September 2002

Cordon Line Highway Traffic Survey for the Delaware Valley Region

Upper Black Eddy Bridge and US 202 Toll Bridge Cordon Stations in Bucks County

Report 4

Delaware Valley Regional Planning Commission

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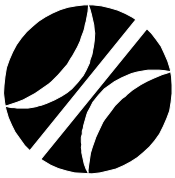
REPORT NO.4

UPPER BLACK EDDY BRIDGE AND US 202 TOLL BRIDGE CORDON STATIONS IN BUCKS COUNTY

September 2002

Delaware Valley Regional Planning Commission
The Bourse Building
111 South Independence Mall East
Philadelphia, PA 19106-2582

Created in 1965, the Delaware Valley Regional Planning Commission (DVRPC) is an interstate, intercounty, and intercity agency which provides continuing, comprehensive, and coordinated planning to shape a vision for the future growth of the Delaware Valley region. The region includes Bucks, Chester, Delaware, and Montgomery counties as well as the City of Philadelphia, in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer counties in New Jersey. DVRPC provides technical assistance and services, conducts high priority studies that respond to the request and demands of member state and local governments, fosters cooperation among various constituents to forge a consensus on diverse regional issues, determines and meets the needs of the private sector, and practices public outreach efforts to promote two-way communication and public awareness of regional issues and the commission.



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.

DVRPC is funded by a variety of funding sources including federal grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), the Pennsylvania and New Jersey departments of transportation, as well as by DVRPC's state and local member governments. This report was primarily funded by the Pennsylvania Department of Transportation and the Federal Highway Administration (FHWA). The authors, however, are solely responsible for its findings and conclusions, which may not represent the official views or policies of the funding agencies.

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EXECUTIVE SUMMARY

The External and Through Traffic Survey collected current information on traffic entering and exiting the DVRPC region. The traffic surveys at Upper Black Eddy Bridge and US 202 Toll Bridge were two of fourteen stations surveyed around the region during the summer of 2001. Information was collected in both directions through a roadside interview, using the questionnaire shown on page 6. Questions were asked about trip origin and destination, purpose, highways used, vehicle type, occupancy, truck garage location and truck commodities. Detailed findings are available individually in Section III and in the Appendices in the back of the report. The survey was conducted with the cooperation of the Delaware River Joint Toll Bridge Authority. Traffic was surveyed at each of the stations in both directions during the time period from 6:45 A.M. to 7:15 P.M.

The major findings for these two survey stations are as follows:

- The 24 hour counts for Upper Black Eddy Bridge and US 202 Toll Bridge were 5,037 and 11,076 AADT, respectively. Upper Black Eddy Bridge has an AM peak with about 6 percent and a PM peak with about 7 percent of the 24 hour total. The US 202 Toll Bridge has an AM peak with about 8 percent and a PM peak with about 8 percent of the 24 hour total. The mode split for the Upper Black Eddy Bridge was not determined by the 24 hour count, but for the US 202 Toll Bridge it is about 83 percent and 15 percent respectively for automobiles and trucks.

- The sample sizes for Upper Black Eddy Bridge and US 202 Toll Bridge were close to the desired goals. Upper Black Eddy Bridge surveyed 916 of 1,000 for about 92 percent of the desired sample goal, and US 202 Toll Bridge surveyed 1,638 of 1,700 for about 96 percent of the desired sample goal.

- The Upper Black Eddy Bridge automobile driver's reasons for traveling the facility were 49 percent saving time and 41 percent other reasons, while truck drivers responded with 65 percent saving time and 25 percent other reasons. On the US 202 Toll Bridge, automobile driver's responses were 88 percent saves time and 7 percent less congested, while truck drivers responded 71 percent saving time and 13 percent most direct.

- The share of work trips on Upper Black Eddy Bridge and US 202 Toll Bridge are about 48 percent and 54 percent, respectively. Other major trip purposes on the Upper Black Eddy Bridge include 18 percent for shopping and 13 percent for social trips, and on US 202 Toll Bridge a 18 percent share for social visits and 12 percent for shopping.

- The average total vehicle occupancy varied between survey stations, with Upper Black Eddy Bridge and US 202 Toll Bridge averaging 1.30 and 1.35 persons per vehicle respectively, while the average occupancy for work trips was less, with 1.13 and 1.11 persons per vehicle respectively.

- Commodities carried by the surveyed trucks at the Upper Black Eddy Bridge station were 46 percent building materials, 18 percent empty, and 10 percent retail merchandise. Trucks crossing US 202 Toll Bridge were 28 percent building materials, 20 percent other, and 19 percent empty.

I. INTRODUCTION

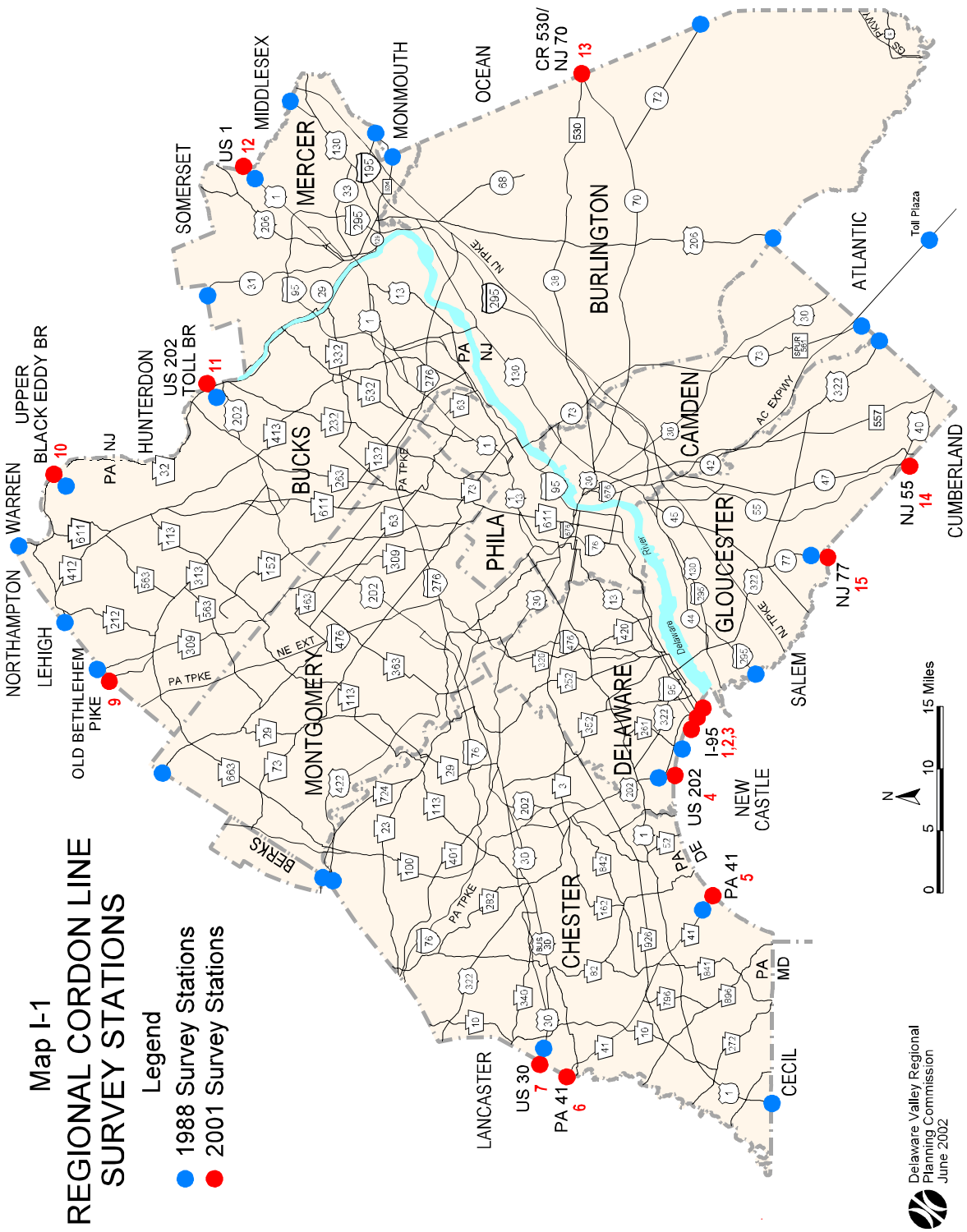
The DVRPC cordon line traffic survey was conducted to collect current information on traffic volumes and determine the origin-destination travel patterns, travel activity, and travel mode of vehicles crossing the nine-county DVRPC cordon line which forms the regional boundary. The external and through trip travel patterns are especially critical for transportation facilities located near the nine-county boundary, as this is an area where in recent years major new development has occurred. The survey, conducted in the spring and summer of 2001, updated trip characteristics and patterns that were last collected in the 1980s. The survey data will be used in the ongoing planning process, validation of travel simulation models, traffic forecasting, preliminary engineering, estimation of vehicle miles of travel (VMT), and monitoring of external and through travel. The toll authorities of the region, state transportation departments, neighboring metropolitan planning organizations, county planners, and interregional freight operators will benefit from this survey, which will provide useful data for the improvement of highway facilities in the next 20 years.

