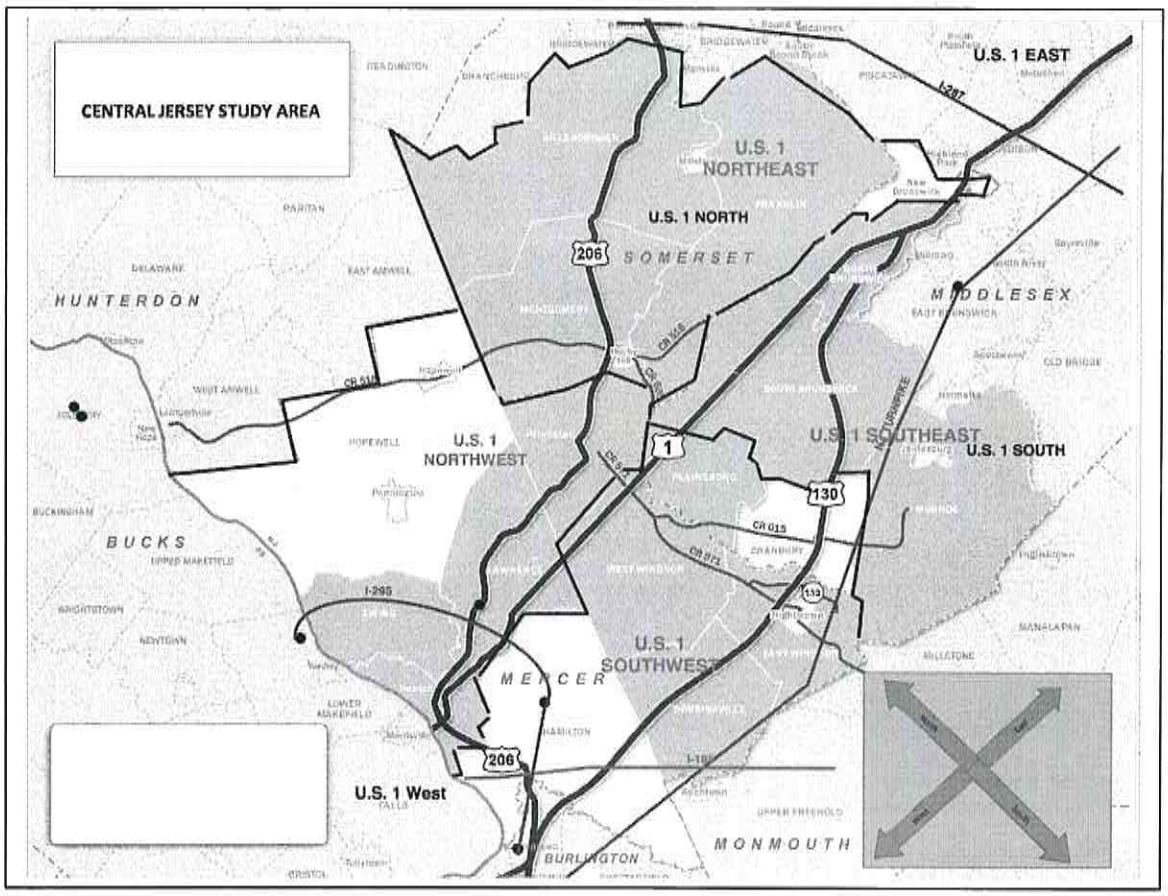
COMMUTER TRAFFIC CHANGES IN RT. 1 STUDY AREA
2008-2017
Some Very Preliminary Findings



PRINCETON TRANSPORTATION TASK GROUP **February 2019**

ABOUT THE NUMBERS

At this early stage in our analysis, all initial estimates come from the U.S. Census Bureau's annual *American Community Survey*. Each year, the bureau surveys 3.5 million households across the nation. It takes five years of household samples for most of our municipalities to yield enough data for an average annual estimate that is 90% accurate (within a frequently wide +/- range). Such estimates help call attention to patterns and issues and are useful for strategic planning, but nowhere near precise enough for project planning.

