1980 – 2010 TRAVEL TRENDS

IN THE PHILADELPHIA CENTRAL BUSINESS DISTRICT

SEPTEMBER 2013

DELAWARE VALLEY
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REGIONAL
PLANNING COMMISSION

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The symbol in our logo is adapted from the official DVRPC seal and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

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Executive Summary

This report assesses trends between 1980 and 2010 in highway traffic volumes and public transportation ridership entering and leaving the Philadelphia Central Business District (CBD), also known as Center City. Volumes are expressed in terms of both vehicle trips and person trips crossing each of the four Center City screenlines: Callowhill and South streets to the north and south, respectively, and the Delaware and Schuylkill Rivers to the east and west, respectively. Average weekday screenline traffic counts collected in 2010 are compared with similar data collected in 1980, 2000, and 2005. Within Center City, there has been no new highway or transit facility construction or disruption of traffic since 2000; consequently, there is a high degree of comparability across the years since 2000.

The major findings of this study are:

- Over 1.8 million people enter or exit Center City Philadelphia each weekday.
- In terms of mode split, 67 percent of these crossings are by automobile, 27 percent are by public transit, 5 percent are by pedestrians, and 1 percent are by bicycle.
- The recession of December 2007 to June 2009 depressed travel to and from Center City. Overall travel across all modes of travel and all four screenlines decreased by 6.0 percent between 2005 and 2010.
- Highway travel to and from Center City was particularly hard hit, declining by 9.3 percent.
- While all four screenlines saw a decrease, the South Screenline experienced the biggest overall decline. Total person trips crossing the South Screenline declined from 446,560 per day in 2005 to 389,768 per day in 2010, a reduction of 12.7 percent.
- While highway travel was declining, public transit ridership to Center City increased by 3.2 percent between 2005 and 2010. Regional rail was a particular bright spot, increasing by 15.7 percent.
- This is the first version of this report to also include data on pedestrian and bicycle travel. In 2010, a total of 93,409 pedestrian trips and 11,438 bicycle trips were made each day to and from Center City.

I. Introduction

The Delaware Valley Regional Planning Commission (DVRPC) has conducted periodic monitoring of travel trends and patterns throughout the nine-county area since its predecessor agency, the Penn-Jersey Transportation Study, conducted the first travel survey in 1960. That initial database included several screenline and cordon line counts used to study travel movements entering and leaving specific areas such as the Philadelphia CBD, which is also known as Center City Philadelphia. The collected data measured traffic volumes crossing county boundaries and major geographical barriers, such as the Schuylkill and Delaware rivers. The data is used in several ways: to assess transportation trends in and out of Center City; to calibrate the DVRPC travel demand forecasting model; and to estimate Vehicle Miles Traveled for air quality conformity analysis.

DVRPC realizes the importance of Center City to the region's economy. In terms of employment, 233,900 salaried jobs were located in Center City in 2010, making it the region's largest employment center.[1] Between 2000 and 2010, the residential population in Center City increased by 18 percent, from 49,855 to 58,882. In terms of transportation, Center City is the hub of the region's transit network. The regional rail system, the subway-elevated system, and many of the region's bus routes pass through Center City, transporting suburban residents to Center City jobs and moving city residents to suburban employment opportunities. The highway network also provides several connections to Center City. The Schuylkill Expressway (I-76), the Vine Expressway (I-676), and I-95 are part of the interstate highway system, linking Philadelphia with the rest of the country.

Given the importance of Center City, DVRPC staff recognizes the need to continuously monitor travel trends in and out of the CBD as a means of increasing the service and efficiency of the region's transportation system. Along these lines, DVRPC conducts comprehensive screenline counts of both highway and public transportation users every five years. Four CBD screenlines define the cordon surrounding Center City: the northern boundary is located just north of Callowhill Street, the southern boundary is located just south of South Street, the eastern boundary is the Delaware River, and the western boundary is the Schuylkill River. The screenlines, with locations for highway and public transportation counts, are illustrated in **Figure 1.**

This report presents the 2010 public transportation ridership and highway traffic counts collected for the Center City Cordon Line. The report compares the 2010 data with previously collected information on cordon crossings from 1980, 2000, and 2005. Earlier iterations of this report used 1960 as the base year (the first year data was collected). However, changes to the transportation system and the length of time that has elapsed since 1960 make 1980 a better baseline.

The highway traffic counts were taken in the summer and fall of 2010 by DVRPC staff and augmented with information from the Delaware River Port Authority (DRPA), and data provided by Traffic.com for counts of major highways in the DVRPC region.

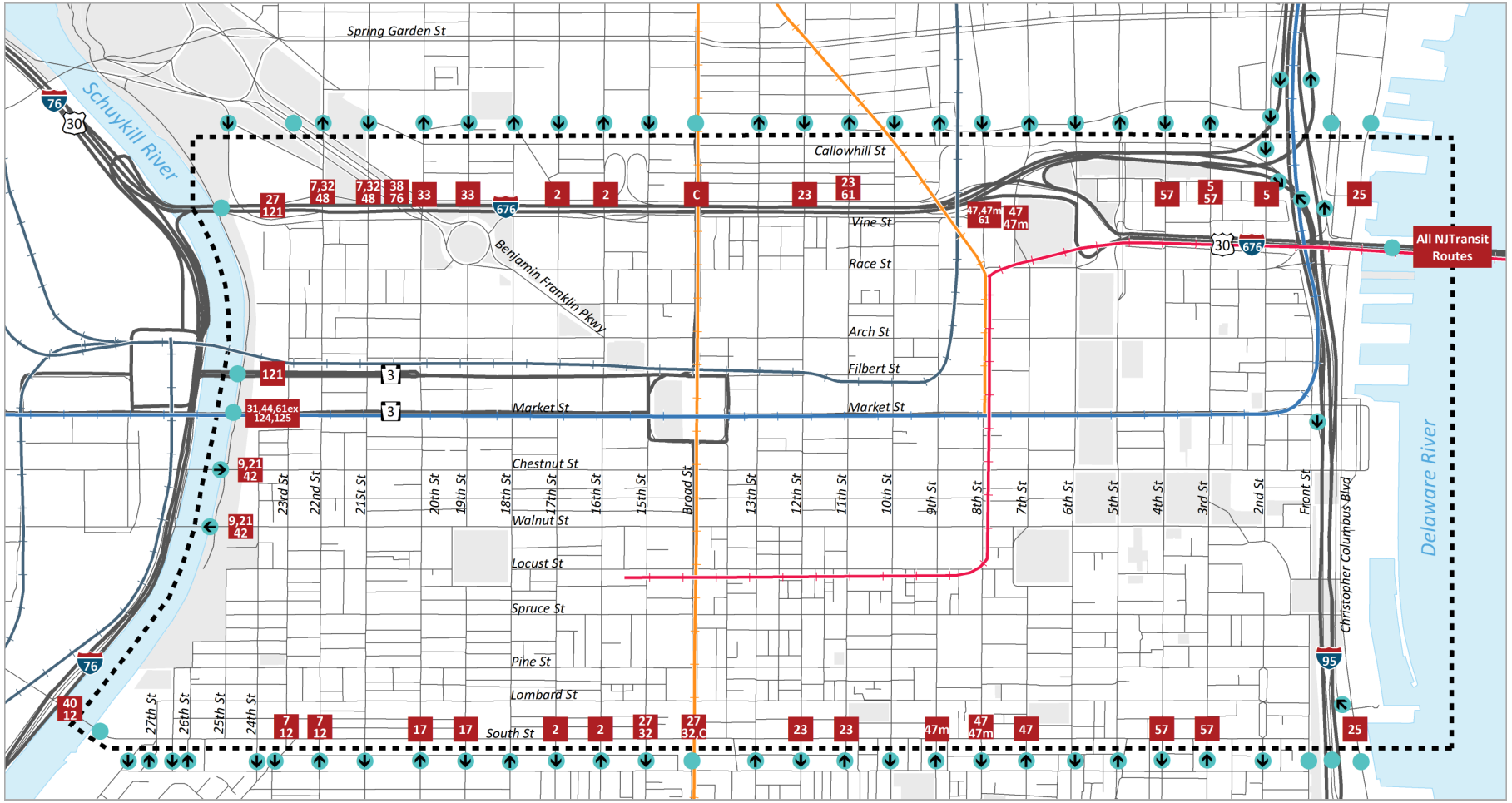
Public transportation ridership counts were provided by the respective transit operators. The Port Authority Transit Corporation (PATCO) and New Jersey Transit (NJ Transit) bus and rail counts were based on recent turnstile or farebox counts, which were then aggregated into specific route and time categories. The Southeastern Pennsylvania Transportation Authority (SEPTA) bus and rail counts were based on ride checks taken as part of SEPTA's regular data gathering program. Where this data was not current enough for this

[1] Center City District & Central Philadelphia Development Corporation, *State of Center City Philadelphia* (Philadelphia: Center City District & Central Philadelphia Development Corporation, 2012), 7, 41.

project, DVRPC contracted with SEPTA to gather current data. In every case the most recently available data was used.

For the first time, this report also includes data on pedestrian and bicycle travel to and from Center City. Philadelphia is considered one of the most walkable and bike friendly cities in the United States, and beginning in 2010, DVRPC staff counted pedestrians and bicyclists, as well as autos and transit passengers. This additional data provides a more complete and accurate picture of travel patterns in Philadelphia.

Figure 1:
Center City—2010 Cordon Line Count Locations



AUGUST 2013

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II. Data Collection and Study Method

The highway traffic counts for the North, South (exclusive of I-95), and West screenlines were taken by DVRPC field crews at the locations indicated in **Figure 1.** I-95 counts were obtained from microwave radar stations operated by Traffic.com. East Screenline counts were collected by DRPA, which owns and operates the Benjamin Franklin Bridge and collects traffic data on a regular basis. Pennsylvania public transportation ridership numbers were obtained from SEPTA, the operator of service into Center City. Transit ridership from New Jersey was based on data collected by PATCO and NJ Transit. Counts of bicyclists and pedestrians were also made by DVRPC field crews.

A. Highway Traffic Counts

DVRPC staff counted vehicles on highways and bridges by direction and time of day using pneumatic tubes. Highway counts are conducted over a continuous forty-eight hour period during the work week (Monday through Friday). Appropriate seasonal and area travel pattern factors, as provided by the Pennsylvania Department of Transportation (PennDOT) were applied to the raw counts to convert them to annual average daily traffic estimates. Person trip volumes were derived from the vehicular counts using average vehicle occupancy data for the Philadelphia region.[2]

Traffic.com has embarked on a program of installing microwave radar traffic monitoring devices along the key highways throughout the DVRPC region. Speed and travel time information collected from this equipment is sold to radio and television stations as well as other private entities. As part of their agreement to install the equipment on public rights-of-way, they also provide the data they collect, including traffic volumes, to PennDOT and DVRPC. Traffic.com collected data on the ramps to and from the Vine Expressway (I-676) and the Walt Whitman Bridge. DVRPC field crews also counted the on- and off-ramps between South Street and the Walt Whitman Bridge. The combination of this data provided I-95 volumes crossing the South Screenline.

The East Screenline is unique since access in or out of Center City is limited to the Benjamin Franklin Bridge. In 1992 DRPA changed the toll collection procedure on its bridges, raising the toll for automobiles from $0.90 collected in each direction to $2.00. Then in January 2000 DRPA raised the toll to $3.00, collected only from westbound vehicles. Consequently, vehicle counts supplied by DRPA are taken in the westbound direction only. Westbound flow is assumed to be balanced by an equivalent eastbound flow. The hourly highway counts from the bridge are adjusted based on historic multipliers to derive hourly counts from the total provided by DRPA.

B. Public Transportation Ridership

SEPTA operates most public transportation services that connect Center City with the rest of the Philadelphia urban area and suburbs. For its bus and trolley service, SEPTA conducted ride checks, where boarding and alighting counts are tallied at specific stops along the border of the CBD. These counts were taken throughout 2010 at specific locations along the screenlines into the CBD, targeting specific routes that had not been recently included in system checks.

Ridership on SEPTA's regional rail service is based on the 2009 rail ridership census.[3] The passenger counts for the North Screenline were taken north of the Market East Station, while the West Screenline counts

[2] Delaware Valley Regional Planning Commission, *2000 and 2005 Validation of the DVRPC Regional Simulation Models* (Philadelphia: Delaware Valley Regional Planning Commission, July 2008), Table VI-6: Auto Occupancy by Time Period.
[3] Southeastern Pennsylvania Transportation Authority, *SEPTA Regional Rail Ridership Census 2009*.

were collected west of the 30th Street Station. These counts were then adjusted to account for platform boarding and alighting at 30th Street Station to reflect passengers crossing the Schuylkill River boundary of the West Screenline.

For its subway-elevated service, SEPTA personnel counted “ons” and “offs” at each station along each route in both the inbound and outbound directions over the course of an entire day and then used this data to estimate daily ridership.

PATCO is a subsidiary of DRPA and operates a rail transit line across the Benjamin Franklin Bridge between Philadelphia and New Jersey. NJ Transit operates bus service over the Benjamin Franklin Bridge to and from New Jersey. The PATCO and NJ Transit counts were compiled from farebox counts and zonal data collected in 2010. Transit counts were completed from 6:00 AM to 12:00 midnight.

C. Bicycle and Pedestrian Volumes

Increasing emphasis is being placed on non-motorized travel—that is, travel by bicyclists and pedestrians. Measuring volumes of these travelers has always presented a challenge. Traditionally, counts were gathered manually by stationing a person along a transportation facility and having them tally the number of cyclists or pedestrians. This type of counting was acceptable for a short-term count lasting only a few hours. Taking a 24-hour count similar to vehicle counts proved cost prohibitive, and there is a well-documented issue with observer fatigue affecting the quality of the data. Since the 2005 version of the Center City screenline monitoring effort, technology has become available that allows the automated counting of pedestrians and bicycles.

Bicycle counting at DVRPC is conducted using the same technology that is used for vehicle counting: a pneumatic tube stretched across the transportation facility. When a tire rolls across the tube, an increase in air pressure activates a switch in the counter, recording the tire. The spacing between the axles allows the counter to distinguish between a bicycle and a motorized vehicle. As with any technology, a validation procedure was conducted on the equipment to develop an adjustment factor to account for any variance between machine and manual count.

For pedestrian counting, DVRPC has adopted passive infrared technology. A unit is mounted on a fixed object like a sign post and measures the heat signature of a person passing by the unit. Dual sensors allow the unit to distinguish direction of travel. It is recommended that the unit be mounted at hip height, preventing each leg of a pedestrian from being counted as an individual. This presents the possibility of undercounting due to infants in carriages or small children. There is also the problem of occlusion: where two persons are walking exactly abreast, only one signature is registered. Because of these issues, an extensive validation procedure was undertaken to develop an expansion factor to account for undercounting.

There is a higher degree of variability, from day to day, for bicycle and pedestrian counts than for auto and transit counts. For example, whereas a person who drives to work is probably going to continue to drive regardless of the whether outside, a person who walks may decide to ride the bus or carpool on rainy or extremely cold days. For this reason, the counting equipment for bicycle and pedestrian counts is set up for a minimum of seven continuous days at each cordon location.

III. Trends in Center City Screenline Travel Volumes

A. North Screenline

The North Screenline was located just north of Callowhill Street so that the entire length of the Vine Expressway (I-676) would be included within the Center City Cordon Line. This screenline includes traffic on the eastbound on-ramp (24th Street) to the Vine Expressway from the Benjamin Franklin Parkway, though the expressway itself does not cross the screenline. Much of the expressway traffic is "through" traffic that exits Center City either via the Benjamin Franklin Bridge (I-676) or I-95. The North Screenline also includes traffic volumes on I-95 (the Delaware Expressway) as well as numerous local streets.

Vehicular screenline volumes crossing the North Screenline are shown in **Table 1.** Although the number of vehicles crossing the North Screenline each day has increased by approximately 32 percent since 1980, the trend from 2000 to 2010 has been a steady decline. In 2010, traffic crossing the screenline is fairly evenly split between interstates (51 percent on I-95 and I-676) and local streets (49 percent). The level of traffic on the interstates increased by approximately 14 percent since 2005, while the traffic on local streets decreased by approximately 16 percent. The overall net effect is a 3.3 percent decrease between 2005 and 2010 for vehicle trips crossing the North Screenline.

The Benjamin Franklin Parkway, which carries traffic from Kelly and West River drives in Fairmount Park, as well as from the Schuylkill Expressway via Spring Garden Street, continues to be the busiest of the local streets. In 2010, it had a screenline volume of 31,657 vehicles per day (vpd), a 28.6 percent decrease from 2005. The same trend is evident with the two other major local streets crossing the North Screenline. Broad Street had a 2010 screenline volume of 21,133 vpd, a 28.2 percent decrease from 2005; and Columbus Boulevard had a 2010 screenline volume of 19,509 vpd, a 24.5 percent decrease from 2005.

Passengers riding on public transit were counted crossing the North Screenline and are shown in **Table 2.** Although the total number of transit passengers crossing the North Screenline each day has declined by approximately 10 percent since 1980, the overall trend from 2000 to 2010 has been a steady increase. Public transportation ridership crossing the North Screenline increased by 12.6 percent between 2000 and 2005, and by 3.1 percent between 2005 and 2010. The greatest percentage increase since 2005 has been by regional rail. It increased from 42,892 passengers per day in 2005 to 49,355 passengers per day in 2010, a 15.1 percent increase.

The subway-elevated mode includes the Market-Frankford Subway Elevated (MFSE), the Broad Street Subway (BSS), and the Broad Ridge Spur (BRS). Of the three, only the BSS Line posted an increase between 2005 and 2010. Ridership on BSS increased from 67,337 to 73,712 passengers per day, a 9.5 percent increase. Ridership decreased by 2.9 percent on the BRS Line, and by 6.1 percent on the MFSE Line. Overall, for the subway-elevated mode, ridership increased by approximately 2 percent between 2005 and 2010.

Ridership on buses and trolleys has remained relatively flat since 2000. In 2000, there were 39,649 bus and trolley passengers crossing the North Screenline each day, and in 2010 there were 38,560. This is approximately a 2.7 percent decline between 2000 and 2010.

Pedestrian trips crossing the North Screenline in 2010 are displayed in **Table 3,** and bicycle trips are displayed in **Table 4.** This is the first version of the Travel Trends report to include data on these modes. Therefore, there is no data from previous years to compare to.

Figure 2 shows the highway and public transportation trends for the North Screenline. To make it possible to compare data across all modes, the highway vehicle counts were converted to person trips using average vehicle occupancy. The data is shown for the years 1980, 2000, 2005, and 2010. The data clearly shows the long-term trend since 1980, and the shift from public transportation to highway travel.

However, from 2000 to 2010, this longer-term trend has been reversing. Public transportation and in particular regional rail has been gaining back some of the ground lost after 1980. The average annual increase for transit over this time period was 2.4 percent between 2000 and 2005, and 0.6 percent between 2005 and 2010. The average annual percentage decrease for highway travel was 0.4 percent between 2000 and 2005, and 0.7 percent between 2005 and 2010.

In terms of mode split, transit accounted for approximately 38 percent of motorized person trips in 1980. This fell to 26 percent by 2000 and has since risen to 28 percent in 2005 and 30 percent in 2010.