Map I-1 displays the highway facilities which were surveyed in 2001 as well as the locations of the 1988 survey. Traffic counts and a sample of interviews were collected at 14 locations crossing the boundary of the nine-county region representing a broad range of highway types, from local to interstate facilities. This information was supplemented with data from two recently conducted surveys, one on the Pennsylvania Turnpike and the other on the New Jersey Turnpike. In addition, traffic counts were taken on an additional 140 highway facilities crossing the regional boundary and bus and rail ridership was collected from carriers crossing the boundary. Survey results are presented in a series of reports. This report presents briefly the surveys conducted at the Upper Black Eddy and US 202 Toll bridges over the Delaware River.

The survey consisted of roadside interviews at each location. Questions were asked about trip origin, destination, and purpose; highway use and vehicle type; and vehicle occupancy. The questionnaire also asked about the reasons for travel and how people make their travel decisions and plan their daily trips. Truck type, garaging and commodity information were also included in the survey questionnaire. Section II of the report describes the design and conduct of the survey. Included are a description of the survey questionnaire, the sample size, and the collection method. A map and description of the survey sites covered in this report are presented. A summary tabulation of traffic volumes at each site and vehicle classification information are also included. Included is a review of the processes employed to enter the survey data, geocode origin/destination information, and tabulate the answers to survey questions.

The survey results are presented in Section III. The major findings of the survey and traffic characteristics are presented; the findings for each question are offered in graphic and written form.

Detailed survey information is provided in the Appendices, including traffic and vehicle classification counts. Simple and cross tabulations of survey responses are shown in a series of 15 tables for each survey station.


Map I-1
REGIONAL CORDON LINE
SURVEY STATIONS
Legend
1988 Survey Stations
2001 Survey Stations
NORTHAMPTON
WARREN
LEHIGH
OLD BETHLEHEM PIKE
9
UPPER BLACK EDDY BR
10
PA
NJ
HUNTERDON
US 202 TOLL BR
11
SOMERSET
US 1
12
MIDDLESEX
MERCER
MONMOUTH
OCEAN
CR 530/ NJ 70
13
BURLINGTON
ATLANTIC
Toll Plaza
CAMDEN
GLOUCESTER
NJ 55
14
CUMBERLAND
NJ 77
15
SALEM
BUCKS
PHILA
DELAWARE
CHESTER
MONTGOMERY
BERKS
LANCASTER
US 30
7
PA 41
6
US 202
4
I-95
1,2,3
NEW CASTLE
PA 41
5
DE
PA
MD
CECIL
PA TPKE
NE EXT
NJ TPKE
AC EXPWY
Delaware River
N
0
5
10
15 Miles
Delaware Valley Regional Planning Commission
June 2002

II. DESIGN AND CONDUCT OF THE SURVEY

The cordon line survey was designed to gather information from a sample of drivers crossing the boundary of the DVRPC region. At each station, two types of traffic information was collected; total number of passing vehicles and driver trip-making characteristics. The recording of all traffic, by vehicle type and by the hour, was collected using DVRPC's Automatic Traffic Recorder units. This information was used to establish the sample size necessary for roadside interviews to collect trip-making characteristics. As shown on the following page, the survey questionnaire consists of 13 questions; two of which need not be asked since the surveyor would be able to check the vehicle type and occupancy. The following information was collected in the interview: time of trip, origin and destination of the trip, major highways used, number of travelers (including the driver). For commercial vehicles additional questions ascertained county where the vehicle is garaged or parked when not in service and the type of commodity carried by trucks.

A. Survey Locations

The results of the survey for two locations are included in this report: Upper Black Eddy Bridge between Upper Black Eddy in Bridgeton Township, Bucks County and Milford Boro in Hunterdon County, New Jersey; and the US 202 Toll Bridge between Solebury Township just north of Borough of New Hope and West Amwell Township, New Jersey just north of Lambertville Boro. These facilities were chosen due to their strategic importance for travel to and from the Delaware Valley region. Both bridges carry traffic across the Delaware River into and out of the DVRPC region from the east.

1. Upper Black Eddy Bridge

The Upper Black Eddy Bridge is an older 2 lane facility spanning the Delaware River. It connects rural northern Bucks County with Milford Boro, an older industrial era town along the river. The Pennsylvania side of the bridge is relatively undeveloped. PA 32, River Rd, is a scenic route paralleling the river and is lined with older homes on large lots, farms, and a few rock quarries which use the bridge to access markets in central New Jersey. As with many of the towns along the upper Delaware River, Milford Boro is transforming into a quaint "village" of local residents and second homes for recrea-tional use.

The survey site was located at the foot of the bridge on the New Jersey side of the river (see Map II-1). For outbound traffic from the DVRPC region, the area in front of the former railroad station was cordoned off with traffic cones and used for the survey. By restricting parking in the first block of the town, sufficient width was available for a lane of traffic in each direction and the inbound traffic survey. Police from the Delaware River Joint Toll Bridge Commission provided traffic control.

Figure II-1. External and Through Survey Field Form

Delaware Valley Regional Planning Commission **№** 10000
EXTERNAL AND THROUGH TRIP SURVEY **Time :** : 1[ ] AM 2[ ] PM

1. Where did you start this trip? (Origin) **2. Is this home?** 1[ ] Yes 2[ ] No

_____
Street address or nearest intersection

_____
Town or City County State Zip Code

3. Where will this trip end? (Destination) **4. Is this home?** 1[ ] Yes 2[ ] No

_____
Street address or nearest intersection

_____
Town or City County State Zip Code

5. Will you stop before arriving at your destination? **6. Is this home?** 1[ ] Yes 2[ ] No

1[ ] No 2[ ] Yes, If yes, where?

_____
Street address or nearest intersection

_____
Town or City County State Zip Code

7. Why do you use this road? (check one or more)
1[ ] Saves Time 3[ ] Less Congestion 5[ ] No Traffic Lights
2[ ] Saves Money 4[ ] Better Road Condition 6[ ] Other_____

8. What is/are the major road(s) that you will take to reach the destination after this road?

1st Highway_____ 2nd Highway _____

9. What type of vehicle is used for the trip?

Passenger Vehicles	**Light Trucks**	**Heavy Trucks (3 axles or more)**
1[ ] Auto	5[ ] Pickup	9[ ] Tractor-Trailer
2[ ] Van, Sta. Wagon	6[ ] Panel	10[ ] Double Trailer
3[ ] SUV	7[ ] Single Unit	11[ ] Other _____
4[ ] Other _____	8[ ] Other _____	

10. What is the purpose of this trip? (Passenger Vehicles Only)
1[ ] Work 3[ ] Eat Meal 5[ ] Social/Recreation 7[ ] Visitor/Tourist
2[ ] School 4[ ] Shopping 6[ ] Medical 8[ ] Other _____

11. How many people are in the vehicle? (Passenger Vehicles Only)
1[ ] One 2[ ] Two 3[ ] Three 4[ ] Four 5[ ] Five 6[ ] More than Five

12. Where is this truck garaged or parked when not in service? (Trucks Only)
1[ ] Bucks County 4[ ] Montgomery County 7[ ] Burlington County 10[ ] Mercer County
2[ ] Chester County 5[ ] Philadelphia County 8[ ] Camden County 11[ ] Other NJ County
3[ ] Delaware County 6[ ] Other PA County 9[ ] Gloucester County 12[ ] Other State

13. What type of commodities are you carrying? (Trucks Only)
1[ ] Empty 4[ ] Agricultural Products 7[ ] Retail Store Merchandise
2[ ] Manufactured Products 5[ ] Building Materials 8[ ] Parcels
3[ ] Petroleum Products 6[ ] Refrigerated Products 9[ ] Other _____

2. US 202 Toll Bridge

US 202 is a major north-south thoroughfare providing a bypass to Philadelphia in its western suburbs. It crosses the Delaware River between Bucks County, PA and Hunterdon County, NJ connecting Philadelphia's northern suburbs with central New Jersey. Prior to the construction of the toll bridge and reconstruction of US 202 to freeway standards in much of this part of New Jersey, traffic was forced through New Hope, across the New Hope - Lambertville Bridge and through the Boro of Lambertville. The toll bridge was constructed to redirect through traffic around these towns. Land use along US 202 on the Pennsylvania side of the river is changing from agricultural to residential and its attendant supporting commercial uses. Though still relatively undeveloped, the US 202 corridor on the New Jersey side of the Delaware River nonetheless provides access to Trenton from the north and to employment in central New Jersey.