We face a special challenge in using the survey's "Journeys to Work" estimates of commuter origins and destinations. Because the Census Bureau must derive them from a collective analysis of data from all municipal surveys gathered each year, the Journey to Work results lag behind , in the years they are released, the annual estimates for most other municipal data The most recent overall estimates for most municipal data are for 2013-2017. As of this date, the most recently released Journey-to-Work survey is for 2011-2015, but the bureau has not yet had time to break those commuter flow estimates down by transportation modes used by commuters. In consequence, temporarily we have used the 2009-2013 Journey to Work survey. In consequence, none of the estimates here should be considered as "fixed." Obviously, as newer estimates become available we will update.

"Study Area" Municipalities in This Analysis

A final note: For this analysis, we have included all municipal jurisdictions originally defined as within the study area, even if they have not yet joined as members of the Forum. In fact, because of commuting relationships with municipalities within the study area, Piscataway, Edison, Highland Park, and Metuchen may warrant inclusion. If they were added, "Central Jersey" might thus be defined as the section of the Rt. 1 corridor between I-287 and I-295/ I-195.

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A.

ESTIMATED CHANGES IN WORKFORCE AND COMMUTATION, 2008-2017
RT. 1 GROWTH STRATEGY STUDY AREA
(All tables are in the appendix.)

1. Resident commuters increased 3.8%, 2008-2017 (Table 1)

- The number of resident commuters in the Rt. 1 Growth Study area increased by an estimated +/-12,500 (3.8%) from 2008 to 2017.
- The number of study area residents who work in their hometowns increased by an estimated +/-4,660 (6.0%) during the same period.
- The estimated number of residents who out-commuted from their hometown went up by nearly +/-7,800 (3.1%).

2. The area's daily workforce and number of in-commuters grew 6%. (Table 1)

- The study area's daily workforce expanded by an estimated +/-23,550 (6.1%) during 2008-2017, about twice the percentage increase for the state.
- The estimated number of in-commuters into the area increased by around +/-18,900.

3. About 52% of resident out-commuters work in another study area town. (Tables 2-5)

- About +/- 134,890 resident out-commuters journeyed to a job in one of the other towns within the study area during 2009-2013. Taken together with the 79,442 resident commuters who worked in their hometowns during that period, this means that over 214,000 resident commuters worked within the study area—over 64% of all resident commuters. Only roughly one-fifth of these resident commuters who drove to jobs within the area used Rt. 1.

4. In-Commuters

- The estimated number of workers commuting into the study area each workday during 2009-2013 was half again as great as the numbers of residents leaving the area each workday for jobs elsewhere.

5. Transport Modes Used by Resident Commuters to Get to Work

- The number of resident commuters driving alone to their job increased by an estimated 10%.
- Despite reliability problems with New Jersey rail transit service during the latter years of 2008-2017, there appears to have been a significant increase in area commuters using rail transit (and a drop in those riding a bus).

B.
PLANNING QUESTIONS ARISING FROM THE ANALYSIS SO FAR

1. Greater attention to east-west/north-south commuter patterns is essential.

Though we are barely into assessing the patterns of intra-municipal commuter traffic within the area, it seems apparent that for resident commuters who work within the area, east-west transportation may be more important than transit within the Rt. 1 corridor itself.

Table A is based on a quick, early review of lone-driver commutes between individual municipalities within the study area as reported in the census' 2009-2013 *Journey to Work* survey. In many cases, it's easy to judge whether it was necessary for the commuter to use Rt. 1 to get between origin and destination; in others it is hard to know whether the driver used Rt. 1 for just a part of the journey, or resorted to back routes to avoid congestion. This is simply a starting point for further, more expert analysis.

Table A.
Intra-Municipal Lone-Driver Study Area Commuters
Who Might Have Used, Crossed, or Did Not Use Rt. 1, 2009-2013
Very Preliminary Working Guesstimate