Table 1:
Daily Highway Vehicle Trips Crossing the Center City North Screenline

Roadway	Average Daily Traffic Volume				Percentage Change			Average Annual Growth		
	1980	2000	2005	2010	1980 to 2000	2000 to 2005	2005 to 2010	1980 to 2000	2000 to 2005	2005 to 2010
Columbus Boulevard	18,324	21,231	25,829	19,509	15.9%	21.7%	–24.5%	0.7%	4.0%	–5.5%
Front Street	na	571	2,121	385		271.5%	–81.8%		30.0%	–28.9%
2nd Street	11,236	5,913	7,715	7,966	–47.4%	30.5%	3.2%	–3.2%	5.5%	0.6%
3rd Street	4,272	4,547	4,519	4,064	6.4%	–0.6%	–10.1%	0.3%	–0.1%	–2.1%
4th Street	4,026	4,823	4,742	4,022	19.8%	–1.7%	–15.2%	0.9%	–0.3%	–3.2%
5th Street	4,605	10,904	10,035	14,494	136.8%	–8.0%	44.4%	4.4%	–1.6%	7.6%
6th Street	10,484	8,397	6,696	7,074	–19.9%	–20.3%	5.6%	–1.1%	–4.4%	1.1%
7th Street	6,055	7,864	8,889	8,643	29.9%	13.0%	–2.8%	1.3%	2.5%	–0.6%
8th Street	9,211	5,753	5,648	6,432	–37.5%	–1.8%	13.9%	–2.3%	–0.4%	2.6%
9th Street	1,546	1,399	1,713	1,357	–9.5%	22.4%	–20.8%	–0.5%	4.1%	–4.6%
Ridge Avenue	3,417	4,033	4,153	3,879	18.0%	3.0%	–6.6%	0.8%	0.6%	–1.4%
10th Street	8,882	3,146	3,203	3,208	–64.6%	1.8%	0.1%	–5.1%	0.4%	0.0%
11th Street	3,055	4,084	4,609	6,488	33.7%	12.9%	40.8%	1.5%	2.4%	7.1%
12th Street	4,531	5,881	4,190	4,441	29.8%	–28.8%	6.0%	1.3%	–6.6%	1.2%
13th Street	4,356	4,896	4,928	4,249	12.4%	0.7%	–13.8%	0.6%	0.1%	–2.9%
Broad Street	31,537	29,957	29,447	21,133	–5.0%	–1.7%	–28.2%	–0.3%	–0.3%	–6.4%
15th Street	8,212	8,224	6,186	6,737	0.1%	–24.8%	8.9%	0.0%	–5.5%	1.7%
16th Street	5,561	7,891	8,932	8,363	41.9%	13.2%	–6.4%	1.8%	2.5%	–1.3%
17th Street	2,176	5,793	4,494	4,502	166.2%	–22.4%	0.2%	5.0%	–5.0%	0.0%
18th Street	4,363	6,683	6,854	4,051	53.2%	2.6%	–40.9%	2.2%	0.5%	–10.0%
19th Street	3,688	7,212	4,286	4,965	95.6%	–40.6%	15.8%	3.4%	–9.9%	3.0%
20th Street	6,445	7,242	7,402	5,762	12.4%	2.2%	–22.2%	0.6%	0.4%	–4.9%
21st Street	6,085	10,343	10,227	4,091	70.0%	–1.1%	–60.0%	2.7%	–0.2%	–16.7%
Benjamin Franklin Parkway	45,052	41,686	44,319	31,657	–7.5%	6.3%	–28.6%	–0.4%	1.2%	–6.5%
22nd Street	11,398	9,240	9,598	5,389	–18.9%	3.9%	–43.9%	–1.0%	0.8%	–10.9%
Subtotal	218,517	227,713	230,735	192,862	4.2%	1.3%	-16.4%	0.2%	0.3%	–3.5%
I-95	71,400	173,013	162,807	186,978	142.3%	–5.9%	14.8%	4.5%	–1.2%	2.8%
Ramp to I-676	7,987	13,260	13,130	13,208	66.0%	–1.0%	0.6%	2.6%	–0.2%	0.1%
Subtotal	79,387	186,273	175,937	200,187	134.6%	–5.5%	13.8%	4.4%	–1.1%	2.6%
TOTAL	**297,904**	**413,986**	**406,672**	**393,049**	**39.0%**	**–1.8%**	**–3.3%**	**1.7%**	**–0.4%**	**–0.7%**

Source: Delaware Valley Regional Planning Commission, 2010

Table 2:
Daily Public Transportation Person Trips Crossing the Center City North Screenline

		Passenger Count				Percentage Change			Average Annual Growth		
Route(s)	Type	1980	2000	2005	2010	1980 to 2000	2000 to 2005	2005 to 2010	1980 to 2000	2000 to 2005	2005 to 2010
25[a]	Bus	na	183	415	682	na	126.8%	64.3%	na	17.8%	10.4%
5[b]	Bus	1,645	455	529	564	–72.3%	16.3%	6.6%	–6.2%	3.1%	1.3%
MFSE	Subway	79,948	49,822	58,421	54,865	–37.7%	17.3%	–6.1%	–2.3%	3.2%	–1.2%
57[c]	Bus	na	2,118	2,599	2,457	na	22.7%	–5.5%	na	4.2%	–1.1%
50[d]	Bus	1,897	na	na	na	na	na	na	na	na	na
47, 47m[e]	Bus	5,080	4,874	5,043	4,538	–4.1%	3.5%	–10.0%	–0.2%	0.7%	–2.1%
61	Bus	2,495	1,783	2,025	1,889	–28.5%	13.6%	–6.7%	–1.7%	2.6%	–1.4%
RRD	Rail	37,338	34,514	42,892	49,355	–7.6%	24.3%	15.1%	–0.4%	4.4%	2.8%
BRS	Subway	4,674	6,726	7,603	7,381	43.9%	13.0%	–2.9%	1.8%	2.5%	–0.6%
23	Bus	4,876	3,698	4,341	4,716	–24.2%	17.4%	8.6%	–1.4%	3.3%	1.7%
BSS	Subway	74,760	62,185	67,337	73,712	–16.8%	8.3%	9.5%	–0.9%	1.6%	1.8%
C	Bus	10,121	5,001	5,518	4,509	–50.6%	10.3%	–18.3%	–3.5%	2.0%	–4.0%
2	Bus	4,549	2,349	2,306	2,438	–48.4%	–1.8%	5.7%	–3.3%	–0.4%	1.1%
33	Bus	8,528	7,805	7,041	6,283	–8.5%	–9.8%	–10.8%	–0.4%	–2.0%	–2.3%
7, 32[f], 48	Bus	13,430	9,158	8,884	8,409	–31.8%	–3.0%	–5.3%	–1.9%	–0.6%	–1.1%
38[g], 76[h]	Bus	na	2,225	2,177	2,075	na	–2.2%	–4.7%	na	–0.4%	–1.0%
TOTAL		**249,341**	**192,896**	**217,131**	**223,873**	**–22.6%**	**12.6%**	**3.1%**	**–1.3%**	**2.4%**	**0.6%**

Source: Southeastern Pennsylvania Transportation Authority, 2010

Notes: BRS = Broad Ridge Spur; BSS = Broad Street Subway; MFSE = Market-Frankford Subway Elevated; RRD = Regional Rail Division. [a]Route 25 was extended from Spring Garden Street to Pier 70 in 1998. [b]Route 5 shifted to Columbus Boulevard in 1993 and then returned to 2nd/3rd Streets in 1998. [c]Route 57 was extended through Center City in 1993. [d]Route 50 was discontinued in 1993. [e]Route 47m was established in 1993. [f]Route 32 was formerly Route A. [g]Route 38 was re-routed from Vine Street /John F. Kennedy Boulevard to the Benjamin Franklin Parkway in 1983. [h]Route 76 was extended across the North Screenline in 1990 and then discontinued in 2001.

Table 3:
Daily Pedestrian Person Trips
Crossing the Center City North Screenline

Street	Pedestrians
Christopher Columbus Boulevard	821
Front Street	176
2nd Street	518
3rd Street	669
4th Street	463
5th Street	196
6th Street	237
7th Street	395
8th Street	772
9th Street	315
Ridge Avenue	694
10th Street	1,039
11th Street	857
12th Street	923
13th Street	787
Broad Street	2,495
15th Street	1,436
16th Street	1,765
17th Street	1,389
18th Street	1,381
19th Street	1,232
20th Street	2,382
21st Street	1,557
Benjamin Franklin Parkway	1,121
22nd Street	1,259
TOTAL	**24,881**

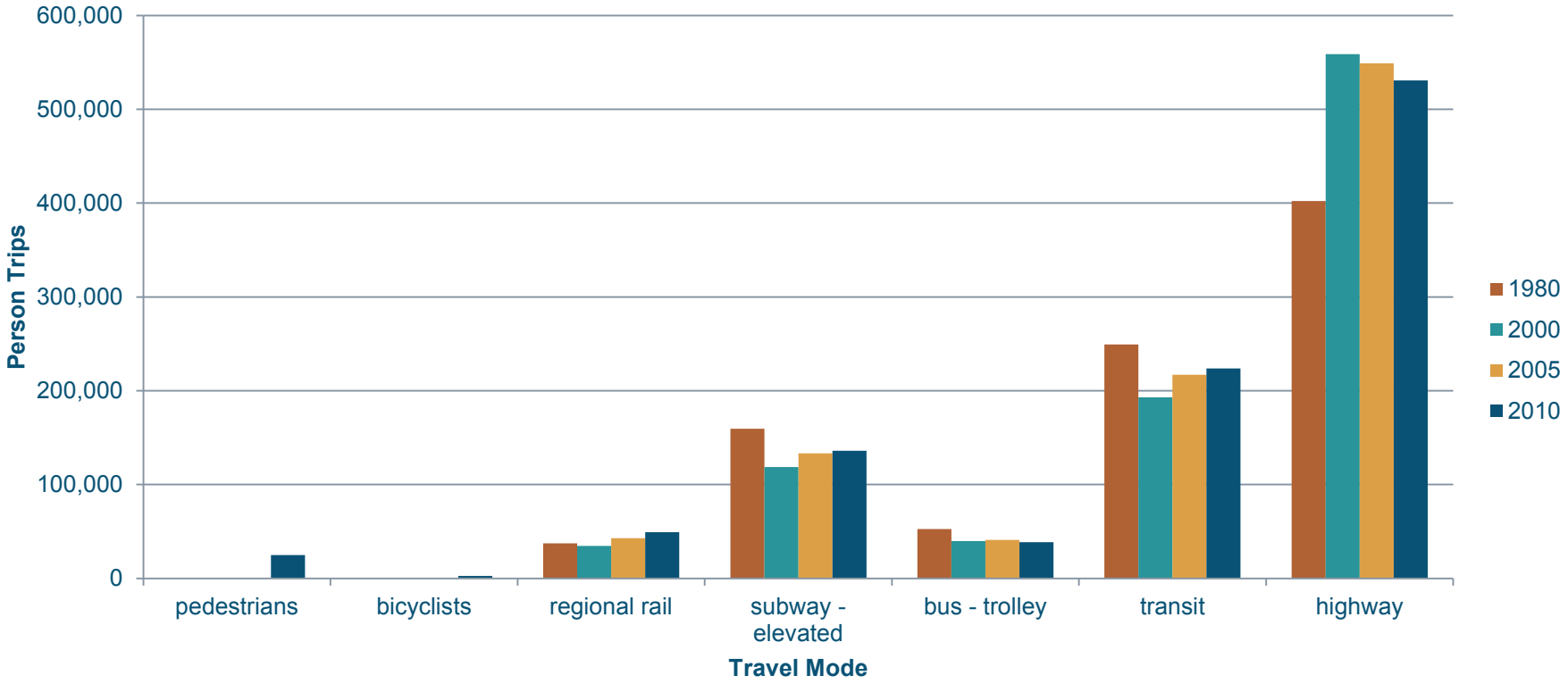
Source: Delaware Valley Regional Planning Commission, 2010

Table 4:
Daily Bicycle Person Trips
Crossing the Center City North Screenline

Street	Bicyclists
Christopher Columbus Boulevard	133
Front Street	4
2nd Street	55
3rd Street	277
4th Street	101
5th Street	149
6th Street	122
7th Street	125
8th Street	61
9th Street	21
Ridge Avenue	90
10th Street	119
11th Street	11
12th Street	67
13th Street	87
Broad Street	292
15th Street	261
16th Street	90
17th Street	12
18th Street	29
19th Street	156
20th Street	81
21st Street	116
Benjamin Franklin Parkway	135
22nd Street	81
TOTAL	**2,675**

Source: Delaware Valley Regional Planning Commission, 2010

Figure 2:
Center City North Screenline



	Daily Person Trips				Average Annual Growth		
	1980	2000	2005	2010	1980 to 2000	2000 to 2005	2005 to 2010
Pedestrian	na	na	na	24,881	na	na	na
Bicycle	na	na	na	2,675	na	na	na
Transit	249,341	192,896	217,131	223,873	–1.3%	2.4%	0.6%
Highway	402,170	558,881	549,007	530,616	1.7%	–0.4%	–0.7%
TOTAL wo Bike and Ped	**651,511**	**751,777**	**766,138**	**754,489**	**0.7%**	**0.4%**	**–0.3%**
TOTAL				**782,045**			

Source: Delaware Valley Regional Planning Commission, 2010

B. South Screenline

The South Screenline is located just south of South Street. South Street extends from a bridge crossing the Schuylkill River eastward to Front Street. This screenline also includes I-95 and Christopher Columbus Boulevard at approximately the same latitude as South Street. Highway traffic crossing this screenline was counted on the south side of South Street for local facilities. For I-95, a microwave radar installation north of the Walt Whitman Bridge provided the starting volume. This was then adjusted with counted ramp volumes between this location and the screenline. Public transportation ridership on the BSS was tallied at the Lombard/South Station. For transit buses, SEPTA personnel conducted counts at the bus stops located on the north (southbound buses) and south (northbound buses) sides of South Street.

Table 5 displays the individual roadway facility volumes along the South Screenline. Although total traffic has increased by 25.8 percent since 1980, the recent trend has been negative. Between 2005 and 2010, traffic volumes crossing the South Screenline fell by 47,198 vpd, from 286,890 to 239,692 vpd. This is a decrease of 16.5 percent over those five years. The decline occurred for both local streets (–20.0 percent) as well as I-95 (–12.1 percent). The two largest local streets crossing the South Screenline are Broad Street and Columbus Boulevard. Broad Street declined from 24,575 to 17,504 vpd between 2005 and 2010, a decrease of 28.8 percent. Columbus Boulevard declined from 31,368 to 18,917 vpd, a decrease of 39.7 percent.

The opposite is the case for public transportation ridership, shown in **Table 6.** As with the North Screenline, overall ridership crossing the South Screenline is down since 1980 but has been climbing steadily since 2000. Ridership increased 13.7 percent between 2000 and 2005, and 11.7 percent between 2005 and 2010. The one subway line that crosses the South Screenline (BSS) increased from 28,837 to 34,699 passengers per day between 2005 and 2010. This is an increase of 20.3 percent. Overall, bus service increased from 30,421 to 31,485 passengers per day, an increase of 3.5 percent.

Pedestrian trips crossing the South Screenline in 2010 are displayed in **Table 7,** and bicycle trips are displayed in **Table 8.** This is the first version of the Travel Trends report to include data on these modes.

Figure 3 shows the highway and public transportation trends for the South Screenline. As with the North Screenline, the data shows the initial decrease in public transit in favor of highway travel after 1980, and then the gradual comeback of transit ridership since 2000. Although not enough to bring it back to the ridership level that occurred in 1980, ridership crossing the South Screenline has increased by 27.0 percent since 2000. During this same time period, highway travel crossing the South Screenline has decreased by 16.6 percent.

In terms of mode split, transit accounted for approximately 22 percent of person trips in 1980. This fell to 12 percent by 2000 and has since risen to 13 percent in 2005 and 17 percent in 2010.

Table 5:
Daily Highway Vehicle Trips Crossing the Center City South Screenline

	Average Daily Traffic Volume				Percentage Change			Average Annual Growth		
Roadway	1980	2000	2005	2010	1980 to 2000	2000 to 2005	2005 to 2010	1980 to 2000	2000 to 2005	2005 to 2010
27th Street/ Schuylkill Avenue	3,898	3,823	2,647	5,226	–1.9%	–30.8%	97.4%	–0.1%	–7.1%	14.6%
Taney Street	Not counted	177	178	59	na	0.6%	–66.9%	na	0.1%	–19.8%
26th Street	207	212	132	58	2.4%	–37.7%	–56.1%	0.1%	–9.0%	–15.2%
24th Street	Not counted	1,653	1,858	1,924	na	12.4%	3.6%	na	2.4%	0.7%
Grays Ferry Avenue	9,242	2,868	3,261	2,429	–69.0%	13.7%	–25.5%	–5.7%	2.6%	–5.7%
22nd Street	5,324	5,459	6,324	6,603	2.5%	15.8%	4.4%	0.1%	3.0%	0.9%
21st Street	3,898	6,002	5,293	4,159	54.0%	–11.8%	–21.4%	2.2%	–2.5%	–4.7%
20th Street	2,898	4,910	5,037	3,878	69.4%	2.6%	–23.0%	2.7%	0.5%	–5.1%
19th Street	2,996	3,038	2,866	3,073	1.4%	–5.7%	7.2%	0.1%	–1.2%	1.4%
18th Street	2,976	5,015	4,220	3,821	68.5%	–15.9%	–9.5%	2.6%	–3.4%	–2.0%
17th Street	2,957	5,125	4,028	3,831	73.3%	–21.4%	–4.9%	2.8%	–4.7%	–1.0%
16th Street	3,143	5,852	4,479	4,798	86.2%	–23.5%	7.1%	3.2%	–5.2%	1.4%
15th Street	2,437	6,183	3,225	3,374	153.7%	–47.8%	4.6%	4.8%	–12.2%	0.9%
Broad Street	29,518	23,912	24,575	17,504	–19.0%	2.8%	–28.8%	–1.0%	0.5%	–6.6%
13th Street	2,979	3,890	3,503	3,248	30.6%	–9.9%	–7.3%	1.3%	–2.1%	–1.5%
12th Street	3,184	4,418	3,816	3,640	38.8%	–13.6%	–4.6%	1.7%	–2.9%	–0.9%
11th Street	4,575	4,696	4,263	3,920	2.6%	–9.2%	–8.0%	0.1%	–1.9%	–1.7%
10th Street	2,239	6,167	4,225	3,493	175.4%	–31.5%	–17.3%	5.2%	–7.3%	–3.7%
9th Street	2,955	5,544	4,305	2,587	87.6%	–22.3%	–39.9%	3.2%	–4.9%	–9.7%
8th Street	5,291	4,800	4,784	3,758	–9.3%	–0.3%	–21.4%	–0.5%	–0.1%	–4.7%
7th Street	4,142	4,855	4,061	3,407	17.2%	–16.4%	–16.1%	0.8%	–3.5%	–3.5%
6th Street	4,409	4,311	4,609	3,831	–2.2%	6.9%	–16.9%	–0.1%	1.3%	–3.6%
5th Street	4,604	6,615	5,666	4,580	43.7%	–14.3%	–19.2%	1.8%	–3.0%	–4.2%
4th Street	4,325	6,555	4,407	3,447	51.6%	–32.8%	–21.8%	2.1%	–7.6%	–4.8%
3rd Street	3,963	7,003	5,065	3,460	76.7%	–27.7%	–31.7%	2.9%	–6.3%	–7.3%
2nd Street	6,196	7,276	4,272	3,180	17.4%	–41.3%	–25.6%	0.8%	–10.1%	–5.7%
Front Street	4,741	3,746	4,825	3,614	–21.0%	28.8%	–25.1%	–1.2%	5.2%	–5.6%
Columbus Boulevard	23,442	24,793	31,368	18,917	5.8%	26.5%	–39.7%	0.3%	4.8%	–9.6%
Subtotal	146,539	168,898	157,292	125,819	15.3%	–6.9%	–20.0%	0.7%	–1.4%	–4.4%
I-95	44,000	118,393	129,598	113,873	169.1%	9.5%	–12.1%	5.1%	1.8%	–2.6%
Subtotal	44,000	118,393	129,598	113,873	169.1%	9.5%	–12.1%	5.1%	1.8%	–2.6%
TOTAL	**190,539**	**287,291**	**286,890**	**239,692**	**50.8%**	**–0.1%**	**–16.5%**	**2.1%**	**0.0%**	**–3.5%**

Source: Delaware Valley Regional Planning Commission, 2010

Table 6:
Daily Public Transportation Person Trips Crossing the Center City South Screenline

		Passenger Count				Percentage Change			Average Annual Growth		
Route(s)	Type	1980	2000	2005	2010	1980 to 2000	2000 to 2005	2005 to 2010	1980 to 2000	2000 to 2005	2005 to 2010
7, 12	Bus	5,282	3,215	3,295	3,334	–39.1%	2.5%	1.2%	–2.5%	0.5%	0.2%
17	Bus	8,556	6,686	7,081	7,978	–21.9%	5.9%	12.7%	–1.2%	1.2%	2.4%
2	Bus	4,520	2,000	2,040	2,044	–55.8%	2.0%	0.2%	–4.0%	0.4%	0.0%
27, 32[a]	Bus	na	672	831	1,182	na	23.7%	42.2%	na	4.3%	7.3%
C	Bus	4,797	2,187	2,294	1,871	–54.4%	4.9%	–18.4%	–3.9%	1.0%	–4.0%
BSS	Subway	36,853	25,251	28,837	34,699	–31.5%	14.2%	20.3%	–1.9%	2.7%	3.8%
23	Bus	3,193	2,884	4,140	4,949	–9.7%	43.6%	19.5%	–0.5%	7.5%	3.6%
47m[b]	Bus	na	814	540	486	na	–33.7%	–10.0%	na	–7.9%	–2.1%
47[c]	Bus	5,512	4,585	6,271	5,643	–16.8%	36.8%	–10.0%	–0.9%	6.5%	–2.1%
50[d]	Bus	2,035	Na	na	na	na	na	na	na	na	na
57[e]	Bus	na	3,654	3,543	3,354	na	–3.0%	–5.3%	na	–0.6%	–1.1%
5[f]	Bus	3,373	na	na	na	na	na	na	na	na	na
25[g]	Bus	Na	158	386	644	na	144.3%	66.8%	na	19.6%	10.8%
TOTAL		**74,121**	**52,106**	**59,258**	**66,184**	**–29.7%**	**13.7%**	**11.7%**	**–1.7%**	**2.6%**	**2.2%**

Source: Southeastern Pennsylvania Transportation Authority, 2010

Notes: BSS = Broad Street Subway. C = Bus Route C. [a]Routes 27 and 32 were extended to Carpenter Street in 1997. [b]Route 47m was established in 1993; southbound service was added in 1995. [c]Route 47 shifted from 8th/9th Streets in 1993. [d]Route 50 was discontinued in 1993. [e]Route 57 was extended through Center City in 1993. [f]Route 5 was truncated at Society Hill in 1993. [g]Route 25 was extended south to Pier 70 in 1998.