The survey was established at the toll plaza which is situated on the Pennsylvania side of the river (see Map II-2). The presence of the toll facility provided an opportune location to survey as vehicles were already stopping to pay a toll. The raised concrete islands in advance of the toll booths also provided a safe location for the surveyor. Although US 202 widens prior to the toll plaza, the effective number of lanes is governed by the number of open toll booths. During the course of the survey, a maximum of two toll lanes were open in each direction. Surveyors distributed themselves among the open toll lanes. Delaware River Joint Toll Bridge Commission police were on site to assure the safety of the survey crew and the motoring public.

B. Sample Methodology

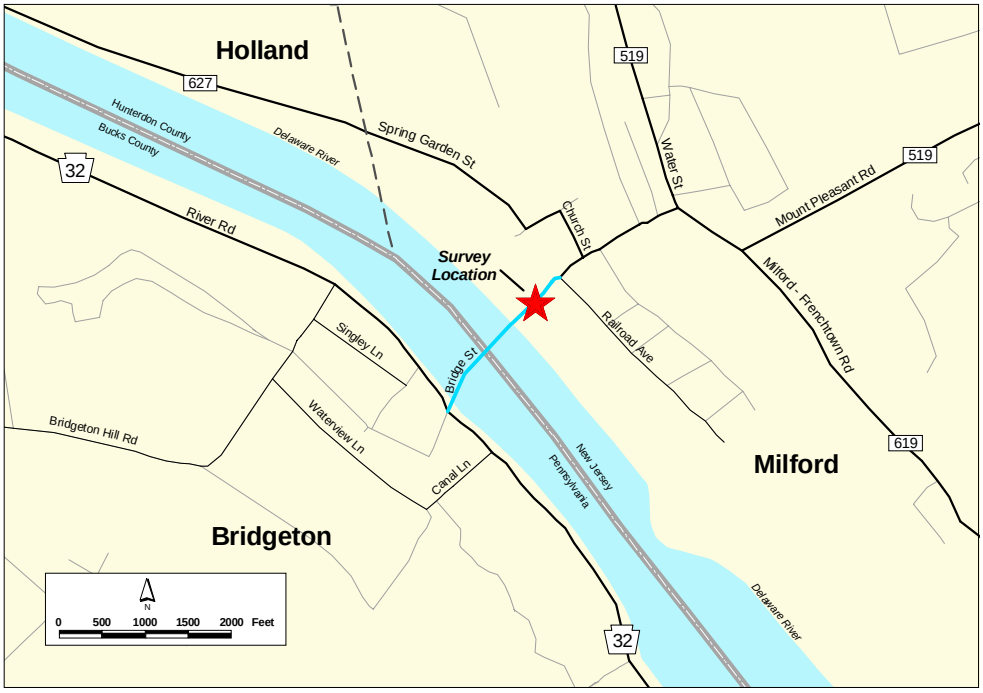
Traffic and vehicle classification counts were taken at each site. The hourly ATR counts and vehicle classification counts, by direction, are presented in the Appendices. Based on these volumes, standard statistical methods were applied and a sample size was established for each location. The sample was then disaggregated into an appropriate number of surveys for passenger and commercial vehicles for each survey period as discussed below.

1. Traffic Counts

Traffic volumes at the Upper Black Eddy Bridge survey site are approximately 5,000 vehicles per day. The morning peak hour factor is 6.1%, occurring between 7 and 8 a.m. The afternoon peak hour factor is higher, at 7.1% between 3 and 4 p.m. Approximately 65% of the traffic is headed outbound in the morning peak, with this directionality being reversed in the afternoon (64% inbound). It should be noted that during the survey period, the Frenchtown-Uhlerstown Bridge was closed for repainting and the Upper Black Eddy Bridge was designated as the detour route.

Traffic volumes at the US 202 toll plaza are approximately 11,000 vehicles per day. Northbound peak hour traffic is heavily peaked, at 11.6 percent, with the afternoon K factor in the westbound direction reflecting returning traffic (11.4%). As with the Upper Black Eddy Bridge, traffic flow at the US 202 Toll Bridge shows about 65% of traffic outbound in the morning peak Trucks (commercial vehicles) account for about 6 percent of the total traffic volume.

Map II-1. Upper Black Eddy Bridge Survey Location



Map II-2. US 202 Toll Bridge Survey Location

2. Sample Size

Based on the hourly traffic and vehicle classification counts, a sample size was determined for both passenger and commercial vehicles. This number of surveys by morning and afternoon period is presented in Section III. For the Upper Black Eddy Bridge, a total of 1,000 surveys were scheduled for collection. This amounted to approximately 500 in each direction, representing inbound and outbound trips. Of this total, 422 forms were to be interviews of passenger vehicles, with the remaining 78 reserved for commercial vehicles.

At the US 202 toll bridge, the total number of interviews was set at 1,700; 850 were to be filled out for traffic in each direction. Passenger vehicles accounted for about 696 surveys, with the balance of 54 surveys consisting of commercial vehicles.

C. Survey Conduct

A manual was prepared to guide the conduct of the survey. It contained information on the distribution of surveys by survey period; partnering agency information; number of police officers needed for traffic control and staffing requirements for each site; a preliminary schedule of survey sites and shifts, as well as a listing of equipment requirements and diagram of a hypothetical site as it would be set up for survey operations.

Before the survey work could be initiated, a crew of temporary workers was hired and trained. General orientation sessions were followed with role playing by the survey crew. In this manner, the surveyor became familiar with the questions and possible problematic situations. It also allowed the surveyors to become comfortable with the survey process, so that once in the field, traffic delay would be minimal and the survey process would be safe and efficient. As the surveyors became experienced with the process, per survey time dropped to the range of 35 to 45 seconds.

While in the office prior to initiating field work, surveyors allocated the proper number of forms for passenger and commercial vehicles by time period. Four different colored forms were used to designate the traffic direction (inbound or outbound) and interview time (morning or afternoon). Forms were allocated to the following survey times:

Morning Survey	Afternoon Survey
6:45 - 8:30 a.m.	1:00 - 2:30 p.m.
8:30 - 9:30 a.m.	2:30 - 3:30 p.m.
9:30 - 10:30 a.m. (meal break)	*3:30 - 4:30 p.m. (meal break)*
10:30 - 12:00 noon	4:30 - 6:00 p.m.
12:00 - 1:00 p.m.	6:00 - 7:15 p.m.

Although in general the conduct was the same for each survey station, the geography of the site dictated a measure of innovation. Safety, both of the survey crew and the driving public, was the primary operating directive. For a four lane facility, the right lane and shoulder were used for the survey. This provided the left lane for traffic to bypass the

survey. Two lane facilities required the survey to be offset by direction. Multiple signs were placed in advance of the site in accordance with state guidelines and distance standards. These warned motorists of the traffic survey, to be prepared to stop, and that police control was in effect. Police vehicles were prominently displayed ahead of the site, with lights flashing, as this tended to slow traffic entering the vicinity of the survey. Police and traffic cones helped direct traffic through the site, and a sign announced the end of the survey site. All survey personnel were outfitted with safety vests. Although each site was visited before the survey date and preliminary sketches of the setup were prepared, the input of the police officers on site was solicited and followed.

Since only a sample of the drivers were interviewed, the platooning method was used in selecting vehicles to be surveyed. A crew chief was designated for each direction and assumed the last position in the survey line. The crew chief was responsible for communicating with the other surveyors and with the police officer. The crew chief would signal the officer when the crew was ready for a platoon of vehicles. Interviews would be conducted, and the appropriate information recorded. The lead surveyor would then assure the safe re-entry of the surveyed vehicles to the traffic stream and the crew chief would signal the police officer for another platoon of vehicles.

Coordinating the survey was the responsibility of the survey chief. This person was responsible for scheduling the appropriate number of survey staff, coordinating with the police, and assuring that the survey site was properly prepared. During the survey the survey chief had the responsibility of distributing and collecting survey forms, resolving situations with the police, seeing to the physical needs of the survey crew, and speaking with motorist regarding survey questions and concerns. The survey chief would join the line of surveyors when an extra person was needed to fill the quota of surveys.