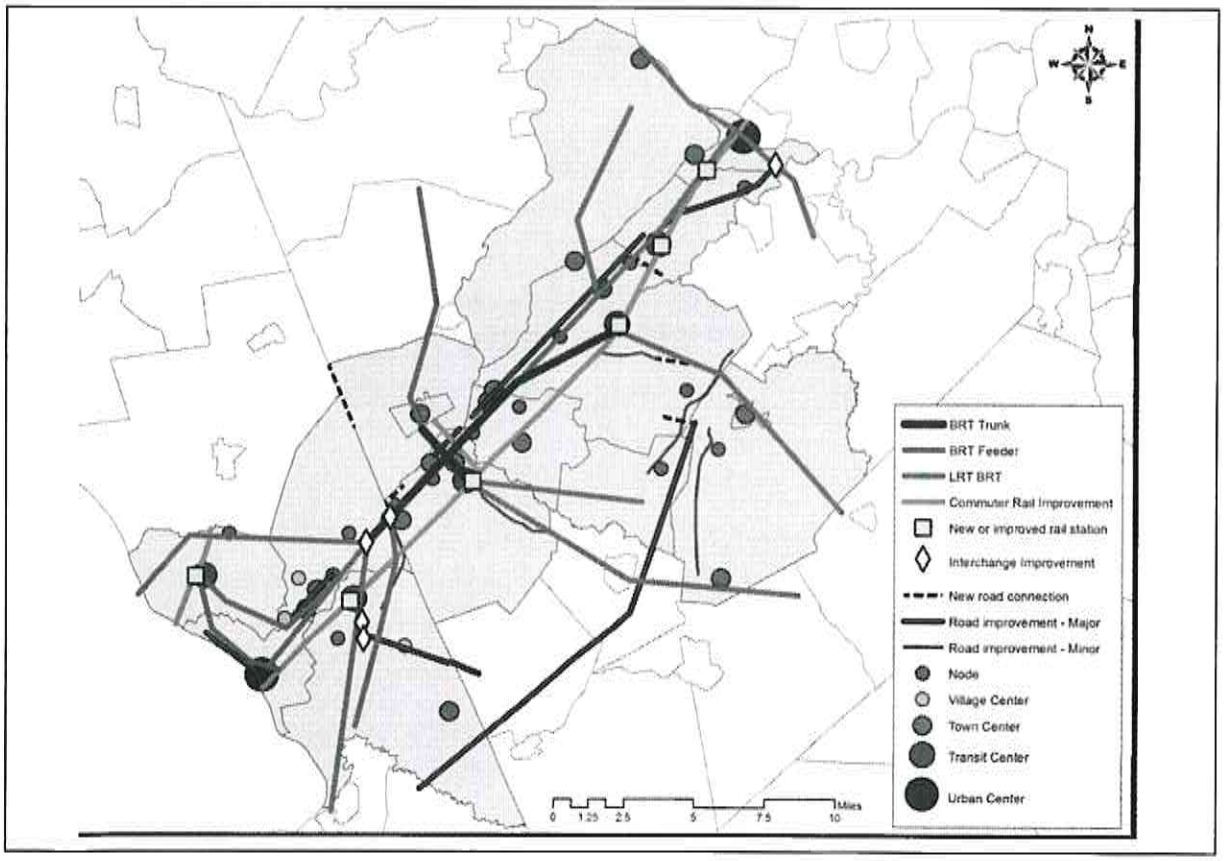
Municipality	Drove alone	Used U.S. 1	%	Crossed U.S. 1	%	Other Route	%
East Windsor	5,575	0	0.0%	2,172	39.0%	3,403	61.0%
Ewing	8,324	570	6.8%	1,940	23.3%	5,814	69.8%
Hamilton	20,851	1,552	7.4%	14,927	71.6%	4,372	21.0%
Hightstown	989	40	4.0%	173	17.5%	776	78.5%
Hopewell Borough	544	0	0.0%	86	15.8%	458	84.2%
Hopewell Twp.	5,051	204	4.0%	871	17.2%	3,976	78.7%
Lawrence	8,129	1,177	14.5%	2,529	31.1%	4,423	54.4%
Pennington	648	0	0.0%	234	36.1%	414	63.9%
Princeton	2,478	551	22.2%	654	26.4%	1,273	51.4%
Robbinsville	3,622	58	1.6%	1,404	38.8%	2,160	59.6%
Trenton	9,813	1,656	16.9%	3,545	36.1%	4,612	47.0%
West Windsor	4,230	1,525	36.1%	1,754	41.5%	951	22.5%
Cranbury	481	90	18.7%	133	27.7%	258	53.6%
Jamesburg	542	42	7.7%	68	12.5%	432	79.7%
Monroe	2,845	194	6.8%	883	31.0%	1,768	62.1%
New Brunswick	2,179	925	42.5%	490	22.5%	764	35.1%
N. Brunswick	5,766	2,740	47.5%		0.0%	3,026	52.5%
Plainsboro	4,224	1,646	39.0%	1,249	29.6%	1,329	31.5%
South Brunswick	7,462	4,302	57.7%	1,491	20.0%	1,669	22.4%
Franklin	6,774	0	0.0%	2,087	30.8%	4,687	69.2%
Hillsborough	3,927	0	0.0%	625	15.9%	3,302	84.1%
Montgomery	3,678	0	0.0%	882	24.0%	2,796	76.0%
Rocky Hill	140	0	0.0%	34	24.3%	106	75.7%
Totals	**108,272**	**17,272**	**16.0%**	**38,231**	**35.3%**	**52,769**	**48.7%**

