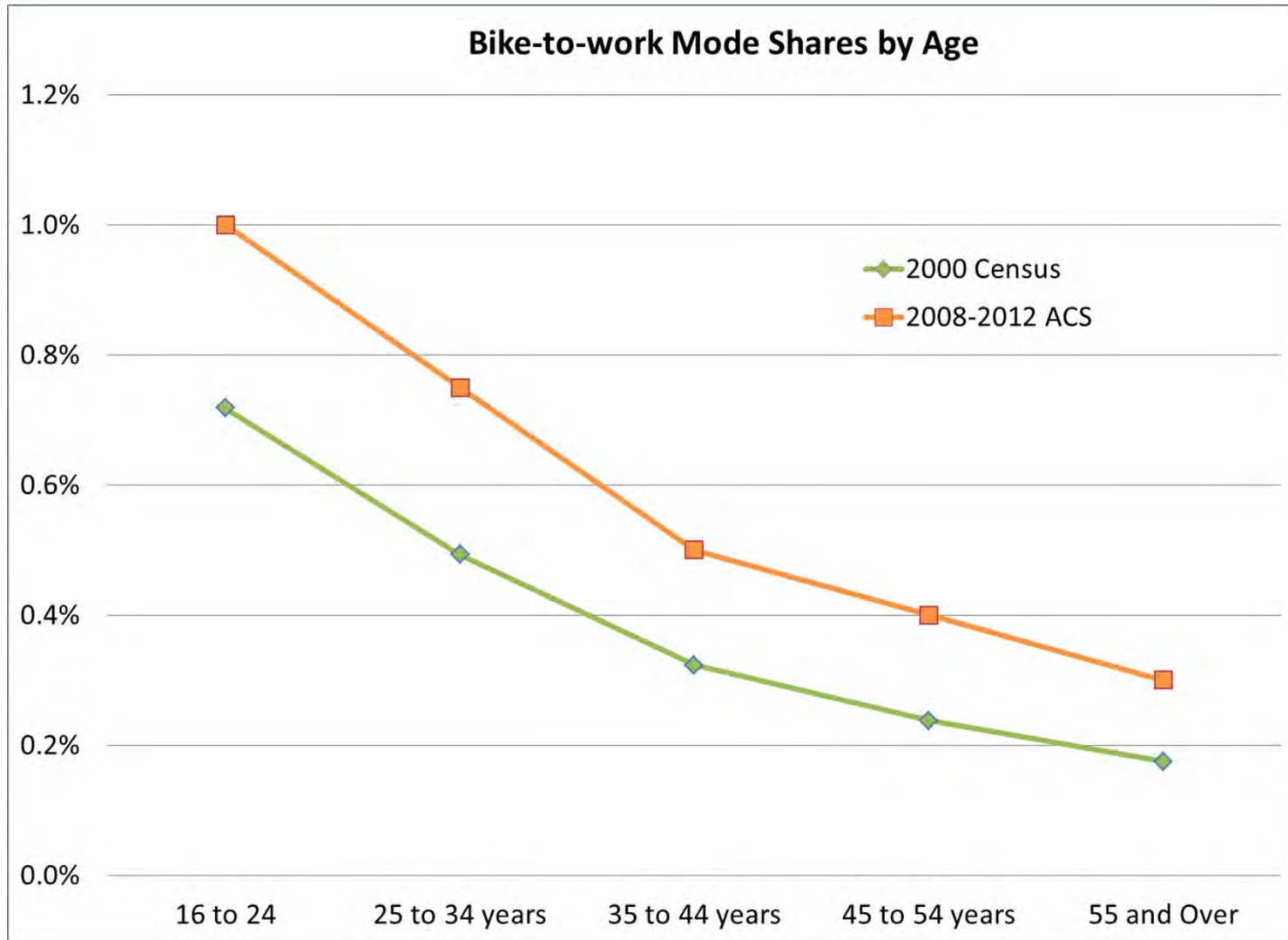
Walking and Bicycling to Work: 1980 to 2008-2012

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see www.census.gov/acs/www/)



Sources: U.S. Census Bureau, Decennial Census, 1980, 1990, 2000; American Community Survey, 2008-2012.