The execution of the survey at both the Upper Black Eddy and US 202 Toll bridges was successful and the required surveys were completed on time without any incident or noticeable traffic delay.

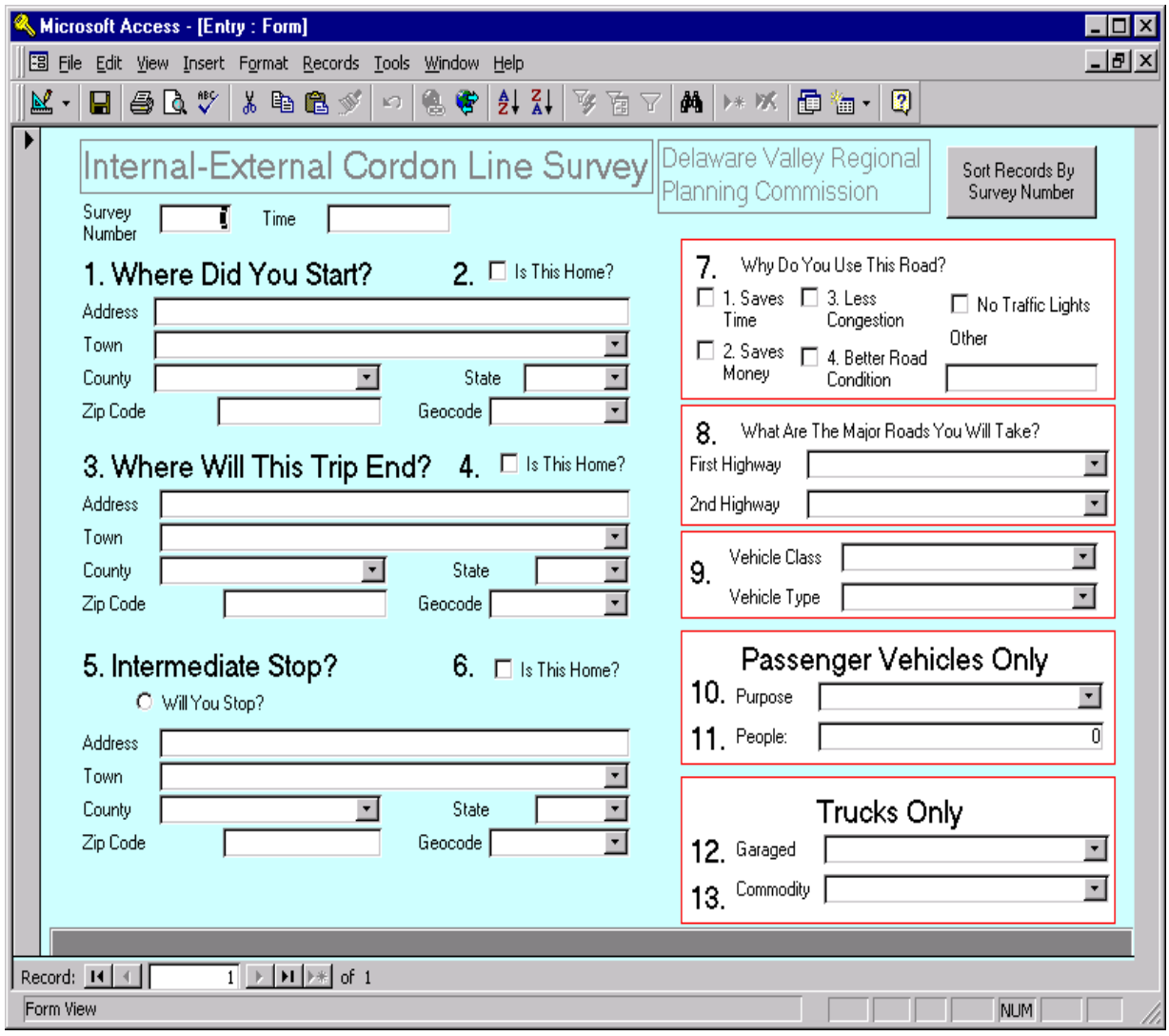
D. Data Entry, Geocoding and Processing

1. Data Entry

Paper field responses collected from survey station interviews were converted into an electronic form suitable for spatial and statistical analysis. A Microsoft Access database resembling the paper field survey form was used so the data entry approximated the entry of information in the field. Data entry goals included replicating the survey form to allow logical flow from paper to digital format; to standardize spelling of responses; to ensure that entries were within acceptable geographic bounds; and to avoid duplicate entries.

Several methods to this end were employed. First, extensive lists of common names for the key variables were built into the Access entry form. These include common names for places, municipalities, counties, and roads. Second, responses on the field survey form for purpose, vehicle class, vehicle type, and commodity were all made part of menu choices. Third, where possible, allowable entries were limited by either forcing a binary

Figure II-2. Survey Entry Form as Displayed on Computer Screen



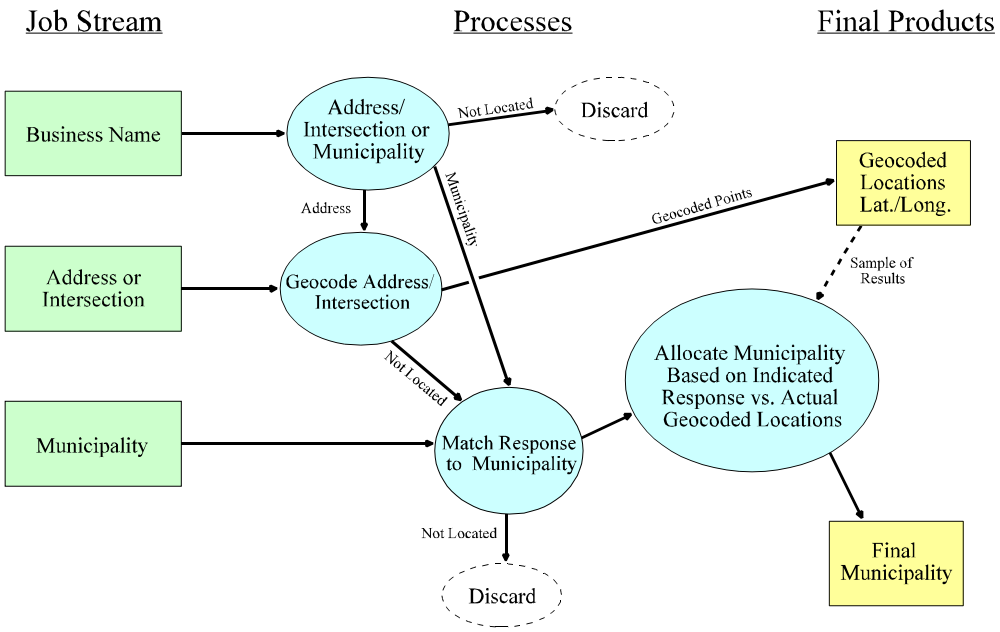
yes/no response or use of a validation rule to limit the range of acceptable numbers. To ease review of entries, the database remained flat with all responses recorded in one data table. An example of this screen is shown in Figure II-2 on the next page and can be compared with the survey form shown in Figure II-1.

Finally, the survey number was used as both a unique identifier and a means to prevent duplication of data entry. The survey number also served to identify cordon station and direction. The database and entries were designed to allow further analysis and processing. One example is the geocode field that was used to specify a likely method of assigning geographic data, such as via municipality, business address, personal address, or intersection.

2. Geocoding

Geocoding refers to the assignment of geographic attributes based on entered survey data (See Figure II-3 for DVRPC Geocoding Process). Another term for this process is data conflation. The conflation process allows for spatial analysis of survey responses and separates the data into several job streams based upon likely geocoding method, and assigns unique identifiers to each address. To assign a unique identifier, full survey entries were separated into singular addresses using the survey ID number and either origin or destination. Note that stopover points were not assigned a geographic location. After separation of origin and destination, three categories were used to assign a method for data conflation: 1) where the address is a street address, intersection of named roads, or a partial combination of the two; 2) where the address is a business name with full or partial street and place information; and 3) where the address is a town, place, state, or other such designated area without a street address or road name. Those entries where the address was invalid, unreadable, or in any other way unable to be determined or placed into one of the three categories, were discarded.