Source: 2009-2013 Journey to Work Survey; U.S. Census Bureau and team judgements.

The 2010 Growth Strategy stressed the importance of at least three cross-Rt. 1 transit links, but did not address details. We are now at a point where an updated plan must address detailed transit and traffic management options across Rt. 1, as well as for Rt.1 itself.

Example:

The long-standing rail link between Princeton and Princeton Junction is served by an aging technology and its unreliability aggravates rather than alleviates road congestion. As the 2010 strategy suggested, this cross-Rt. 1 corridor is key for commuters from multiple municipalities on both sides of Rt. 1 who pass through Princeton and West Windsor on their way to work, or on their way to the Princeton Junction station.



Source: 2010 NJDOT Rt. 1 Growth Strategy Final Report.

2. **Who are potential users of a Rt. 1 Transit Line?**

If it turns out to be true that only about a fifth of resident commuters are likely to find transit within the Rt. 1 corridor a convenient way to get to and from work, we must ask from where do the commuters come who make up most of the Rt.1 rush hour traffic and where are they going?

It is likely that we'll find that the largest percentage of rush hour commuters traffic on Rt. 1 comes from outside the area. If that is true, we must do a great deal of creative thinking about how we can serve them with transit and re-think the Rt. 1 trunk transit proposal.

For example, it's highly likely that a large percentage of the commuter traffic coming into and exiting the corridor from south of the study area originates in Burlington County. While the destination for many from that county is Trenton/Ewing, a significant percentage continues up the corridor as far as New Brunswick (**Table B**).

The vast majority of these Burlington County commuters do not live in towns on or near the River Line. They come from very dispersed locations in a large county. They are highly unlikely to opt for a two-seat ride by parking their car and boarding a transit line for their final miles to work.

When we look for the biggest commuter traffic generators coming from the north, we'll undoubtedly find that many of the same questions arise.

Table B.
Estimated In-Commutes to Study Area from Burlington and Bucks Counties
2009-2013

	From Burlington County	From Bucks County, PA
Trenton	6,868	4,866
Hamilton	5,524	2,326
Ewing	1,778	2,697
Lawrence	1,733	2,720
Princeton	1,426	1,287
West Windsor	1,181	1,887
Robbinsville	629	162
Hopewell Twp.	588	1,296
South Brunswick	561	432
New Brunswick	410	146
East Windsor	371	162
Plainsboro	344	814
Monroe	188	
Montgomery	139	330
Cranbury	124	88
Franklin	50	
Hightstown	37	
Pennington	11	509
North Brunswick		38
Total	**21,962**	**19,760**

COMMUTER TRAFFIC CHANGES IN RT. 1 STUDY AREA
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APPENDIX

Table 1
Estimated Changes in Numbers of Commuters, 2008-2017
Rt. 1 Growth Study Area

	2008-2012	2013-2017	Change	Percent
Resident Commuters	330,624	343,076	12,452	3.8%
Worked in town	77,872	82,534	4,662	6.0%
Out-commuted	252,752	260,542	7,790	3.1%
Daily Workforce	388,231	411,785	23,554	6.1%
Resident workers	77,872	82,534	4,662	6.0%
In-commuters	310,359	329,251	18,892	6.1%

Source: 2008-2012 and 2013-2017 American Community Surveys; U.S. Bureau of Census

Table 2
Estimated Total Resident Commuters Who Worked Within Study Area
2009-2013*

