

# O-D Study Transit Staff Workshop – January 23, 2014

## Agenda

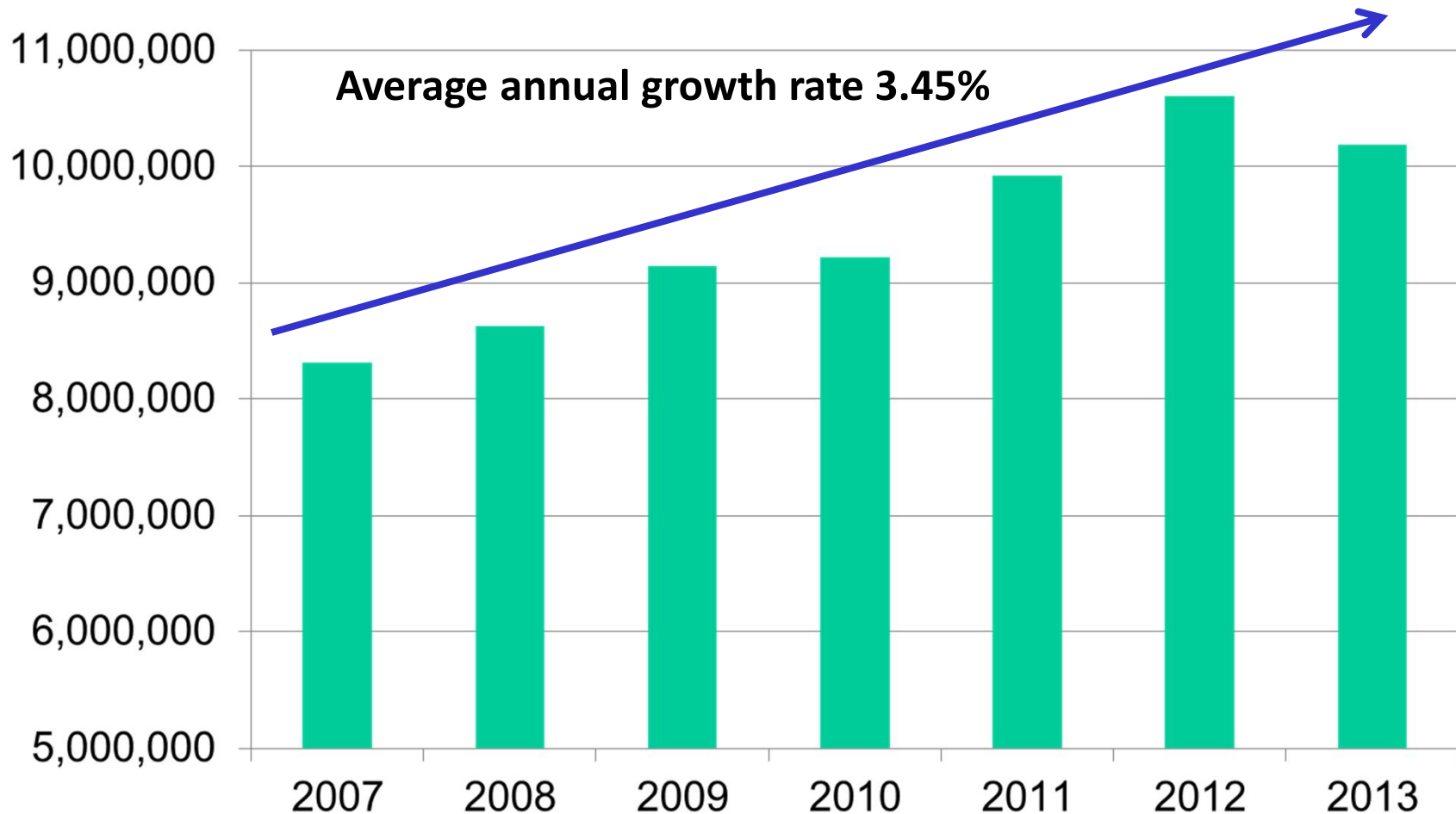
- I. Survey and Data Entry Status
- II. Survey Data Analysis
  - Mode of Access / Egress
  - Trip Purpose
- III. Transfer Evaluation
- IV. Socio-economic Mapping
- V. Travel Patterns by Corridor
- VI. Discussion
- VII. Project Schedule

## State Smart Transportation Initiative - April 2013

- Select recommendations included:
  - Improve the quality of available data
    - Origin-destination studies
    - Boarding and alighting surveys
  - Maintain service in the CBD while reconfiguring the route structure on the periphery to capture suburban ridership.
  - Create meaningful connections between rail and bus service,
  - Improve headways and travel times to make bus service fast and convenient.
  - Establish “express” bus routes to primary employment destinations.
  - Consider establishing suburban satellite hubs at locations with strong current ridership.

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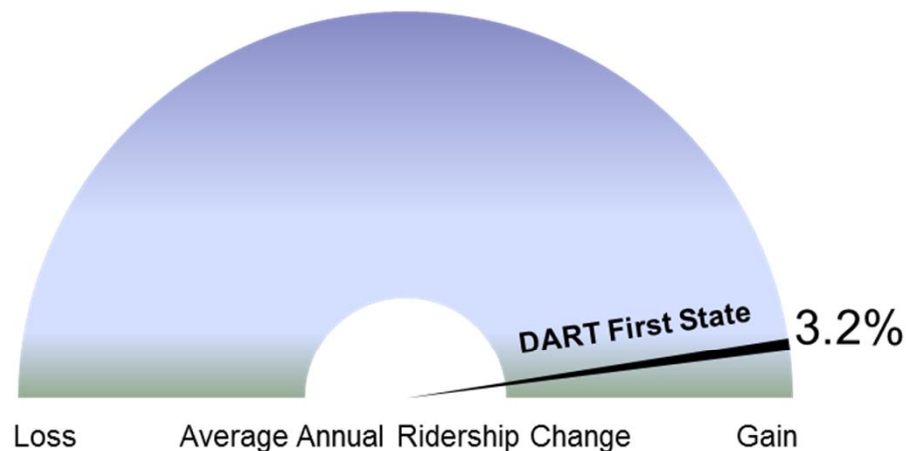
BUILD ON DELAWARE TRANSIT CORPORATION'S SUCCESS



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## BUILD ON DELAWARE TRANSIT CORPORATION'S SUCCESS

**From 2006 to 2011, DART First State's fixed route bus service annual ridership increased by an average of 3.2% percent per year.**



System	Annual Change
Port Authority of Allegheny County	-2.0%
Richmond, VA	-1.9%
Maryland Transit Administration	-0.8%
New Jersey Transit	-0.8%
Rockville, MD	-0.4%
WMATA	-0.3%
SEPTA	0.7%
Allentown, PA	1.7%
DART First State	3.2%
Harrisburg, PA	3.3%



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## SURVEY AND DATA ENTRY STATUS

### Survey Plan by November 22, 2013

Estimated Total Riders	Ideal Sample Size	Recommended Sample Size
16,002	5,113	1,784

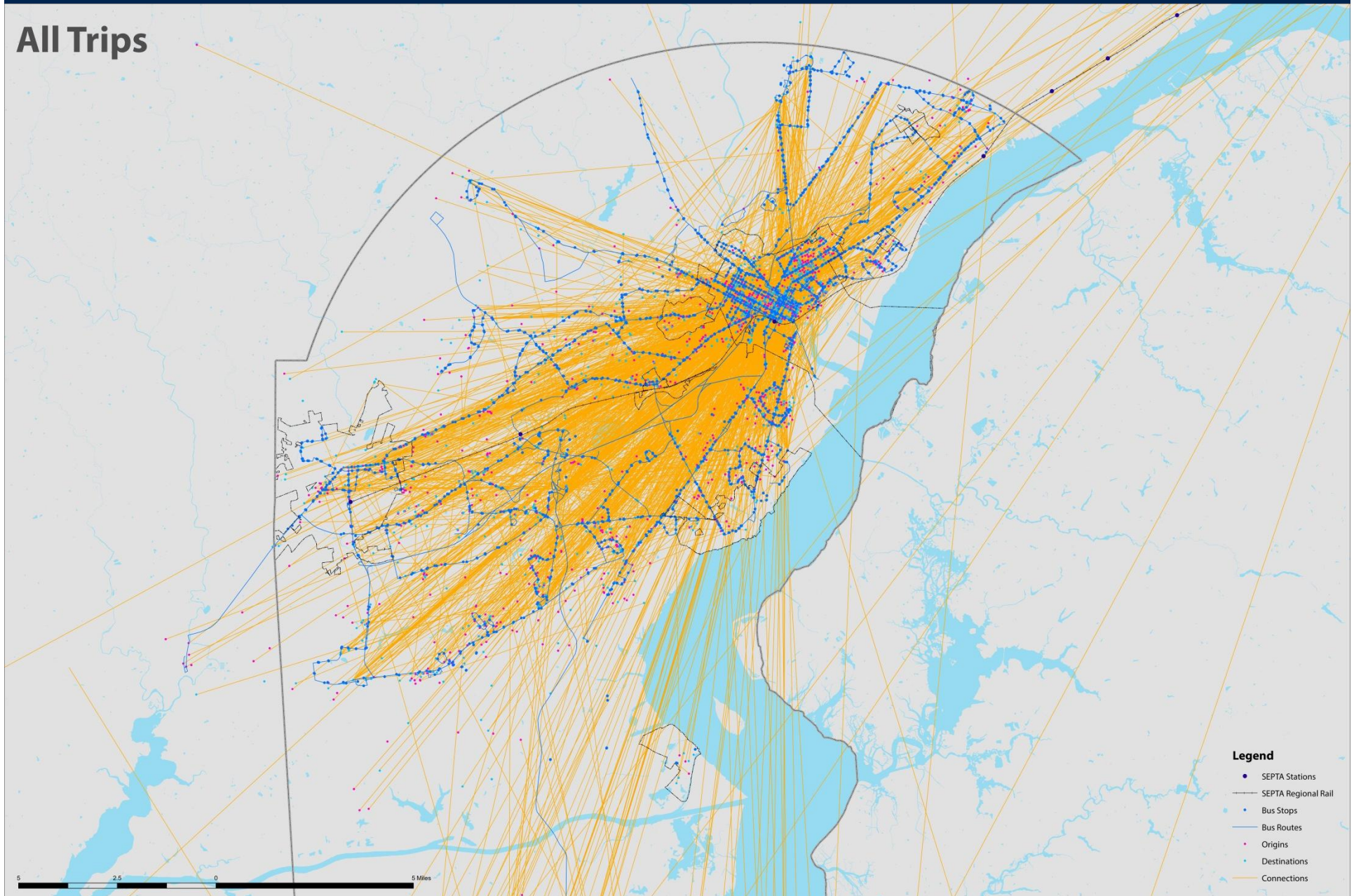
### Survey to October 15 to November 22, 2013

Riders	Surveys Distributed	Surveys Returned
16,807	5,198	4,490

Surveys Geocoded	Valid O-D Matches	% Successful Match
4,490	2,394	53.3

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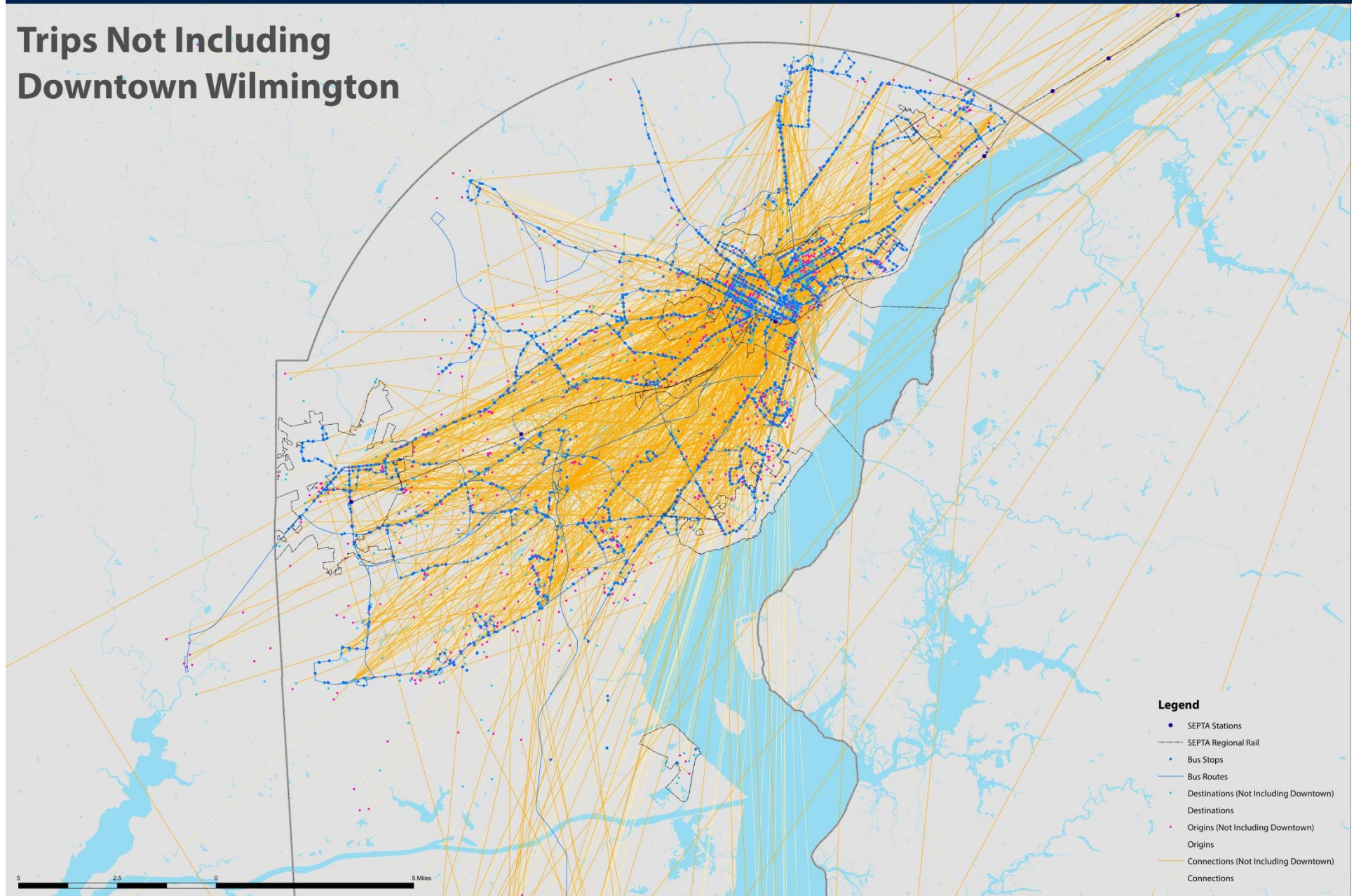
## All Trips





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## Trips Not Including Downtown Wilmington



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## SURVEY DATA ANALYSIS

- **Data Analysis Underway**
  - Completed surveys - 4,490
  - Geocoded surveys - 2,394
  - DTC boarding and alighting data by route
- **Geographic Analysis**
  - Upper New Castle County routes
  - Routes grouped by corridor
  - Regional traffic analysis zones by subarea