Figure II-3. DVRPC Geocoding Process



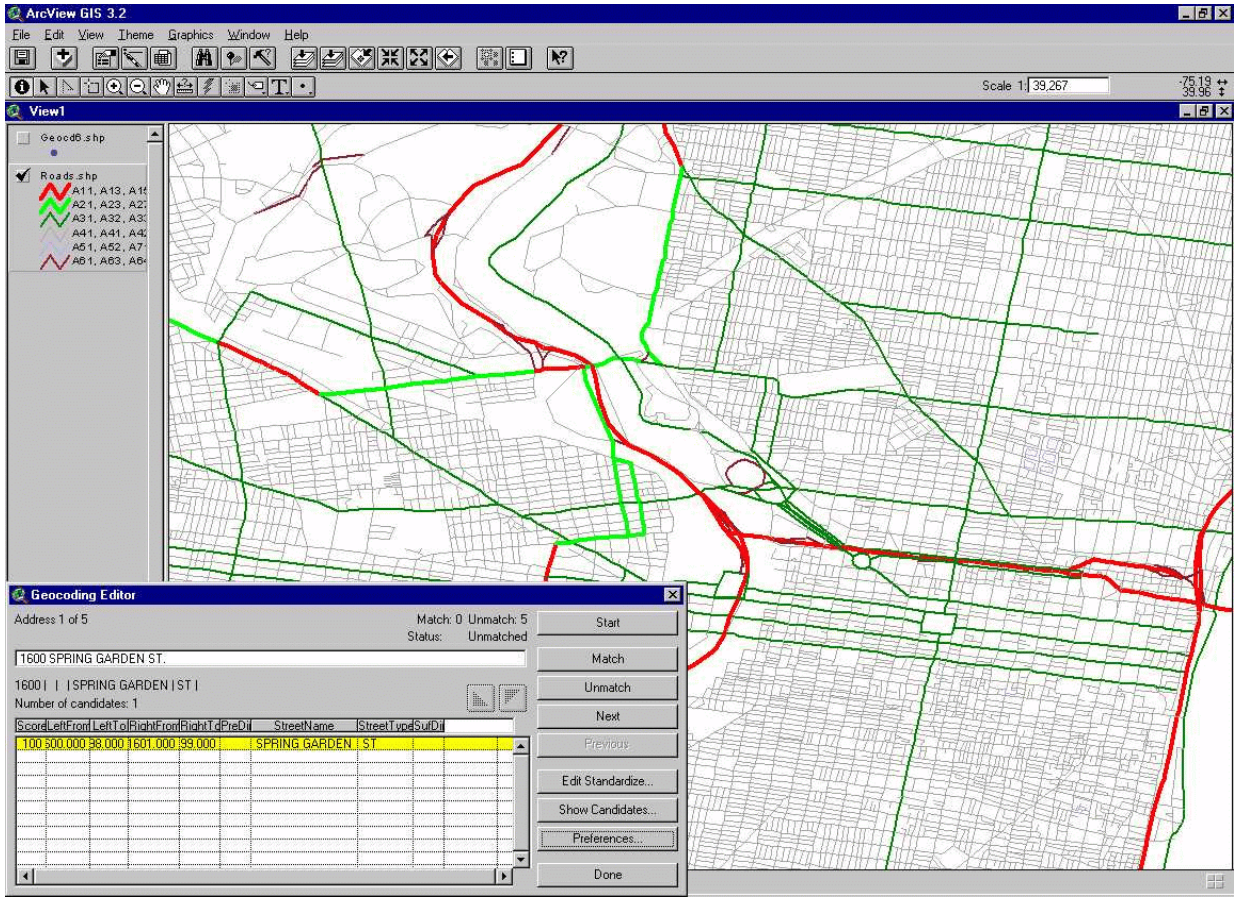
3. Street Addresses and Businesses

The first category of origins and destinations to be assigned geographic locations (latitude and longitude) was the group containing a street address, intersection, or road name. The ArcView 3.2 program was able to geocode many of the recognizable data entries. The underlying address and road name data to which it was matched was the U.S. Census TIGER files for the DVRPC region and adjacent counties. This group was first processed using the Geocoding interface in ArcView 3.2, automatically comparing entered address

or intersection versus TIGER data. After the initial run, many of the addresses remained unmatched due to spelling errors in road names. To fix this, those addresses not found initially were again put through the geocoding program and checked against atlases of streets and roads in the chosen areas. This second attempt was done manually, and while very time consuming, yielded the vast majority of the remaining entries thought likely to be geocoded. Those few entries that could not be geocoded were grouped with entries where only municipality was known, or discarded.

Figure II-4 shows the ArcView Geocoding interface used to process those data items not found automatically. Entries that had a business address or name were assigned to an address using either the internet yellow pages or local phone books. After assigning the addresses to be geocoded they were "run" through the Arcview geocoding process as above. Any entries that still had not been assigned a geographic location were placed into the town/place entry file.

Figure II-4. Interface for ArcView Geocoding



4. Town / Place Addresses

All entries not processed using the prior two techniques were assigned geographic location via town/place name. The first part of this process was to standardize spellings and ancillary data such as county for each response. A process was developed to assign geography using surveyed town/place response, and appropriate latitude and longitude measurements. The process began with place names. Entries corresponding to places completely inside an MCD (Minor Civil Division) were assigned to either the geographic center of the place as defined by the Census Bureau, or the focal intersection for the named place. This was most effective for small villages.

The entries consisting of MCD names were allocated by comparing reported MCDs versus actual MCDs based upon the geocoding process. This process corrects for the variation between respondents conception of geographic bounds and actual political borders. Respondents indicating a specific MCD as a destination were equally likely to be traveling to the adjacent townships based upon given intersection or address. The responses were scattered across several MCDs based upon the ratio established from geocoded results, rather than assign all trips to the centroid of the MCD.

This process ensures that the geographic location for the entries assigned to municipalities near the reported MCD are representative of the actual sample. A similar procedure allocates responses when boroughs are surrounded by townships with the same name. Finally, state centroids were used to assign geographic location to states and provinces beyond 200 miles. This allows for reasonable distance calculations for longer trips.

The geocoding process yielded results allowing a full range of spatial analysis. To allow for differing geographic resolutions, survey data was grouped by accuracy. Consequently, 65.3 percent of survey responses could be assigned using address or intersection data, and 28.9 percent of responses could be assigned by municipality. Only 5.9 percent of all surveyed points were not assigned a geographic location.

III. SUMMARY SURVEY RESULTS FOR UPPER BLACK EDDY BRIDGE AND US 202 TOLL BRIDGE SURVEY LOCATIONS PARTS 1 AND 2

The summary survey results for Upper Black Eddy Bridge and US 202 Toll Bridge are shown in this section. Part 1 of this section consists of Upper Black Eddy Bridge survey results while Part 2 consists of US 202 Toll Bridge survey results. Information was collected in both inbound and outbound directions on both facilities through a roadside interview, using the questionnaire shown on page 6. Questions were asked about trip origin and destination, purpose, highways used, vehicle type, occupancy, truck garage location and commodities transported. Simple and cross tabulations of survey responses for each of the two stations are summarized in Parts 1 and 2.

The major findings of the survey and traffic characteristics are presented with the findings for each question are offered in graphic and written form. Included with each table or figure is text summarizing the highlights of the survey responses. The text summarizes the findings and describes points of interest not shown in the graphics. Detailed survey information is provided in the Appendices.

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PART 1
Upper Black Eddy Bridge Survey Summary Results

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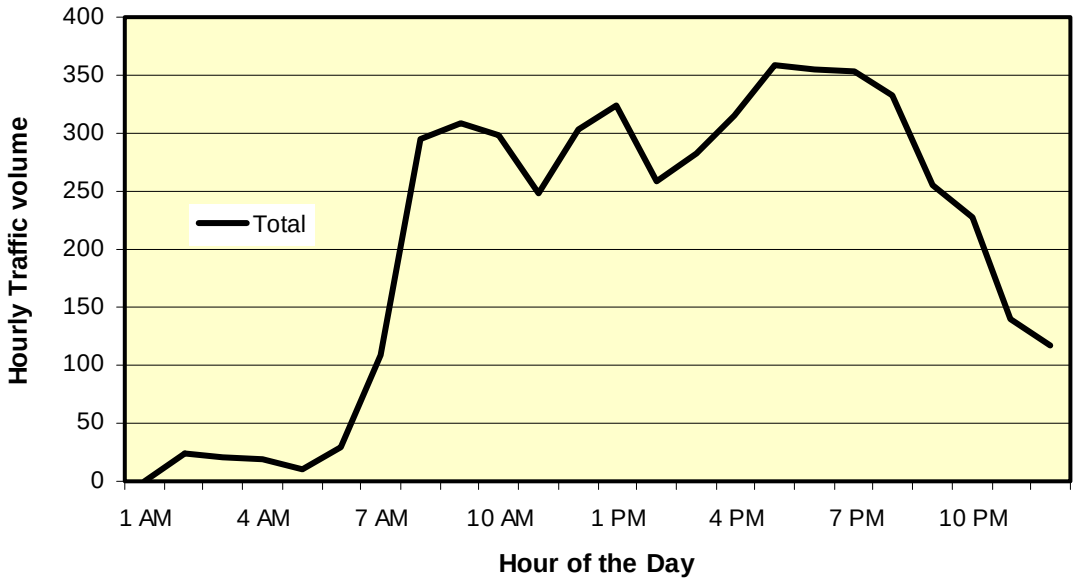
Daily Traffic Counts by Hour of the Day



- Vehicle classification traffic counts were collected during 24 hours preceding the survey. The Upper Black Eddy Bridge traffic counts were taken near the Bucks / Hunterdon county boundary, where the field survey was conducted. The traffic volume at that point was 5,037 vehicles per day. These counts were not classified by vehicle type. The full statistical portrait for Upper Black Eddy Bridge is shown in Table A-1 in the Appendix A in the back of the report.