	Worked in Hometown	Out-Commuted to Study Area Town	Total
Hamilton	11,945	23,505	35,450
Trenton	10,201	16,669	26,870
New Brunswick	9,109	4,817	13,926
Ewing	4,130	9,285	13,415
Lawrence	3,938	9,345	13,283
Franklin	5,287	7,797	13,084
South Brunswick	3,819	8,902	12,721
Princeton	7,553	3,197	10,750
North Brunswick	3,422	6,688	10,110
Plainsboro	2,381	7,339	9,720
East Windsor	2,212	7,332	9,544
Hillsborough	4,481	4,139	8,620
West Windsor	2,627	4,815	7,442
Hopewell Township	1,590	5,474	7,064
Montgomery	1,961	3,902	5,863
Monroe	2,316	3,131	5,447
Robbinsville	789	3,775	4,564
Hightstown	219	1,688	1,907
Jamesburg	354	886	1,240
Pennington	190	898	1,088
Cranbury	392	499	891
Hopewell Borough	187	660	847
Rocky Hill	64	147	211
Total	79,167	134,890	214,057

Source: 2009-2013 Journey to Work Survey; U.S. Bureau of Census

*The 2009-2013 Journey to Work Survey gave us the only commuter origin/destination estimates broken down by mode of transport to work. As a result, these estimates will not match up with the 2013-2017 overall municipal estimates. Journey to Work estimates will be updated as new ones are released.

Table 2a.
Total Resident Commuters Who Worked Within and Outside Study Area
Estimated 2009-2013*

	Total	Worked in Study Area	Percent	Worked Outside Study Area	Total
Hamilton	44,312	35,450	80.0%	8,862	20.0%
Trenton	32,898	26,870	81.7%	6,028	18.3%
Franklin	31,256	13,084	41.9%	18,172	58.1%
New Brunswick	23,706	13,926	58.7%	9,780	41.3%
South Brunswick	21,942	12,721	58.0%	9,221	42.0%
North Brunswick	21,246	10,110	47.6%	11,136	52.4%
Hillsborough	20,283	8,620	42.5%	11,663	57.5%
Lawrence	16,994	13,283	78.2%	3,711	21.8%
Ewing	16,796	13,415	79.9%	3,381	20.1%
Monroe	14,294	5,447	38.1%	8,847	61.9%
East Windsor	13,968	9,544	68.3%	4,424	31.7%
Princeton	13,649	10,750	78.8%	2,899	21.2%
West Windsor	12,932	7,442	57.5%	5,490	42.5%
Plainsboro	12,216	9,720	79.6%	2,496	20.4%
Montgomery	9,827	5,863	59.7%	3,964	40.3%
Hopewell Twp.	8,898	7,064	79.4%	1,834	20.6%
Robbinsville	6,990	4,564	65.3%	2,426	34.7%
Hightstown	3,140	1,907	60.7%	1,233	39.3%
Jamesburg	2,585	1,240	48.0%	1,345	52.0%
Cranbury	1,695	891	52.6%	804	47.4%
Pennington	1,260	1,088	86.3%	172	13.7%
Hopewell Boro	1,012	847	83.7%	165	16.3%
Rocky Hill	282	211	74.8%	71	25.2%
Totals	**332,181**	**214,057**	**64.4%**	**118,124**	**35.6%**