Increase in Transit, Bike, and Walk

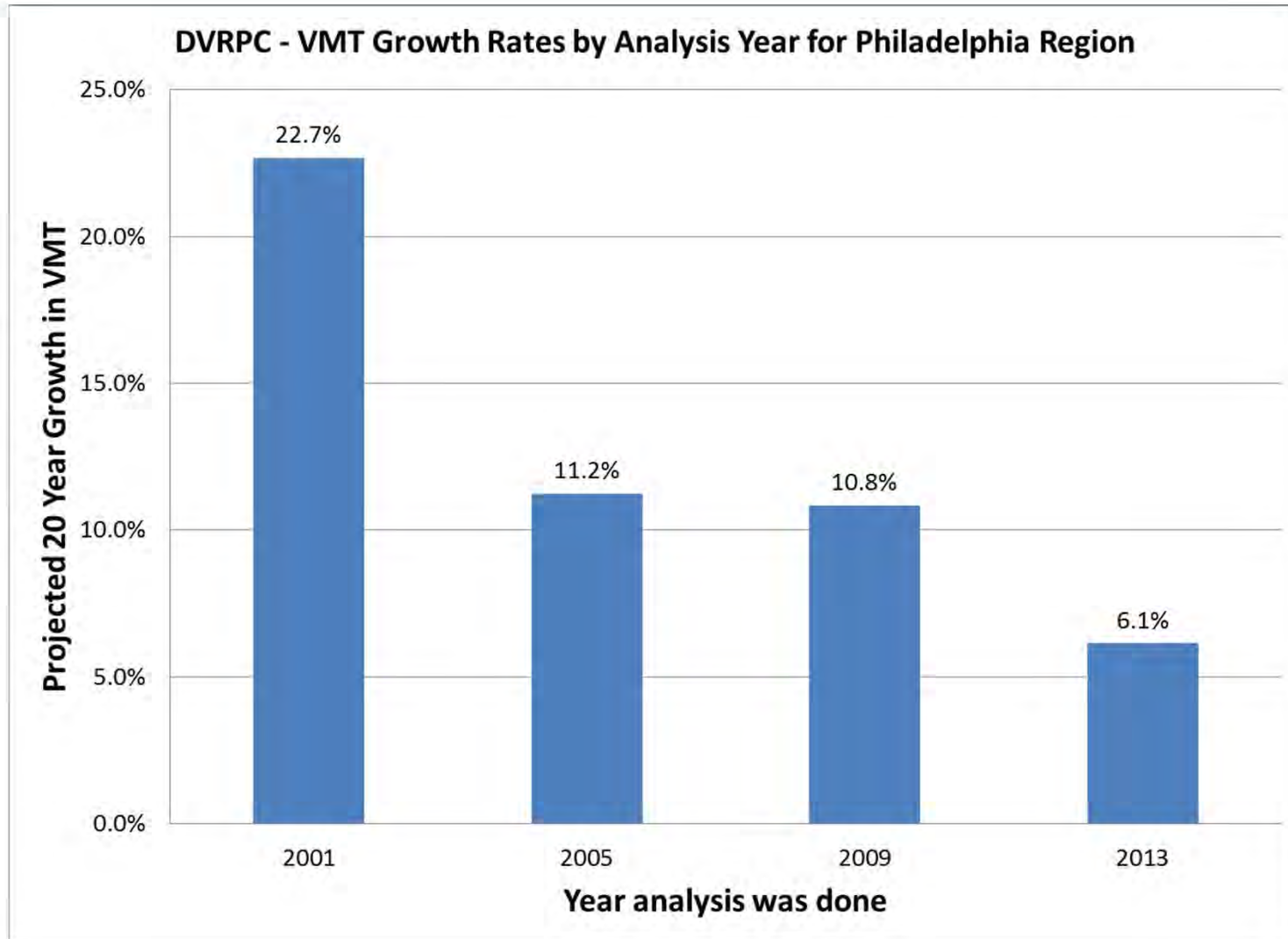


Is it real!?! (out on a limb)



- Yes – but probably a good chunk was caused by the economy and gas prices
- Will the trend last – too early to tell
- Will millennials drive? – yes, of course (they have to), but probably somewhat less than their parents

Lowered Auto Forecasts



What are we doing about it?



- Lowering traffic projections
- Prioritizing maintenance over new capacity
- Improving our forecasting models
- Some changes will be hard to forecast (certis publicis not in effect) → Scenario planning
- Wait and see

Improved Forecasting Models



- Activity Based Models
- Ability to model generational shifts in behavior
- Sensitivity to factors that influence biking and walking
- Sensitivity to energy prices (not just daily mode share, but auto ownership and location choice)



Staff who assisted -

Scott Brady

Matt Gates

Ben Gruswitz

Brett Fusco

Josh Rocks

Jan. 6th, 2015

Christopher M. Puchalsky, Ph.D.