- The AM peak hour traffic occurred between the hours of 7:00 a.m. and 8:00 a.m. The count for that hour was 308 vehicles. This count was 6.1 percent of the 24 hour traffic volume. The PM peak occurred between the hours of 3:00 p.m. and 4:00 p.m. The vehicle count for that hour was 359, which is 7.1 percent of the 24 hour traffic volume.

- There was also a lunchtime Peak between the hours of 11:00 a.m. and 12:00 p.m. The count for that hour was 325 vehicles, which is 6.5 percent of the 24 hour traffic volume.

Total Interviews by Survey Period

Survey Period	Total Surveys	Inbound Surveys	Inbound % of Total	Outbound Surveys	Outbound % of Total
Morning Shift					
6:30 a.m. - 10:30 a.m.	196	73	17%	123	26%
10:30 a.m. - 1:00 p.m.	235	118	27%	117	24%
Evening Shift					
1:00 p.m. - 4:30 p.m.	219	112	26%	107	22%
4:30 p.m. - 8:00 p.m.	266	134	31%	132	28%
TOTAL	**916**	**437**	**100%**	**479**	**100%**

- There were 916 drivers surveyed at this location. This sample is about 92 percent of the desired total of 1,000. The hourly shift totals have been added together to create the table above. The disaggregated numbers are shown in greater detail in Table A-2 in the Appendix.

- The number of survey responses favors the outbound direction with 437 inbound and 479 outbound vehicles surveyed at the cordon station. The 6:30 a.m. to 8:30 a.m. morning peak time had about 12 percent of the total volume, while the 4:30 p.m. to 6:00 p.m. afternoon peak time had about 18 percent the total surveys.

- The morning inbound traffic had the lowest share of traffic with about 6 percent between 6:30 a.m. to 8:30 a.m. The outbound survey volumes have the greatest share of survey responses. The surveys between 6:30 a.m. to 8:30 a.m. and 4:30 p.m. and 6:00 p.m. each had about 17 percent of the traffic volume.

Place of Trip Origin by Municipality

Inbound Trip Origins		Outbound Trip Origins	
Municipality	**% of Total**	**Municipality**	**% of Total**
1. Frenchtown	18%	1. Bridgeton	33%
2. Milford	11%	2. Tinicum	20%
3. Raritan	8%	3. Nockamixon	10%
4. Franklin	5%	4. Doylestown	3%
5. Flemington	5%	5. Bedminster	3%
6. Bridgeton	5%	6. Durham	3%
7. Alexandria	4%	7. Riegelsville	2%
8. Holland	3%	8. Plumstead	2%
9. Kingwood	3%	9. Bethlehem	2%
10. East Amwell	2%	10. Easton	1%

- There were 886 drivers responding to the question, "Where did you start this trip?" The numbers in the table above show only the trips originating in the top ten municipalities. The disaggregated numbers are shown in detail in Table A-3 in the Appendix.

- About 18 percent of the inbound trips originate in Frenchtown and about 11 percent originate in Milford with the remaining eight trip origins equaling about 41 percent. The smallest shares were Readington and Stockton (not shown) each with 1 percent. The "other" responses were about 30 percent of the total. A 33 percent share of the outbound trips originate in Bridgeton and about 20 percent originate in Tinicum. The remaining of the municipalities combine for about a 28 percent share. The miscellaneous "other" origins equal about 20 percent of the responses.

- About 66 percent of the surveyed trips have home-based trip origins. Frenchtown and Bridgeton both have the largest share of inbound and outbound home-based trip origins with 20 and 32 percent, respectively.

- Truck trips constitute about 12 percent of the drivers surveyed. About 22 percent of the inbound trucks may be attributed to two origins: Frenchtown (11%), and Milford (11%). The remaining truck origins have a 42 percent share, with the "other" category, composed of miscellaneous responses, tallying a 36 percent share. Similarly, the top outbound truck origin, Bridgeton, equals 31 percent with "other" having 36 percent share.

Place of Trip Destination by Municipality

Inbound Trip Destination		Outbound Trip Destination	
Municipality	**% of Total**	**Municipality**	**% of Total**
1. Bridgeton	28%	1. Milford	23%
2. Tinicum	18%	2. Frenchtown	16%
3. Nockamixon	15%	3. Alexandria	8%
4. Plumstead	4%	4. Holland	6%
5. Doylestown	3%	5. Flemington	4%
6. Bedminster	3%	6. Phillipsburg	4%
7. Easton	2%	7. Kingwood	4%
8. Richland	2%	8. Raritan	3%
9. Riegelsville	1%	9. Franklin	3%
10. Lower Saucon	1%	10. Bridgeton	2%

- There were 851 drivers responding to the question, "Where will this trip end?" The numbers in the table above show only the trip destinations aggregated for the top ten municipalities in each direction. The disaggregated numbers appear in detail in Table A-4 in the Appendix.

- The largest share of inbound trip destinations are to Bridgeton with a 28 percent share, though Tinicum (18%) and Nockamixon (15%) both have relatively large shares. Milford has a 23 percent share and Frenchtown has a 16 percent share of the outbound destinations. The "other" category for both inbound and outbound destinations has about 20 and 22 percent shares respectively. The remaining inbound and outbound municipalities have relatively small trip shares.

- Home-based trip destinations constitute about 65 percent of all trips. Bridgeton (21%), Tinicum (19%) and Nockamixon (15%) all have similar trip shares to the total trip shares. The same goes for the outbound shares with Milford (23%) and Frenchtown (16%) mimicking there trip total shares.

- Truck trips are a 12 percent share of the total surveyed vehicles. A dominant 45 percent of inbound truck destinations are to Bridgeton. About 17 percent of the outbound truck destinations are destined for Frenchtown. Trucks have a smaller inbound than outbound "other" destination response (17% inbound and 35% outbound.

Trip Stops by Vehicle Type

Survey Period	Passenger Vehicle Stopping	Commercial Vehicle Stopping	Total Stopping
Inbound Trips			
6:30 a.m. - 10:30 a.m.	10.7%	12.5%	11.1%
10:30 a.m. - 1:00 p.m.	6.9%	8.3%	7.0%
1:00 p.m. - 4:30 p.m.	3.0%	0.0%	2.6%
4:30 p.m. - 8:00 p.m.	0.8%	0.0%	0.7%
Outbound			
6:30 a.m. - 10:30 a.m.	11.2%	13.3%	11.5%
10:30 a.m. - 1:00 p.m.	9.8%	0.0%	8.8%
1:00 p.m. - 4:30 p.m.	5.2%	0.0%	4.7%
4:30 p.m. - 8:00 p.m.	4.1%	0.0%	3.1%
TOTAL	**6.1%**	**3.8%**	**5.8%**

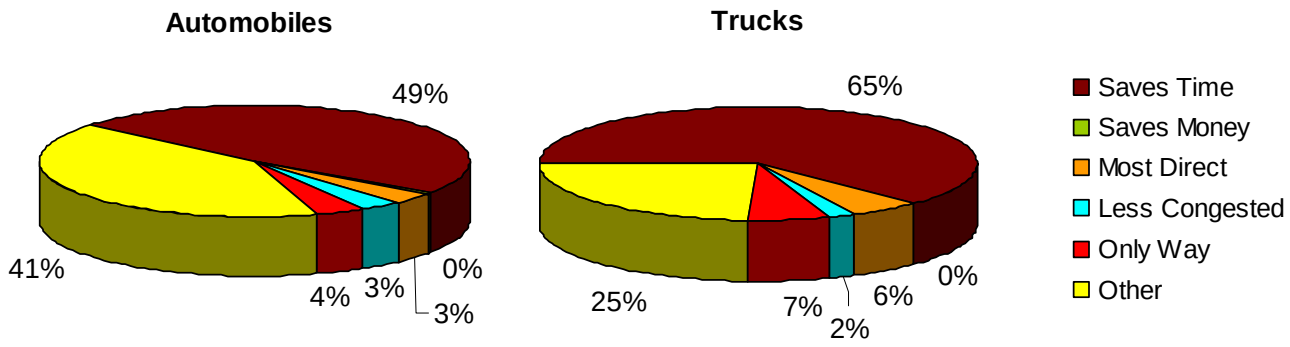
- There were 937 drivers responding to the question: "Will you stop before arriving at your destination?" The numbers in the table above were aggregated from the complete data set shown in Table A-5 in the Appendix.