Source: 2009-2013 Journey to Work Survey; U.S. Bureau of Census

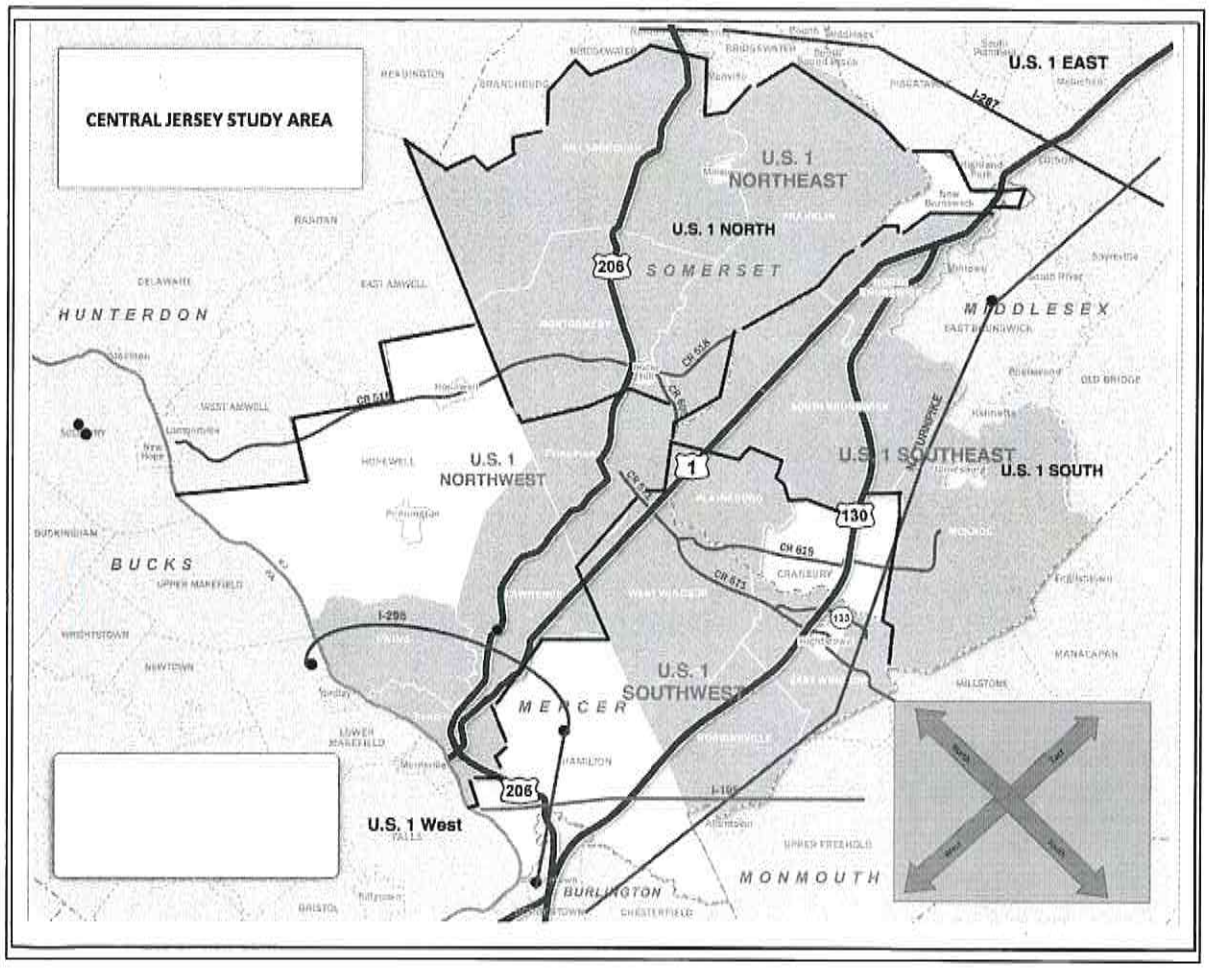
*The 2009-2013 Journey to Work Survey gave us the only commuter origin/destination estimates broken down by mode of transport to work. As a result, these estimates will not match up with the 2013-2017 overall municipal estimates. Journey to Work estimates will be updated as new ones are released.

Table 3.
Estimated Change in Number of Resident Commuters, 2008-2017
Municipalities in Rt. Growth Study Area

	2013-2017	2008-2012	Change	Percent
MONROE	16,700	14,139	2,561	18.1%
FRANKLIN	33,404	30,903	2,501	8.1%
MONTGOMERY	11,480	9,776	1,704	17.4%
S. BRUNSWICK	23,092	21,423	1,669	7.8%
HILLSBOROUGH	21,400	19,744	1,656	8.4%
PRINCETON	14,781	13,258	1,523	11.5%
WEST WINDSOR	14,058	12,633	1,425	11.3%
HAMILTON	45,674	44,350	1,324	3.0%
ROBBINSVILLE	7,719	6,678	1,041	15.6%
TRENTON	33,843	32,899	944	2.9%
HOPEWELL TWP	9,063	8,125	938	11.5%
JAMESBURG	3,163	2,747	416	15.1%
N. BRUNSWICK	21,069	20,903	166	0.8%
EWING	17,071	17,018	53	0.3%
ROCKY HILL	287	257	30	11.7%
HOPEWELL BORO	1,058	1,054	4	0.4%
CRANBURY	1,733	1,733	0	0.0%
PENNINGTON	1,225	1,241	-16	-1.3%
LAWRENCE	16,858	16,896	-38	-0.2%
HIGHTSTOWN	2,893	2,993	-100	-3.3%
PLAINSBORO	11,714	12,516	-802	-6.4%
EAST WINDSOR	13,229	14,713	-1,484	-10.1%
NEW BRUNSWICK	21,562	24,625	-3,063	-12.4%
Total	**343,076**	**330,624**	**12,452**	**3.8%**