Table 7:
Daily Pedestrian Person Trips
Crossing the Center City South Screenline

Street	Pedestrians
Schuylkill Avenue	195
27th Street	226
Taney Street	153
26th Street	172
24th Street	792
Grays Ferry Avenue	2,020
22nd Street	1,959
21st Street	1,726
20th Street	1,995
19th Street	1,718
18th Street	1,975
17th Street	1,789
16th Street	1,600
15th Street	1,840
Broad Street	4,687
13th Street	1,081
12th Street	1,405
11th Street	1,862
10th Street	2,509
9th Street	3,399
8th Street	2,254
7th Street	2,194
6th Street	1,772
5th Street	2,501
4th Street	5,358
3rd Street	2,850
2nd Street	2,618
Front Street	1,062
Christopher Columbus Boulevard	582
TOTAL	**54,294**

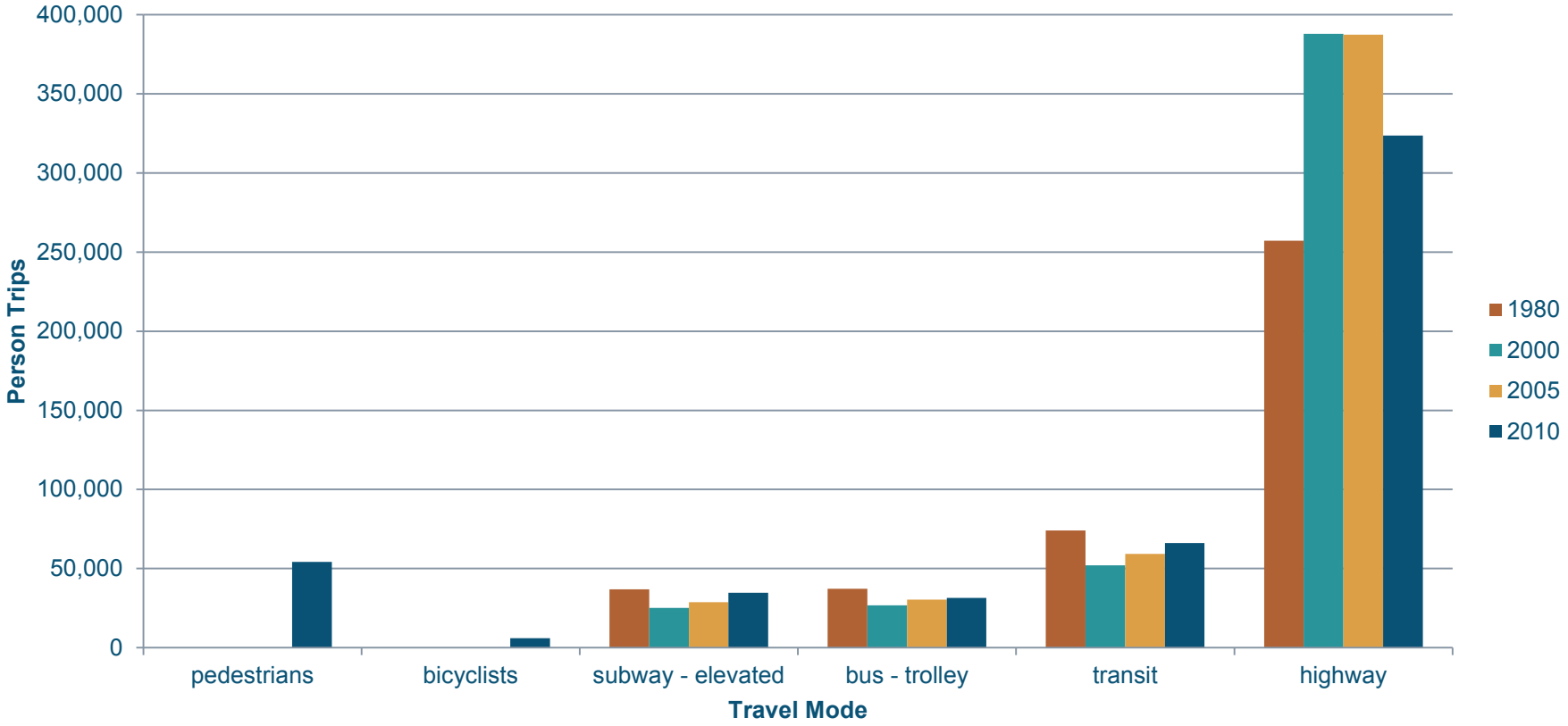
Source: Delaware Valley Regional Planning Commission, 2010

Table 8:
Daily Bicycle Person Trips
Crossing the Center City South Screenline

Street	Bicyclists
Schuylkill Avenue	7
27th Street	14
Taney Street	6
26th Street	8
24th Street	94
Gray's Ferry Avenue	125
22nd Street	478
21st Street	204
20th Street	228
19th Street	215
18th Street	176
17th Street	209
16th Street	313
15th Street	185
Broad Street northbound lanes	450
Broad Street southbound lanes	237
13th Street	243
12th Street	56
11th Street	277
10th Street	364
9th Street	7
8th Street	304
7th Street	236
6th Street	277
5th Street	193
4th Street	312
3rd Street	300
2nd Street	154
Front Street	102
Christopher Columbus Boulevard northbound lanes	118
Christopher Columbus Boulevard southbound lanes	52
TOTAL	**5,944**

Source: Delaware Valley Regional Planning Commission, 2010

Figure 3:
Center City South Screenline



	Daily Person Trips				Average Annual Growth		
	1980	2000	2005	2010	1980 to 2000	2000 to 2005	2005 to 2010
Pedestrian	na	na	na	54,294	na	na	na
Bicycle	na	na	na	5,944	na	na	na
Transit	74,121	52,106	59,258	66,184	–1.7%	2.6%	2.2%
Highway	257,228	387,843	387,302	323,584	2.1%	0.0%	–3.5%
TOTAL wo Bike and Ped	**331,349**	**439,949**	**446,560**	**389,768**	**1.4%**	**0.3%**	**–2.7%**
TOTAL				**450,006**			

Source: Delaware Valley Regional Planning Commission, 2010

C. East Screenline

The Benjamin Franklin Bridge (I-676, US 30) provides the only entry into Center City from the east for autos, public transit passengers, bicyclists, and pedestrians[4]. The bridge, which opened in 1926, carries vehicular traffic, the PATCO rail line (subway-elevated) from Camden County stations, buses operated by NJ Transit serving southern New Jersey, as well as bicyclists and pedestrians. DRPA supplied vehicle traffic counts used in this report, based on tolls collected in the westbound direction and passenger volumes on PATCO. NJ Transit supplied passenger count information from their on-board fare system.

The number of highway vehicles crossing the Benjamin Franklin Bridge, as shown in **Table 9,** has decreased from 102,670 in 2005 to 101,342 in 2010, a decrease of 1.3 percent. Unlike the North and South screenlines, the decrease in highway volumes was not offset by an increase in public transit ridership. For the East Screenline, transit ridership also decreased, from 40,676 passengers per day in 2005 to 38,152 passengers per day in 2010. This was a decrease of 6.2 percent.

Pedestrian trips crossing the East Screenline in 2010 are displayed in **Table 10,** and bicycle trips are displayed in **Table 11.**

Figure 4 shows a comparison of highway and public transit person trips crossing the East Screenline. The overall trend since 1980 is the same as for the North and South screenlines, with a significant increase in the share of transportation made by auto and a corresponding decrease in the share made by public transit. However the changes for the East Screenline since 2000 have been more muted, with no real shifting between modes. For example, in terms of mode split, transit accounted for approximately 36 percent of person trips in 1980. This fell to 23 percent by 2000, stayed at 23 percent in 2005, and then decreased slightly to 22 percent in 2010.

[4] The RiverLink ferry service operates between Penn's Landing in Philadelphia and the Adventure Aquarium in Camden, New Jersey from May through September.

Table 9:
Daily Highway Vehicle Trips and Transit Person Trips Crossing the Center City East Screenline

	Highway and Passenger Counts				Percentage Change			Average Annual Growth		
	1980	2000	2005	2010	1980 to 2000	2000 to 2005	2005 to 2010	1980 to 2000	2000 to 2005	2005 to 2010
Highway Vehicle Trips (AADT)										
Benjamin Franklin Bridge	62,295	98,734	102,670	101,342	58.5%	4.0%	–1.3%	2.3%	0.8%	–0.3%
Transit Person Trips										
New Jersey Transit Bus	11,951	6,395	6,756	6,562	–46.5%	5.6%	–2.9%	–3.1%	1.1%	–0.6%
PATCO	36,026	33,234	33,920	31,590	–7.7%	2.1%	–6.9%	–0.4%	0.4%	–1.4%
TOTAL	**47,977**	**39,629**	**40,676**	**38,152**	**–17.4%**	**2.6%**	**–6.2%**	**–1.0%**	**0.5%**	**–1.3%**

Source: Delaware River Port Authority, New Jersey Transit, PATCO, 2010

Note: AADT = Annual Average Daily Traffic; PATCO = Port Authority Transit Corporation.

Table 10:
Daily Pedestrian Person Trips Crossing the Center City East Screenline

Street	Pedestrians
Ben Franklin Bridge	739
TOTAL	**739**

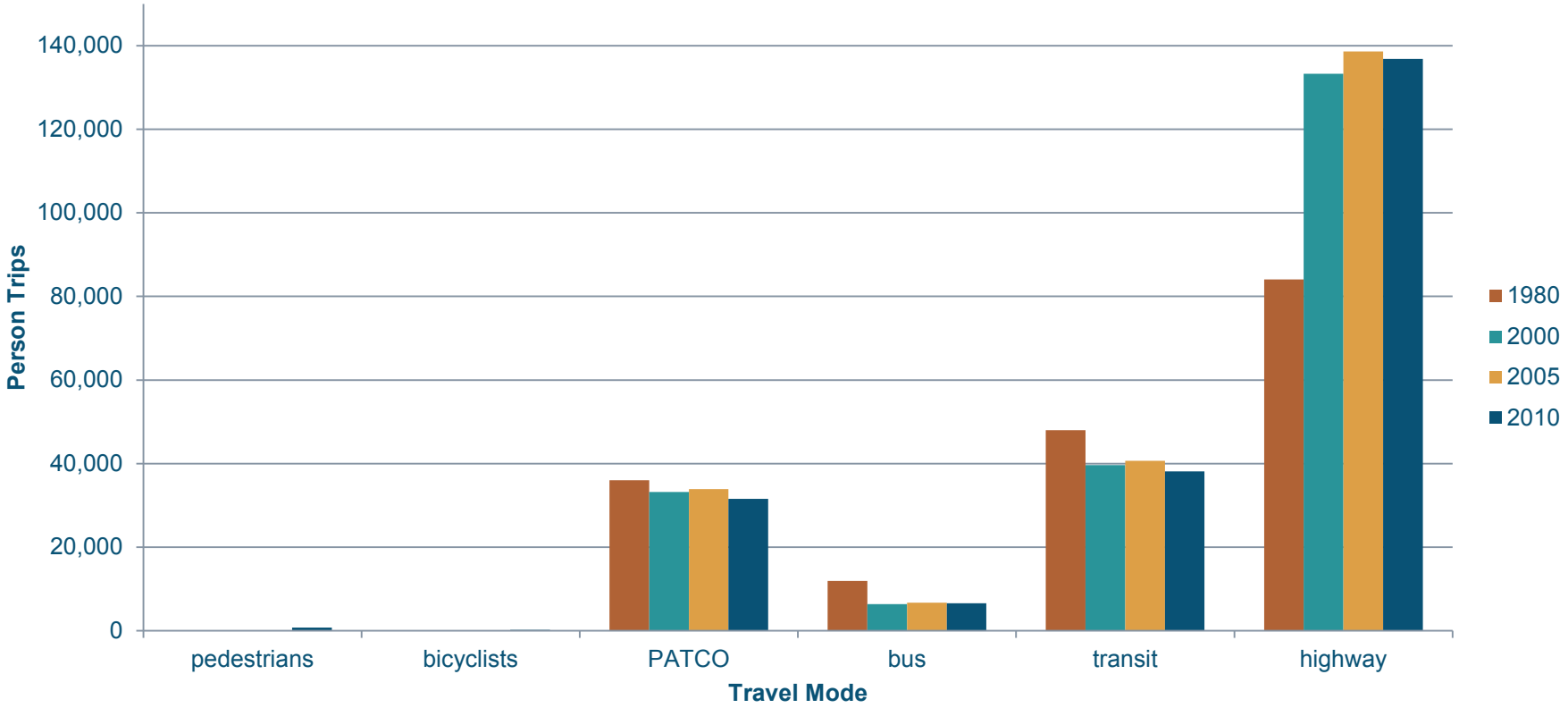
Source: Delaware Valley Regional Planning Commission, 2010

Table 11:
Daily Bicycle Person Trips Crossing the Center City East Screenline

Street	Bicyclists
Ben Franklin Bridge	232
TOTAL	**232**

Source: Delaware Valley Regional Planning Commission, 2010

Figure 4:
Center City East Screenline



	Daily Person Trips				Average Annual Growth		
	1980	2000	2005	2010	1980 to 2000	2000 to 2005	2005 to 2010
Pedestrians	na	na	na	739	na	na	na
Bicycle	na	na	na	232	na	na	na
Transit	47,977	39,629	40,676	38,152	–1.0%	0.5%	–1.3%
Highway	84,098	133,291	138,605	136,812	2.3%	0.8%	–0.3%
TOTAL wo Bike and Ped	**132,075**	**172,920**	**179,281**	**174,964**	**1.4%**	**0.7%**	**–0.5%**
TOTAL				**175,935**			

Source: Delaware Valley Regional Planning Commission, 2010

D. West Screenline

The section of the Schuylkill River comprising the West Screenline is crossed by six bridges, five highways, SEPTA's regional rail Center City trunk line, the MFSE Line, and five subway-surface streetcar lines. Highway traffic crossing this screenline was counted on the bridges over the Schuylkill River. SEPTA provided regional rail conductor counts west of the 30th Street Station. These were adjusted by boardings and alightings at the 30th Street Station to attain the number of passengers crossing the screenline. The MFSE counts and subway surface cars share a station (although different platforms) at 30th Street, and this is where ridership data was collected. Bus patronage was tallied at the last stop prior to buses crossing the river for both inbound and outbound service.

The South Street Bridge was closed for a portion of 2010, while it was being re-constructed. The bus volumes crossing the West Screenline were taken while the bridge was closed to vehicular traffic, and SEPTA Routes 12 and 40 were temporarily re-routed. The highway volumes were taken after the bridge had re-opened.

Table 12 provides the individual highway facility counts for the bridges crossing the West Screenline. There was a fairly significant drop in highway volumes between 2005 and 2010. Traffic volumes decreased from 218,899 vpd in 2005 to 186,954 vpd in 2010, a decrease of 31,945 vpd (14.6 percent). The Vine Expressway (I-676) decreased by 17.0 percent, and local streets decreased by 10.7 percent. On the two busiest local streets, volumes declined on Market Street from 19,142 to 15,676 but increased on South Street from 19,341 to 20,416.

As with the North and South screenlines, the decline in highway volumes was accompanied by an increase in public transit ridership. Overall, transit ridership, shown in **Table 13,** increased by approximately 4,300 passengers per day, or 2.6 percent. The greatest percentage increase was by regional rail, which increased from approximately 44,500 to 51,700 passengers per day (16.3 percent). The Market-Frankford Subway-Elevated line also increased by 2.3 percent. But many of the bus routes saw declines in ridership between 2005 and 2010.

Pedestrian trips crossing the West Screenline in 2010 are displayed in **Table 14,** and bicycle trips are displayed in **Table 15.**

Figure 5 shows both the highway and transit data in terms of person trips. As with the North and South screenlines, the data shows the initial decrease in public transit in favor of highway travel after 1980, and then the gradual comeback of transit ridership since 2000. Although not enough to bring it back to the ridership level that occurred in 1980, ridership crossing the West Screenline has increased by 10.3 percent since 2000. During this same time period, highway travel crossing the West Screenline has decreased by 15 percent.

In terms of mode split, transit accounted for approximately 47 percent of person trips in 1980. This fell to 35 percent by 2000 and has since risen to 36 percent in 2005 and 41 percent in 2010.

Table 12:
Daily Highway Vehicle Trips Crossing the Center City West Screenline

	Average Daily Traffic Volume				Percentage Change			Average Annual Growth		
Roadway	**1980**	**2000**	**2005**	**2010**	**1980 to 2000**	**2000 to 2005**	**2005 to 2010**	**1980 to 2000**	**2000 to 2005**	**2005 to 2010**
John F. Kennedy Boulevard	14,072	13,618	14,392	11,102	–3.2%	5.7%	–22.9%	–0.2%	1.1%	–5.1%
Market Street	18,454	22,617	19,142	15,676	22.6%	–15.4%	–18.1%	1.0%	–3.3%	–3.9%
Chestnut Street	15,677	14,151	14,036	13,076	–9.7%	–0.8%	–6.8%	–0.5%	–0.2%	–1.4%
Walnut Street	17,379	19,104	17,345	14,978	9.9%	–9.2%	–13.6%	0.5%	–1.9%	–2.9%
South Street	19,815	22,791	19,341	20,416	15.0%	–15.1%	5.6%	0.7%	–3.2%	1.1%
Subtotal	85,397	92,281	84,256	75,248	8.1%	–8.7%	–10.7%	0.4%	–1.8%	–2.2%
I-676	77,934	127,658	134,643	111,705	63.8%	5.5%	–17.0%	2.5%	1.1%	–3.7%
Subtotal	77,934	127,658	134,643	111,705	63.8%	5.5%	–17.0%	2.5%	1.1%	–3.7%
TOTAL	**163,331**	**219,939**	**218,899**	**186,954**	**34.7%**	**–0.5%**	**–14.6%**	**1.5%**	**–0.1%**	**–3.1%**

Source: Delaware Valley Regional Planning Commission, 2010

Table 13:
Daily Public Transportation Person Trips Crossing the Center City West Screenline

		Passenger Count				Percentage Change			Average Annual Growth		
Route(s)	**Type**	**1980**	**2000**	**2005**	**2010**	**1980 to 2000**	**2000 to 2005**	**2005 to 2010**	**1980 to 2000**	**2000 to 2005**	**2005 to 2010**
12[a], 40[b]	Bus	2,237	1,612	1,796	1,886	–27.9%	11.4%	5.0%	–1.6%	2.2%	1.0%
9, 21, 42	Bus	19,423	11,743	14,420	10,776	–39.5%	22.8%	–25.3%	–2.5%	4.2%	–5.7%
31, 62[c], 124, 125	Bus	2,477	2,890	2,517	2,435	16.7%	–12.9%	–3.3%	0.8%	–2.7%	–0.7%
Subway Surface	Subway	33,816	29,928	33,070	32,205	–11.5%	10.5%	–2.6%	–0.6%	2.0%	–0.5%
Market-Frankfort Line	Subway	75,376	63,486	67,999	69,536	–15.8%	7.1%	2.3%	–0.9%	1.4%	0.4%
Regional Rail Division	Rail	48,488	42,788	44,499	51,744	–11.8%	4.0%	16.3%	–0.6%	0.8%	3.1%
27	Subway	5,045	2,205	2,473	2,469	–56.3%	12.2%	–0.2%	–4.1%	2.3%	0.0%
44, 121[d]	Subway	7,681	2,740	2,487	2,536	–64.3%	–9.2%	2.0%	–5.0%	–1.9%	0.4%
TOTAL		**194,543**	**157,392**	**169,261**	**173,587**	**–19.1%**	**7.5%**	**2.6%**	**–1.1%**	**1.5%**	**0.5%**

Source: Southeastern Pennsylvania Transportation Authority, 2010

Note: [a]Route 12 bus service was re-routed to the South Screenline during the South Street Bridge re-construction. [b]Route 40 bus service was re-routed to the Chestnut Street Bridge during the South Street Bridge re-construction. [c]Route 62 bus service is the former Route 61 Express. [d]Route 121 is no longer in service, beginning in 2005.