- Only 49 automobiles and 5 trucks responded affirmatively, meaning only about 6 percent of total drivers answered that they would stop before arriving at their destination. The greatest total share of positive answers occurred inbound between 8:30 a.m. and 10:30 a.m. with about 13 percent, and outbound between 6:30 a.m. and 8:30 a.m. with about 16 percent.

- Out of all the responses, outbound drivers were more likely to stop than inbound drivers. About 60 percent of all the "stop" responses (49) were from passenger vehicles with 19 heading inbound and 30 vehicles heading outbound.

- Only 5 truck drivers responded that they planned to stop.

Reason for Using Upper Black Eddy Bridge by Automobile and Truck Drivers



*Totals may exceed 100% due to multiple answers

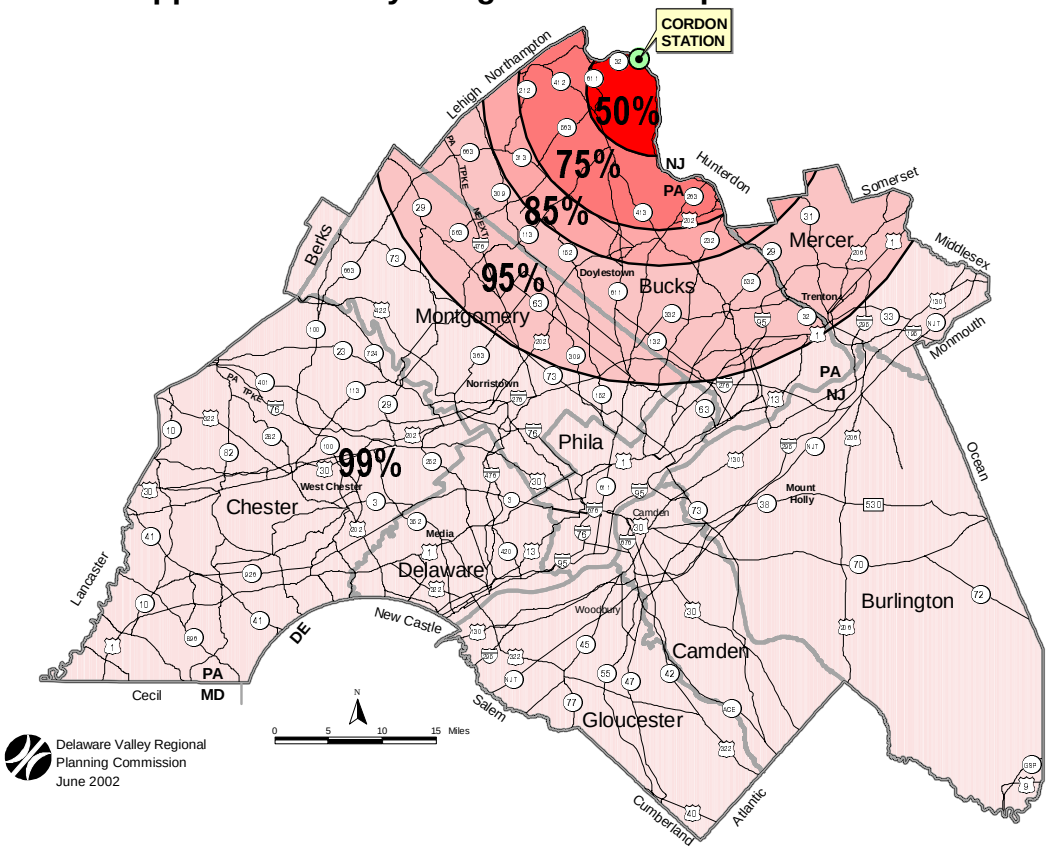
- There were 776 passenger and 108 commercial vehicles responding to the question, "Why do you use this road?" The drivers were permitted to provide more than one answer which means that totals in the Appendix tables can add to more than 100 percent. The complete data sets are in Tables A-6 and A-7 in the Appendix.

- "Saves time" was the dominant response for both vehicle types with 49 percent of the responses for automobiles and 65 percent for trucks. At the low end, a combined total of about 4 percent of automobile and 2 percent of truck drivers responded with "saves money" and "less congested".

- The miscellaneous "other" category for automobile and truck drivers (41% and 25% respectively) is by far the largest secondary response.

- About 77 percent of automobile drivers proceeding inbound responded with "saves time" between 6:30 a.m. and 8:30 a.m., the greatest percentage response for this question.

Distribution of Upper Black Eddy Bridge Inbound Trips



- The map shows the distribution of inbound trips within the DVRPC region, though the percentages also include values outside the region but within the isochrone lines. About 83 percent of the trips end within the region, the through trips are described below.

- Only 16.6 percent of the surveyed vehicles were through trips with destinations outside the region. Of these trips about 1.1 percent of all trips were headed west out of the region into Pennsylvania towards Lancaster County.

- About 10.3 percent of the through trips went north of Pennsylvania up the PA Turnpike Northeast Extension (I-476) or had destinations outside the region in north New Jersey and towards New York City.

- About 5.2 percent of the trips were headed either east in New Jersey towards shore points or south to Delaware.

Major Roads Taken by all Vehicles

Inbound Traffic		Outbound Traffic	
Roads Used	**% of Total**	**Roads Used**	**% of Total**
1. PA 32	37%	1. CR 519	28%
2. PA 611	22%	2. NJ 12	12%
3. I-78	9%	3. I-78	11%
4. US 22	3%	4. NJ 29	11%
5. US 202	3%	5. CR 513	5%
6. I-95	3%	6. US 202	4%

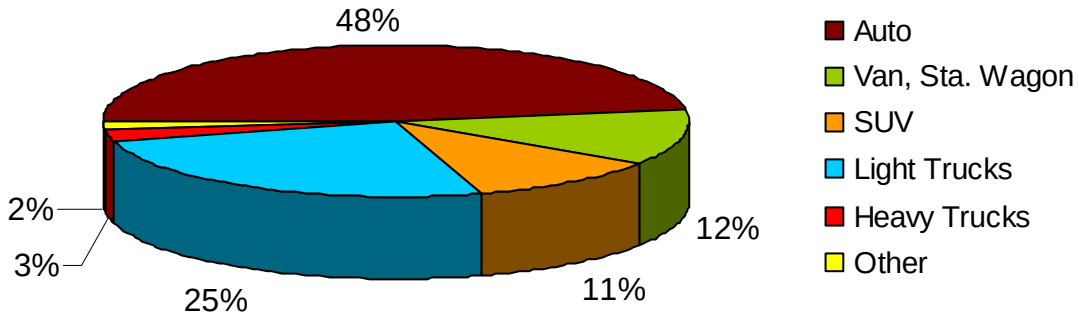
- There were 650 driver responses to the question "What is/are the major roads that you will take to reach your destination after this road?" The complete data set is in Table A-8 in the Appendix.

- About 37 percent of the total inbound drivers responded that PA 32 would be the road they would use to reach their destination. Outbound drivers reported CR 519 was their road of choice with a 28 percent share. The "other" category had similar shares in each direction with 22 percent share inbound and 26 percent outbound. The remaining facilities having lesser shares of the total outbound volume.

- Passenger vehicle responses were similar to the total responses with PA 32 having a 38 percent inbound share and with CR 519 having a 29 percent outbound share of passenger responses. Again, "other", a catch-all for miscellaneous responses, had a 22 percent inbound share and a 24 percent outbound share.