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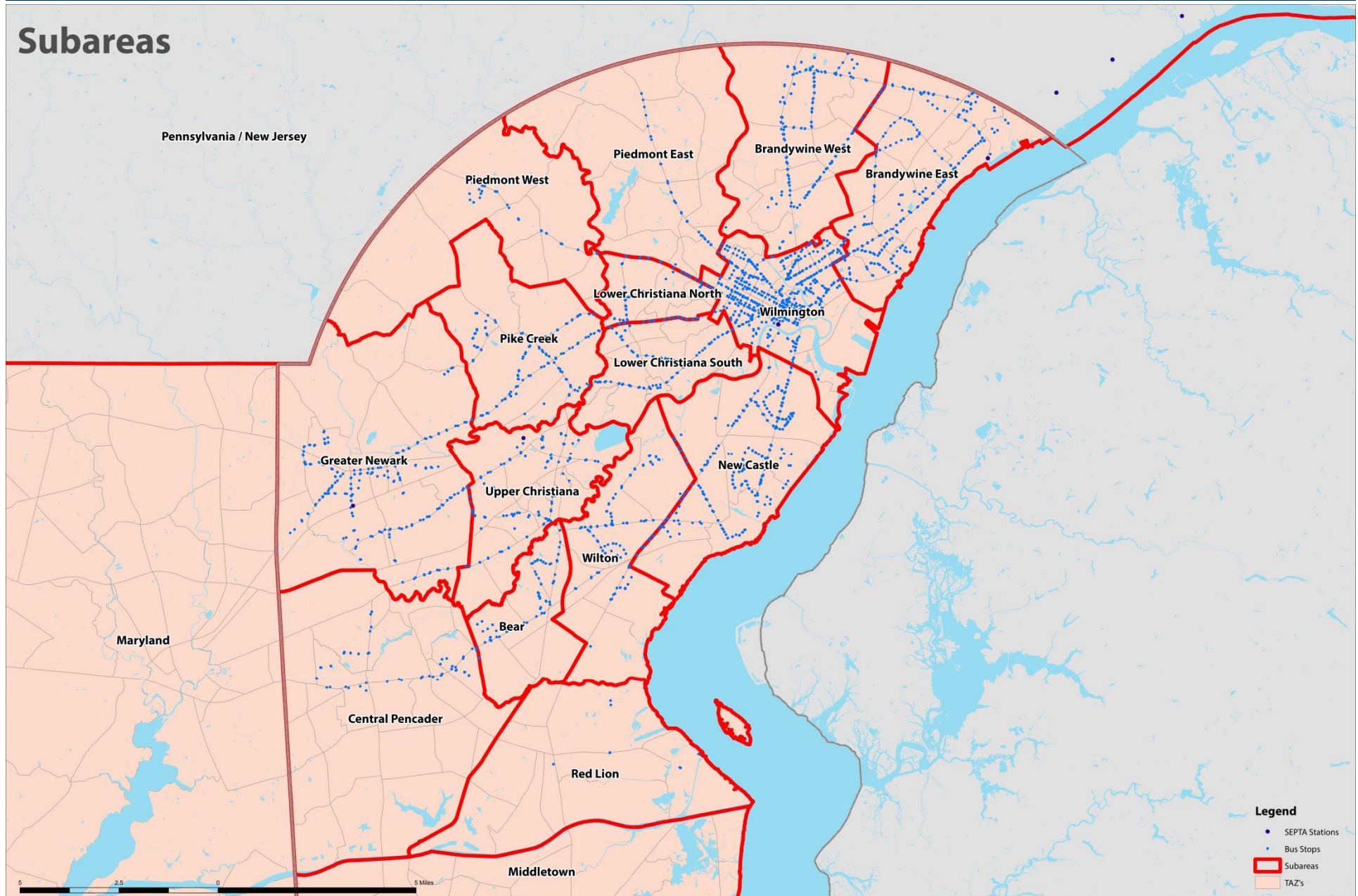
## ROUTES BY CORRIDOR – MAY 2013 OPERATING RESULTS

Corridor	Routes	Ridership	Hours	Net Cost	Net Cost per Rider	Recovery Ratio
Philadelphia Pike	1,3,11,12,24,38, 61	165,320	5,719	\$ 410,294	\$ 2.48	19.1%
Concord Pike	2,21, 28, 35	52,637	2,275	\$ 180,717	\$ 3.43	12.4%
Penn Ave & Lancaster Pike	4, 10, 20	63,292	2,314	\$ 169,953	\$ 2.69	16.5%
Kirkwood Highway	6, 19, 30, 36	80,268	3,459	\$ 289,849	\$ 3.61	14.6%
Maryland Ave	5, 7, 9	86,252	2,984	\$ 243,922	\$ 2.83	16.0%
Market, DuPont and New Castle	8, 15, 17, 22, 25, 32	121,673	5,565	\$ 508,422	\$ 4.18	12.0%
Christina Mall / Newark	16, 23, 27, 33, 34, 55, 59, 62, 63, 65	72,273	4,227	\$ 462,508	\$ 6.40	8.6%
Bear/Glasgow	40, 41, 42, 43, 54, 64	41,935	1,805	\$ 200,657	\$ 4.78	11.6%
Downstate Express	45, 301, 305	20,439	1,587	\$ 218,972	\$ 10.71	17.6%
Total – May 2013		704,089	29,935	\$2,685,294	\$ 3.81	12.9%



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## Subareas



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## SURVEY DATA ANALYSIS – COMPLETED SURVEYS

### Mode of Access / Egress

	Mode of Egress						
		Auto	Carpool	Kiss & Ride	Bike	Walk	Total
Mode of Access	Auto	130	1	3		223	357
	Carpool	6	3			14	23
	Kiss & Ride	68	6	7		14	95
	Bike	7	2		41	72	122
	Walk	217	7	12	12	3,350	3,598
	Total	428	19	22	53	3,673	4,195

**Note:** Of 4,490 surveys, 4,195 had valid mode of access and mode or egress completed. 87.6 percent of all trips are walk access and walk egress

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## SURVEY DATA ANALYSIS – COMPLETED SURVEYS

### Trip Purpose

	# of Surveys	Percentage
Home to Work	2151	47.9%
Home to Other	813	18.1%
Home to School	382	8.5%
Home to Home	296	6.6%
Workplace to Other	265	5.9%
Workplace to Workplace	243	5.4%
Other to Other	184	4.1%
Workplace to School	90	2.0%
School to School	58	1.3%
School to Other	8	0.2%
Total	4,490	100.0%



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## TRANSFER ANALYSIS NORTHERN NEW CASTLE COUNTY

Surveys Returned	Blank or Invalid Routes	Surveys for Transfer Analysis	# Transfers	% Transfer
4,490	98	4,392	2,394	41.2%

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## TRANSFER ANALYSIS BY CORRIDOR

Corridor	Estimated Riders	# Surveys	# Transfers	% Transfer
Philadelphia Pike	3,757	909	415	45.7%
Concord Pike	1,196	269	94	36.8%
Penn Ave & Lancaster Pike	1,438	407	156	39.3%
Kirkwood Highway	1,824	415	147	35.4%
Maryland Ave	1,960	386	178	49.0%
Market, DuPont, New Castle	2,765	954	406	43.5%
Christiana Mall	1,643	532	191	37.0%
Bear / Glasgow	953	325	162	50.2%
Downtown Express	464	162	43	27.8%
Train	-	33	19	57.6%
Total	16,001	4,392	1,811	41.2%

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## CORRIDOR TRANSFER MATRIX

Corridor	# Surveys	No Transfer	Transfer within the Corridor	Transfer to Another Corridor	
				#	% surveys
Philadelphia Pike	909	494	67	348	38.3%
Concord Pike	269	175	13	81	30.1%
Penn Ave & Lancaster Pike	407	251	10	146	35.9%
Kirkwood Highway	415	268	14	133	32.0%
Maryland Ave	386	208	14	164	42.5%
Market, DuPont, New Castle	954	548	85	321	33.6%
Christiana Mall	532	341	42	149	28.0%
Bear / Glasgow	325	163	13	149	45.8%
Downstate Express	162	119	7	36	22.2%
Train	33	14	4	15	45.5%
Total	4,392	2,581	269	1,542	35.1%

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## SUBAREA TRIP MATRIX ANALYSIS – GEOCODED SURVEYS ONLY

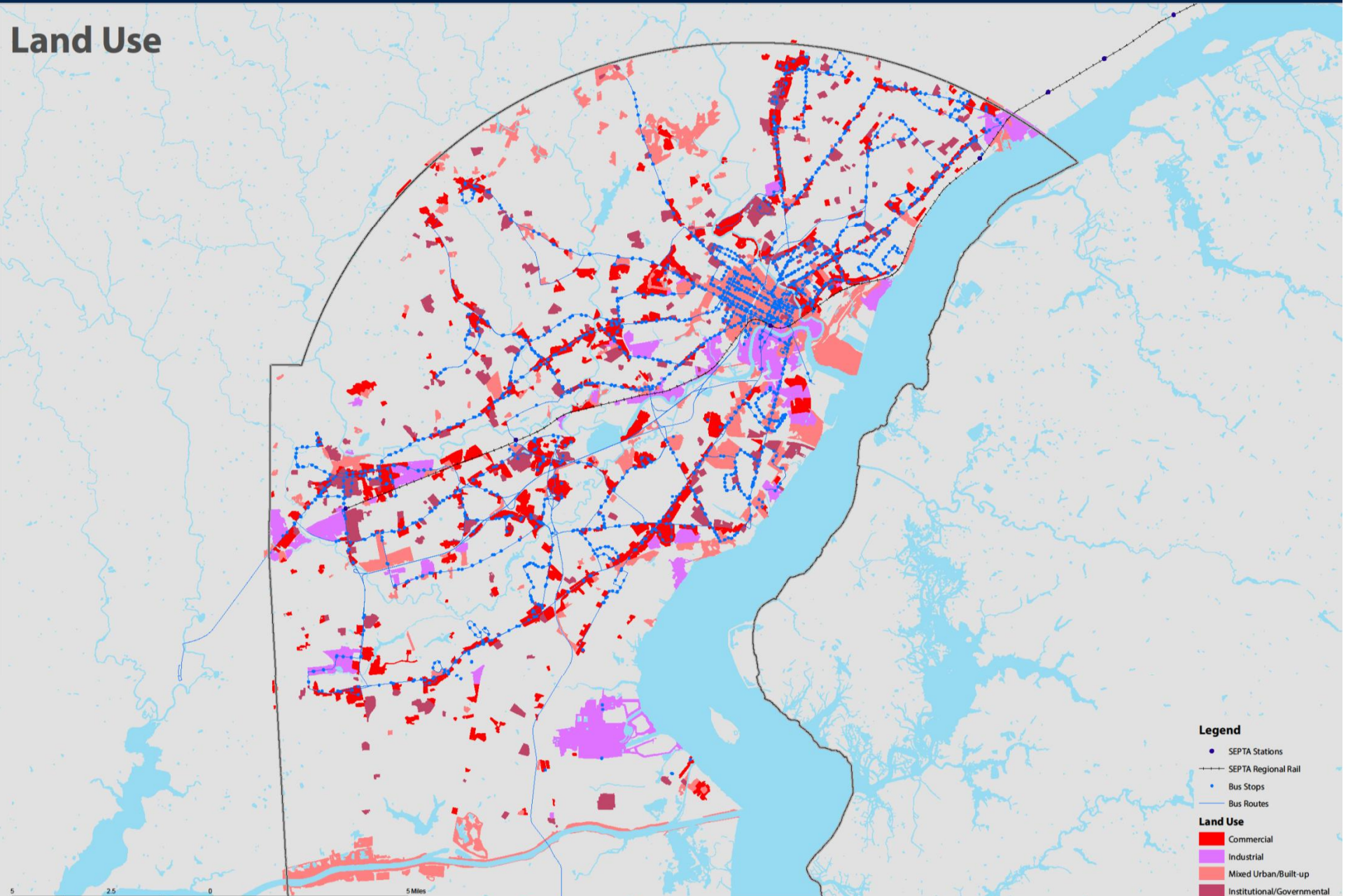
Subarea	# Origin		Trips Within Subarea		Trips to Wilmington (excluding Wilmington)		Trips to other Subarea (except Wilmington)	
	#	%	#	%	#	%	#	%
Wilmington	1,162	48.5%	534	46.0%			628	54.0%
All others	1,232	51.5%	135	11.0%	619	50.2%	478	38.8%
Total	2,394	100.0%						

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## SUBAREA TRIP MATRIX – GEOCODED SURVEYS ONLY

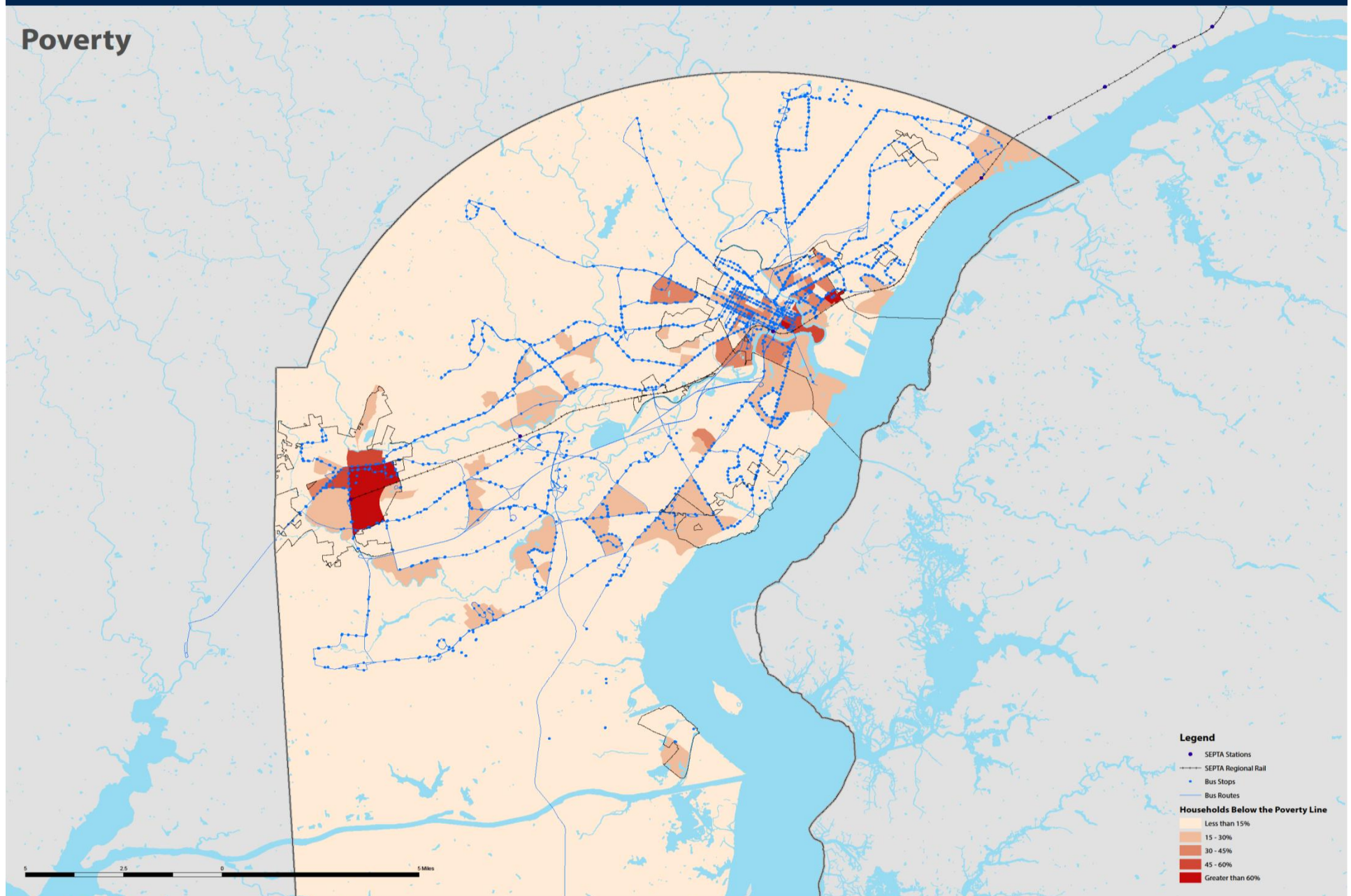
Subarea (excluding Wilmington)	# Origin	Trips Within Subarea		Trips to Wilmington		Trips to other Subarea (except Wilmington)	
		#	%	#	%	#	%
Brandywine East	128	21	16.4%	66	51.6%	41	32.0%
Brandywine West	57	4	7.0%	43	75.4%	10	17.5%
Piedmont East	8	2	25.0%	3	37.5%	3	37.5%
Piedmont West	20	2	10.0%	15	75.0%	3	15.0%
Lower Christiana North	46	1	2.2%	32	69.6%	13	28.3%
Lower Christiana South	109	12	11.0%	50	45.9%	47	43.1%
New Castle	214	32	15.0%	100	46.7%	82	38.3%
Pike Creek	71	3	4.2%	40	56.3%	28	39.4%
Upper Christiana	114	12	10.5%	49	43.0%	53	46.5%
Wilton	94	8	8.5%	54	57.4%	32	34.0%
Bear	57	2	3.5%	29	50.9%	26	45.6%
Greater Newark	162	26	16.0%	68	42.0%	68	42.0%
Central Pencader	60	6	10.0%	22	36.7%	32	53.3%
Red Lion	4	1	25.0%	1	25.0%	2	50.0%
Middletown	50	2	4.0%	33	66.0%	15	30.0%
Kent / Sussex	16	1	6.3%	4	25.0%	11	68.8%
Maryland	11	-	0.0%	4	36.4%	7	63.6%
Pennsylvania	11	-	0.0%	6	54.5%	5	45.5%
New Jersey	0	-	0.0%	-	0.0%	-	0.0%
Total	1,232	135	11.0%	619	50.2%	478	38.8%