Source: 2008-2012 and 2013-2017 American Community Surveys; U.S. Bureau of Census

Geographic Division of Study Area
For
Intra-Municipal Commutes



To summarize intra-municipal commutes in Tables 3 and 4, we divided the study area into four geographic areas. *To determine how many of these commutes involved Rt. 1, we used a matrix of lone driver commuter trips between individual municipalities within the study area. The results so far, still under critical examination, are summarized in Table 5.*

Table 4
Estimated Study Area Out-Commuters to Study Area Municipalities, 2009-2013
By Study Area Sub-Divisions

	Rt. 1 Northeast	Rt. 1 Northwest	Rt. 1 Southeast	Rt. 1 Southwest	Totals
Rt. 1 Southwest					
Hamilton	1,122	16,780	2,014	3,589	23,505
Hightstown	31	411	443	803	1,688
Robbinsville	58	1,448	459	1,810	3,775
West Windsor	563	2,172	1,215	865	4,815
Plainsboro	551	2,259	3,201	1,328	7,339
Cranbury	61	170	164	104	499
East Windsor	783	2,062	2,251	2,236	7,332
Sub-total	**3,169**	**25,302**	**9,747**	**10,735**	**48,953**
Rt. 1 Northwest					
Trenton	409	8,110	880	7,270	16,669
Ewing	573	6,129	458	2,125	9,285
Lawrence	656	4,831	1,089	2,769	9,345
Princeton	585	1,172	589	851	3,197
Hopewell Boro.	99	447	40	74	660
Hopewell Twp.	352	4,022	257	843	5,474
Pennington	38	632	58	170	898
Sub-total	**2,712**	**25,343**	**3,371**	**14,102**	**45,528**
Rt. 1 Southeast					
South Brunswick	3,612	2,064	1,978	1,248	8,902
Monroe	833	374	1,321	603	3,131
Jamesburg	135	68	652	31	886
North Brunswick	3,852	677	1,916	243	6,688
Sub-total	**8,432**	**3,183**	**5,867**	**2,125**	**19,607**
Rt. 1 Northeast					
New Brunswick	2,392	157	1,957	311	4,817
Franklin	4,018	1,389	1,678	712	7,797
Montgomery	1,125	1,869	611	297	3,902
Hillsborough	2,443	1,025	345	326	4,139
Rocky Hill	56	55	29	7	147
Sub-total	**10,034**	**4,495**	**4,620**	**1,653**	**20,802**
Grand total	**14,369**	**53,883**	**19,014**	**26,969**	**134,890**

Source: 2009-2013 Journey to Work Survey, American Community Survey; U.S. Census Bureau

Table 5
Estimated Study Area In-Commuters to Study Area Municipalities, 2009-2013
By Study Area Sub-Divisions

	Rt. 1 Northeast	Rt. 1 Northwest	Rt. 1 Southeast	Rt. 1 Southwest	Totals
Rt. 1 Southwest					
Hamilton	578	7,196	573	2,319	10,666
Hightstown		261	69	678	1,008
Robbinsville	146	1,027	162	1,678	3,013
West Windsor	900	4,636	1,845	3,340	10,721
Plainsboro	1,436	1,544	961	1,962	5,903
Cranbury	777	309	1,017	777	2,880
East Windsor	368	886	665	1,355	3,274
Sub-total	**4,205**	**15,859**	**5,292**	**12,109**	**37,465**
Rt. 1 Northwest					
Trenton	770	5,301	835	9,342	16,248
Ewing	479	4,043	308	3,667	8,497
Lawrence	886	5,019	1,059	4,449	11,413
Princeton	2,241	6,332	2,124	3,553	14,250
Hopewell Boro.		487		97	584
Hopewell Twp.	515	1,811	325	1,331	3,982
Pennington	281	1,377	284	434	2,376
Sub-total	**5,172**	**24,370**	**4,935**	**22,873**	**57,350**
Rt. 1 Southeast					
South Brunswick	3,256	1,319	1,176	2,197	7,948
Monroe	922	199	917	1,054	3,092
Jamesburg	145		471		616
North Brunswick	5,765	141	1,222	402	7,530
Sub-total	**10,088**	**1,659**	**3,786**	**3,653**	**19,186**
Rt. 1 Northeast					
New Brunswick	5,635	695	2,128	1,049	9,507
Franklin	3,407	381	1,169	556	5,513
Montgomery	1,553	1,280	599	478	3,910
Hillsborough	948	215	74	72	1,309
Sub-total	**11,543**	**2,571**	**3,970**	**2,155**	**20,239**
Grand total	**31,008**	**44,459**	**17,983**	**40,790**	**134,240**