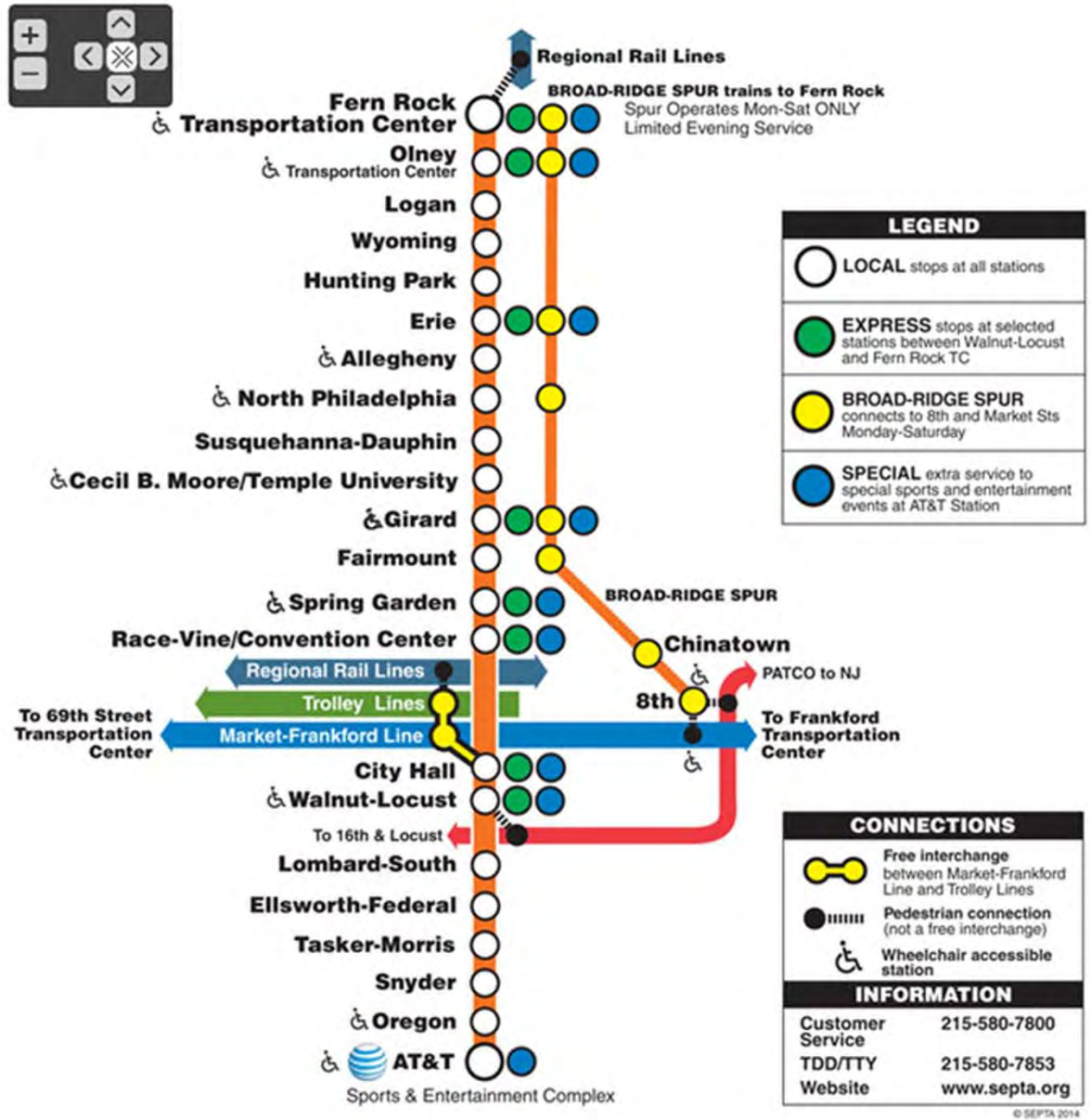
FY 2015

WORK PROGRAM AMENDMENT

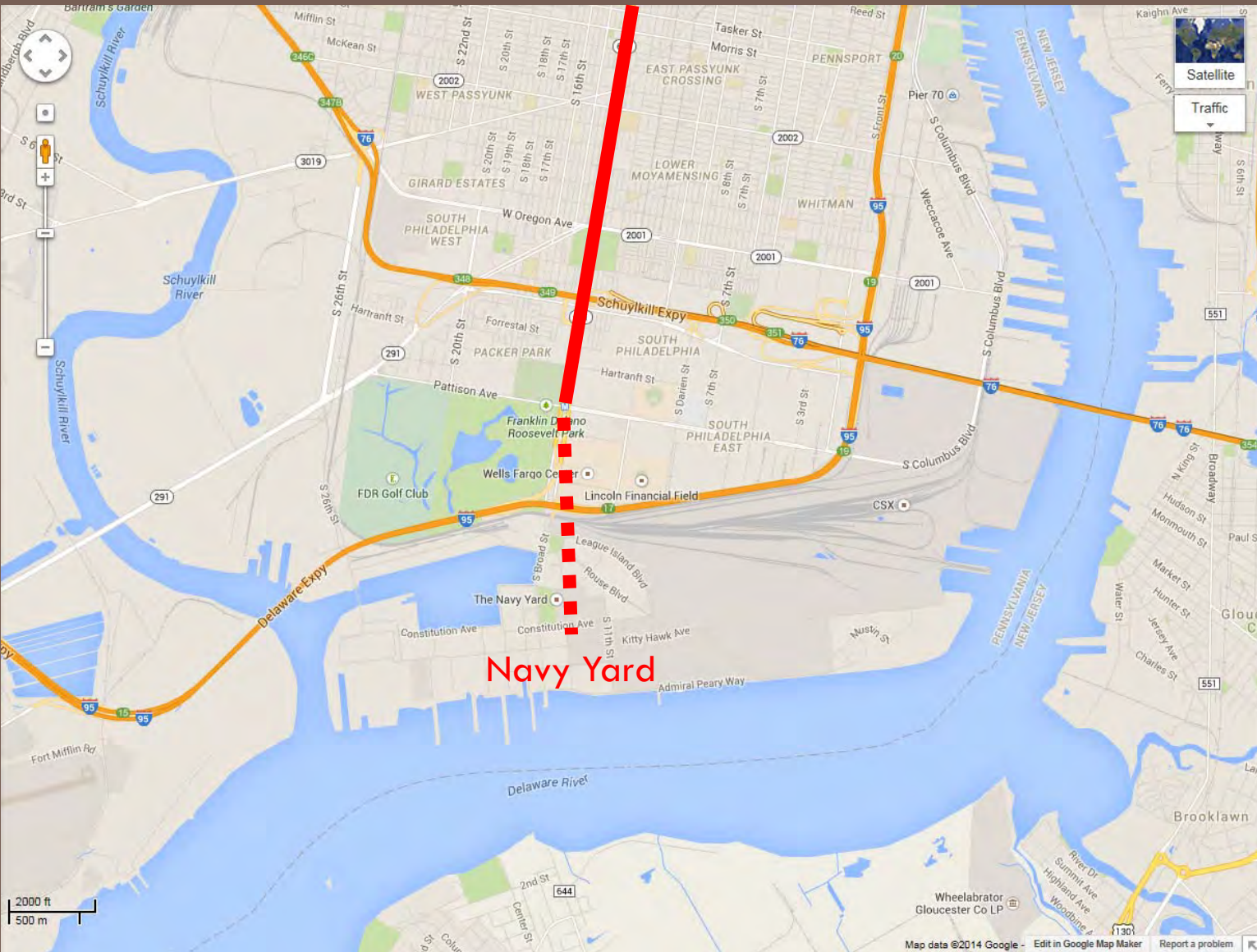
January 6, 2015

Brad S. Lane

Broad Street Subway Line



Broad Street Subway Extension



Broad Street Subway Extension

❖ Navy Yard Master Plan

- ❖ Currently 6.5 million SF of occupied space & 10,000 jobs
- ❖ Over the next 15-20 years, will grow to:
 - ❖ 6.2 million SF of office
 - ❖ 5.7 million SF of industrial
 - ❖ 1,018 residential units
 - ❖ 20,000 jobs



Broad Street Subway Extension

- ❖ Most of the work will be done in FY 2016.
- ❖ Provide daily and peak hour ridership forecasts for three Build alternatives.
- ❖ Funded by PennDOT
 - ❖ \$160,000
 - ❖ State Program 170
 - ❖ MPMS # 342



Action Requested

- That the RTC recommend the Board amend the FY 2015 Planning Work Program to include the Broad Street Subway Extension Ridership Forecasts and acknowledge that work for these ridership forecasts will be funded from MPMS# 342 (100% State Program 170, Transit Administration and Oversight Funds).



TRAVEL MODEL UPDATE

January 6, 2015

Brad S. Lane

new Base Year model

- ❖ The Base Year version of the model represents “current development patterns and travel conditions – or as close to current as we can get
- ❖ It’s a moving target – constantly changing
- ❖ Ideally, we’d like to have a “true” current model (e.g. 2015)
- ❖ However, there’s always a bit of a time lag or delay
 - ❖ We can only be as current as the data will allow
- ❖ Today, briefly discuss transition from a 2010 to a 2013 Base Year model

Population & Employment

- ❖ New development in TAZ 136
 - ❖ The Barnes Art Museum opened in May 2012



	2010	2013	Net Change
Population	3,731	3,816	+ 85
Households	2,442	2,501	+ 59
Employment	2,196	2,308	+ 112