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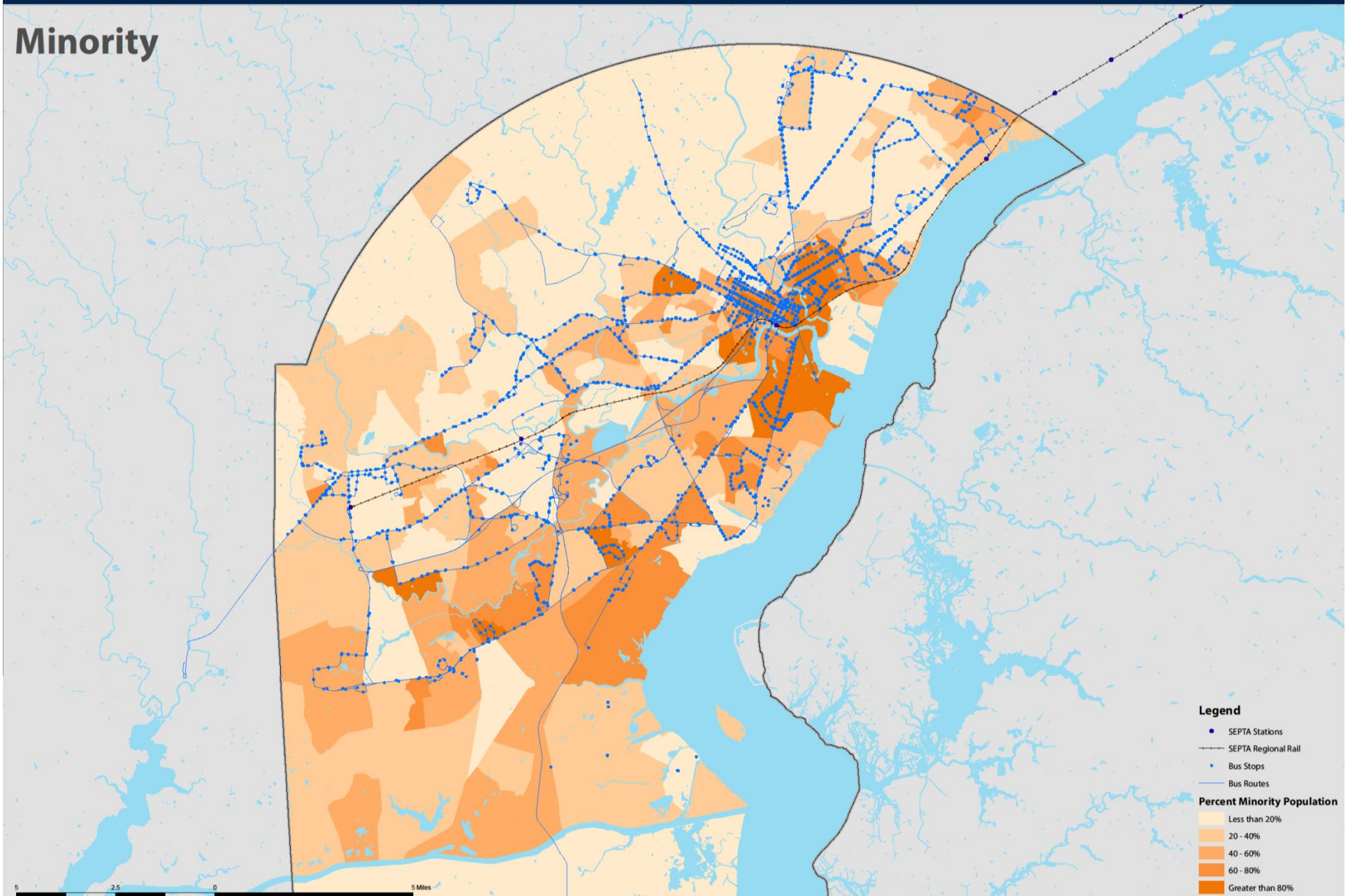




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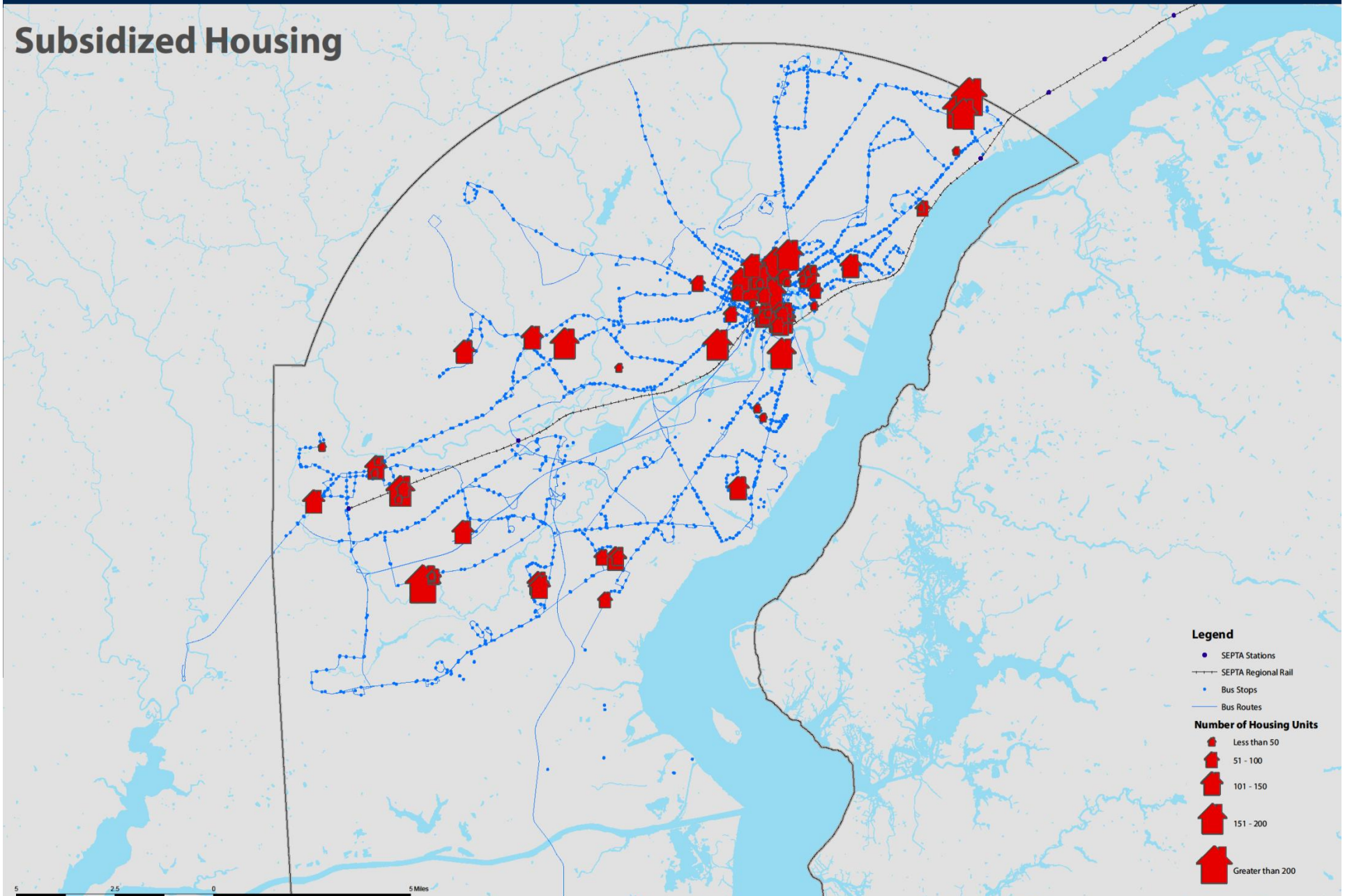
# O-D Study Transit Staff Workshop – January 23, 2014





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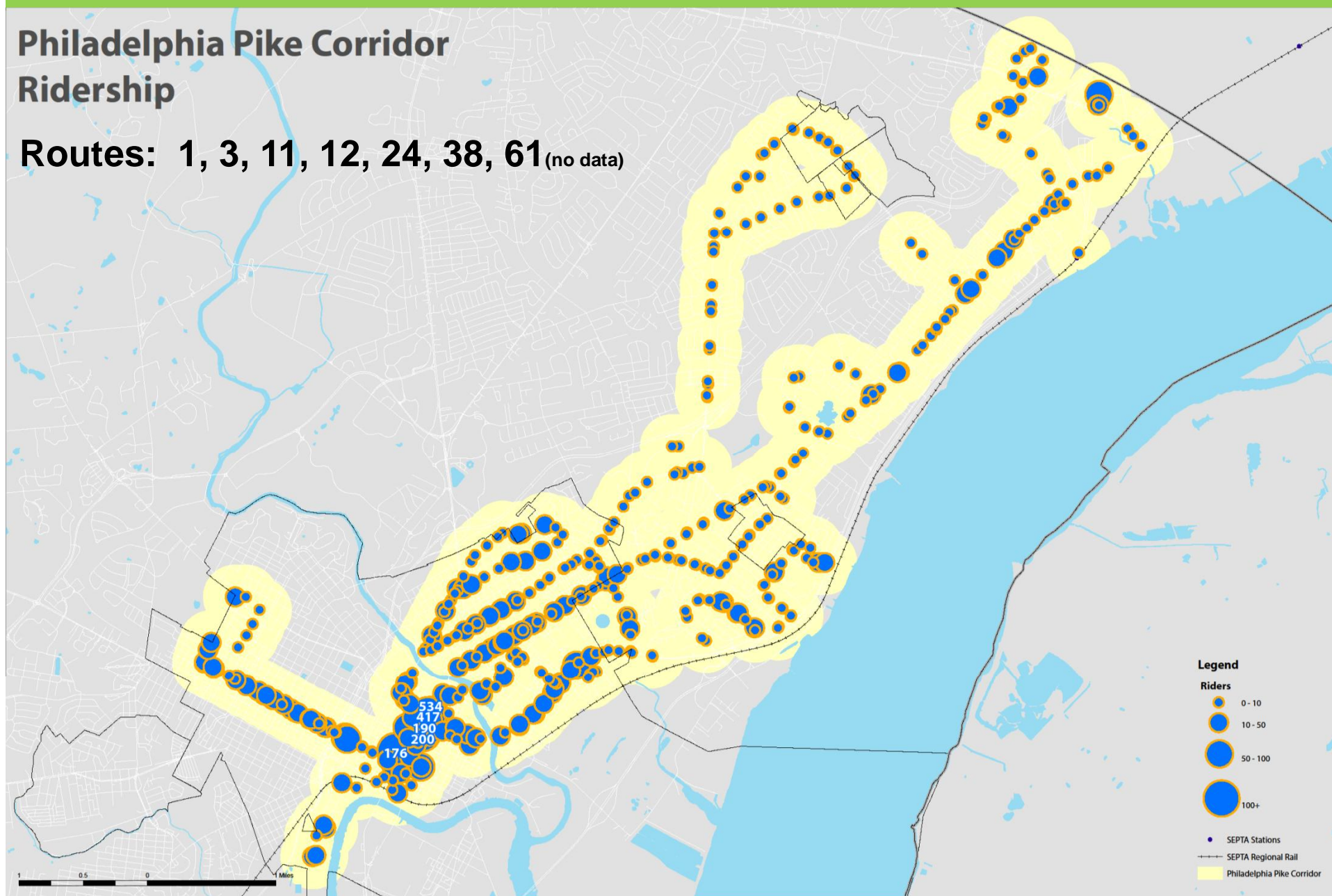
## Subsidized Housing



# Corridor Travel Patterns – Philadelphia Pike

## Philadelphia Pike Corridor Ridership

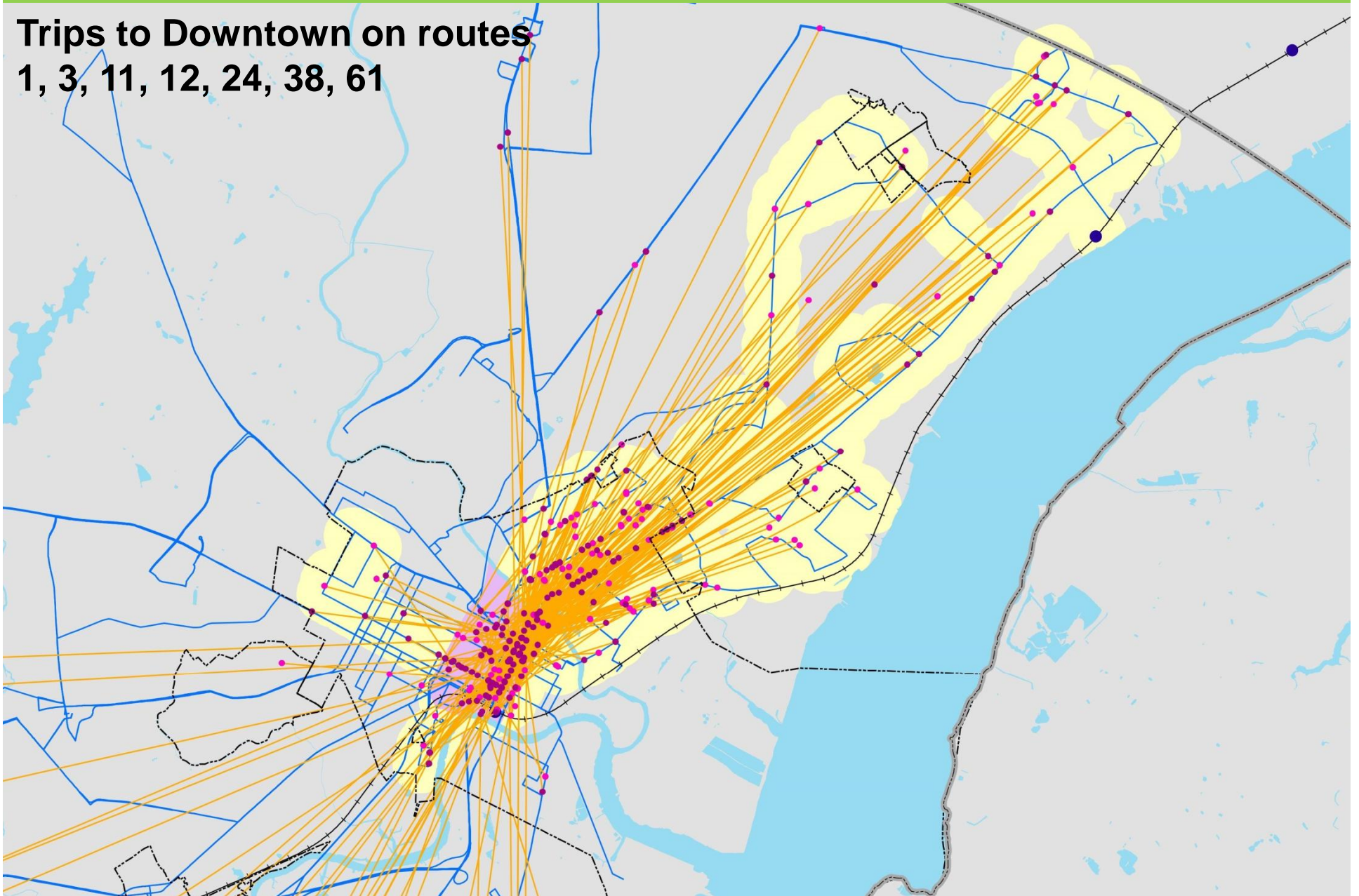
Routes: 1, 3, 11, 12, 24, 38, 61 (no data)