Source: 2009-2013 Journey to Work Survey, American Community Survey; U.S. Census Bureau

Table 6
Estimated Daily Workforce, 2008-2017
Ranked by Size
Municipalities in Rt. Growth Study Area

	2013-2017	2008-2012	Change	Percent
TRENTON	48,904	50,182	-1,278	-2.5%
NEW BRUNSWICK	45,184	41,884	3,300	7.9%
HAMILTON	38,560	37,538	1,022	2.7%
FRANKLIN	32,089	26,744	5,345	20.0%
PRINCETON*	31,266	32204	-938	-2.9%
LAWRENCE	26,643	24,427	2,216	9.1%
S. BRUNSWICK	24,943	23,664	1,279	5.4%
EWING	24,146	22,182	1,964	8.9%
WEST WINDSOR	23,476	22,385	1,091	4.9%
PLAINSBORO	16,539	15,066	1,473	9.8%
N. BRUNSWICK	15,299	15,782	-483	-3.1%
HILLSBOROUGH	13,515	11,332	2,183	19.3%
MONROE	11,570	11,042	528	4.8%
HOPEWELL TWP	11,552	10,130	1,422	14.0%
MONTGOMERY	10,584	10,208	376	3.7%
ROBBINSVILLE	9,276	6,070	3,206	52.8%
EAST WINDSOR	8,041	9,407	-1,366	-14.5%
CRANBURY	7,970	7,650	320	4.2%
PENNINGTON	5,646	4,052	1,594	39.3%
HIGHTSTOWN	2,557	2,510	47	1.9%
JAMESBURG	2,485	2,283	202	8.8%
HOPEWELL BORO	1,507	1,445	62	4.3%
Total	**411,752**	**388,187**	**23,565**	**6.1%**

Source: 2008-2012 and 2013-2017 American Community Surveys; U.S. Bureau of Census

*The decline in Princeton's daily workforce resulted from the relocation of the medical center from Princeton to Plainsboro and relocation of some Princeton University administrative employees to Carnegie Center in West Windsor.

Table 7.
Resident Commuters Rode Rail Transit to Work
Estimated Changes by Area Municipality, 2008-2017
Rt. 1 Growth Study Area

	Rail Transit 2008-2012	Rail Transit 2013-2017	Change	Percent
WEST WINDSOR	2,375	3,088	713	30.0%
FRANKLIN	889	1,387	498	56.0%
PRINCETON	868	1,022	154	17.7%
HAMILTON	783	969	186	23.8%
NORTH BRUNSWICK	773	864	91	11.8%
PLAINSBORO	692	1,049	357	51.6%
EAST WINDSOR	645	534	-111	-17.2%
SOUTH BRUNSWICK	635	807	172	27.1%
LAWRENCE	609	757	148	24.3%
NEW BRUNSWICK	589	419	-170	-28.9%
HILLSBOROUGH	507	569	62	12.2%
TRENTON	469	553	84	17.9%
ROBBINSVILLE	439	445	6	1.4%
MONTGOMERY	378	734	356	94.2%
EWING	362	249	-113	-31.2%
HOPEWELL TWP	267	420	153	57.3%
HIGHTSTOWN	117	0	-117	-100.0%
CRANBURY	98	88	-10	-10.2%
MONROE	78	228	150	192.3%
PENNINGTON	44	43	-1	-2.3%
JAMESBURG	11	52	41	
ROCKY HILL	3	2	-1	
HOPEWELL BORO	0	26	26	

Source: 2008-2012 and 2013-2017 American Community Surveys; U.S. Bureau of Census