Transit Fares

- ❖ SEPTA fares increased in July 2013

	2010	2013	Change
Cash Fare	\$2.00	\$2.25	+ \$0.25
Token	\$1.55	\$1.80	+ \$0.25

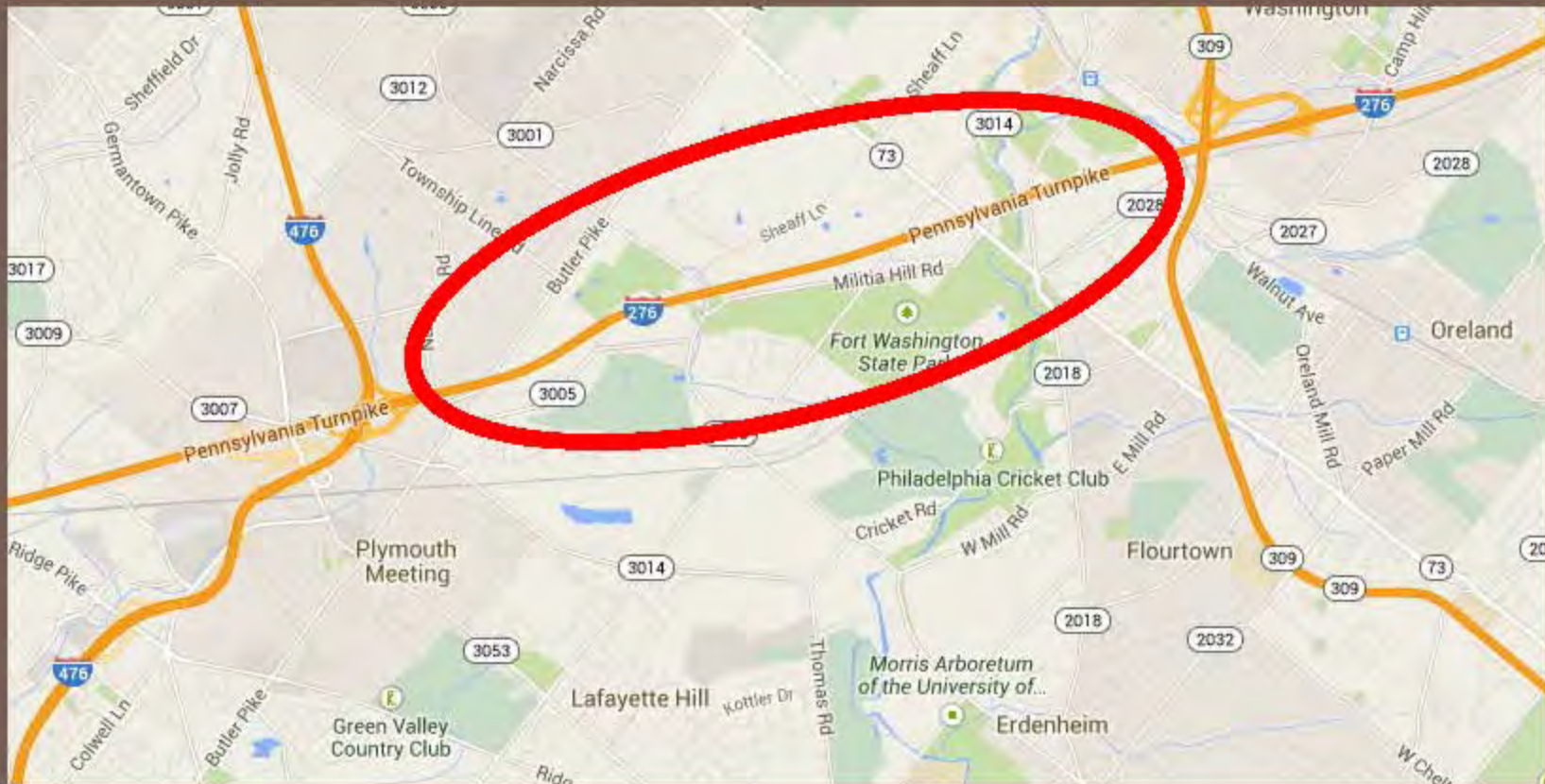


Tolls



Road / Bridge	2010 Toll	2013 Toll	Change
Ben Franklin Bridge	\$4.00	\$5.00	+ \$1.00

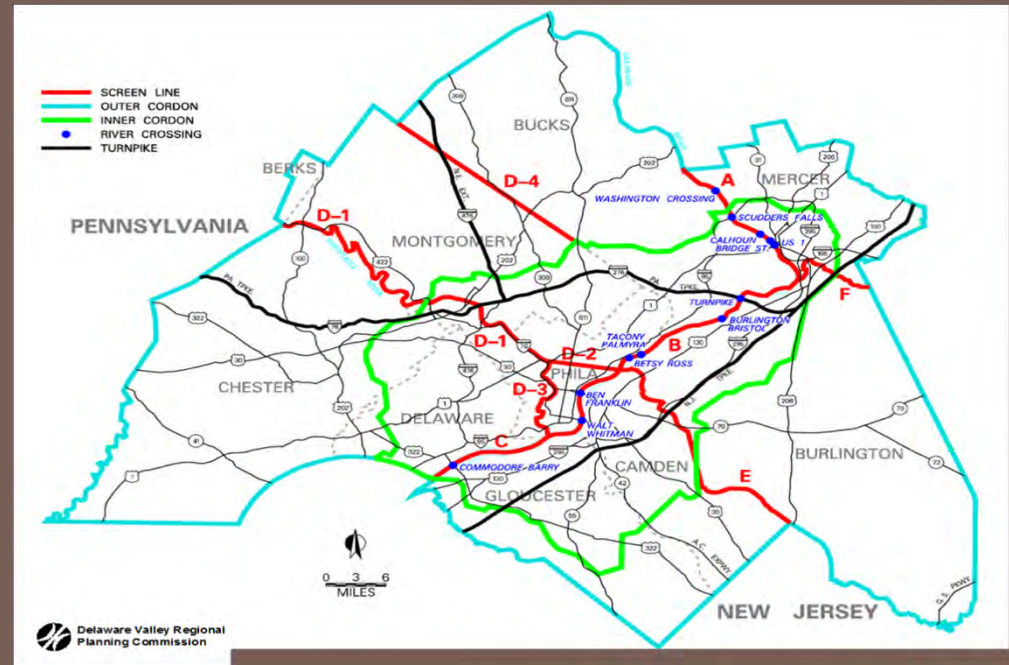
Traffic Counts



Road	from	to	2010 Daily Count	2013 Daily Count	Change
PA Turnpike	I-476	PA-309	116,187	123,551	+ 7,364

Model Validation

❖ Model volume compared to traffic count (Daily)



Screenline	2013 count	2013 model volume	% Difference
Center City	983,969	905,831	-8%
Inner Cordon	2,854,063	2,727,735	-4%
Outer Cordon	1,725,555	1,785,732	+3%
River Crossings	613,314	576,507	-6%