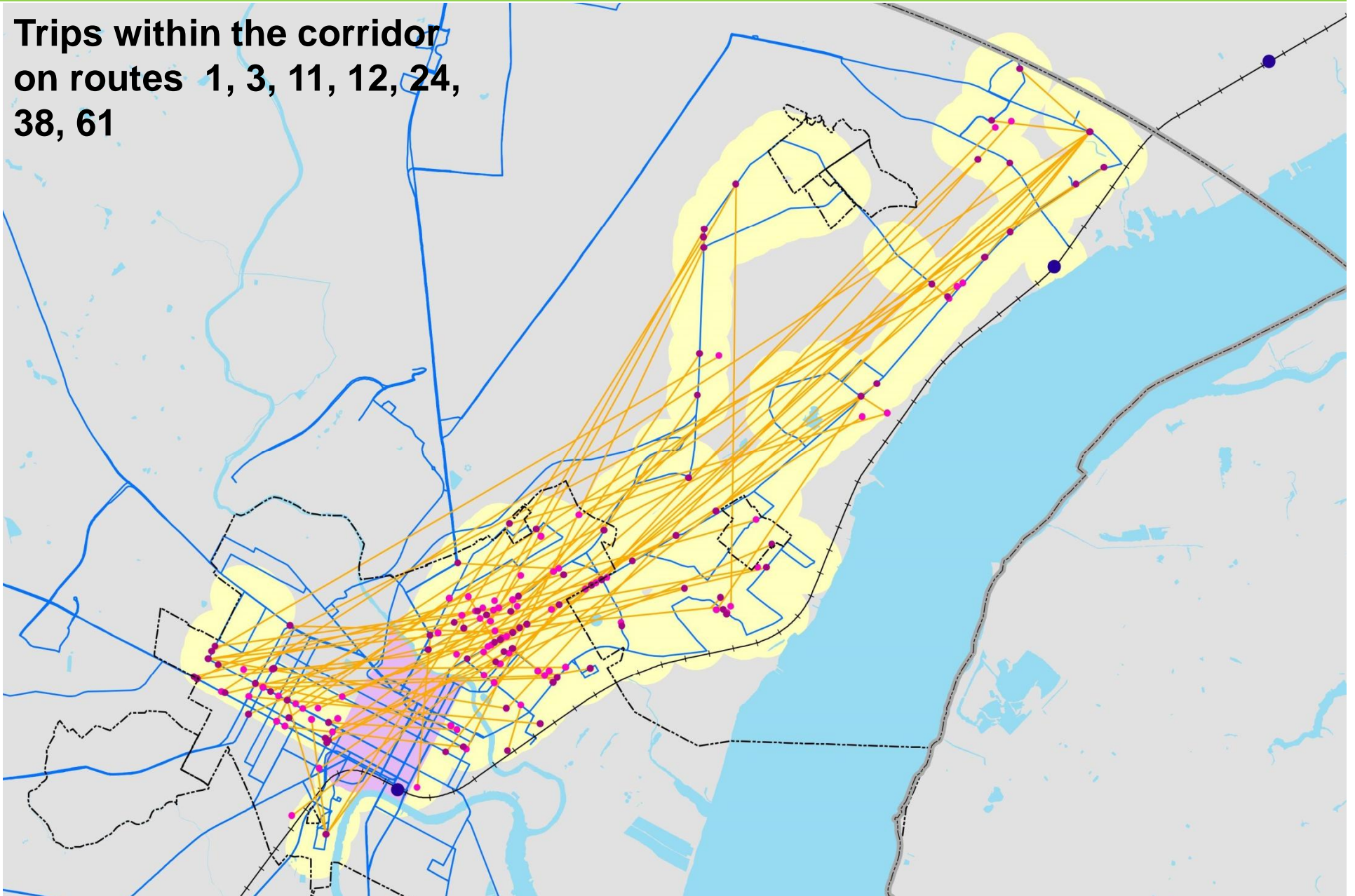
# Corridor Travel Patterns – Philadelphia Pike

**Trips to Downtown on routes  
1, 3, 11, 12, 24, 38, 61**



## Corridor Travel Patterns – Philadelphia Pike

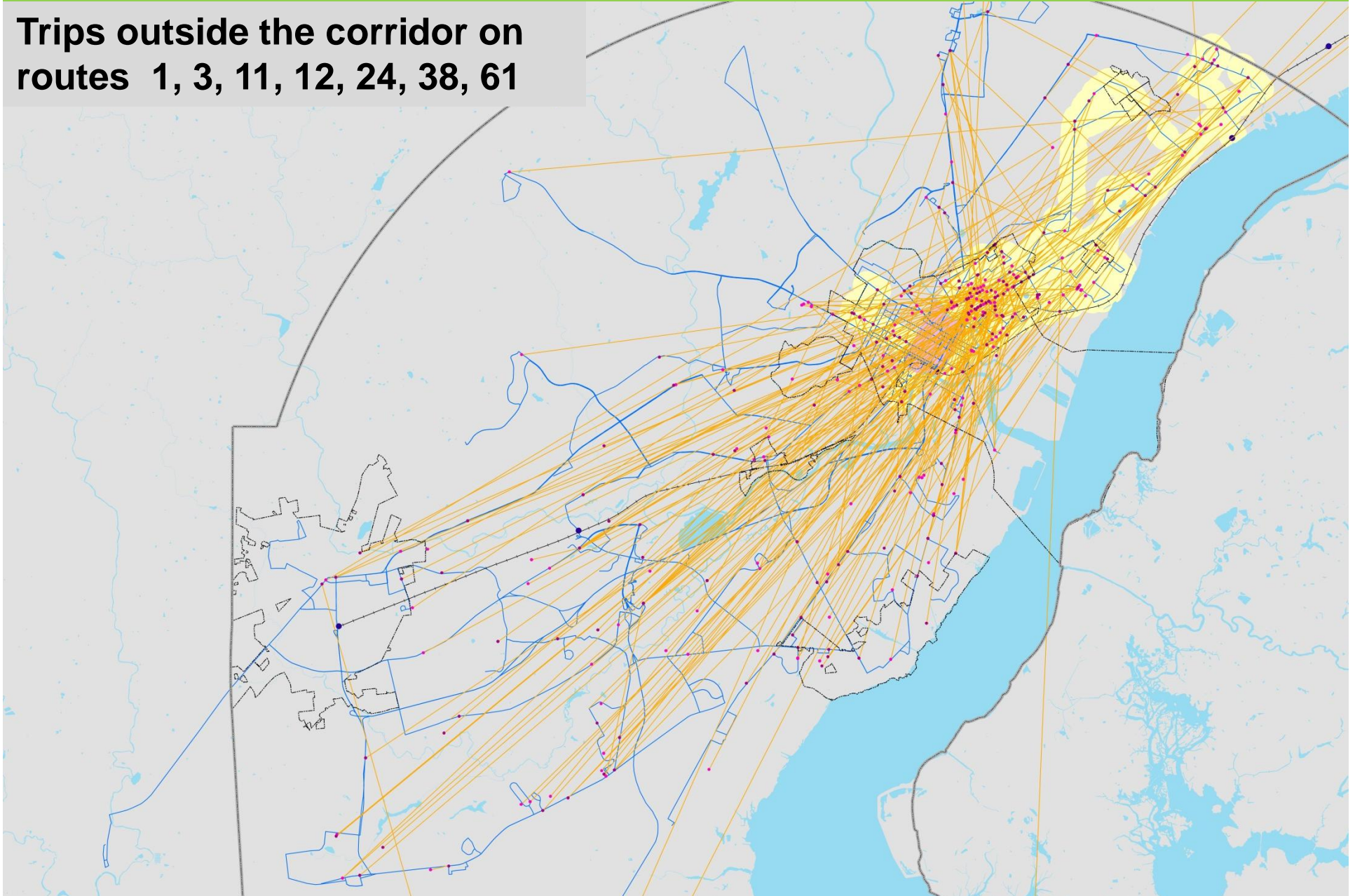
**Trips within the corridor  
on routes 1, 3, 11, 12, 24,  
38, 61**