Table 14:
Daily Pedestrian Person Trips Crossing the Center City West Screenline

Street	Pedestrians
John F. Kennedy Boulevard	1,788
Market Street Bridge	4,163
Chestnut Street Bridge	1,690
Walnut Street Bridge	4,058
South Street Bridge	1,796
TOTAL	**13,495**

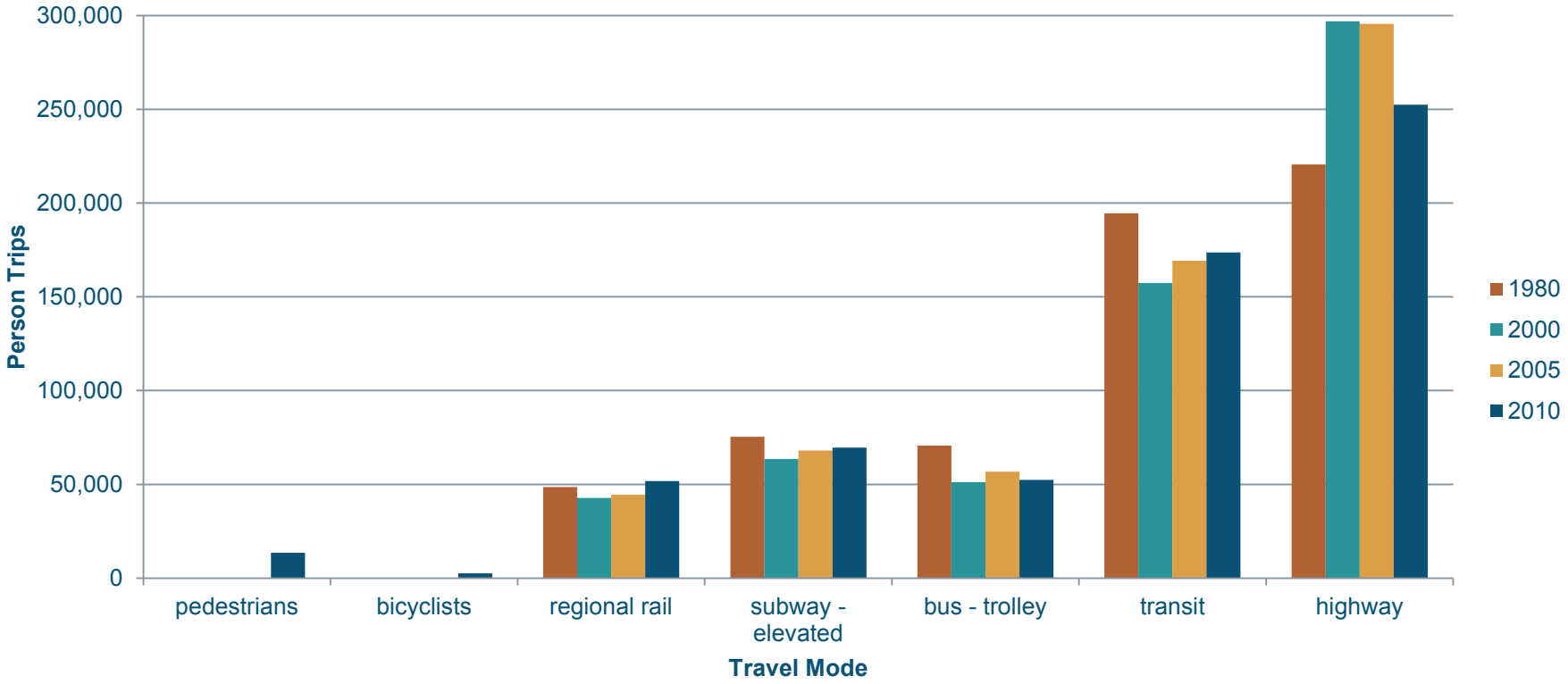
Source: Delaware Valley Regional Planning Commission, 2010

Table 15:
Daily Bicycle Person Trips Crossing the Center City West Screenline

Street	Bicyclists
John F. Kennedy Boulevard	7
Market Street Bridge	197
Chestnut Street Bridge	447
Walnut Street Bridge	577
South Street Bridge	1,359
TOTAL	**2,587**

Source: Delaware Valley Regional Planning Commission, 2010

Figure 5:
Center City West Screenline



	Daily Person Trips				Average Annual Growth		
	1980	2000	2005	2010	1980 to 2000	2000 to 2005	2005 to 2010
Pedestrian	na	na	na	13,495	na	na	na
Bicycle	na	na	na	2,587	na	na	na
Transit	194,543	157,392	169,261	173,587	–1.1%	1.5%	0.5%
Highway	220,497	296,918	295,514	252,388	1.5%	–0.1%	–3.1%
TOTAL wo Bike and Ped	**415,040**	**454,310**	**464,775**	**425,975**	**0.5%**	**0.5%**	**–1.7%**
TOTAL				**442,057**			

Source: Delaware Valley Regional Planning Commission, 2010

E. Total Cordon Line Travel Volume

The total public transit and highway person trips crossing the Center City Cordon Line in 2010 were tabulated and compared to data from 1980, 2000, and 2005 in order to assess the long- and short-term trends for each travel mode. **Table 16** displays the number of trips by mode and screenline for each reported year, and **Table 17** shows the percentage change between each year.

The total number of people crossing the Philadelphia CBD Cordon Line on a daily basis has increased from 1.5 million person trips in 1980 to 1.7 million in 2010, an increase of approximately 14 percent over this 30-year period. Most of this growth occurred between 1980 and 2000. Growth slowed to a 2 percent increase between 2000 and 2005, before turning negative from 2005 to 2010. The total number of person trips crossing the CBD cordon each day decreased by 6 percent between 2005 and 2010 as the economy slowed and unemployment increased during the Great Recession (December 2007 to June 2009).

The mode of travel has also changed since 1980. As **Figure 6** shows, the period from 1980 to 2000 saw a sharp increase in trips by auto and a decline in the number of trips by public transit. Highway trips increased by approximately 43 percent during this period, while transit trips decreased by 22 percent. Transit's share of the total person trips crossing the CBD cordon each day declined from 37 to 24 percent.

Since 2000, these trends have reversed. The number of trips made by auto declined by 0.5 percent between 2000 and 2005 and by 9.3 percent between 2005 and 2010. The number of trips by transit increased by 10 percent between 2000 and 2005 and by 3.2 percent between 2005 and 2010. Transit's share of person trips rose from 24 percent in 2000 to 26 percent in 2005 and to 29 percent in 2010. But while the total number of highway person trips made in 2010 is still well above the level made in 1980, the total number of transit person trips is still below the 1980 level.

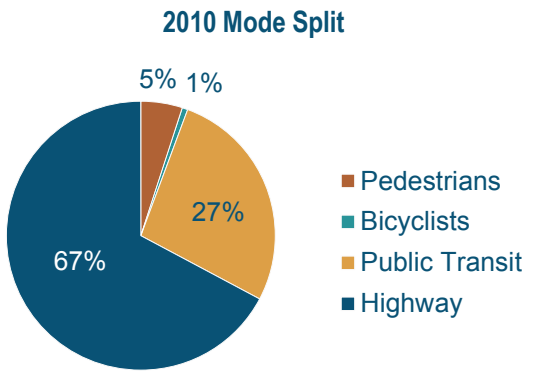
Most of the resurgence in transit ridership to and from the Philadelphia CBD is attributable to regional rail. The number of passengers using regional rail each day increased by 13 percent between 2000 and 2005 and by 16 percent between 2005 and 2010. While there has been zero growth in bus service, and modest growth in subway-elevated, the number of passengers riding regional rail in 2010 actually exceeds the number riding in 1980.

Table 16:
Summary of Trends in Weekday Person Trips Crossing the Center City Cordon Line

	North				South			
	1980	2000	2005	2010	1980	2000	2005	2010
Pedestrians				24,881				54,294
Bicyclists				2,675				5,944
Regional Rail	37,338	34,514	42,892	49,355				
Subway-Elevated	159,382	118,733	133,361	135,958	36,853	25,251	28,837	34,699
Bus-Trolley	52,621	39,649	40,878	38,560	37,268	26,855	30,421	31,485
Transit	249,341	192,896	217,131	223,873	74,121	52,106	59,258	66,184
Highway	402,170	558,881	549,007	530,616	257,228	387,843	387,302	323,584
TOTAL wo Bike and Ped	651,511	751,777	766,138	754,489	331,349	439,949	446,560	389,768
TOTAL				782,045				450,006

	East				West			
	1980	2000	2005	2010	1980	2000	2005	2010
Pedestrians				739				13,495
Bicyclists				232				2,587
Regional Rail					48,488	42,788	44,499	51,744
Subway-Elevated	36,026	33,234	33,920	31,590	75,376	63,486	67,999	69,536
Bus-Trolley	11,951	6,395	6,756	6,562	70,679	51,118	56,763	52,307
Transit	47,977	39,629	40,676	38,152	194,543	157,392	169,261	173,587
Highway	84,098	133,291	138,605	136,812	220,497	296,918	295,514	252,388
TOTAL wo Bike and Ped	132,075	172,920	179,281	174,964	415,040	454,310	464,775	425,975
TOTAL				175,935				442,057

	TOTAL			
	1980	2000	2005	2010
Pedestrians				93,409
Bicyclists				11,438
Regional Rail	85,826	77,302	87,391	101,099
Subway-Elevated	307,637	240,704	264,117	271,783
Bus-Trolley	172,519	124,017	134,818	128,914
Transit	565,982	442,023	486,326	501,796
Highway	963,993	1,376,933	1,370,427	1,243,400
TOTAL wo Bike and Ped	**1,529,975**	**1,818,956**	**1,856,753**	**1,745,196**
TOTAL				**1,850,043**



Source: Delaware Valley Regional Planning Commission, 2010

Table 17:
Summary of Changes in Weekday Person Trips Crossing the Center City Cordon Line

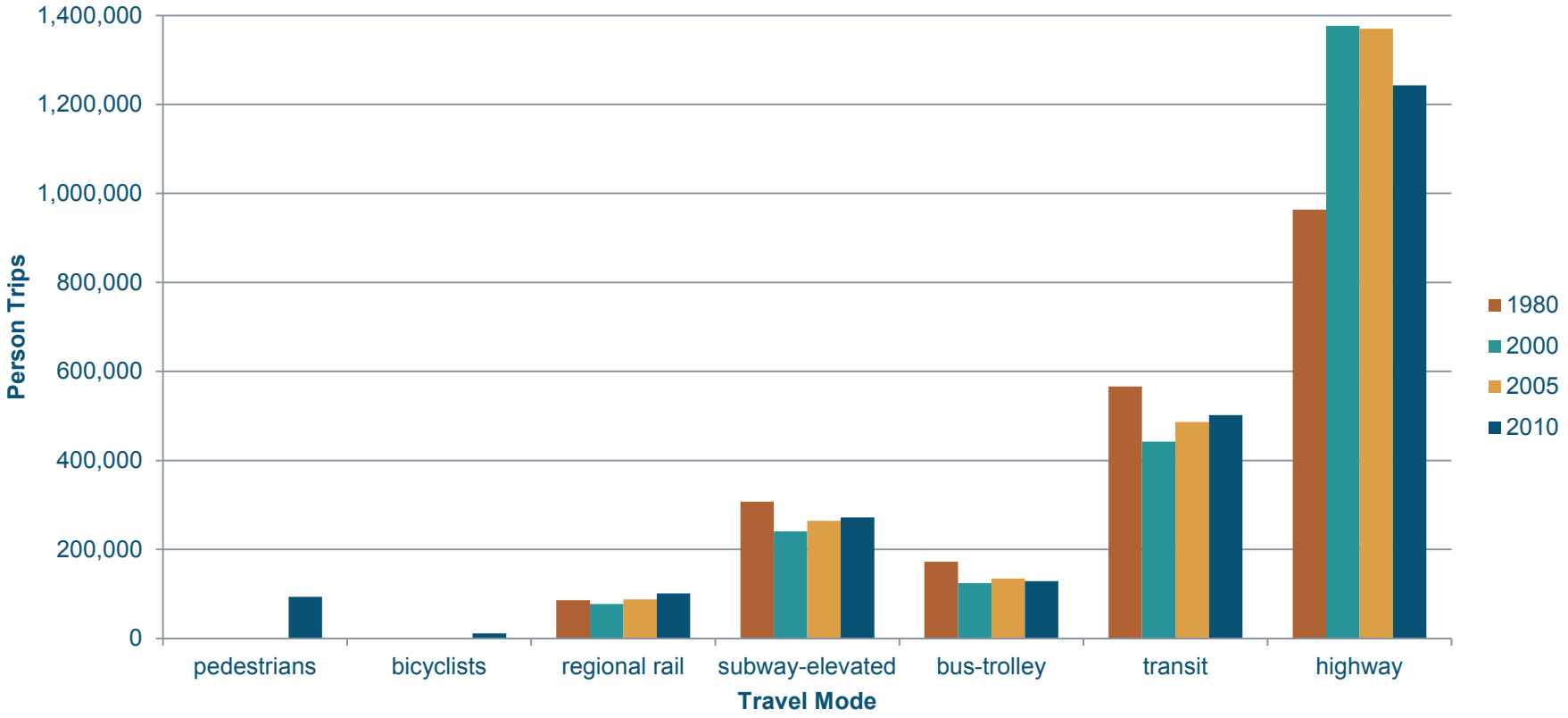
	North			South		
	1980–2000	2000–2005	2005–2010	1980–2000	2000–2005	2005–2010
Regional Rail	–7.6%	24.3%	15.1%			
Subway-Elevated	–25.5%	12.3%	1.9%	–31.5%	14.2%	20.3%
Bus-Trolley	–24.7%	3.1%	–5.7%	–27.9%	13.3%	3.5%
Transit	–22.6%	12.6%	3.1%	–29.7%	13.7%	11.7%
Highway	39.0%	–1.8%	–3.3%	50.8%	–0.1%	–16.5%
TOTAL wo Bike and Ped	15.4%	1.9%	–1.5%	32.8%	1.5%	–12.7%

	East			West		
	1980–2000	2000–2005	2005–2010	1980–2000	2000–2005	2005–2010
Regional Rail				–11.8%	4.0%	16.3%
Subway-Elevated	–7.7%	2.1%	–6.9%	–15.8%	7.1%	2.3%
Bus-Trolley	–46.5%	5.6%	–2.9%	–27.7%	11.0%	–7.9%
Transit	–17.4%	2.6%	–6.2%	–19.1%	7.5%	2.6%
Highway	58.5%	4.0%	–1.3%	34.7%	–0.5%	–14.6%
TOTAL wo Bike and Ped	30.9%	3.7%	–2.4%	9.5%	2.3%	–8.3%

	TOTAL		
	1980–2000	2000–2005	2005–2010
Regional Rail	–9.9%	13.1%	15.7%
Subway-Elevated	–21.8%	9.7%	2.9%
Bus-Trolley	–28.1%	8.7%	–4.4%
Transit	–21.9%	10.0%	3.2%
Highway	42.8%	–0.5%	–9.3%
TOTAL wo Bike and Ped	**18.9%**	**2.1%**	**–6.0%**

Source: Delaware Valley Regional Planning Commission, 2010

Figure 6:
Total Center City Cordon Line Crossings



	Daily Person Trips				Average Annual Growth		
	1980	2000	2005	2010	1980 to 2000	2000 to 2005	2005 to 2010
Pedestrian	na	na	na	93,409	na	na	na
Bicycle	na	na	na	11,438	na	na	na
Transit	565,982	442,023	486,326	501,796	–1.2%	1.9%	0.6%
Highway	963,993	1,376,933	1,370,427	1,243,400	1.8%	–0.1%	–1.9%
TOTAL wo Bike and Ped	**1,529,975**	**1,818,956**	**1,856,753**	**1,745,196**	**0.9%**	**0.4%**	**–1.2%**
TOTAL				**1,850,043**			

Source: Delaware Valley Regional Planning Commission, 2010

IV. Time-of-Day Variation in Center City Cordon Line Daily Crossings

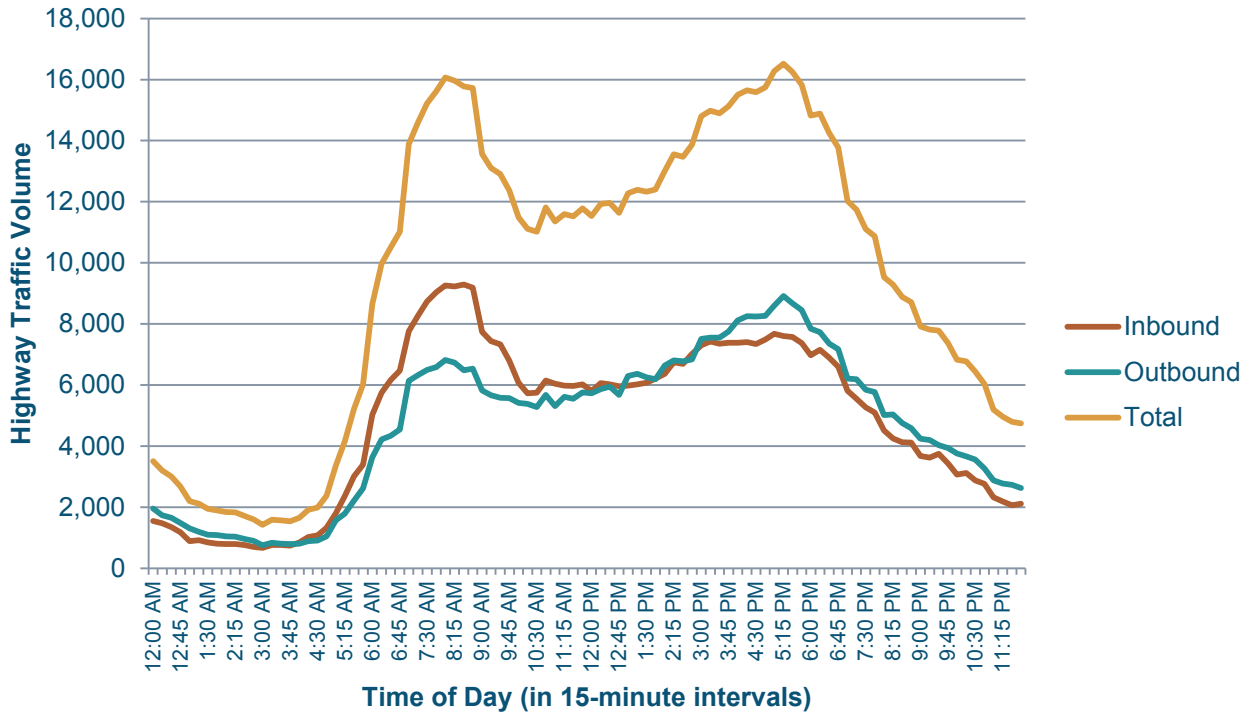
Highway, pedestrian, and bicycle counts were collected at 15-minute intervals, and public transportation ridership counts were collected at hourly intervals. The data are displayed for an entire day, from 12:00 midnight to 12:00 midnight. The time-of-day traffic and ridership counts for each travel mode and screenline are shown in **Appendix A.**

A. 15-Minute Variation in Highway Traffic

The 2010 15-minute highway volumes for individual screenlines are displayed in **Figures A-1, A-7, A-10** and **A-13** in **Appendix A.** **Figure 7** shows the 15-minute variations in highway vehicle trips crossing all four CBD screenlines. The morning inbound peak hour typically occurs between 8:00 and 9:00 AM and is more compact than the afternoon peak hour which occurs from 5:00 to 6:00 PM. There is a mid-day "trough" between the peaks, where the effect of commuter traffic is less pronounced. The percentage of daily inbound trips occurring in the AM peak hour, and the percentage of daily outbound trips occurring in the PM peak hour is displayed in **Table 18.**

Daily traffic patterns typically show a narrower and more clearly defined peak in the AM than in the PM. This is partly due to the fact that school trips and journey-to-work commute trips tend to occur at the same time in the morning, but in the afternoon, students usually return home from school before commuters return home from work. Shopping, social, and recreational trips are more likely to take place in the afternoon, and this also tends to broaden the afternoon peak and introduce greater variability.

Figure 7:
15-Minute Variation in Highway Vehicle Trips



Source: Delaware Valley Regional Planning Commission, 2010

Table 18:
2010 Highway Peak-Hour Vehicle Trips by Direction

	Vehicles per Day	Peak Hour Traffic	Percentage
Inbound	466,630	36,965	7.9%
Outbound	454,410	33,703	7.4%
TOTAL	**921,040**	**70,669**	**7.7%**

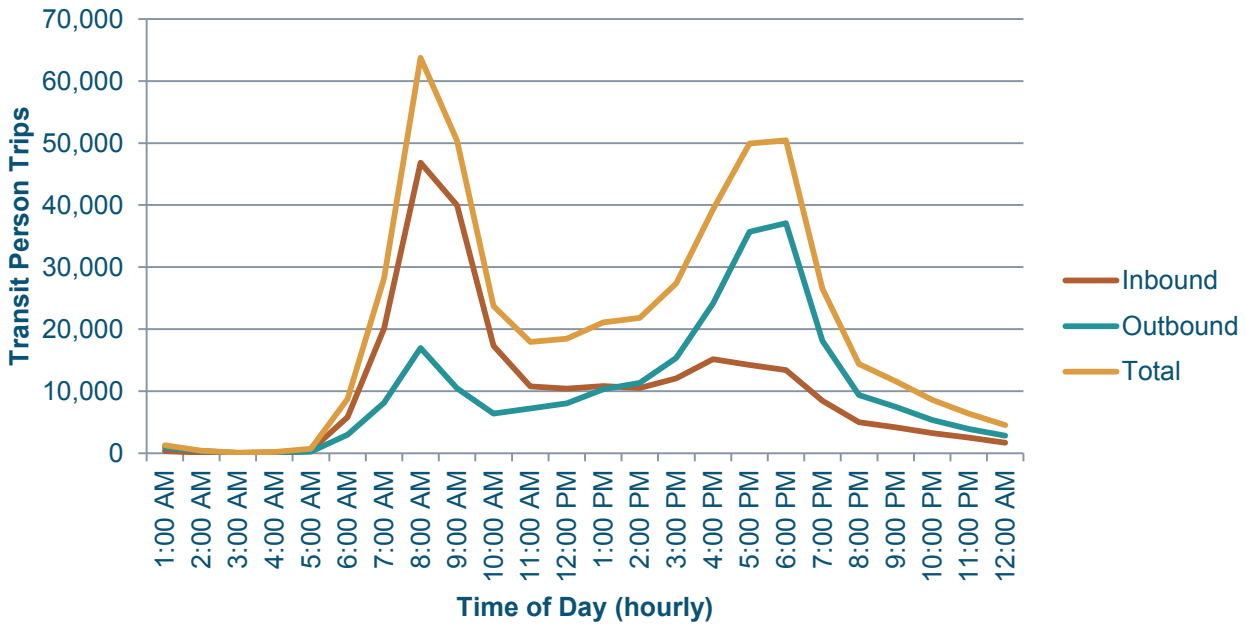
Source: Delaware Valley Regional Planning Commission, 2010

B. Hourly Variation in Public Transportation Ridership

The hourly variations in passenger volumes crossing all four of the screenlines on public transportation are displayed in **Figure 8,** and the hourly variations for individual screenlines are displayed in **Appendix A.** For transit, the morning inbound peak hour occurs from 7:00 to 8:00 AM, and the afternoon outbound peak hour occurs from 5:00 to 6:00 PM. The percentage of daily inbound trips occurring in the AM peak hour, and the percentage of daily outbound trips occurring in the PM peak hour is displayed in **Table 19.**

One characteristic that distinguishes transit ridership from highway traffic patterns is the share of riders carried during the peak hour. For example, approximately 18.3 percent of the inbound transit trips that occur each day are made during the morning peak hour versus only 7.9 percent of the inbound highway trips that occur each day. The morning and afternoon peaks are sharper, and the mid-day trough deeper, than on the corresponding plot of highway volumes.