Use of the new 2013 Base

- ❖ Norristown Hi Speed Line (NHSL) Tier 3 Modeling
 - ❖ Currently underway
- ❖ Bethlehem Branch Rail Study
- ❖ Broad Street Subway Extension
- ❖ US 30 Corridor Study
- ❖ as well as other upcoming projects



Questions

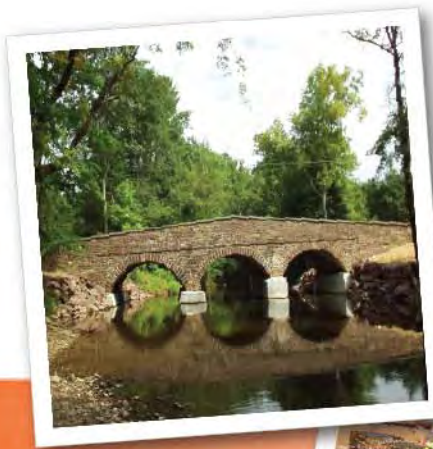


January 2015

★ TIP A-C-T-I-O-N-S

Transportation Improvement Program

New Jersey (FY2014-2017)
Pennsylvania (FY2015-2018)



DELAWARE VALLEY
dvrpc
REGIONAL
PLANNING COMMISSION

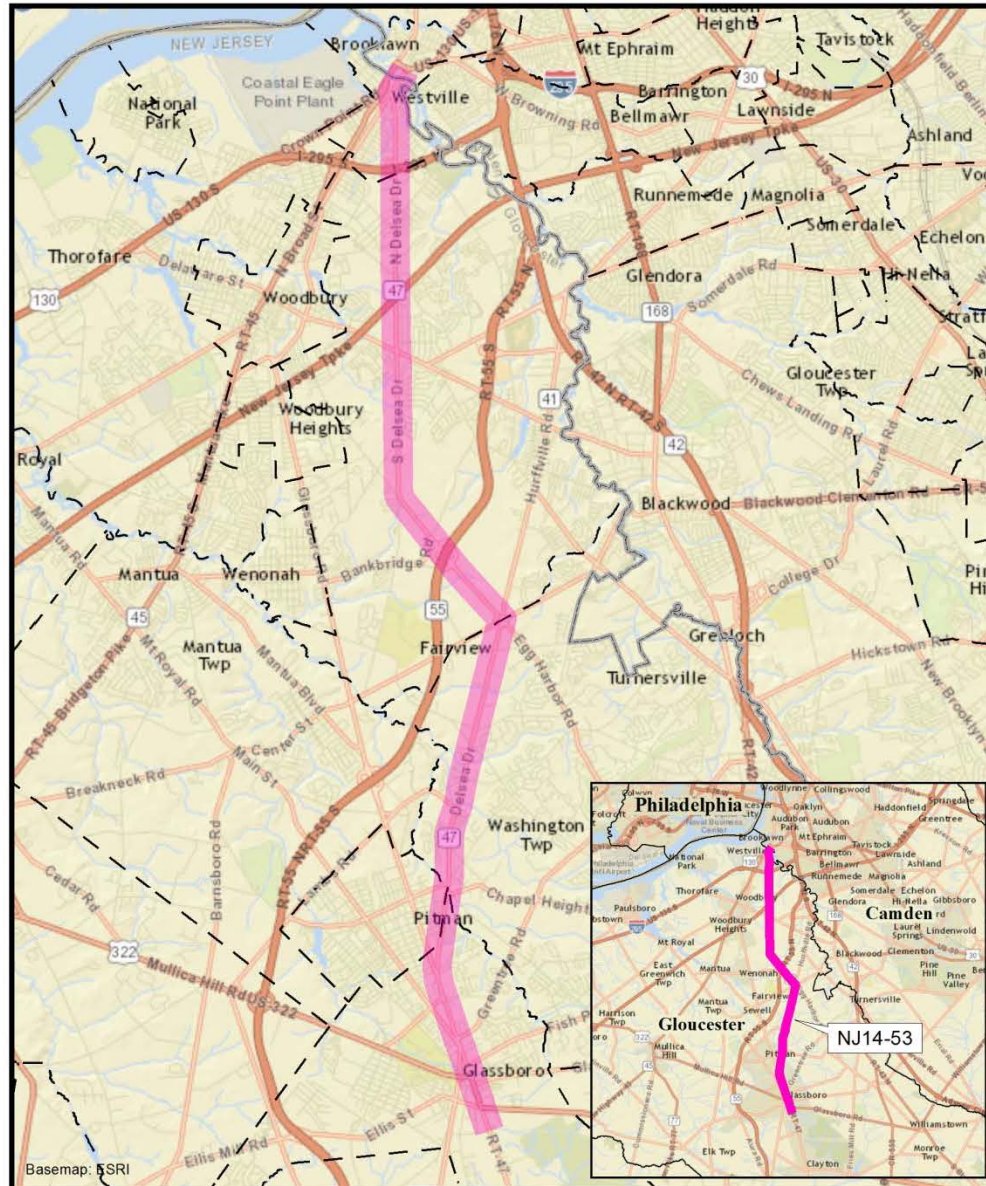


Delay & Cost Increase of All Phases- NJ

a. Route 47, Grove St. to Route 130, Pavement, Gloucester County

- Modify the TIP for NJ by delaying all phases and increasing costs that will result in an overall project cost increase of \$5,050,000 from \$26,200,000 STP to \$31,250,000 STP, accordingly:
 - *Delay PE from FY14 to FY15 and increase the PE cost by \$1,650,000;*
 - *Delay DES from FY15 to FY17 and increase the DES cost by \$800,000;*
 - *Delay ROW from FY15 to FY17 and increase the ROW cost by \$100,000;*
 - *Delay CON from FY17 and FY18 to FY20 and increase the overall CON cost by \$2,500,000.*
- This project will restore almost 13 miles of deteriorated pavements and correct ADA deficiencies on Route 47 (Delsea Drive) from Grove St. (M.P. 62.3) in Glassboro Borough continuing through Washington and Deptford Townships to Broadway Ave. (M.P. 75.2) near the Brooklawn Circle in Westville Borough.