# Corridor Travel Patterns – Philadelphia Pike

**Trips outside the corridor on  
routes 1, 3, 11, 12, 24, 38, 61**

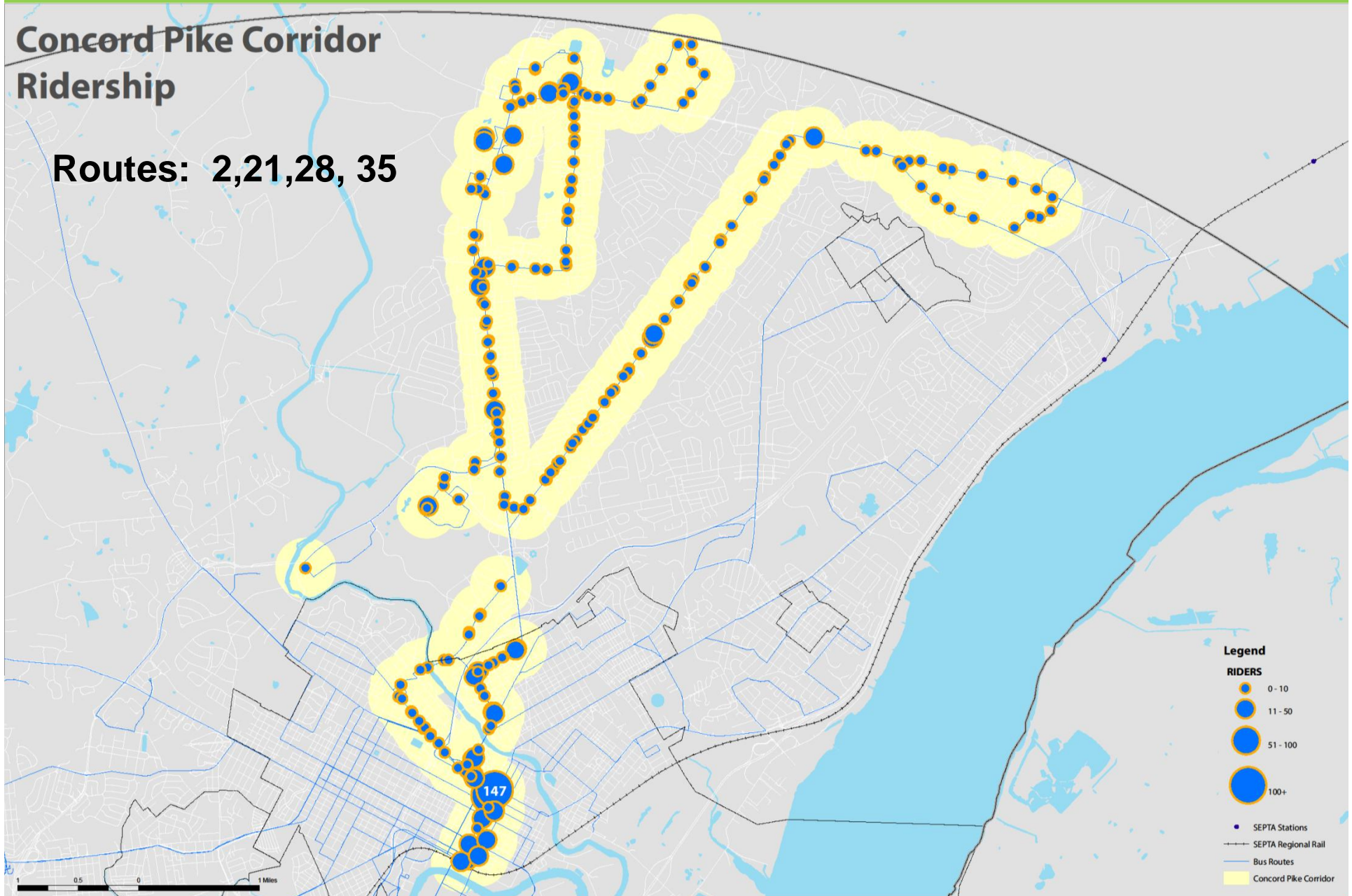




# Corridor Travel Patterns – Concord Pike

## Concord Pike Corridor Ridership

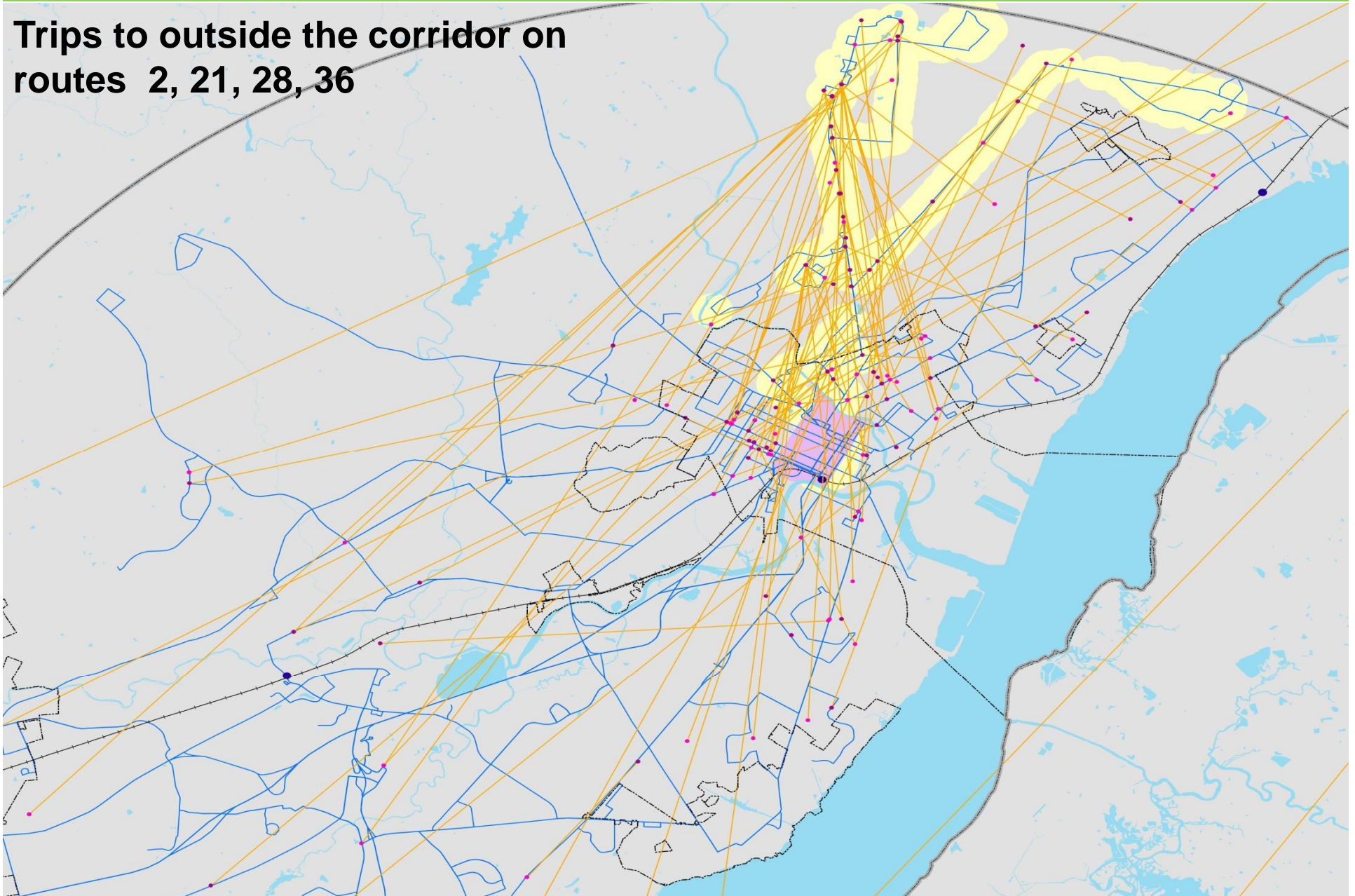
Routes: 2,21,28, 35





# Corridor Travel Patterns – Concord Pike

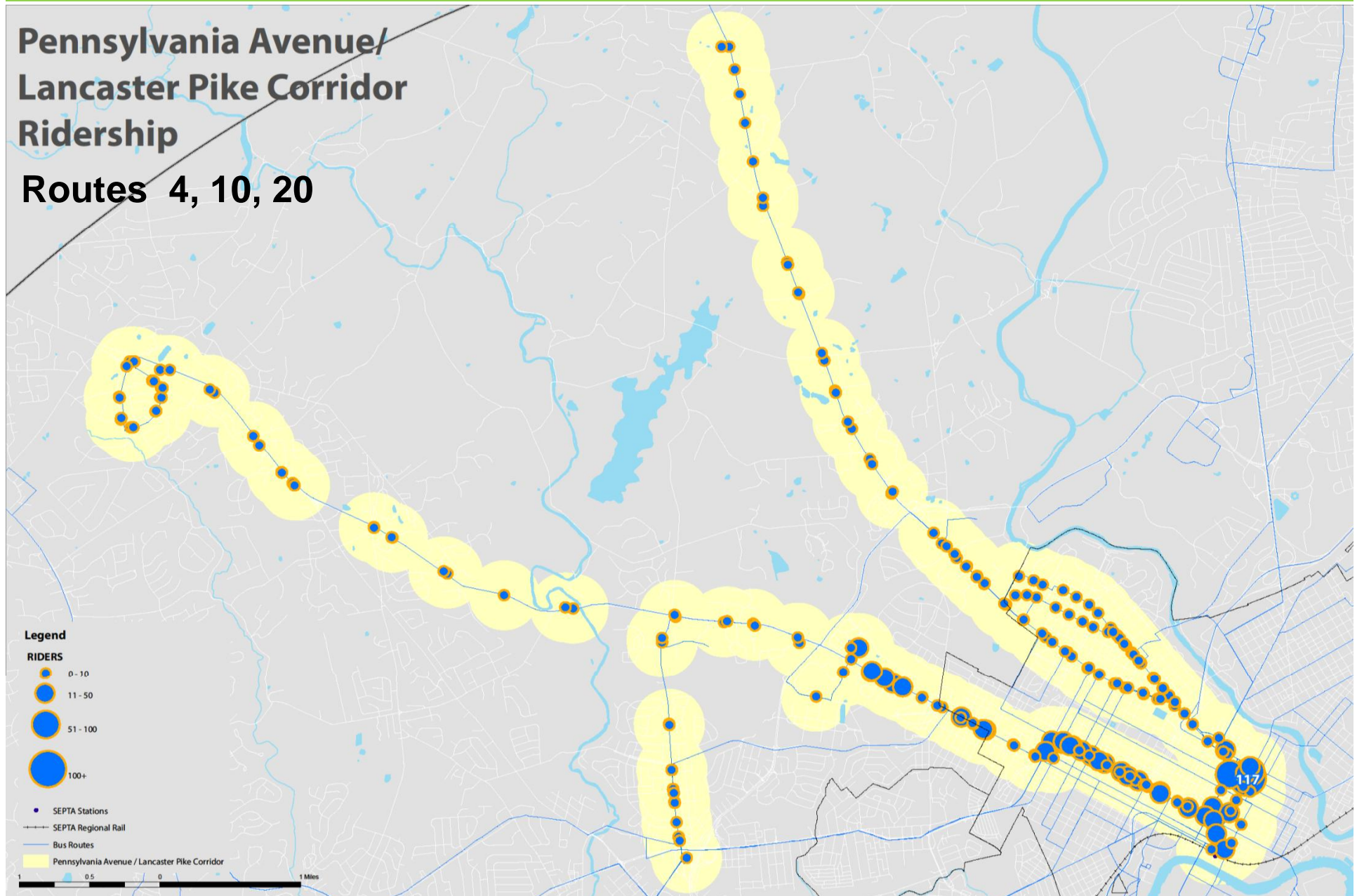
**Trips to outside the corridor on  
routes 2, 21, 28, 36**





# Corridor Travel Patterns – Pennsylvania Avenue / Lancaster Pike

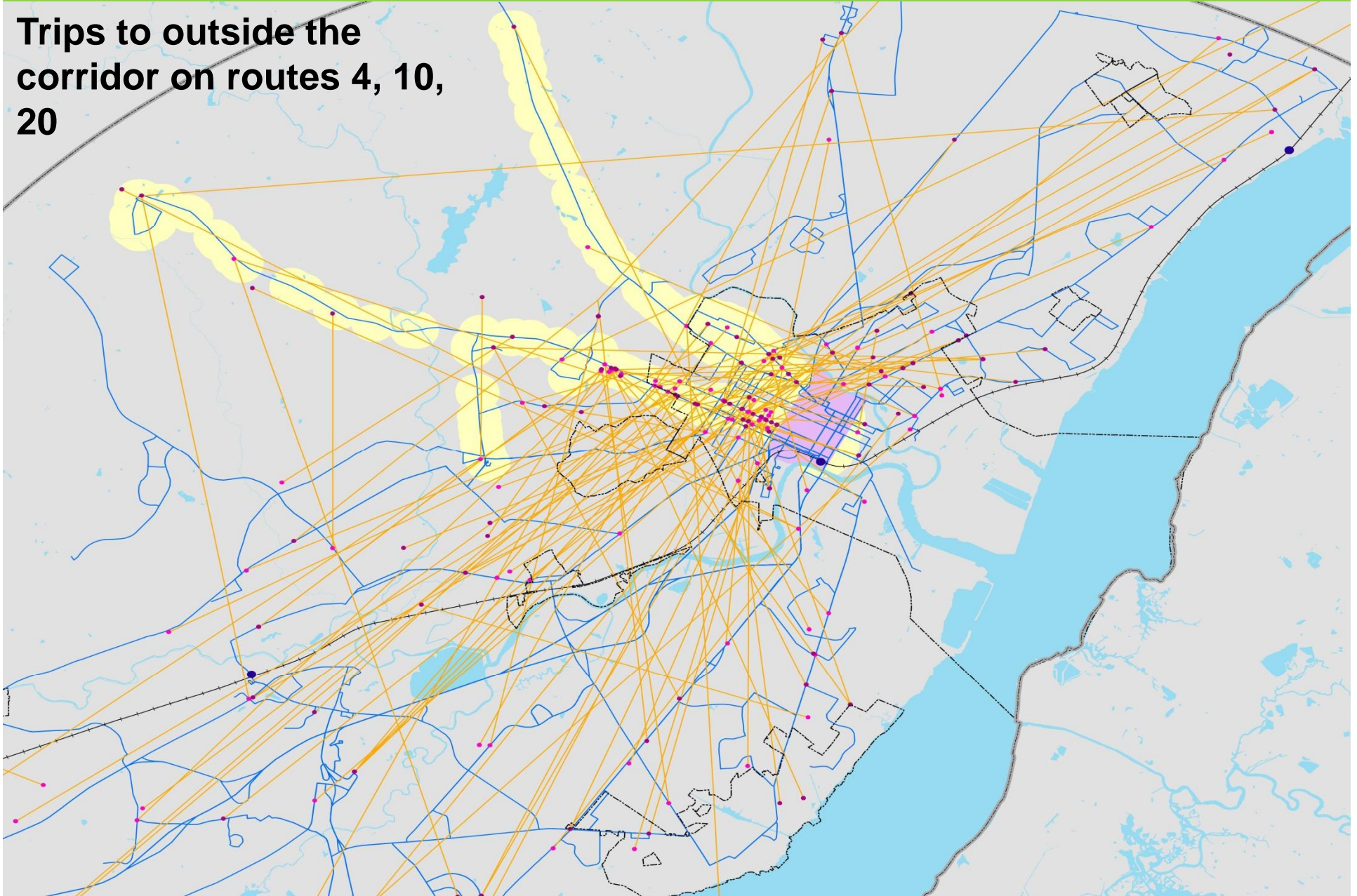
## Pennsylvania Avenue/ Lancaster Pike Corridor Ridership Routes 4, 10, 20