Figure 8:
Hourly Variation in Public Transportation Trips



Source: Delaware Valley Regional Planning Commission, 2010

Table 19:
2010 Public Transportation Peak-Hour Person Trips by Direction

	Person Trips per Day	Peak Hour Trips	Percentage
Inbound	257,058	47,038	18.3%
Outbound	244,738	37,221	15.2%
TOTAL	**501,796**	**84,259**	**16.8%**

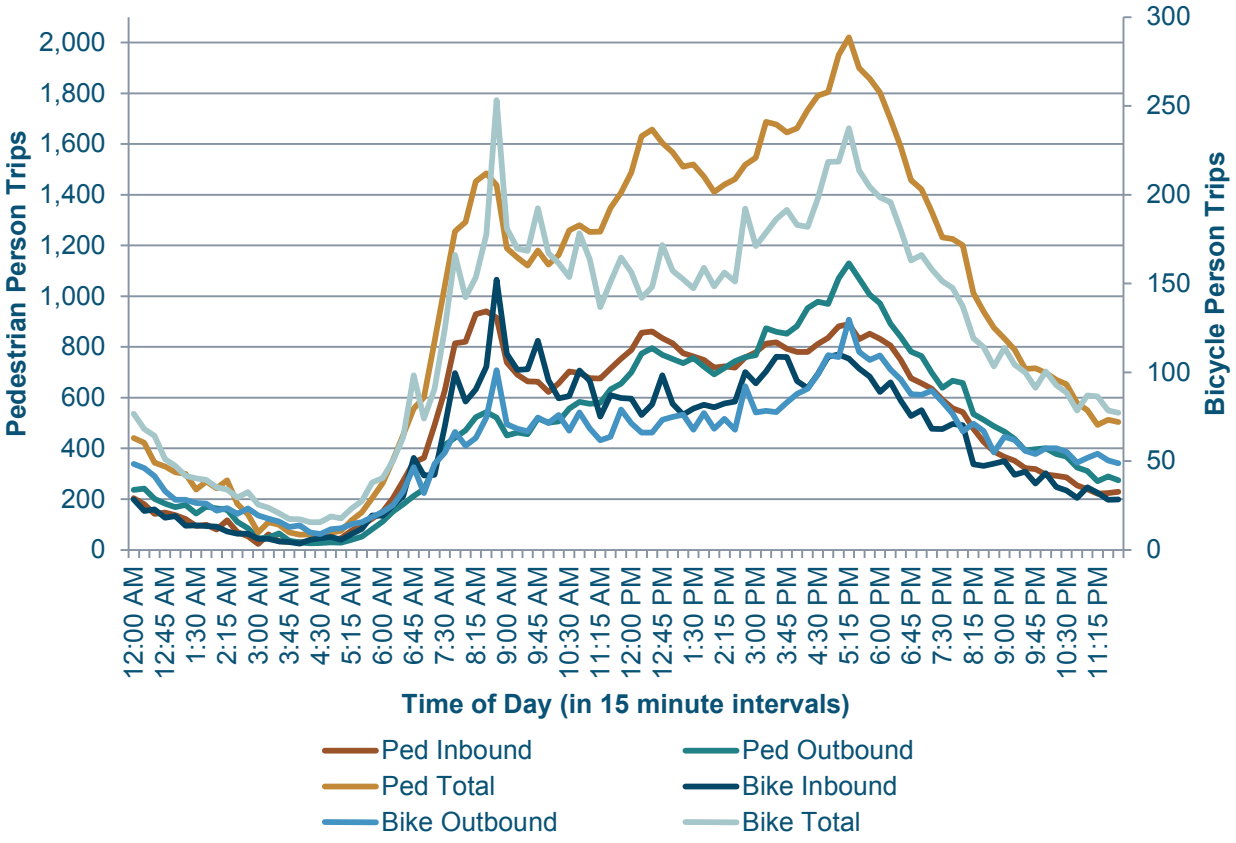
Source: Delaware Valley Regional Planning Commission, 2010

C. 15-Minute Variation in Bicycle and Pedestrian Volumes

The variation in the flow of bicycle and pedestrian trips to and from Center City across all four screenlines by time of day is displayed in **Figure 9.** For pedestrian trips, there are three clear peaks: the AM Peak Hour, the PM Peak Hour, and the lunch hour. Inbound trips peak between 8:30 and 8:45 AM, and outbound trips peak between 5:15 and 5:30 PM. The same general trend also applies to bicycle trips, although on a much smaller scale. For bicycle trips, there is a very pronounced and narrow inbound peak at 8:45 AM, and the outbound peak occurs at 5:15 PM.

The percentage of daily inbound trips occurring in the AM peak hour, and the percentage of daily outbound trips occurring in the PM peak hour is displayed in **Table 20.** For both pedestrian and bicycle trips, a much greater percentage of trips are made during the PM peak hour than during the AM peak hour. In the case of pedestrian trips, 9.2 percent of outbound trips occur in the PM peak hour versus 4.9 percent of inbound trips in the AM peak hour. In the case of bicycle trips, 8.0 percent of outbound trips occur in the PM peak hour versus 4.4 percent of inbound trips in the AM peak hour.

Figure 9:
15-Minute Variation in Bicycle and Pedestrian Person Trips



Source: Delaware Valley Regional Planning Commission, 2010

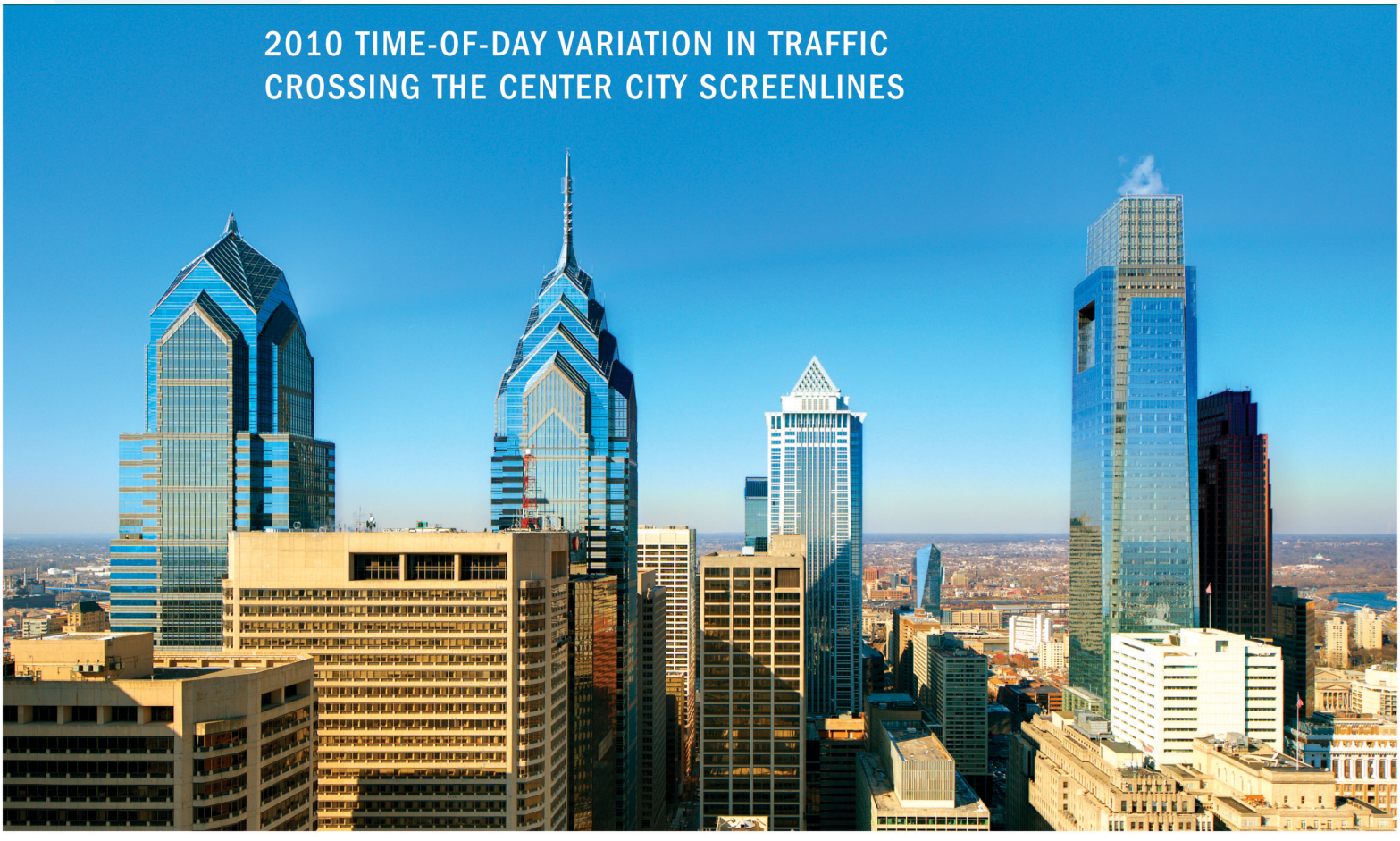
Table 20:
2010 Bicycle and Pedestrian Peak-Hour Person Trips by Direction

	Person Trips per Day	Peak Hour Trips	Percentage
Pedestrian Inbound	47,161	2,293	4.9%
Pedestrian Outbound	46,248	4,274	9.2%
PEDESTRIAN TOTAL	**93,409**	**6,567**	**7.0%**
Bicycle Inbound	5,746	253	4.4%
Bicycle Outbound	5,692	457	8.0%
BICYCLE TOTAL	**11,438**	**710**	**6.2%**

Source: Delaware Valley Regional Planning Commission, 2010

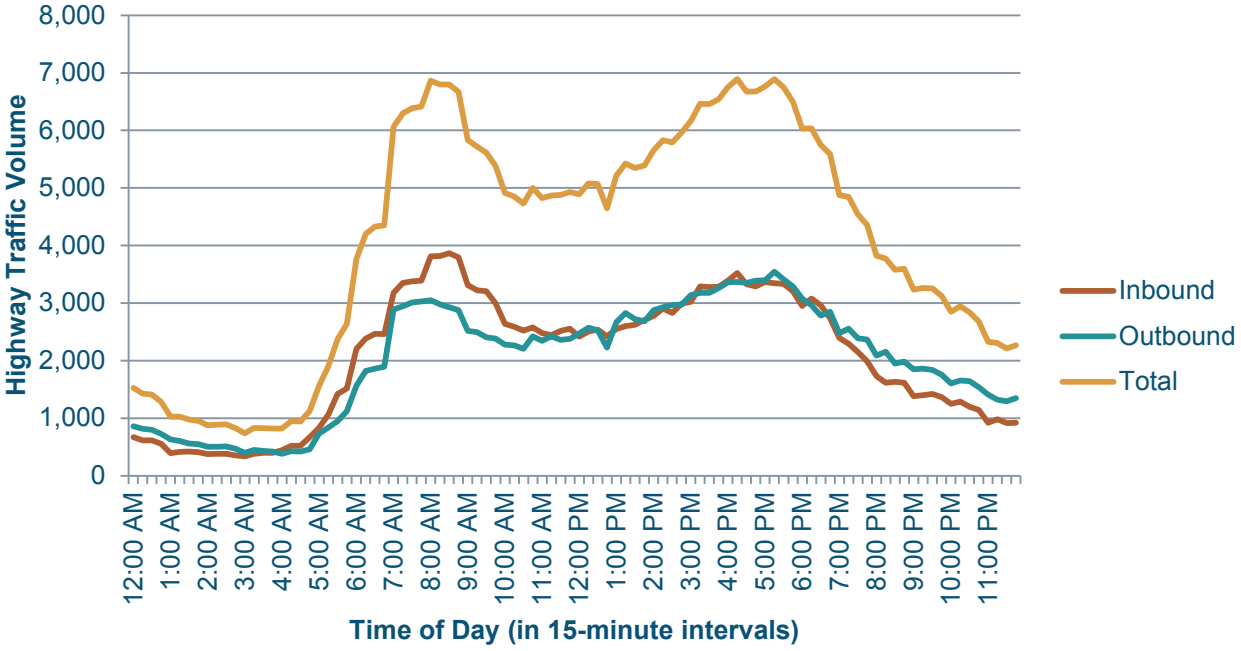
APPENDIX A

2010 TIME-OF-DAY VARIATION IN TRAFFIC CROSSING THE CENTER CITY SCREENLINES



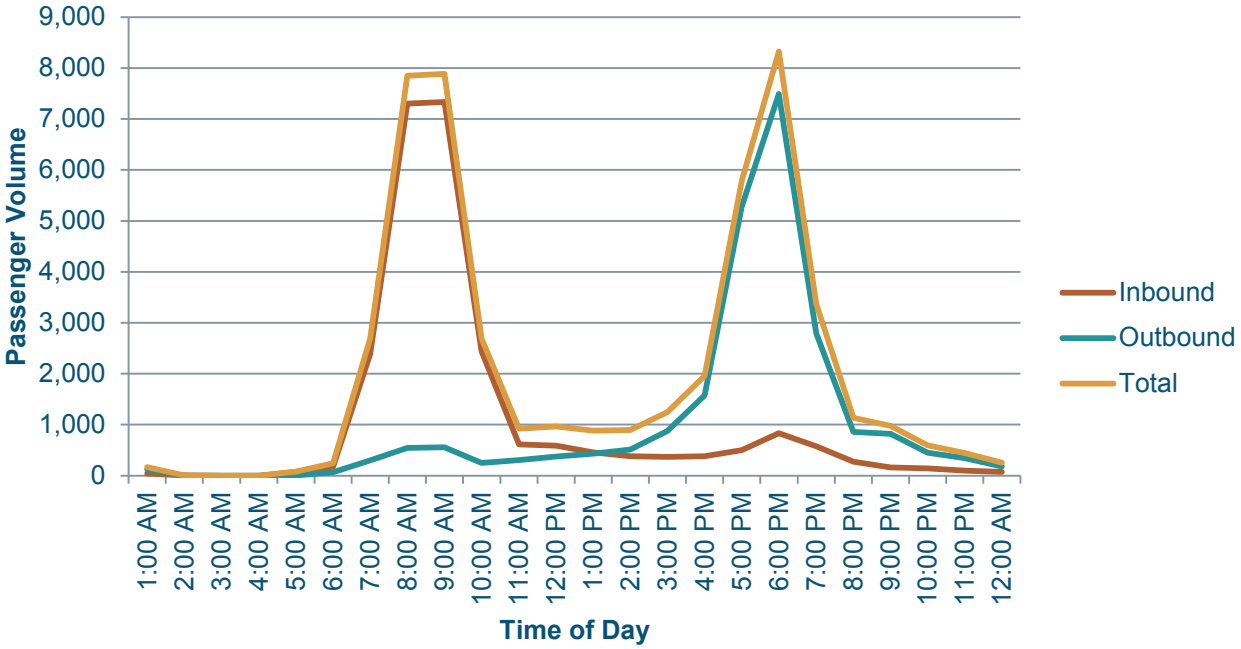
Appendix A. 2010 Time-of-Day Variation in Traffic Crossing the Center City Screenlines

Figure A-1:
15-Minute Variation in Highway Vehicle Trips Crossing the North Screenline



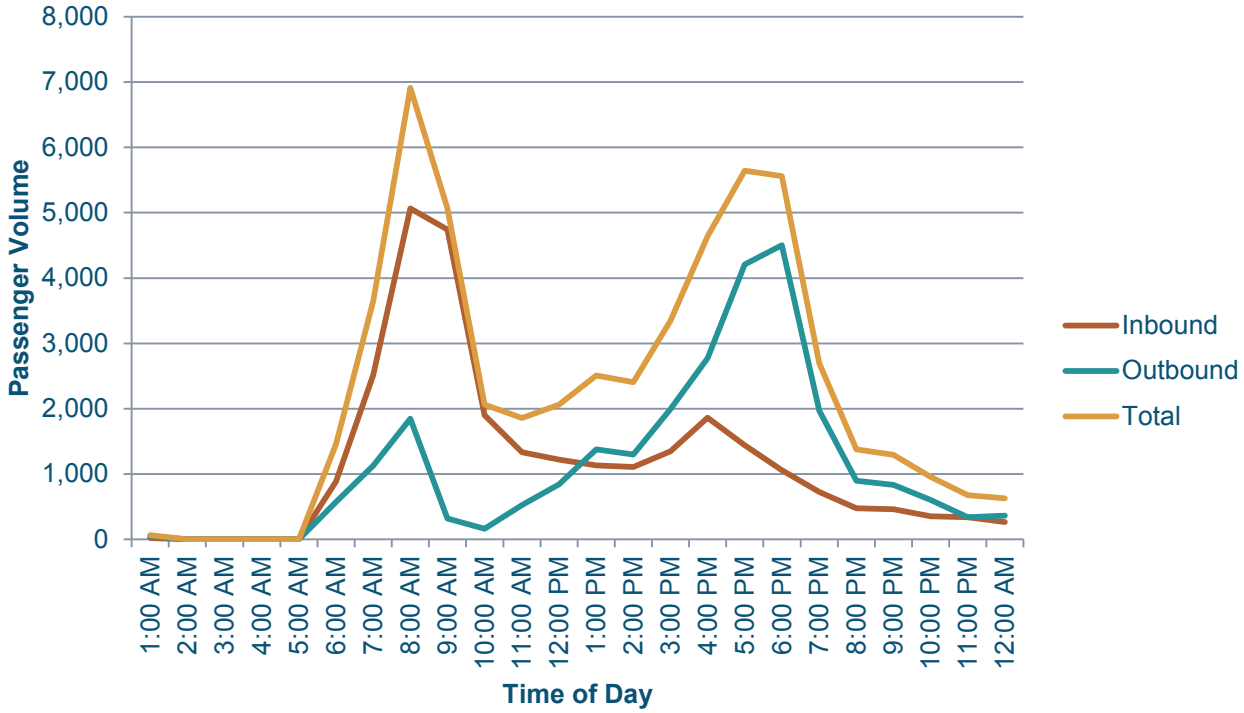
Source: Delaware Valley Regional Planning Commission, 2010

Figure A-2:
Hourly Variation in Regional Rail Trips Crossing the North Screenline