NJ14-53: Route 47 Pavement Resurfacing



a. Route 47, Grove St. to Route 130, Pavement, Gloucester County

Delay all phases and increase costs that will result in an overall project cost increase of \$5,050,000 from \$26,200,000 STP to \$31,250,000 STP, accordingly:

- *Delay PE from FY14 to FY15 and increase the PE cost by \$1,650,000;*
- *Delay DES from FY15 to FY17 and increase the DES cost by \$800,000;*
- *Delay ROW from FY15 to FY17 and increase the ROW cost by \$100,000;*
- *Delay CON from FY17 and FY18 to FY20 and increase the overall CON cost by \$2,500,000.*



Add Project Back in to the TIP - PA

b. Chalfont Pedestrian Facilities (SRTSF), Bucks County

- Amend the TIP for PA by adding a project back in to the TIP, for \$579,734 SRTSF funds in FY15 for Construction.
- This project was inadvertently omitted from the TIP.
- Awarded with \$719,734 federal Safe Routes to School (SRTSF) funding in May of 2009, \$140,000 has been obligated for Preliminary Engineering in the previous TIP.
- Crosswalks, curbing, and sidewalks along Route 202 will be provided in Chalfont and New Britain Boroughs that will enable students to walk to/from the elementary and middle schools.

b. Chalfont Pedestrian Facilities (SRTSF), Bucks County

Add the project back in to the TIP for \$579,734 SRTSF funds in FY15 for Construction.



Add Proposed New Projects - PA

c. Approval of Automated Red-Light Enforcement (ARLE) Round 5 (2014 Funding) Projects, Various Counties

- Approve 14 projects that were selected as part of PennDOT's ARLE program Round 5 and amend the TIP for PA by adding the selected projects in FY15 for Construction.
- The DVRPC region was awarded a total of \$4,541,427 of State Appropriation 244 funding, which are additional funds to the region, for 14 projects.
 - \$205,520 is for projects in Bucks County;
 - \$483,757 is for projects in Chester County;
 - \$33,150 is for a project in Delaware County;
 - \$319,000 is for projects in Montgomery County;
 - \$3,500,000 is for projects in the City of Philadelphia.
- 226 applications were submitted by municipalities totaling \$36 million for Round 5 of ARLE that awarded a total of \$6.6 million statewide.

★ TIP A-C-T-I-O-N

PROPOSED-PA

County/Project Title	Total CON Amount (FY15)
BUCKS COUNTY	
Video Traffic Signal Detection Upgrade	\$48,500
Pedestrian Signal Upgrades	\$157,020
CHESTER COUNTY	
Traffic Signal Head Upgrade	\$8,500
Incident Management Upgrade	\$341,507
Traffic Signal Equipment Upgrade	\$72,500
LED Traffic Signal Upgrade	\$61,250
DELAWARE COUNTY	
Pedestrian Facilities Improvement	\$33,150
MONTGOMERY COUNTY	
Traffic Signal Safety Upgrade	\$35,000
Traffic Signal Improvement	\$82,000
Signal System Upgrade	\$202,000

County/Project Title	Total CON Amount (FY15)
CITY OF PHILADELPHIA	
Philadelphia Fiber Optic Network Expansion	\$500,000
Philadelphia Intersection Upgrades	\$1,000,000
Philadelphia Modern Roundabouts	\$1,000,000
Philadelphia Traffic Calming	\$1,000,000
Total ARLE Round 5 Award for the DVRPC Region	\$4,541,427

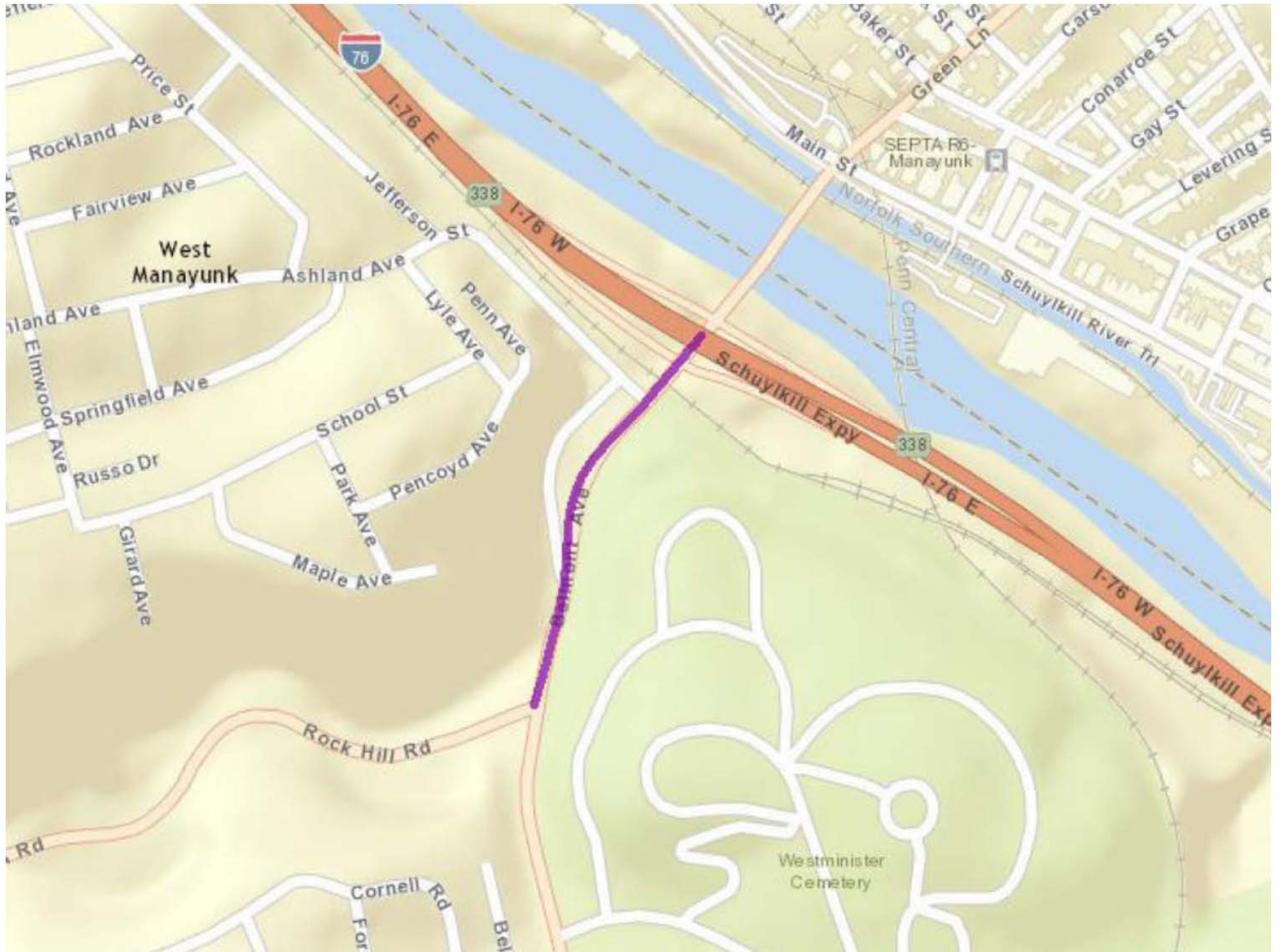
These are additional funds to the region.