# Corridor Travel Patterns – Pennsylvania Avenue / Lancaster Pike

**Trips to outside the corridor on routes 4, 10, 20**

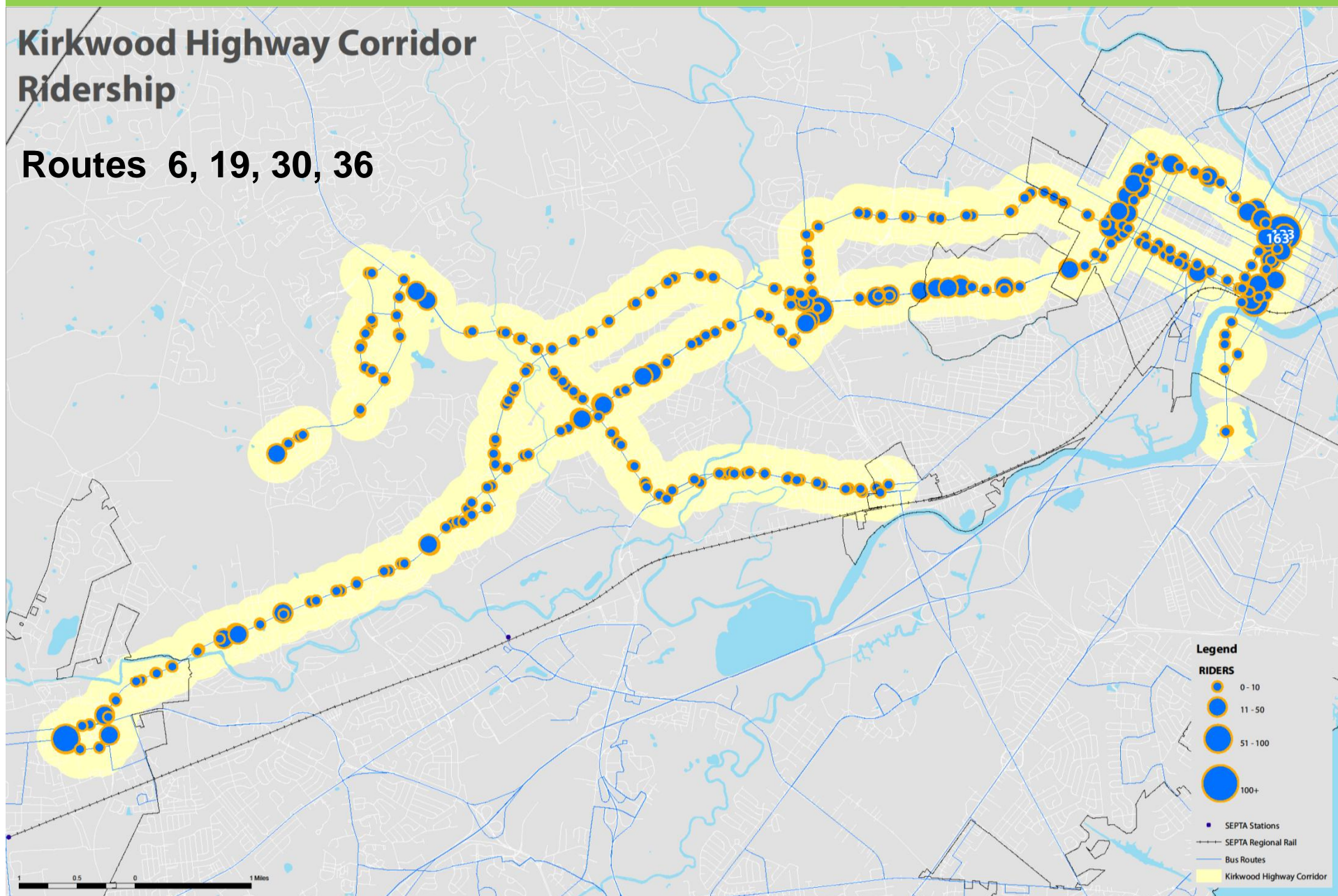




# Corridor Travel Patterns – Kirkwood Highway

## Kirkwood Highway Corridor Ridership

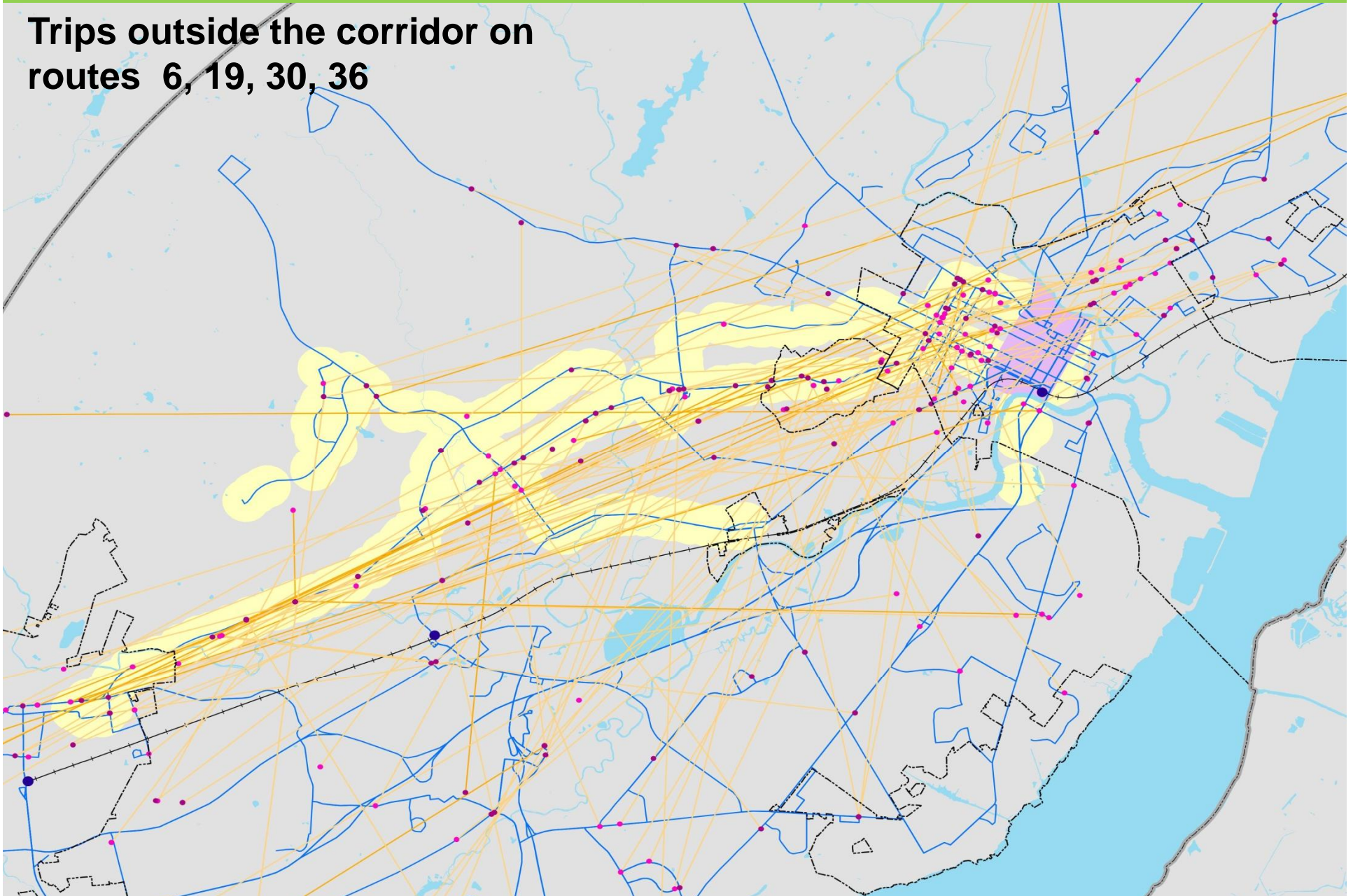
Routes 6, 19, 30, 36





# Corridor Travel Patterns – Kirkwood Highway

**Trips outside the corridor on  
routes 6, 19, 30, 36**

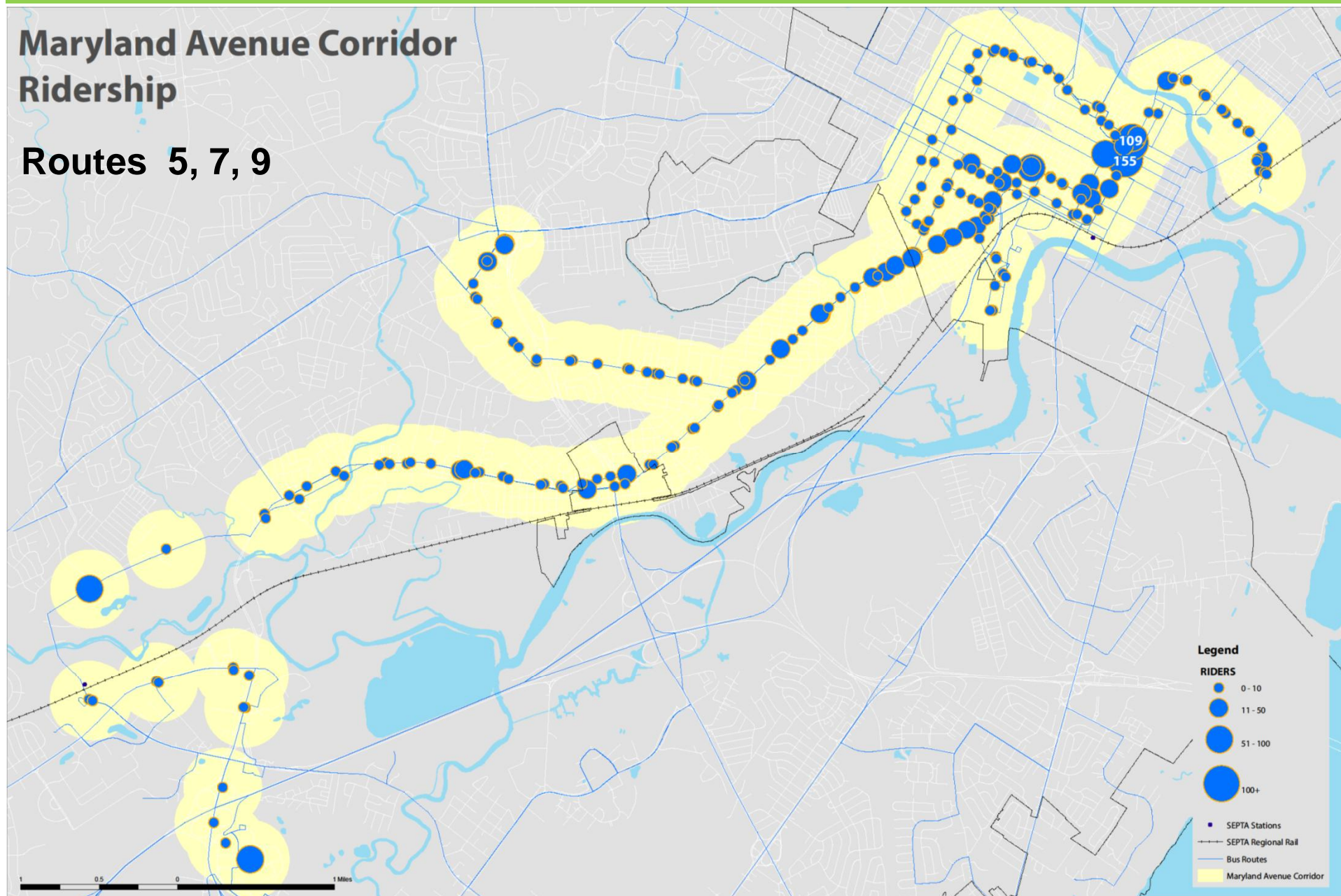




# Corridor Travel Patterns – Maryland Avenue

## Maryland Avenue Corridor Ridership

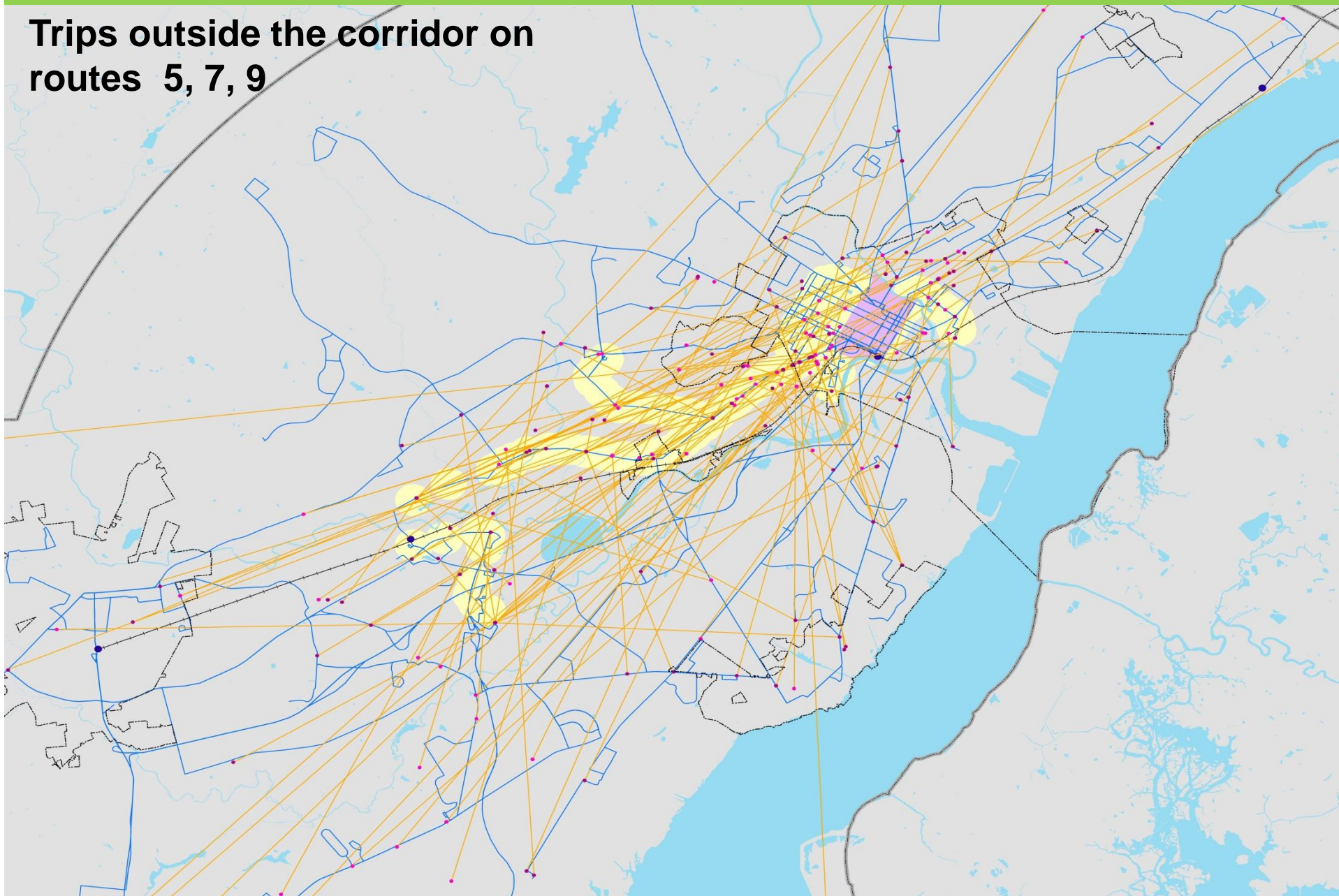
Routes 5, 7, 9





# Corridor Travel Patterns – Maryland Avenue

**Trips outside the corridor on  
routes 5, 7, 9**

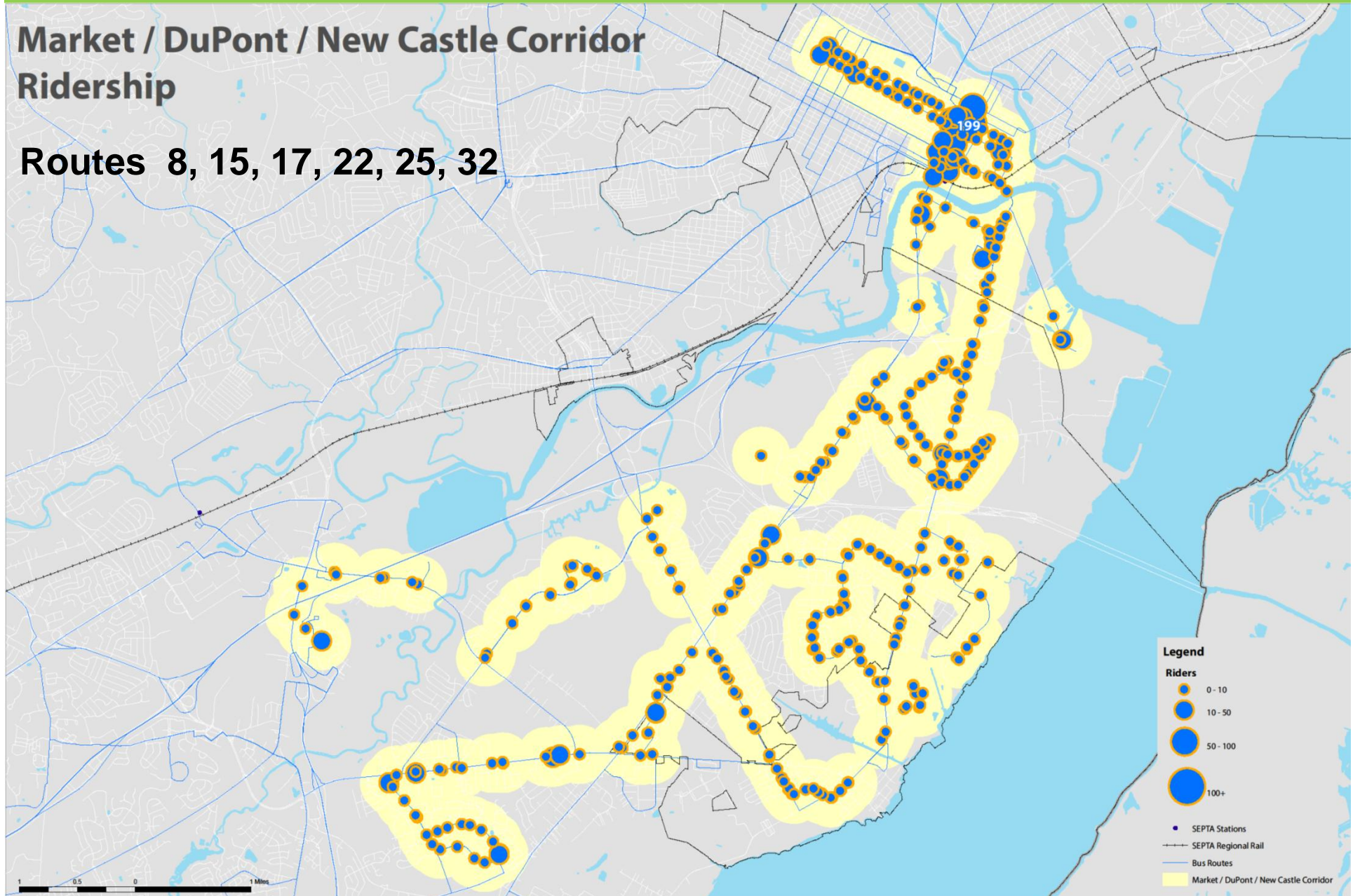