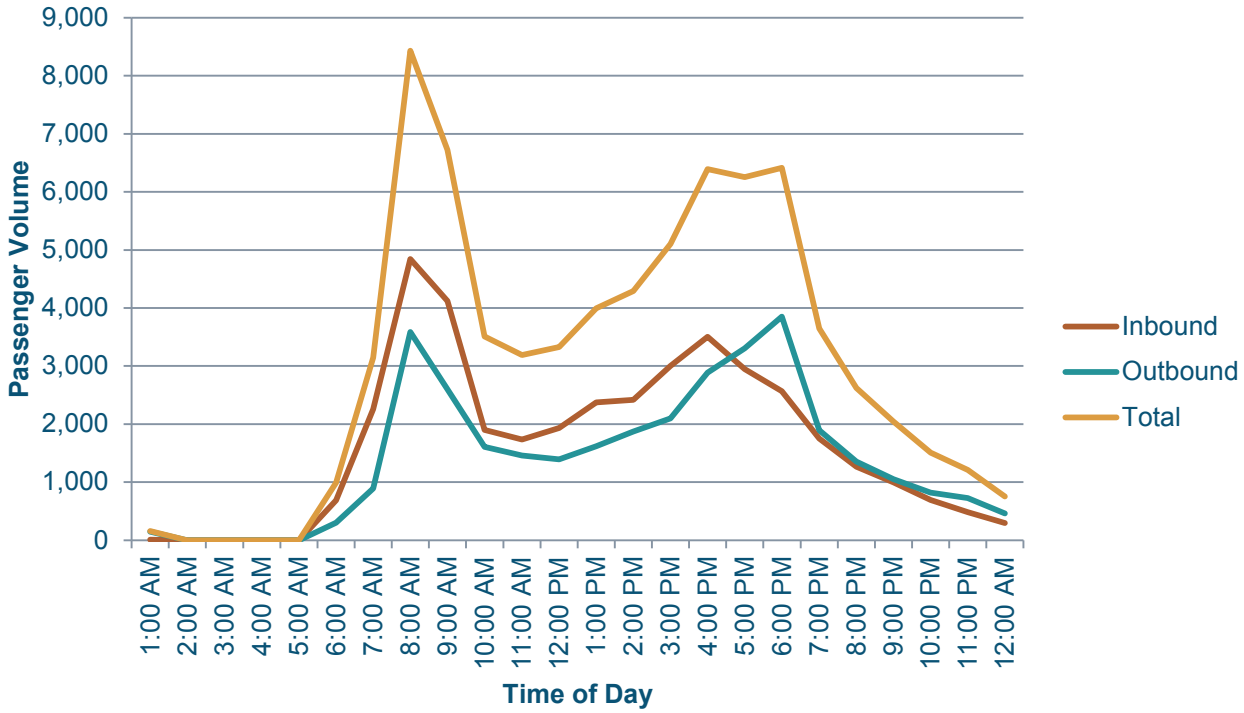
Source: Southeastern Pennsylvania Transportation Authority, 2010

Figure A-3:
Hourly Variation in Market-Frankford Trips Crossing the North Screenline



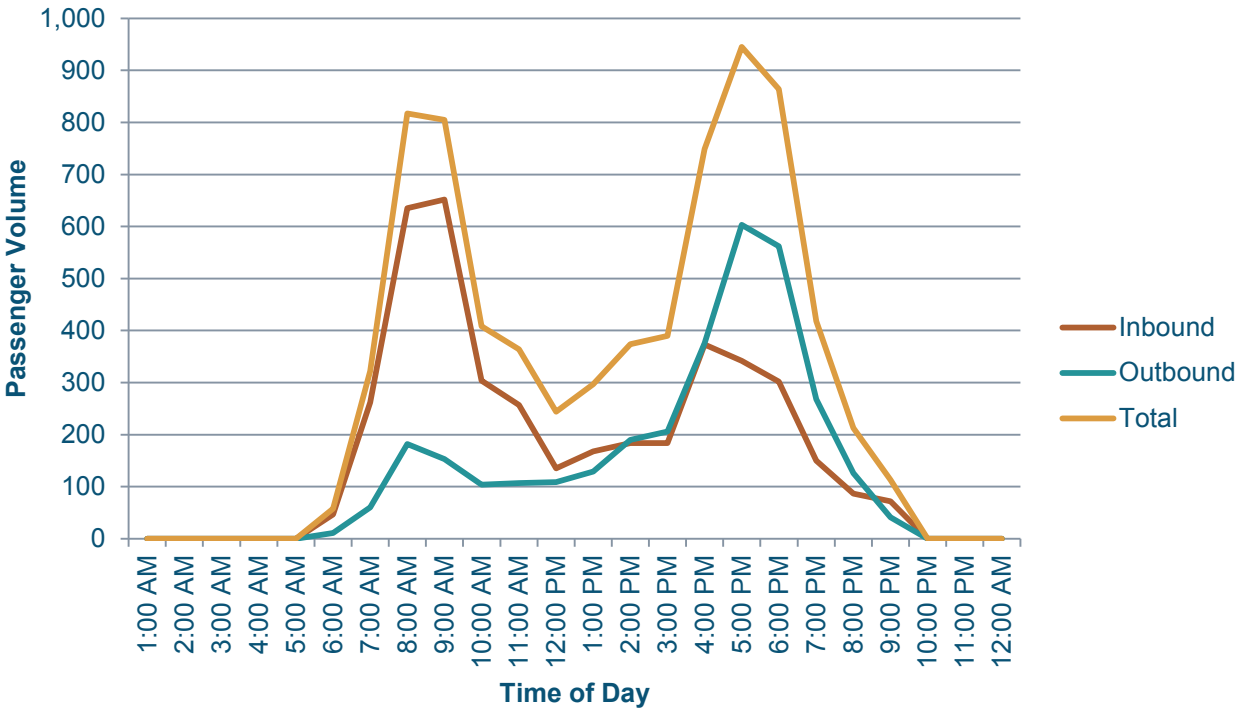
Source: Southeastern Pennsylvania Transportation Authority, 2010

Figure A-4:
Hourly Variation in Broad Street Subway Trips Crossing the North Screenline



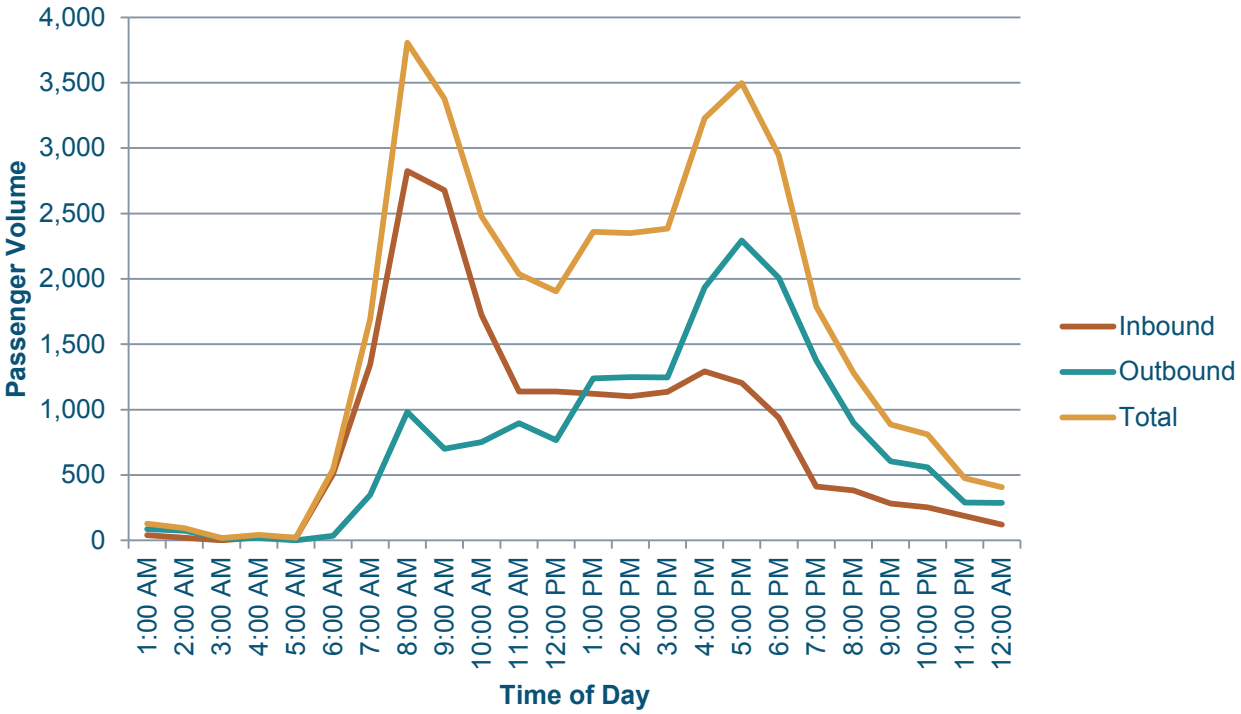
Source: Southeastern Pennsylvania Transportation Authority, 2010

Figure A-5:
Hourly Variation in Broad Ridge Spur Trips Crossing the North Screenline



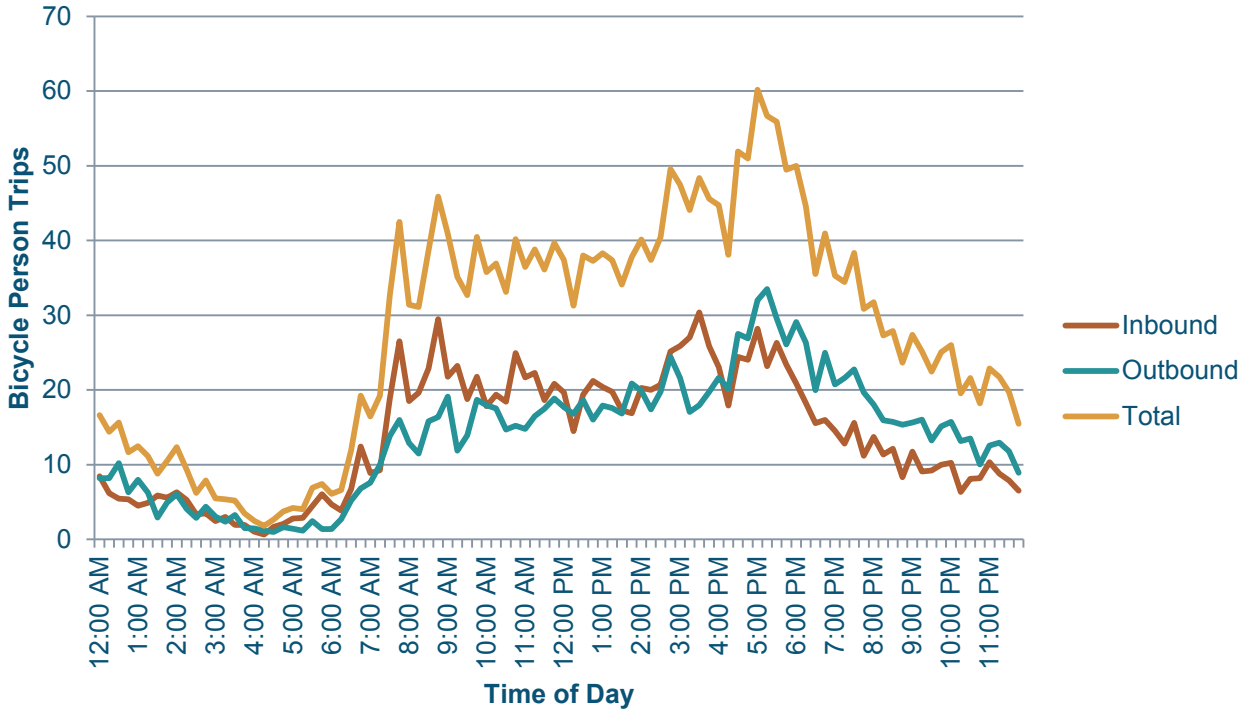
Source: Southeastern Pennsylvania Transportation Authority, 2010

Figure A-6:
Hourly Variation in Bus Trips Crossing the North Screenline



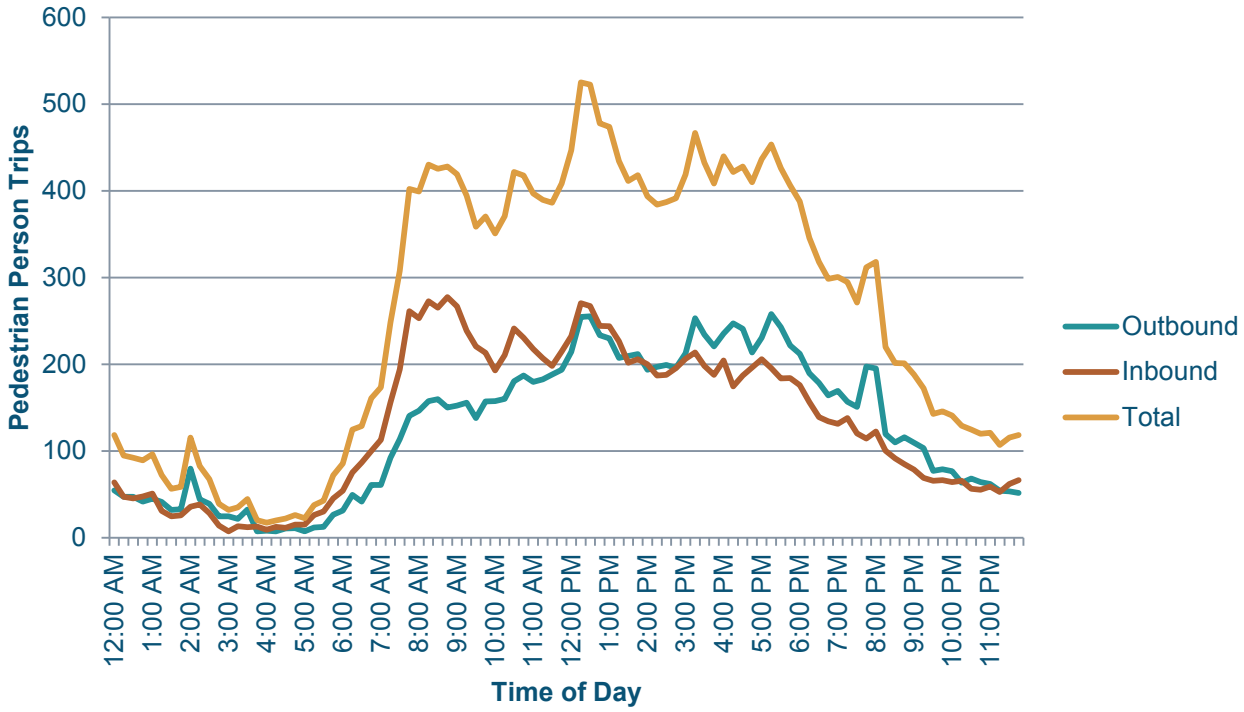
Source: Southeastern Pennsylvania Transportation Authority, 2010

Figure A-7:
15-Minute Variation in Bicycle Trips Crossing the North Screenline



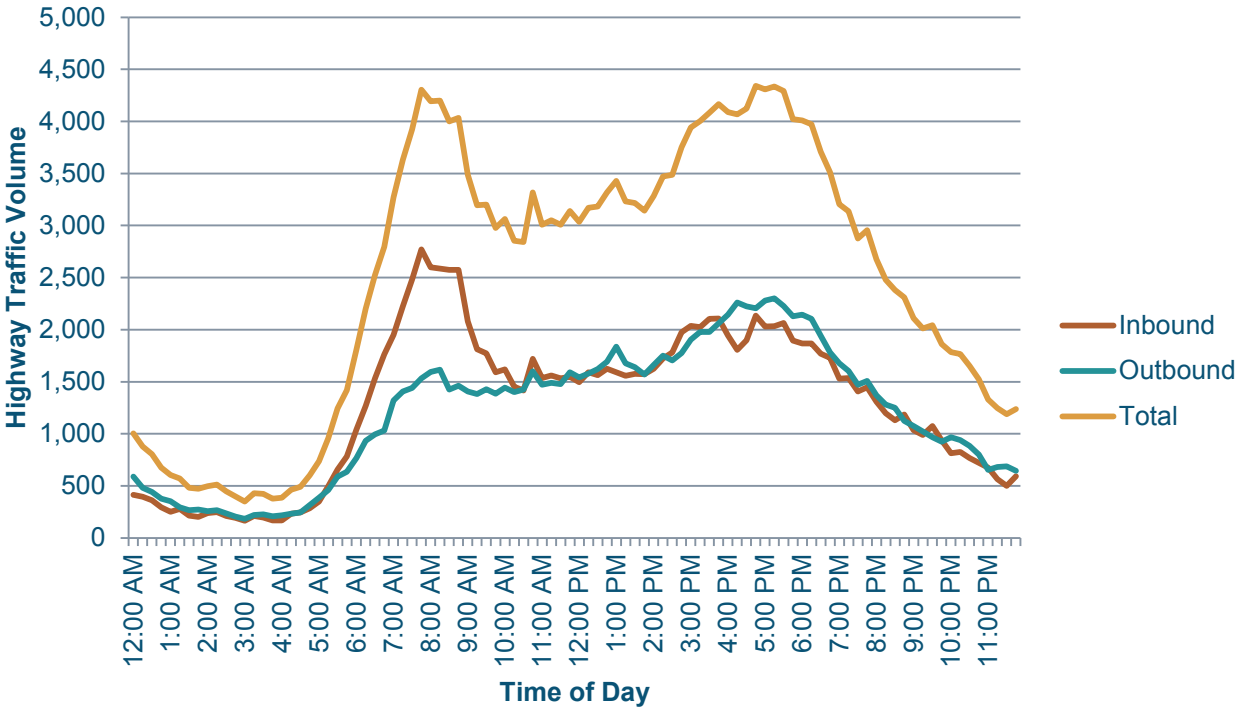
Source: Delaware Valley Regional Planning Commission, 2010

Figure A-8:
15-Minute Variation in Pedestrian Trips Crossing the North Screenline



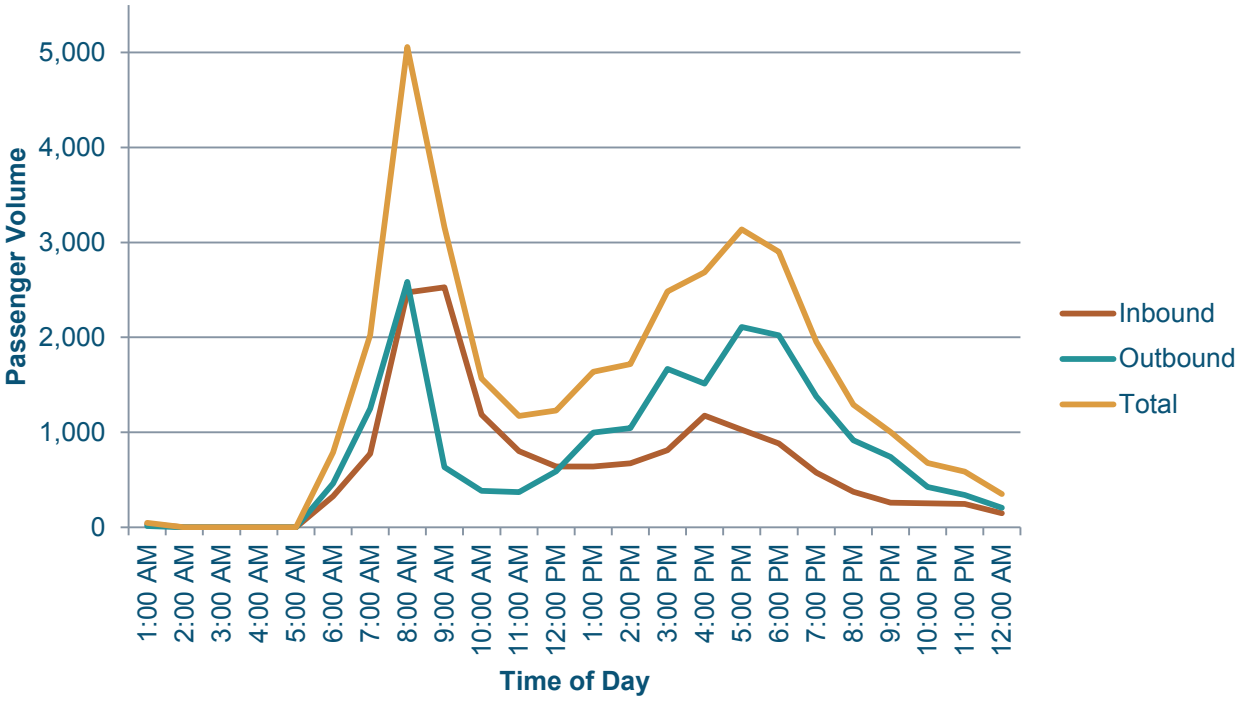
Source: Delaware Valley Regional Planning Commission, 2010

Figure A-9:
15-Minute Variation in Highway Vehicle Trips Crossing the South Screenline