Add Proposed New Break-out Project to the TIP - PA

d. Rock Hill Road Advance ROW, Montgomery County

- Amend the TIP for PA by adding a new break-out project to the TIP for \$248,000 State 581 funds in FY15 for Right-of-Way (ROW).
- This is a companion project to the Belmont Rd/Rock Hill Rd Widening: I-76 Ramps to Rock Hill Road project in Lower Merion Township that will reconstruct and widen Belmont Avenue from the interchange with I-76 Schuylkill Expressway to west of Rock Hill Road and replace a railroad overpass.
- Funds will enable ROW acquisition from a property owner who is willing to sell property to the township at this time.





Add Project Back into the TIP - PA

e. Culvert Replacement Group K, Bucks County

- Amend the TIP for PA by adding a project back in to the TIP for \$4,000,000 State 581 funds in FY15 for Construction.
- The project was programmed on the previous TIP, but funds were never encumbered.
- Funds will provide for 10 bridge replacements that are in critical condition with minimal roadway improvement, which are as follows:
 1. Dublin Pike over Morris Run (Bridge Key 6990)
 2. Easton Road over Branch Neshaminy Creek (Bridge Key 7061)
 3. Aquetong Road over Branch Aquetong Creek (Bridge Key 7100)
 4. Hulmeville Road over Chubb Run (Bridge Key 7222)
 5. Old Lincoln Highway over Branch Neshaminy Creek (Bridge Key 7335)
 6. Almshouse Road over Branch Neshaminy Creek (Bridge Key 7384)
 7. Main Street and Bethlehem Pike over Wertz Creek (Bridge Key 7384)
 8. Rocky Ridge Road over Branch Tohickon Creek (Bridge Key 7415)
 9. Richlandtown Pike over Cooks Creek (Bridge Key 7419)
 10. State Road over Branch Cooks Creek (Bridge Key 7442)

Stream restoration and District-wide “On Demand” bridge repairs will also be included.



Add Project Back into the TIP - PA

f. Culvert Replacement Group L, Various Counties

- Amend the TIP for PA by adding a project back in to the TIP for \$200,000 State 581 funds for Utility in FY15 and \$5,000,000 State 581 funds for Construction in FY15 (\$487,000), FY16 (\$300,000), FY17 (\$3,960,000) and FY18 (\$253,000).
- The project was programmed on the previous TIP, but funds were never encumbered.
- Funds will provide for 7 culvert replacements in Chester, Delaware, and Montgomery counties with minimal roadway improvements, which are as follows:
 1. Doe Run Road over Branch Sucker Run (Bridge Key 10044) – Chester County
 2. Creek Road over Branch Brandywine Creek (Bridge Key 10174) – Chester County
 3. Bondsville Road over Branch Beaver Creek (Bridge Key 10215) – Chester County
 4. Whitehorse Road over Branch Pickering Creek (Bridge Key 10303) – Chester County
 5. Clay Creek Road over Tributary East Branch White Clay Creek (Bridge Key 39994) – Chester County
 6. Macdade Boulevard over Branch Muckinipattis Creek (Bridge Key 15231) – Delaware County
 7. Second Avenue over Branch of Mingo Creek (Bridge Key 27805) – Montgomery County

The superstructure replacement of the Graterford Road Bridge over Perkiomen Creek in Montgomery County; substructure repairs for the Pocopson Road Bridge in Chester County; and District-wide “On-Demand” bridge repairs will be included.



Add PE Phase to Statewide Project - PA

g. Main Street Grade Crossing, Delaware County

- Amend the TIP for PA by adding a Preliminary Engineering (PE) phase to the Main Street Grade Crossing statewide project for \$750,000 State 581 funds in FY15.
- This project has already been awarded with \$337,653 RRX funds for Construction in FY18 from the 2015 Statewide Rail-Highway Grade Crossing Program.