# Corridor Travel Patterns – Market, DuPont, and New Castle

## Market / DuPont / New Castle Corridor Ridership

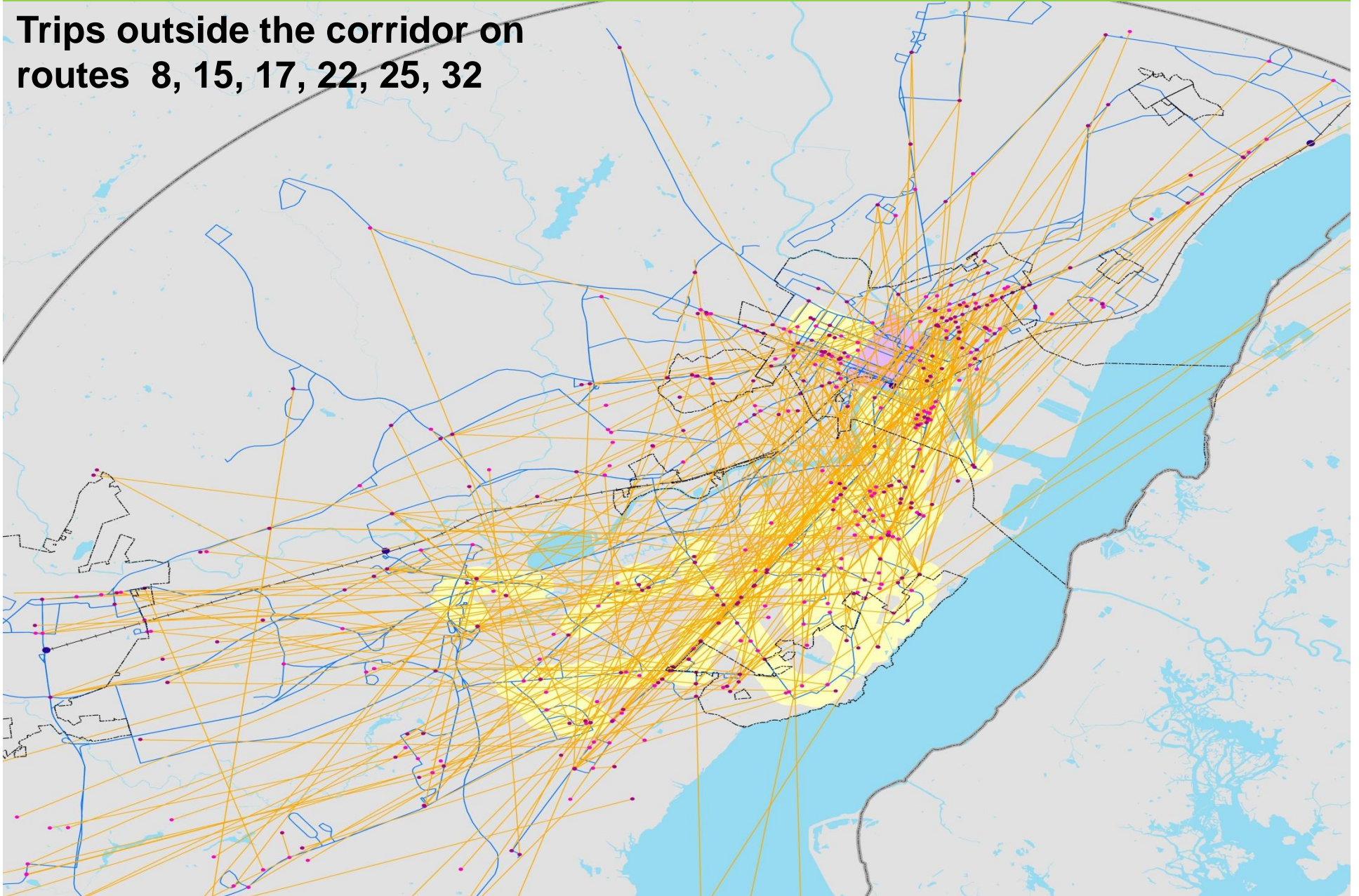
Routes 8, 15, 17, 22, 25, 32





# Corridor Travel Patterns – Market, DuPont, and New Castle

**Trips outside the corridor on  
routes 8, 15, 17, 22, 25, 32**

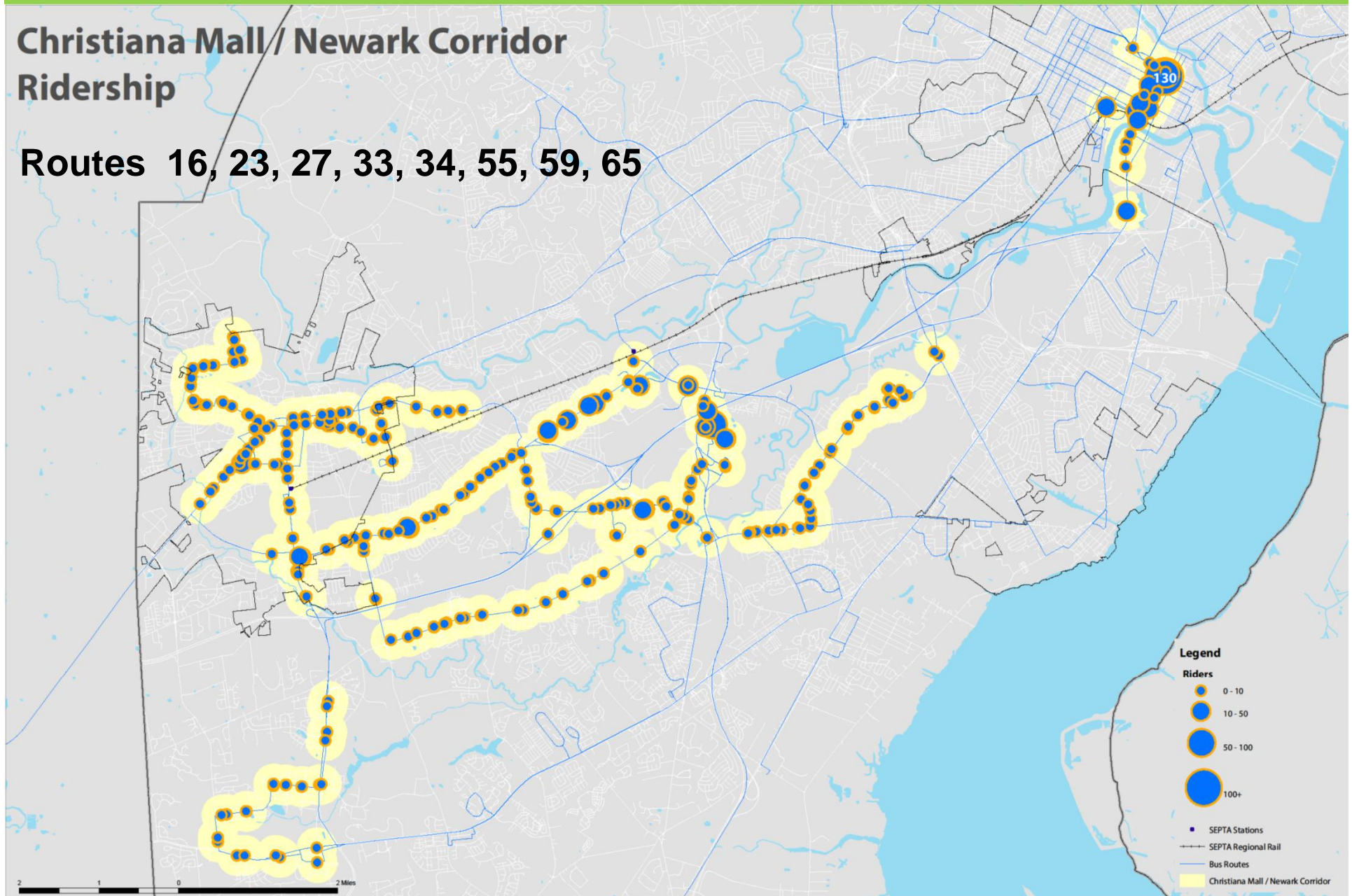




# Corridor Travel Patterns – Christiania Mall / Newark

## Christiana Mall / Newark Corridor Ridership

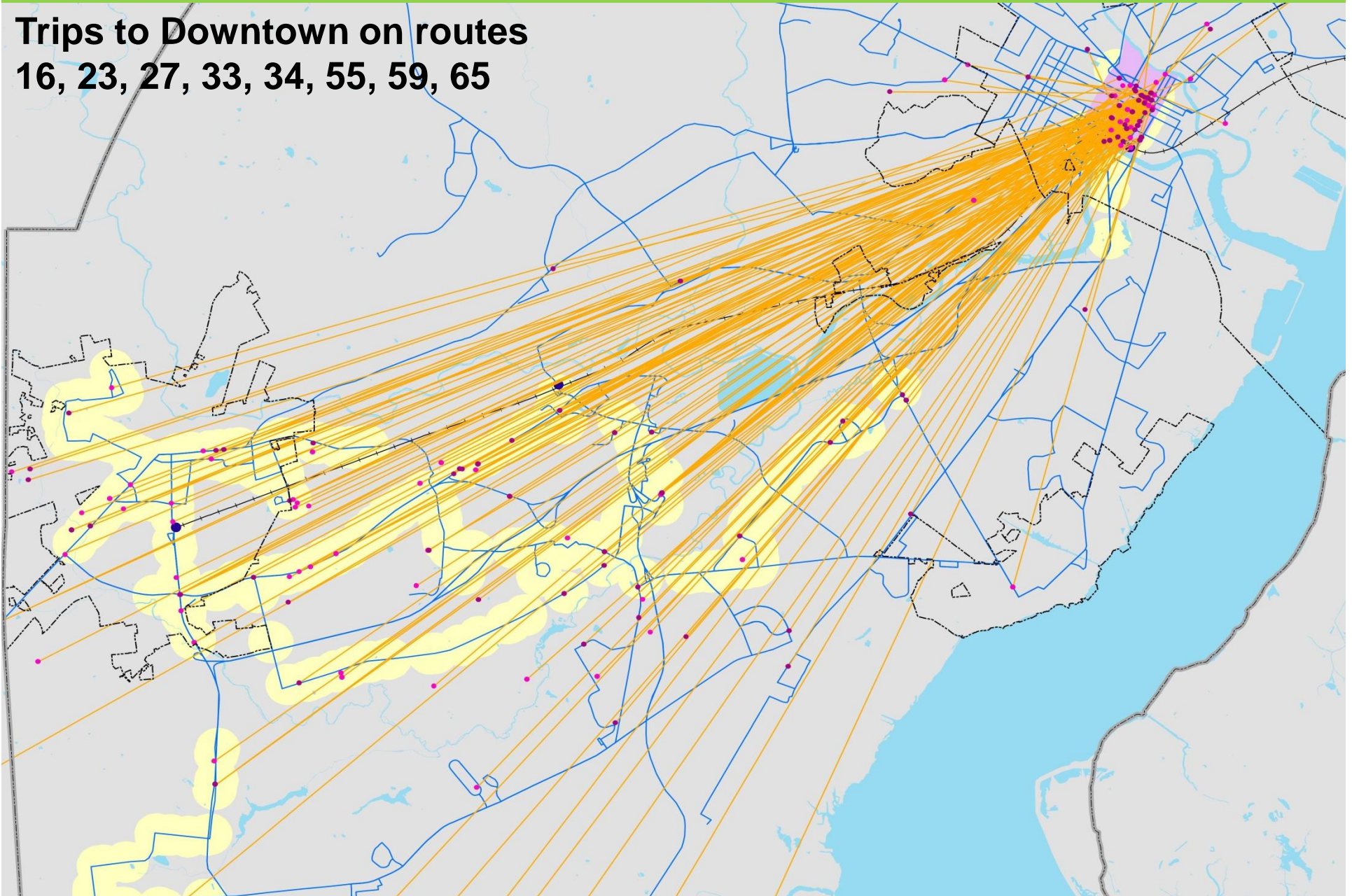
Routes 16, 23, 27, 33, 34, 55, 59, 65





# Corridor Travel Patterns – Christiania Mall / Newark

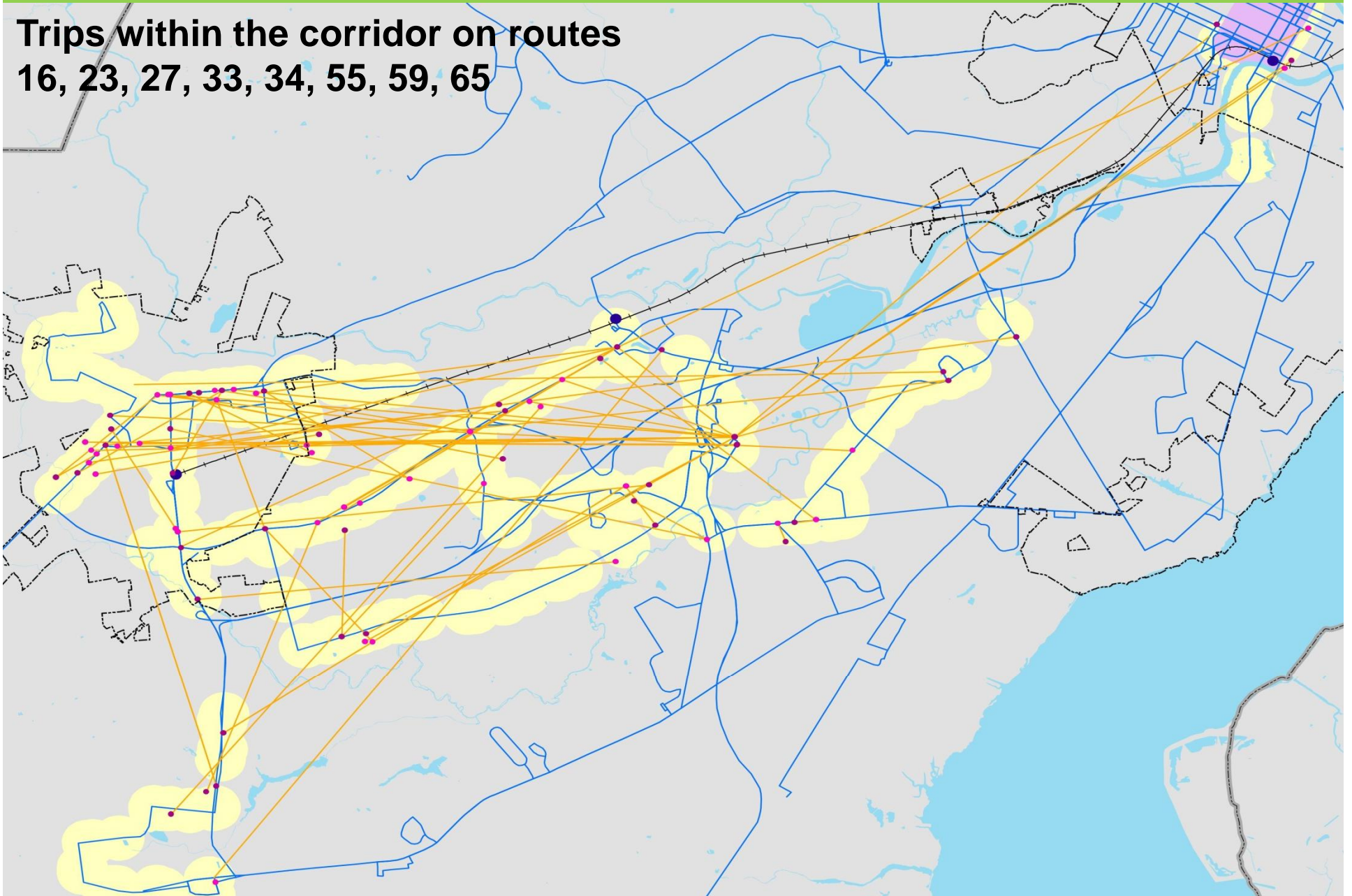
**Trips to Downtown on routes  
16, 23, 27, 33, 34, 55, 59, 65**





# Corridor Travel Patterns – Christiania Mall / Newark

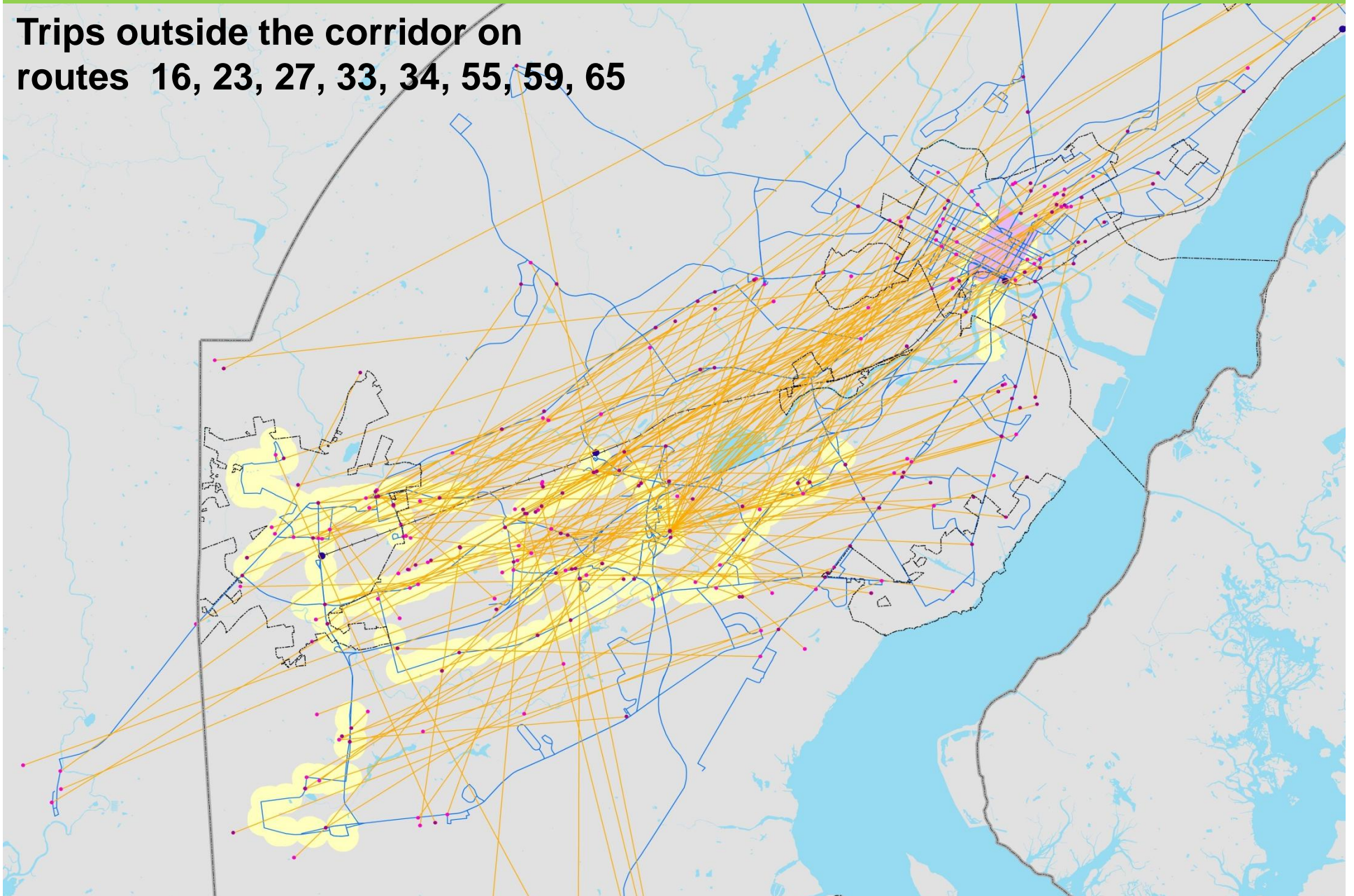
**Trips within the corridor on routes  
16, 23, 27, 33, 34, 55, 59, 65**