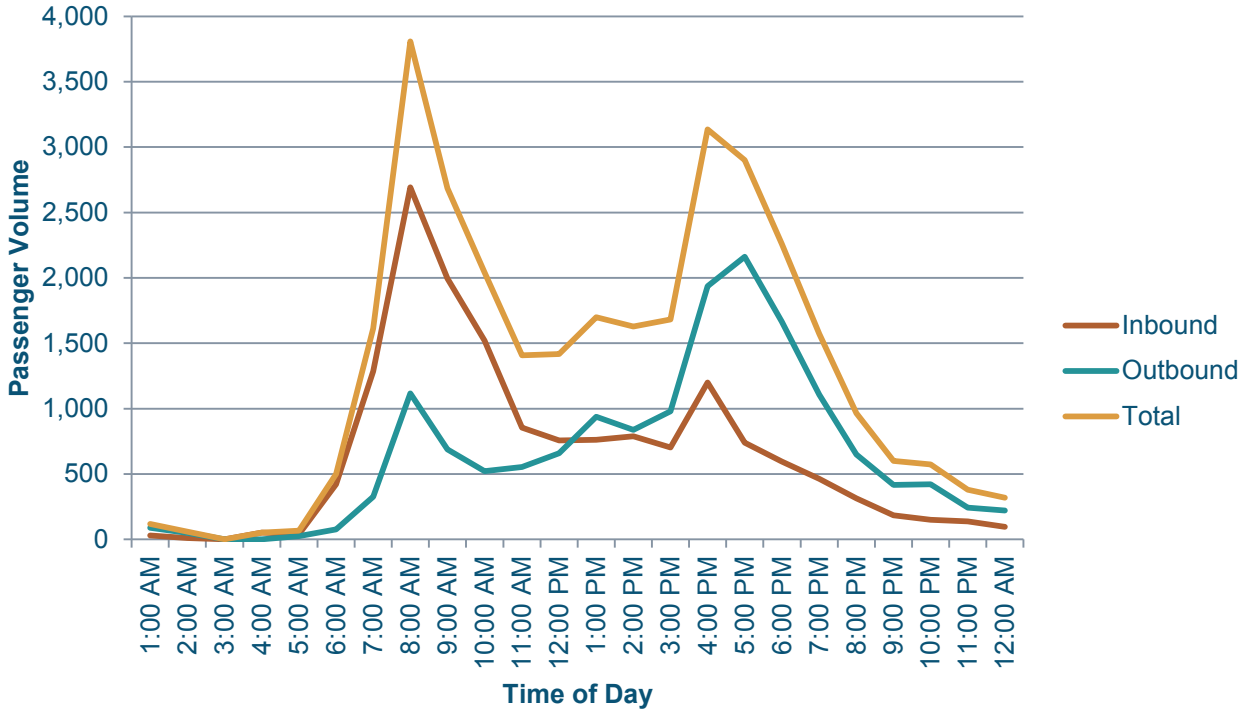
Source: Delaware Valley Regional Planning Commission, 2010

Figure A-10:
Hourly Variation in Broad Street Subway Trips Crossing the South Screenline



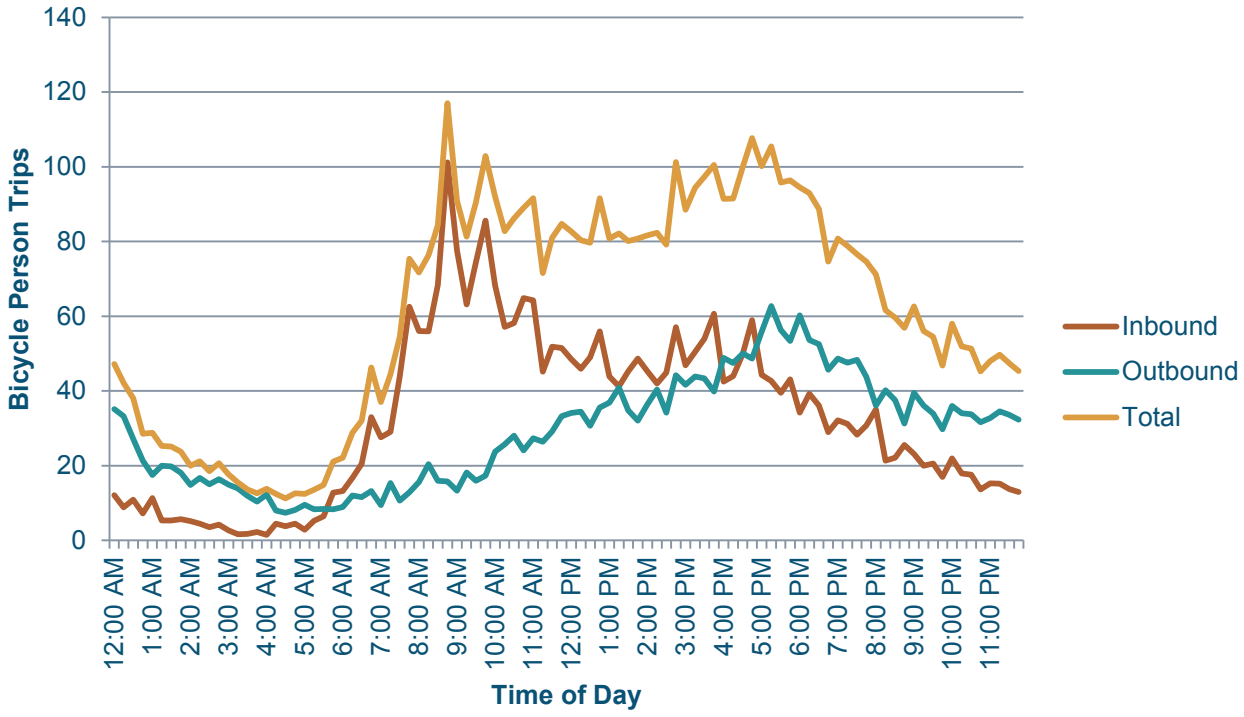
Source: Southeastern Pennsylvania Transportation Authority, 2010

Figure A-11:
Hourly Variation in Bus Trips Crossing the South Screenline



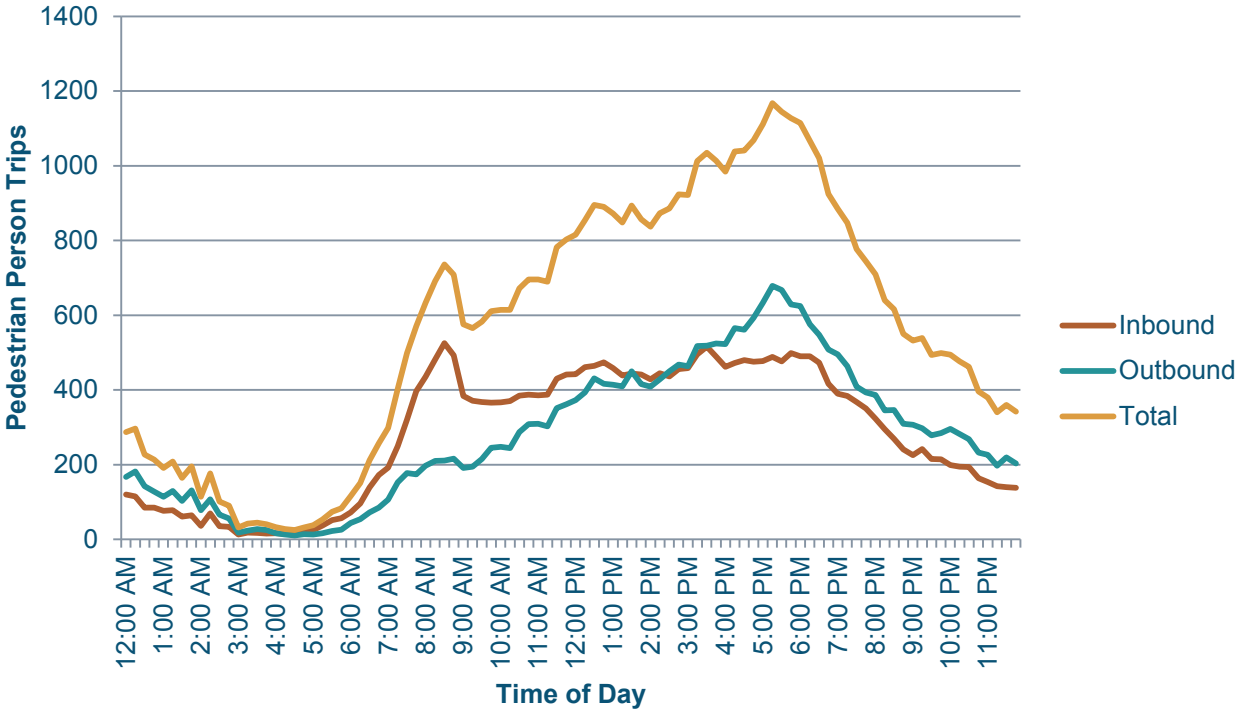
Source: Southeastern Pennsylvania Transportation Authority, 2010

Figure A-12:
15-Minute Variation in Bicycle Trips Crossing the South Screenline



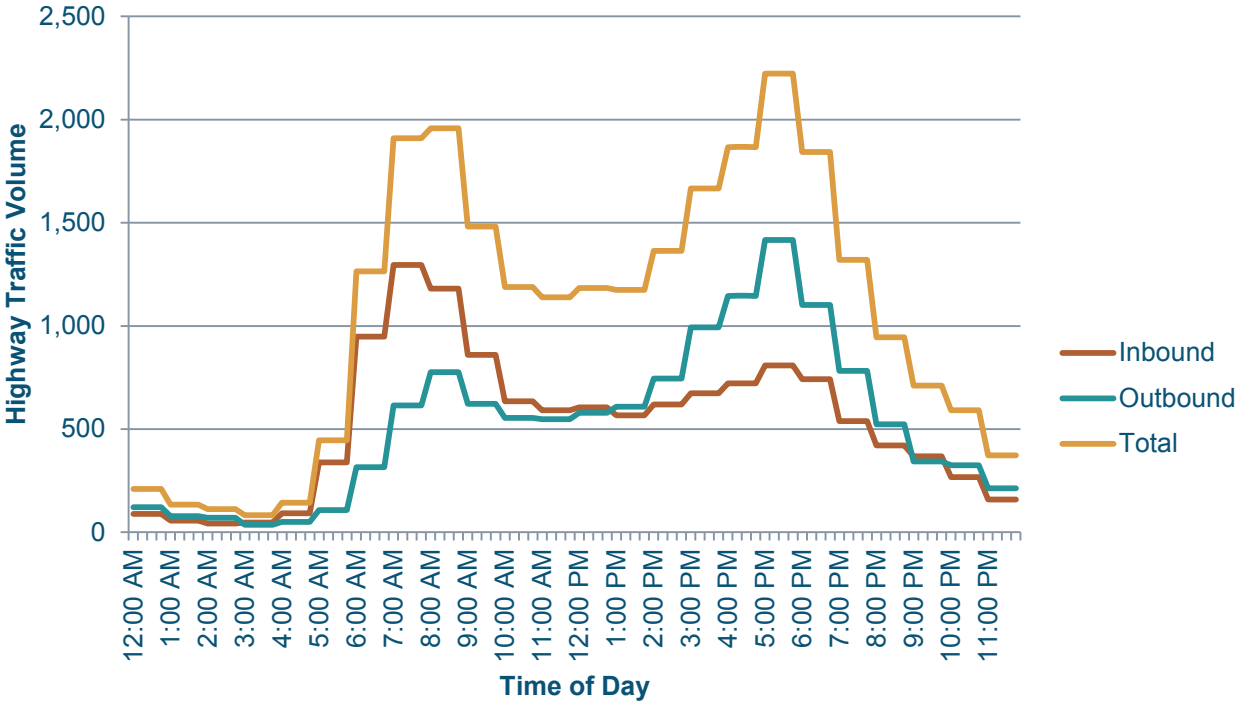
Source: Delaware Valley Regional Planning Commission, 2010

Figure A-13:
15-Minute Variation in Pedestrian Trips Crossing the South Screenline



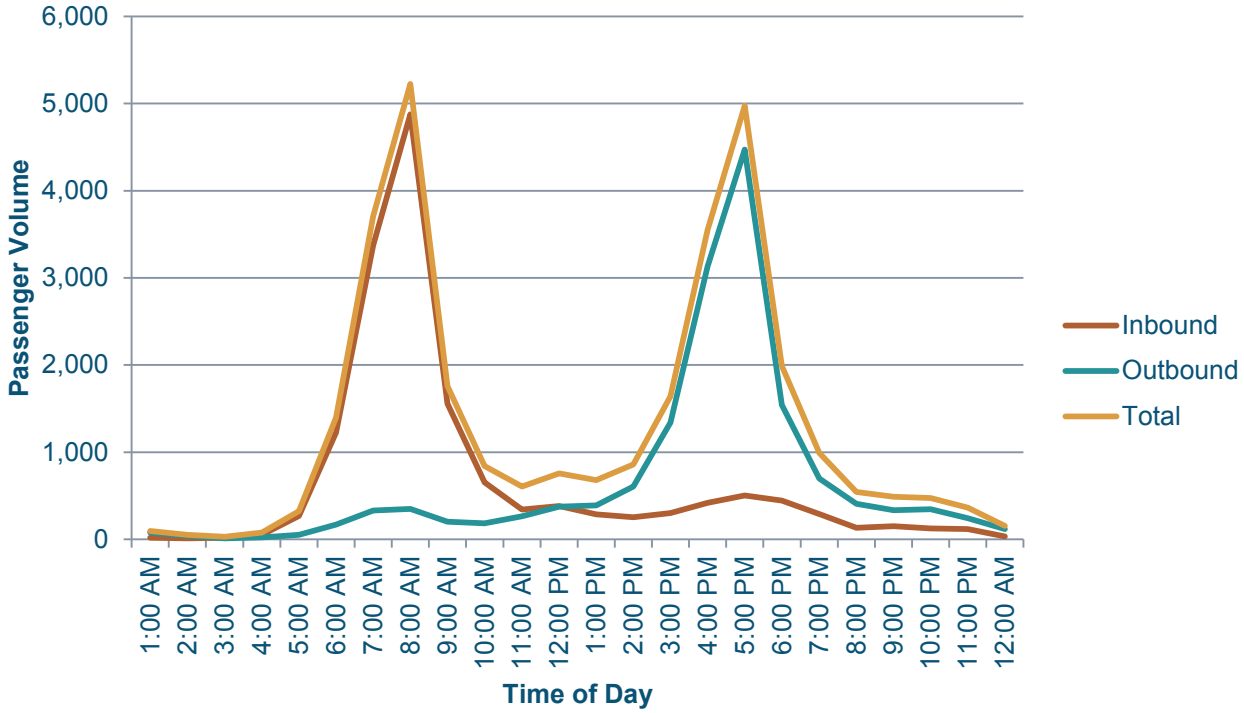
Source: Delaware Valley Regional Planning Commission, 2010

Figure A-14:
15-Minute Variation in Highway Vehicle Trips Crossing the East Screenline



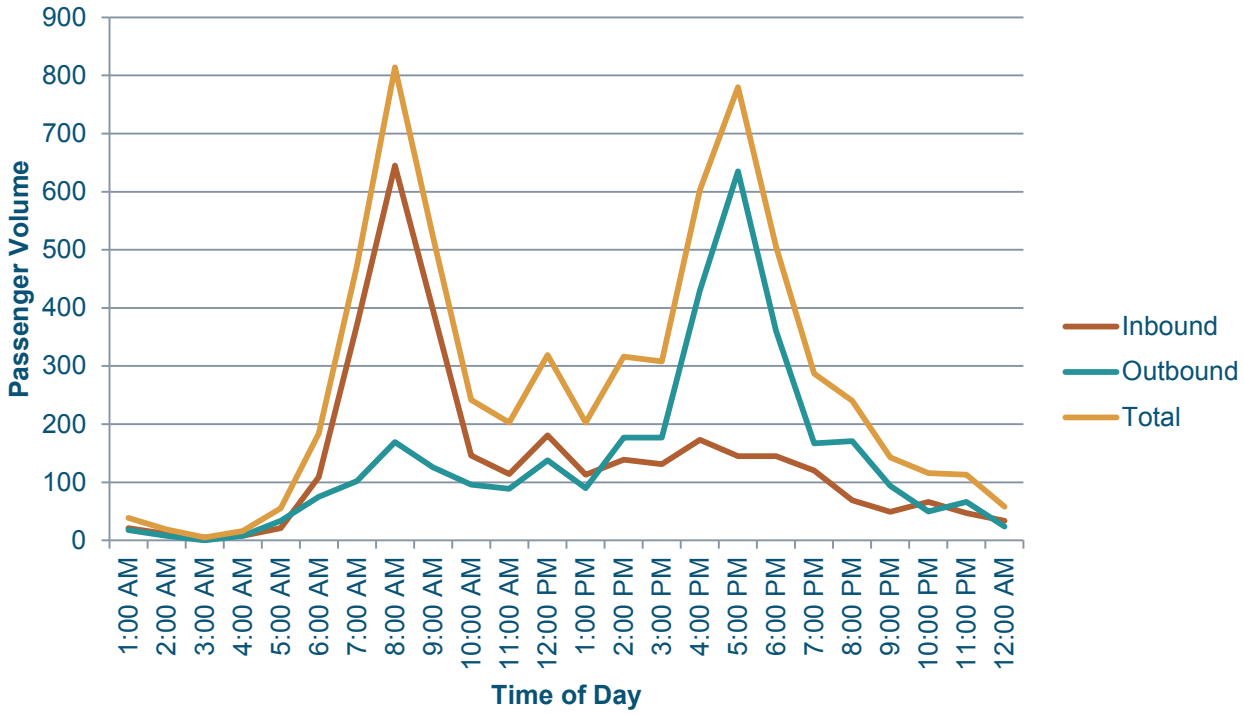
Source: Delaware River Port Authority, 2010

Figure A-15:
Hourly Variation in PATCO Transit Trips Crossing the East Screenline



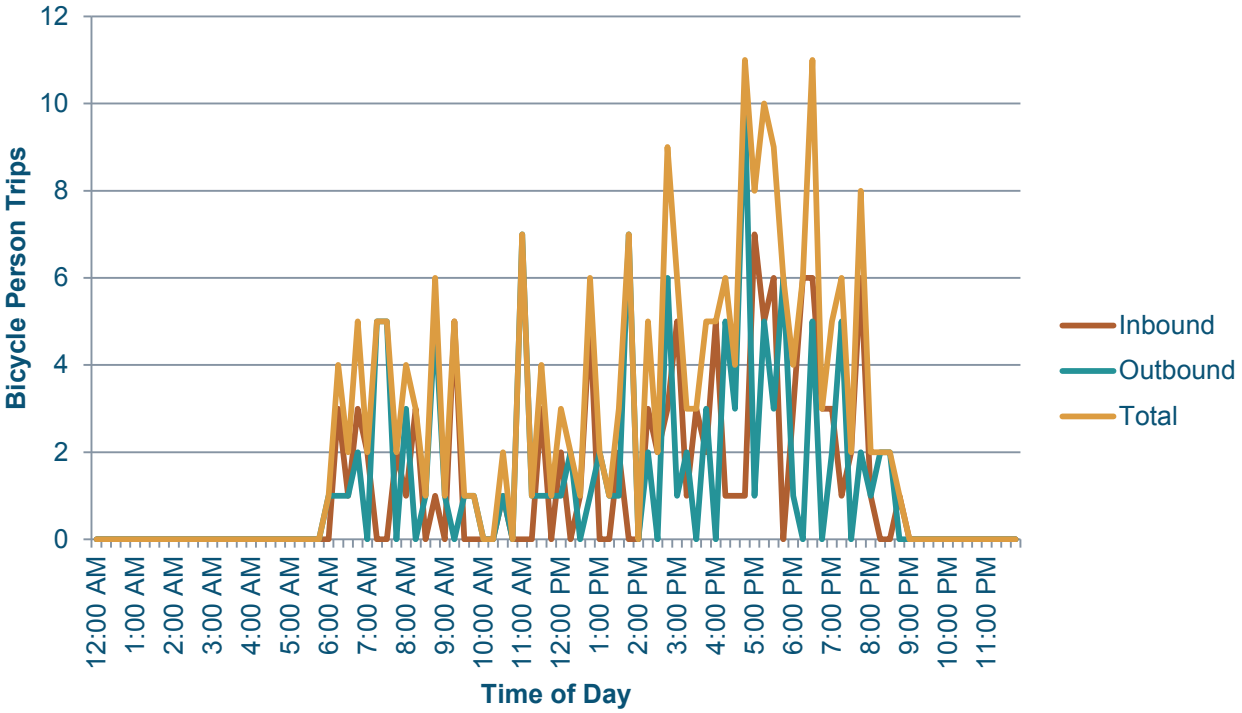
Source: PATCO, 2010

Figure A-16:
Hourly Variation in New Jersey Transit Bus Trips Crossing the East Screenline