Channelization

A



Striping & Crosswalks

B



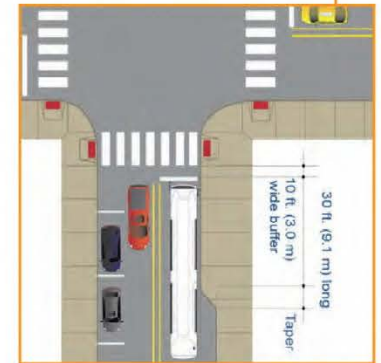
Signalization

F



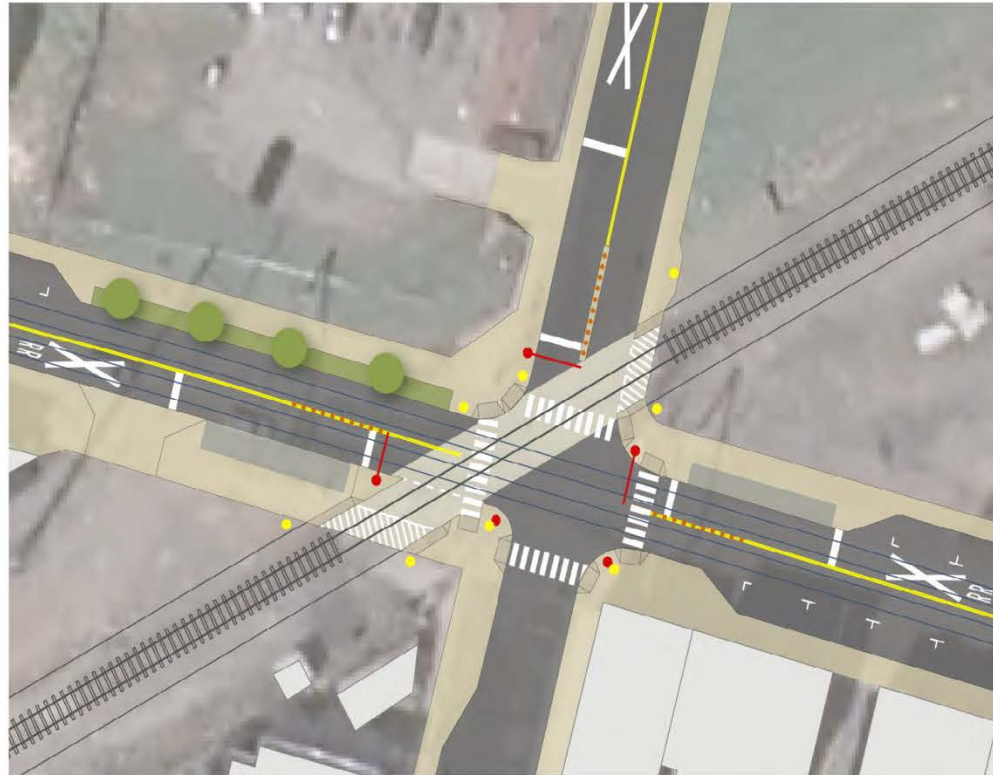
Curb bumpouts

C



Resurfacing

E



D

Pedestrian Signals



- Pedestrian signal
- Vehicular signal
- Crossing gate w/signal
- SEPTA stop



Add Project Back in to TIP - PA

h. North Broad Streetscape Improvements, Montgomery County

- Amend the TIP for PA by adding a project back in to the TIP in the amount of \$142,148 (\$100,148 SXF/ \$42,000 Local) for Construction in FY15.
- These are additional funds to the region.
- The construction phase was not able to be obligated under the previous TIP.
- This project will include streetscape improvements such as concrete sidewalks, curbs and street plantings.



Add Final Design Back in to TIP - PA

i. American Cities/Safe Routes to School – Phase 3, City of Philadelphia

- Amend the TIP for PA by adding a Final Design phase back in to the TIP in the amount of \$400,000 (\$320,000 SXF/ \$80,000 Local) in FY15.
- Final Design was not able to be obligated under the previous TIP due to delays in obtaining environmental clearances.
- The project will install school flashers, pedestrian bumpouts, and crosswalks at various locations throughout the city.

★ TIP A-C-T-I-O-N

PROPOSED-PA

d. Rock Hill Road Advance ROW, Montgomery County

Add the new break-out project to the TIP for \$248,000 State 581 funds in FY15 for Right-of-Way (ROW).

e. Culvert Replacement Group K, Bucks County

Add the project back in to the TIP for \$4,000,000 State 581 funds in FY15 for Construction.

f. Culvert Replacement Group L, Various Counties

Add the project back in to the TIP for \$200,000 State 581 funds for Utility in FY15 and \$5,000,000 State 581 funds for Construction in FY15 (\$487,000), FY16 (\$300,000), FY17 (\$3,960,000) and FY18 (\$253,000).

g. Main Street Grade Crossing, Delaware County

Add a PE phase to the statewide project for \$750,000 State 581 funds in FY15.
The project has already been awarded with \$337,653 RRX funds for CON in FY18 from the 2015 Statewide Rail-Highway Grade Crossing Program.

h. North Broad Streetscape Improvements, Montgomery County

Add the project back in to the TIP in the amount of \$142,148 (\$100,148 SXF/ \$42,000 Local) for Construction in FY15.

i. American Cities/Safe Routes to School – Phase 3, City of Philadelphia

Add a FD phase back in to the TIP in the amount of \$400,000 (\$320,000 SXF/ \$80,000 Local) in FY15.



Add Proposed New Program to the TIP - PA

j. Bridge Bundling 2015, Various Counties

- Amend the TIP for PA by adding a new program to the TIP, for \$4,700,000 Spike STP (sSTP) funds in FY15 and FY16, accordingly:
 - \$250,000 for PE in FY15
 - \$450,000 for FD in FY15
 - \$25,000 for UTL in FY15
 - \$25,000 for ROW in FY15
 - \$3,950,000 for CON in FY16.
- These are additional funds to the region.
- The PennDOT Local Bridge Bundling program selects and repairs bridges that have the same structure type with the same design requirements and are located geographically close to each other in order to induce cost and time savings.



Add Proposed New Program to the TIP - PA

- A total of 15 bridges in Bucks (8), Delaware (1), and Montgomery (6) counties that have been selected are expected to be let for construction in October of 2015.

Bucks County	
Municipality	Bridge Name (Key)
Northampton	Willow Road Bridge (7629)
Hilltown	Moyer Road Bridge (7613)
East Rockhill	Fredericks Bridge 14J08 (7516)
Warrington	Warrington Twp. 33J02 (7531)
Falls	Alden Avenue 38H05 (7606)
Springfield	Springfield Street (7643)
Middletown	Snowball Gate 42H02 (7490)
Perkasie	Perkasie Boro 20H02 (7482)

Delaware County	
Municipality	Bridge Name (Key)
Springfield	Paper Mill Road Bridge (15434)

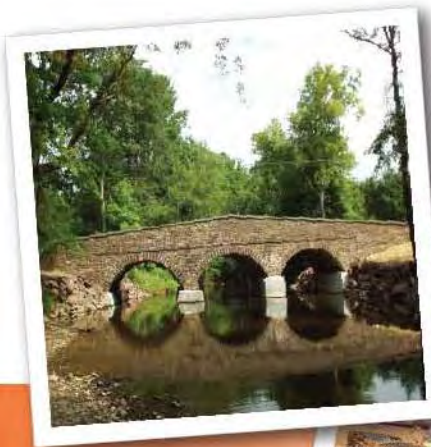
Montgomery County	
Municipality	Bridge Name (Key)
Cheltenham	Easton Road (27989)
Springfield	Oreland Mill Bridge 31B09 (28042)
Hatfield	Trewigtown Road 17A06 (28018)
Upper Merion	Keebler Road Bridge (28125)
Lower Merion	Violet Lane Bridge (47474)
Lower Merion	Remington Road Bridge (28022)

j. Bridge Bundling 2015, Various Counties

Add the new program to the TIP for \$4,700,000 Spike STP (sSTP) funds in FY15 and FY16, accordingly:

- \$250,000 for PE in FY15
- \$450,000 for FD in FY15
- \$25,000 for UTL in FY15
- \$25,000 for ROW in FY15
- \$3,950,000 for CON in FY16.

These are additional funds to the region.



THANK YOU