# Corridor Travel Patterns – Christiania Mall / Newark

**Trips outside the corridor on  
routes 16, 23, 27, 33, 34, 55, 59, 65**

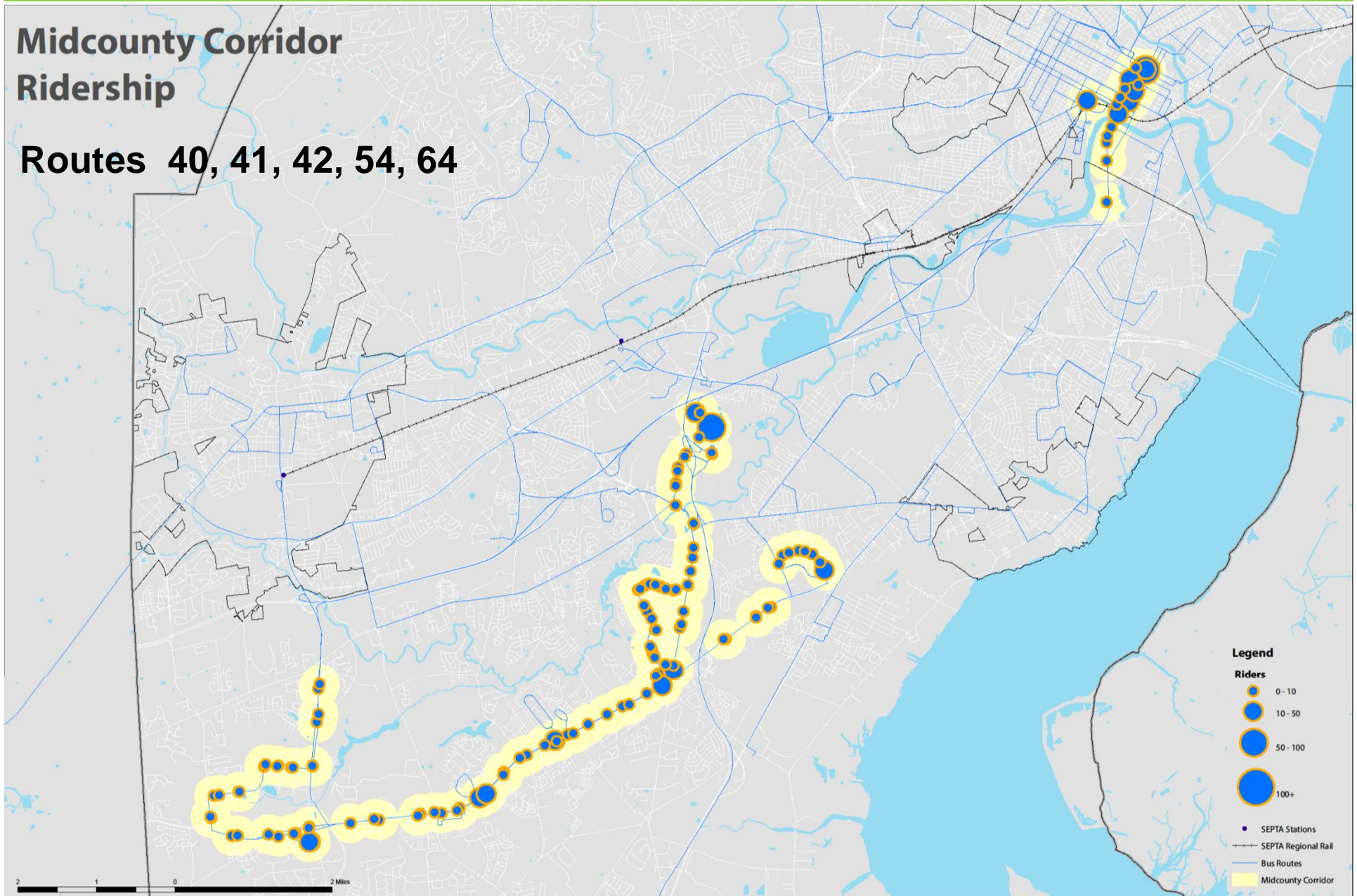




# Corridor Travel Patterns – Bear / Glasgow

## Midcounty Corridor Ridership

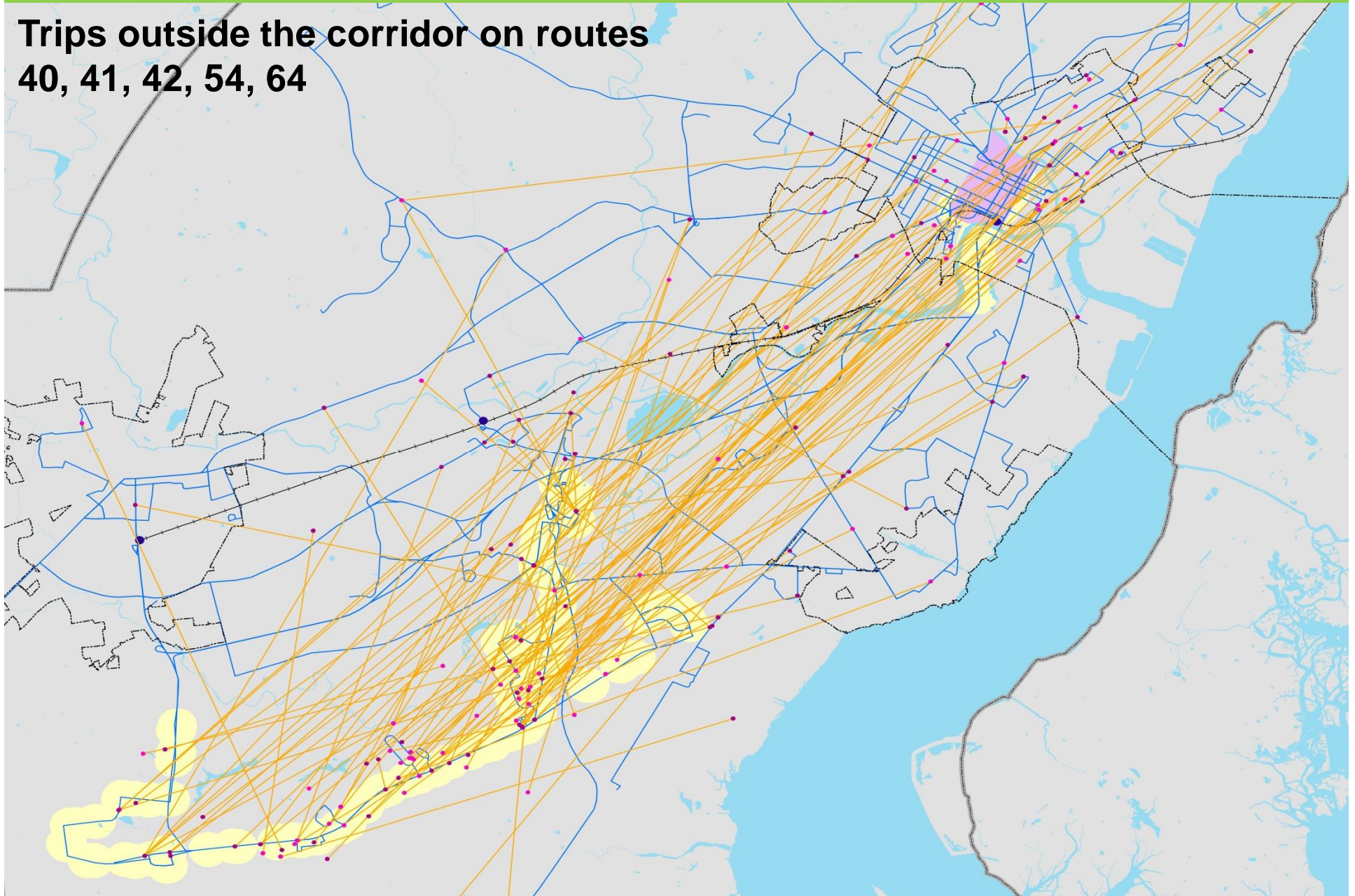
Routes 40, 41, 42, 54, 64





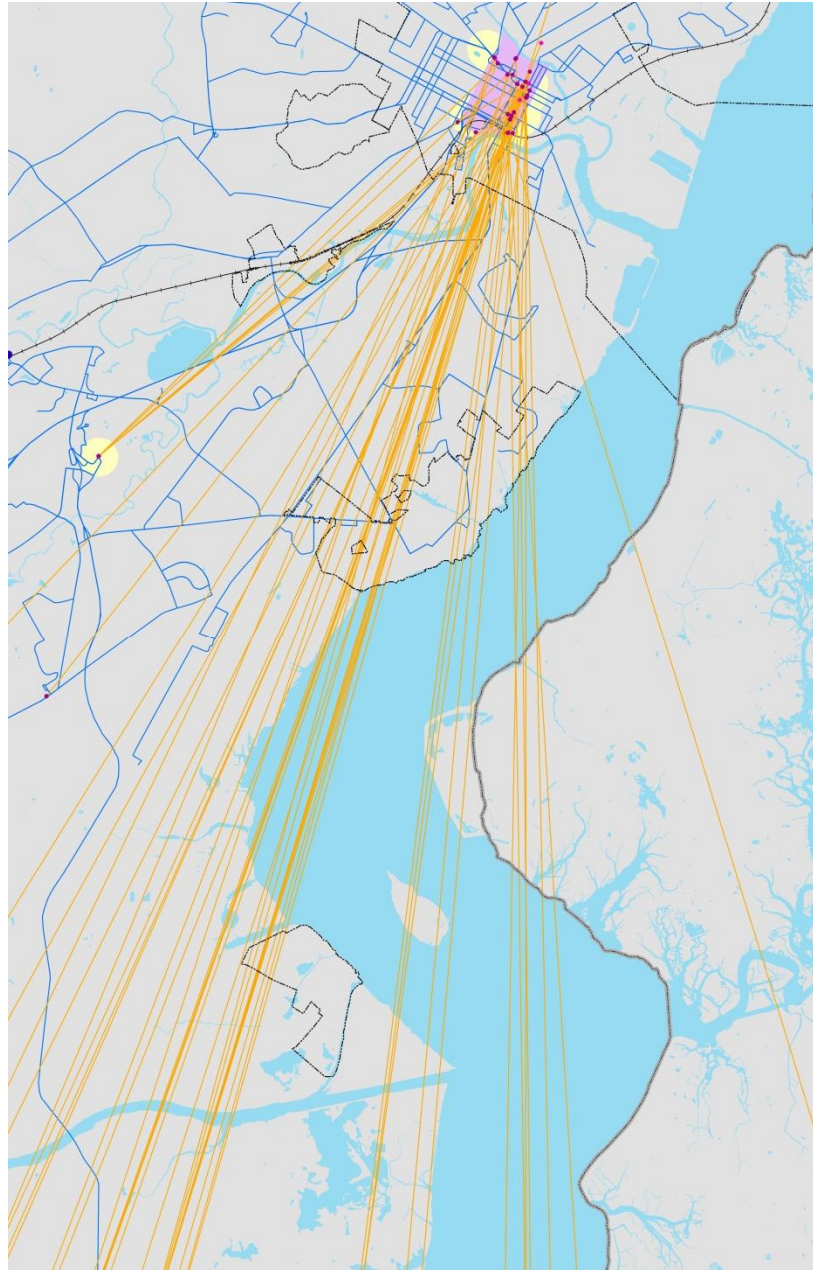
# Corridor Travel Patterns – Bear / Glasgow

**Trips outside the corridor on routes  
40, 41, 42, 54, 64**



# Corridor Travel Patterns – Express Routes

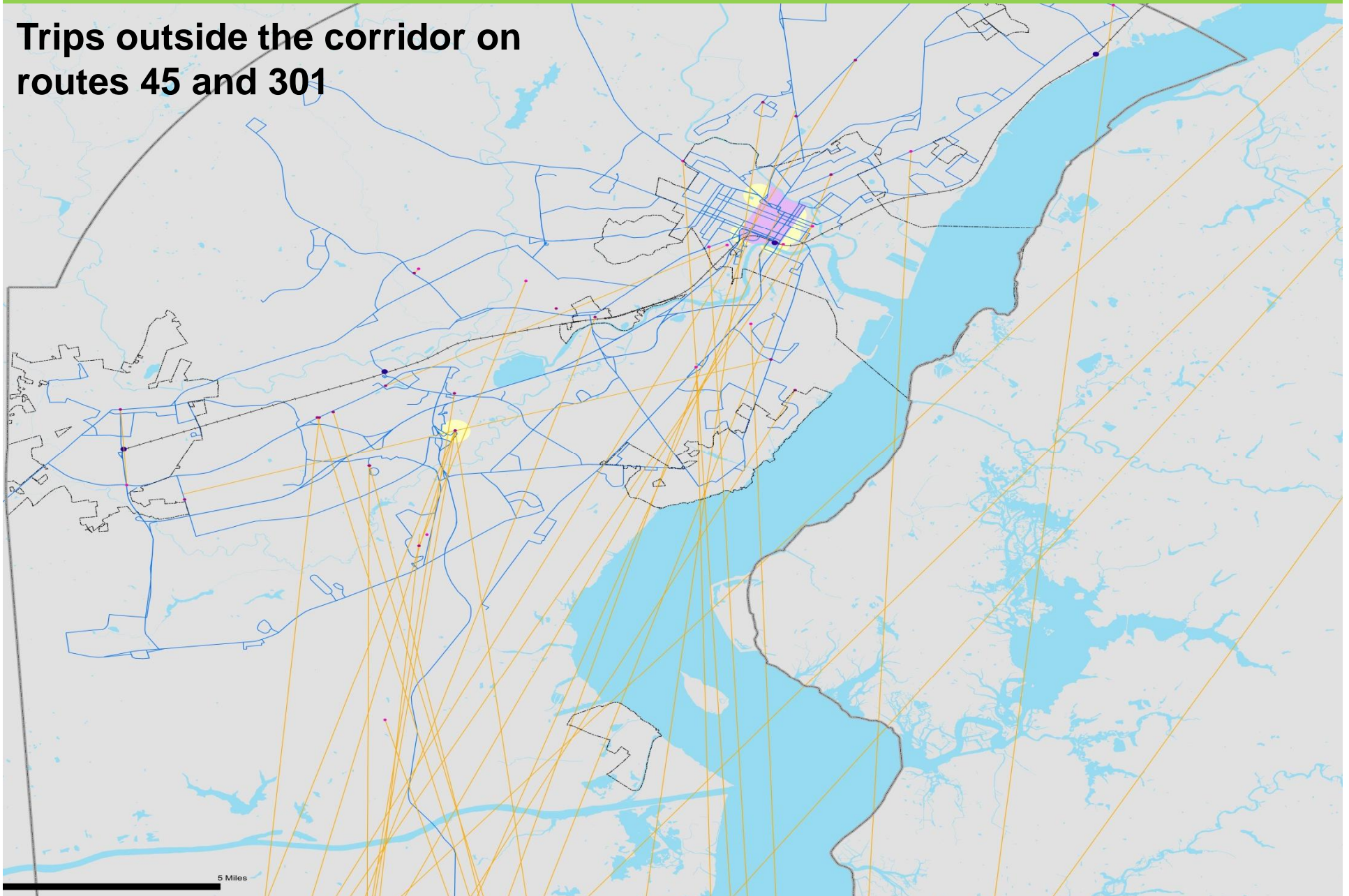
**Trips to Downtown on  
routes 45 and 301**





# Corridor Travel Patterns – Express Routes

**Trips outside the corridor on  
routes 45 and 301**



# O-D Study Transit Staff Workshop – January 23, 2014

## 2010 TO 2013 RIDERSHIP CHANGE BY CORRIDOR

Corridor	2013 Weekday Riders	Average Annual Change
Philadelphia Pike	7,476	2.7%
Concord Pike	2,257	0.9%
Penn Ave & Lancaster Pike	2,846	-0.8%
Kirkwood Highway	3,699	2.3%
Maryland Ave	3,701	5.1%
Market, DuPont, New Castle	5,718	2.7%
Christiana Mall	3,514	4.6%
Bear / Glasgow	2,071	3.6%
Downstate Express	949	6.7%
Total	32,232	2.8%



## Discussion

1. Questions about O-D data?
2. Goals for service improvements?
  - Direct trips with fewer transfers
  - Increase ridership by reducing trip time
  - Reduced the number of transfers at Rodney Square
3. Ideas for service improvements?
  - Service refinement – short range (3 to 5 years)
  - New transfer facilities – mid-range (5 to 10 years)
  - New modes – long range (10 to 20 years)