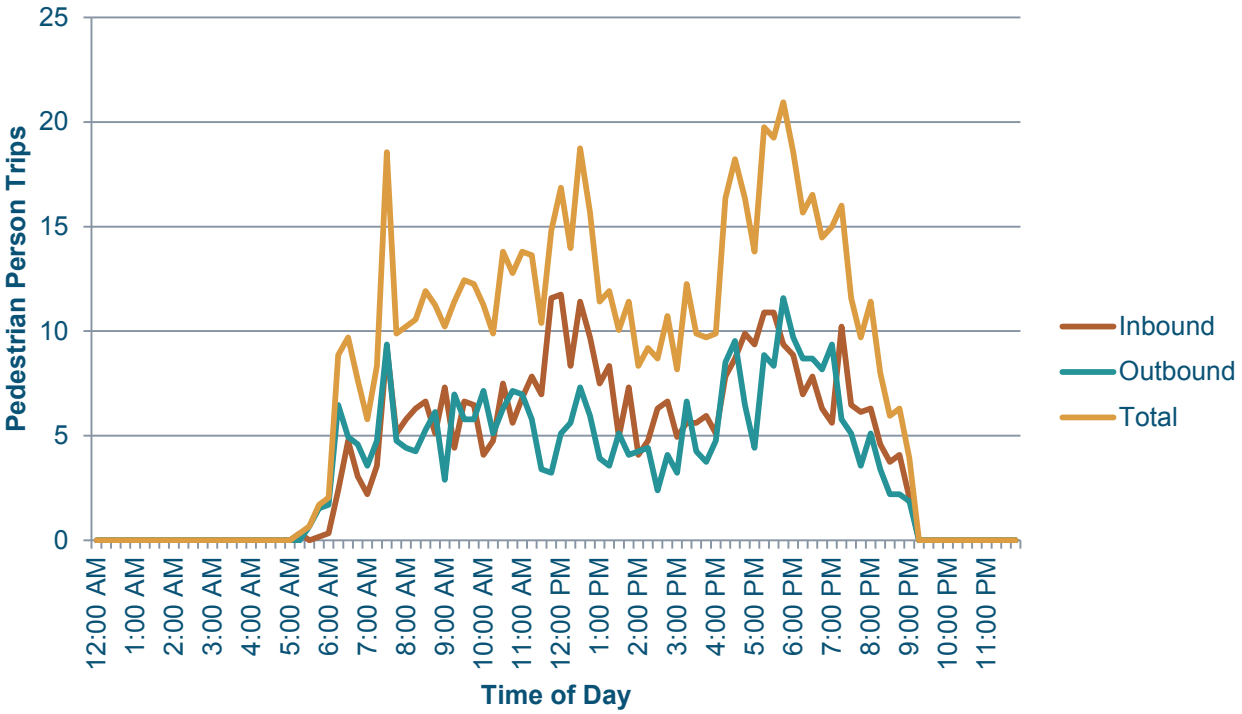
Source: New Jersey Transit, 2010

Figure A-17:
15-Minute Variation in Bicycle Trips Crossing the East Screenline



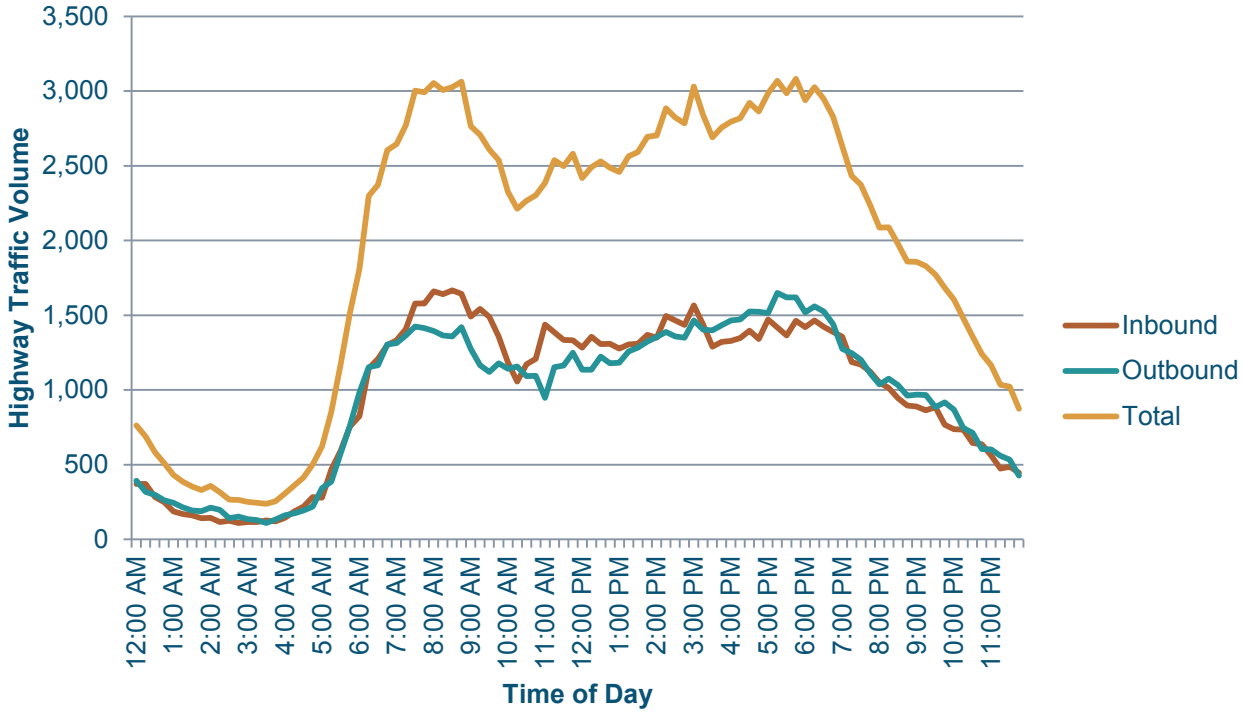
Source: Delaware Valley Regional Planning Commission, 2010

Figure A-18:
15-Minute Variation in Pedestrian Trips Crossing the East Screenline



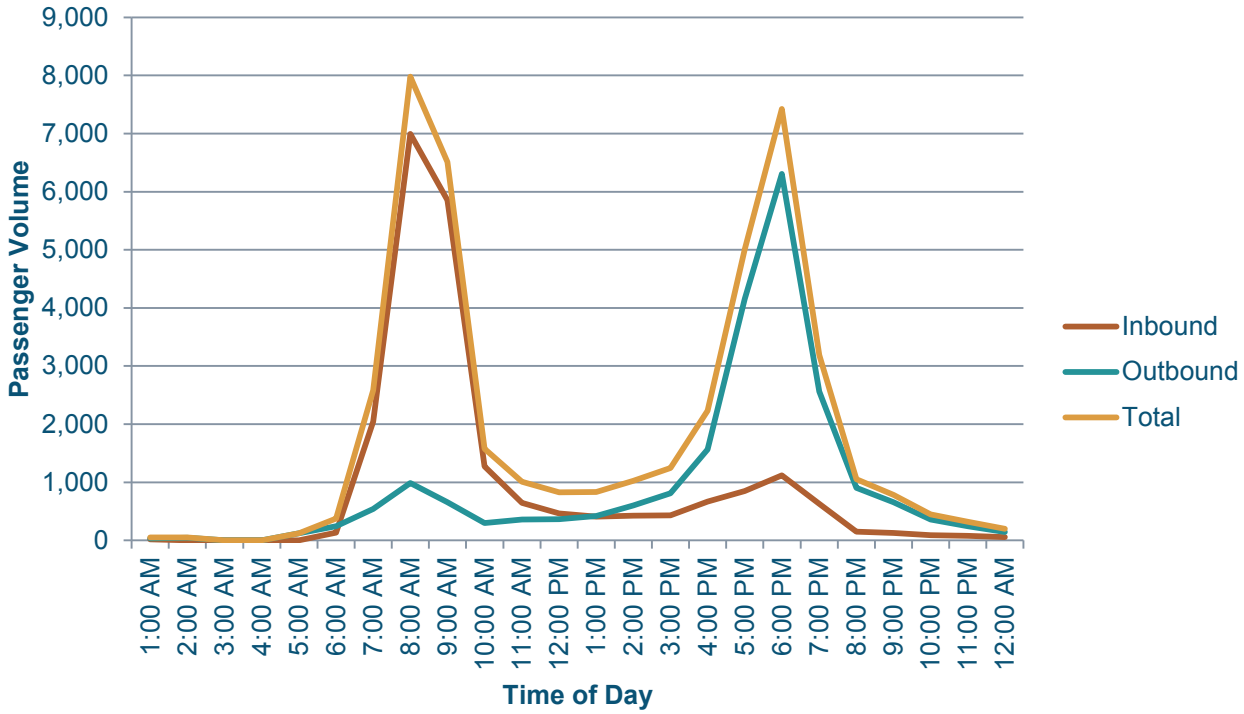
Source: Delaware Valley Regional Planning Commission, 2010

Figure A-19:
15-Minute Variation in Highway Vehicle Trips Crossing the West Screenline



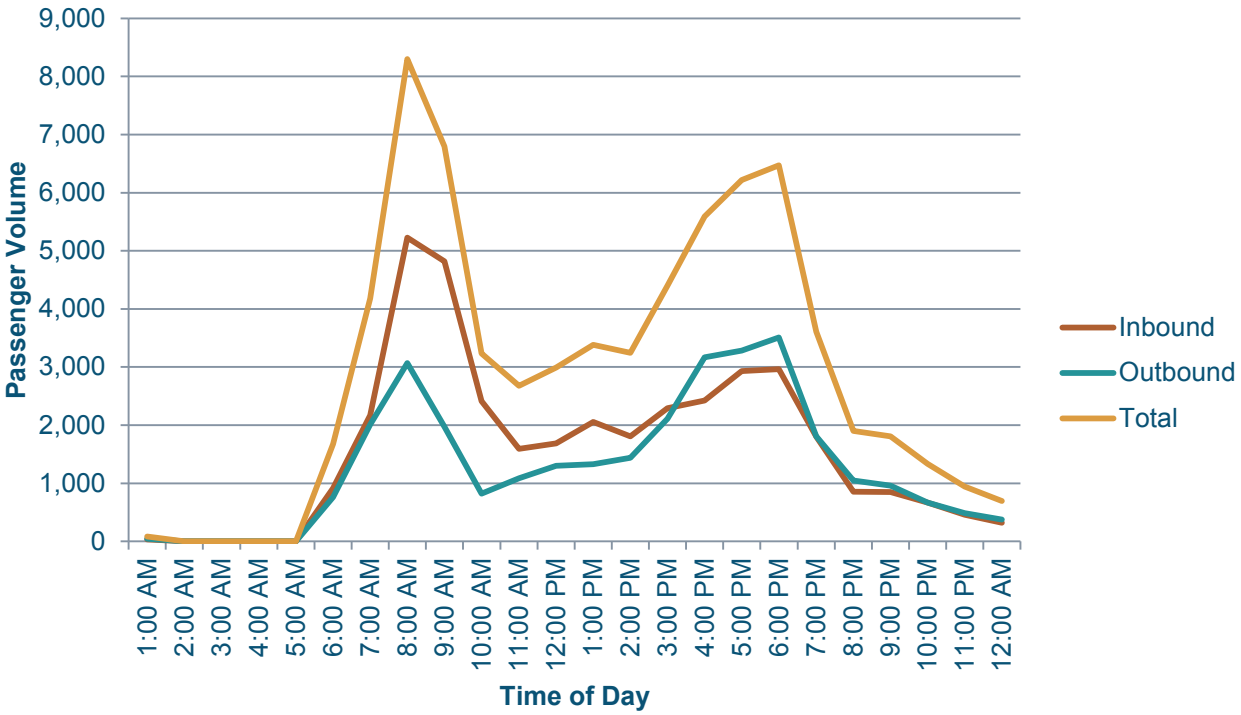
Source: Delaware Valley Regional Planning Commission, 2010

Figure A-20:
Hourly Variation in Regional Rail Trips Crossing the West Screenline



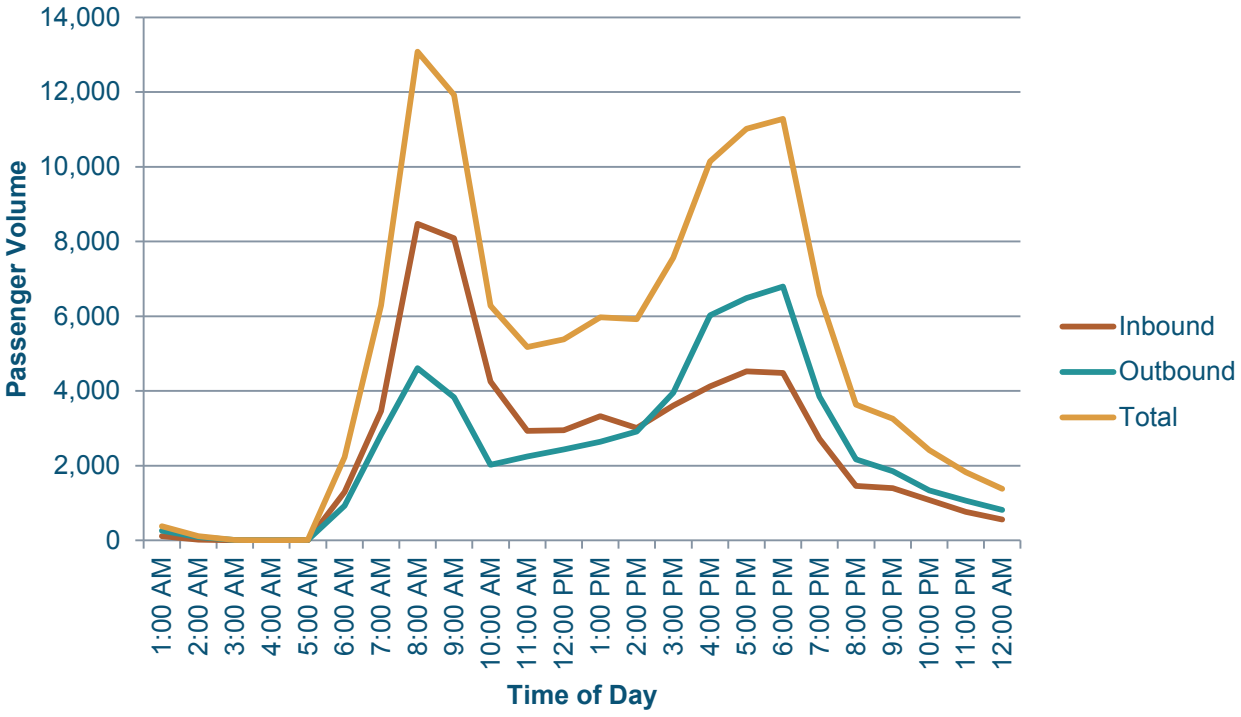
Source: Southeastern Pennsylvania Transportation Authority, 2010

Figure A-21:
Hourly Variation in Market-Frankford Trips Crossing the West Screenline



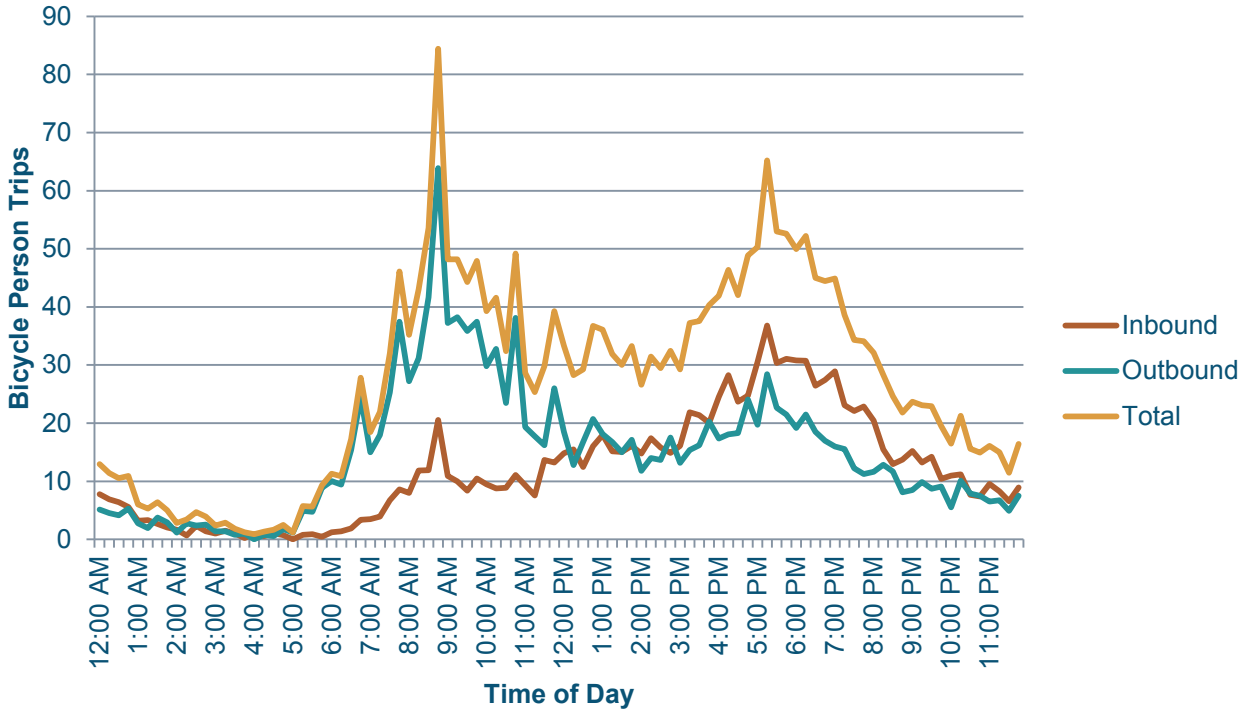
Source: Southeastern Pennsylvania Transportation Authority, 2010

Figure A-22:
Hourly Variation in Bus and Trolley Trips Crossing the West Screenline



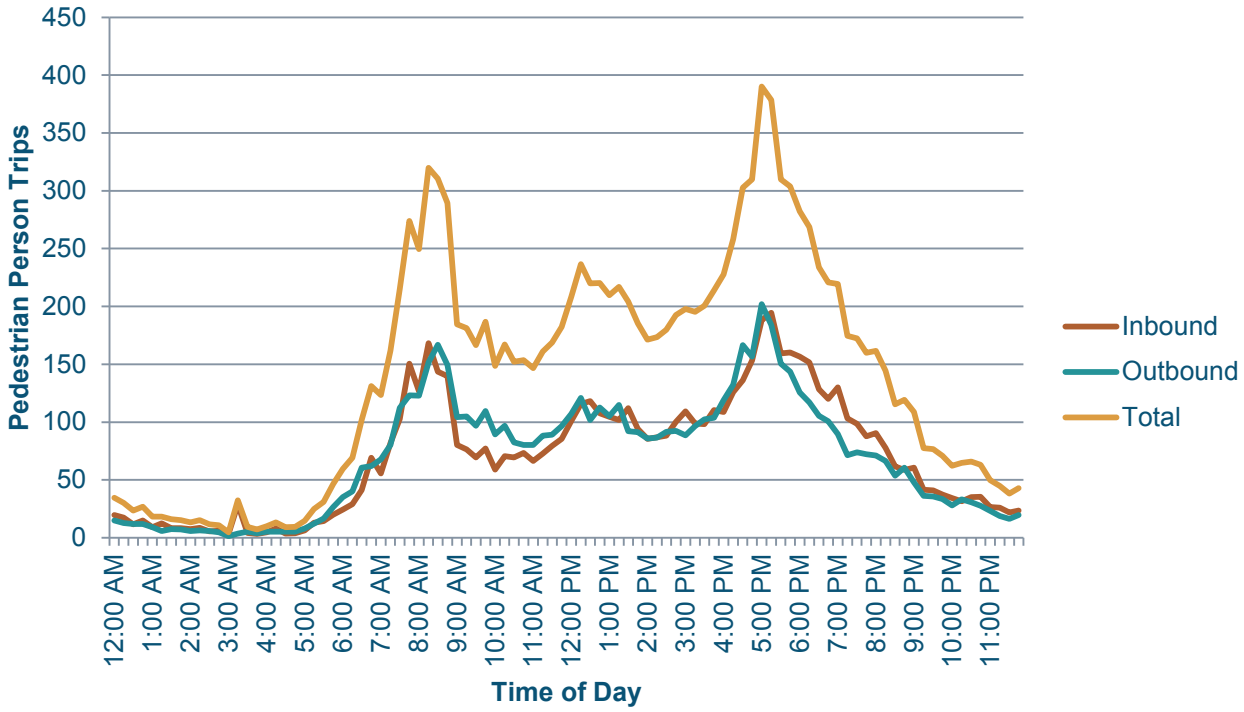
Source: Southeastern Pennsylvania Transportation Authority, 2010

Figure A-23:
15-Minute Variation in Bicycle Trips Crossing the West Screenline



Source: Delaware Valley Regional Planning Commission, 2010

Figure A-24:
15-Minute Variation in Pedestrian Trips Crossing the West Screenline



Source: Delaware Valley Regional Planning Commission, 2010

1980–2010 Travel Trends

In the Philadelphia Central Business District

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Key Words:

Center City, Philadelphia Central Business District, Traffic Count, Public Transportation Ridership, Regional Rail, Subway-Elevated, Buses, Trolleys, Cordon Line, Screenline, Travel Trends, Vehicle Trips, Person Trips, Transit Trips, Pedestrian Trips, Bicycle Trips, Annual Average Daily Traffic (AADT), Peak-Hour Volume

Abstract:

This report assesses the 1980–2010 trends in highway traffic volumes, public transit ridership, bicycle trips, and pedestrian trips entering and leaving the Philadelphia Central Business District (CBD). Traffic volumes are expressed as both vehicle and person trips. Public transit, bicycle, and pedestrian trips are expressed as person trips. The report analyzes all trips crossing the North, West, South, and East screenlines.

Staff Contact:

Brad S. Lane
Senior Transportation Engineer
☏ (215) 238-2886
blane@dvrpc.org

Delaware Valley Regional Planning Commission
190 N. Independence Mall West, 8th Floor
Philadelphia, PA 19106-1520
Phone: (215) 592-1800
Fax: (215) 592-9125
Internet: www.dvrpc.org

DELAWARE VALLEY
dvrpc
REGIONAL
PLANNING COMMISSION

DVRPC, 8TH FLOOR
190 N. INDEPENDENCE MALL WEST
PHILADELPHIA, PA 19106-1520
215.592.1800
WWW.DVRPC.ORG