- Inbound truck driver responses varied from the passenger and total responses with PA 32 (33%) a smaller share and "other" (26%) with a larger share. Outbound truck drivers cited CR 519 (23%) and "other", (37%) as the likely roads taken to reach their destinations.

Type of Vehicles Surveyed



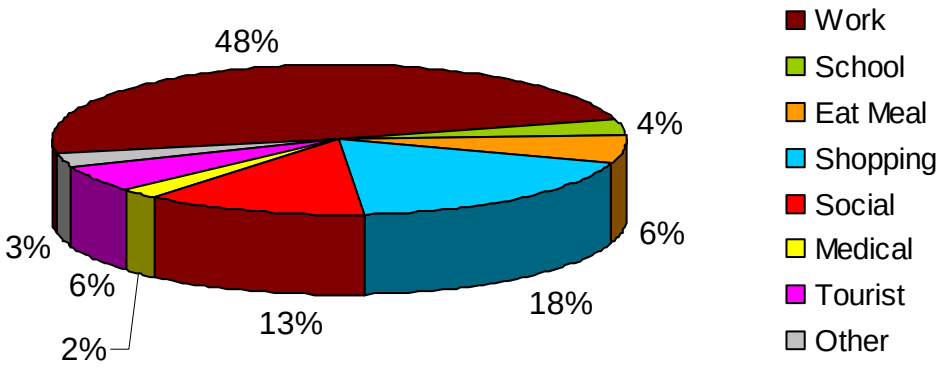
- The response to this question was obtained from observation rather than questioning the 916 drivers in the survey sample. The grouped categories can not be compared with the 24 hour vehicle classification count, since there was no vehicle classification for that count at this station. The complete data set is in Table A-9 in the Appendix.

- Surveyed passenger vehicles (autos, vans, SUVs) had about a 70 percent share of the total. Light truck traffic (pickup, panel, and single unit) had about a 25 percent share of the total traffic.

- Automobiles make up about 48 percent of the surveyed vehicle mix, while vans with 12 percent and SUVs with about 11 percent constitute the remaining passenger vehicles.

- Pick-up trucks, which are a part of the light truck designation, have about a 17 percent share of the total, while surveyed heavy trucks had a 3 percent share.

Trip Purpose of Passenger Vehicles



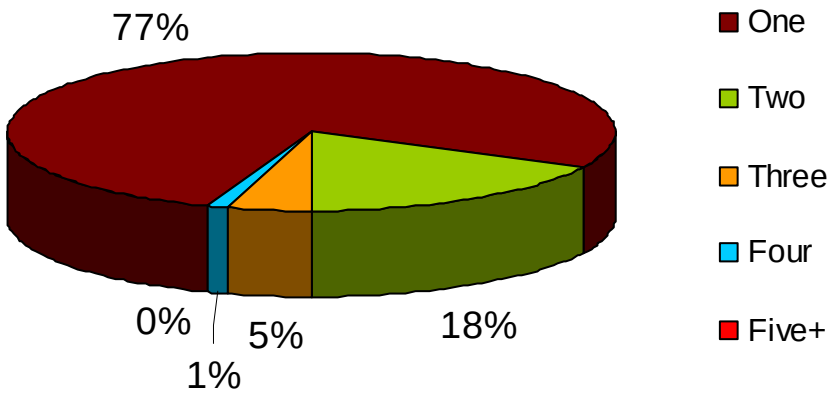
- Drivers in passenger vehicles were asked "What is the purpose of this trip?" Truck and commercial vehicle drivers were not asked this question as their purpose was evident. The complete data set is in Table A-10 in the Appendix.

- The work trip is the greatest trip purpose with about 48 percent of the total trips. Work trips dominate the morning peak hours between 6:30 a.m. and 8:30 a.m. with inbound and outbound shares (88% and 90% respectively). The PM peak hours between 4:30 p.m. and 6:00 p.m. have inbound and outbound shares (73% and 30%) which are not as dominant as the AM peaks.

- The shopping trip is the secondary reasons for making a trip, with about 18 percent of total trips. Social trips provide about 13 percent of the trip purposes. The remaining five categories are split among the remaining 21 percent of trip purposes.

- Meal, tourist, and school together have about 16 percent total (6%, 6%, 4% respectively). Other and medical each offer small shares (3%, 2% respectively).

Vehicle Occupancy



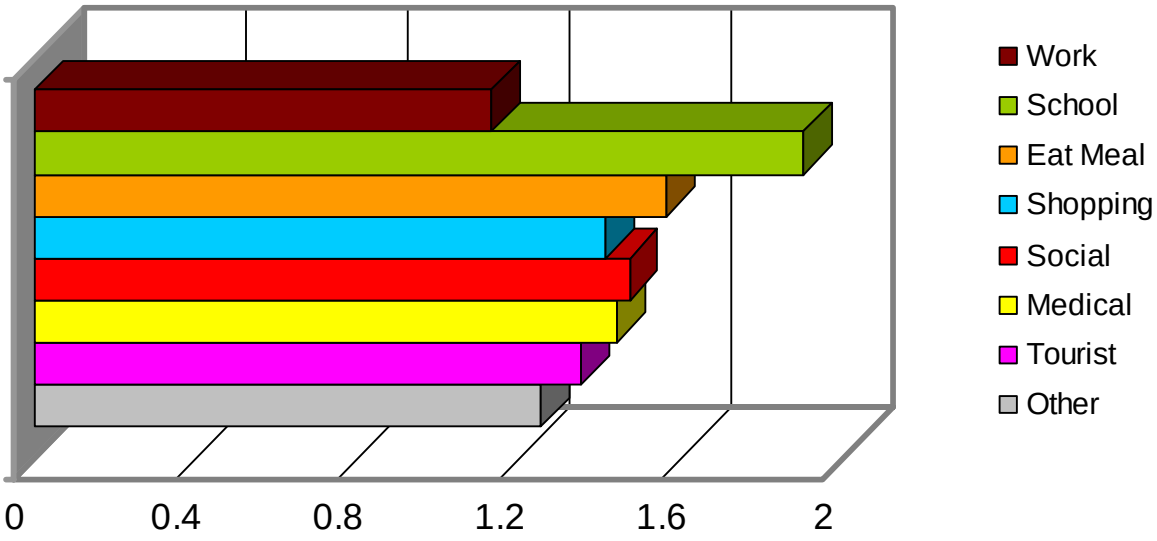
- This question, "How many people are in the vehicle?" was obtained by observation of the 802 passenger vehicle drivers in the survey sample. The complete data set is in Table A-11 in the Appendix.

- Single occupant vehicles were 77 percent of total vehicles surveyed. The greatest number of these inbound (175) were distributed during the evening survey period (1:00 p.m. to 8:00 p.m.) and outbound (175) during the morning survey period (6:30 a.m. and 1:00 p.m.).

- Two occupant vehicles are 18 percent of the vehicles surveyed. The greatest inbound share is 21 percent during the10:30 a.m. and 12:00 p.m. period, while the greatest outbound share is about 30 percent during the 6:00 p.m. to 8:00 p.m. time period.

- Three and four occupant vehicles have much smaller shares than the lesser occupied vehicles (5% and 1% respectively). There were zero vehicles with 5+ occupants.

Average Vehicle Occupancy by Trip Purpose



- Average vehicle occupancy by trip purpose was obtained by cross tabulating the observed vehicle occupancy with the survey question regarding trip purpose. The complete data set is in Table A-12 in the Appendix.

- The total average vehicular occupancy is 1.30 persons per vehicle. Average occupancy for the van/station wagons (1.43) and average auto occupancy (1.32) both exceed the total average. The average SUV occupancy (1.28) is less than the total average occupancy of 1.30 persons per vehicle.

- Work trips have the lowest total vehicle occupancy rate for any trip purpose (1.13), while school trips have the highest total with 1.90. The work trip occupancy rate for automobiles (1.11) and SUVs (1.11) is less than that for van/station wagons (1.19).

- The trip purposes with secondary total occupancy rates are the eat meal and social categories with 1.56 and 1.47 persons per vehicle, respectively.

- The greatest occupancy rate by vehicle type is the school trip by van/station wagon (2.71 respectively). Closely following is the school trip purpose in the automobile with 1.79 persons per vehicle.

- The lowest occupancy rates, besides work trips, occur in the “other” trip purposes for automobiles and van/station wagons (1.28 and 1.25 respectively), and for SUVs in the medical category (1.00).

Vehicle Trip Length Distribution within the DVRPC Region

Trip Length	Work Trips	Auto Trips	Truck Trips
0-5 miles	51%	59%	52%
5-10 miles	27%	21%	21%
10-20 miles	15%	13%	15%
20-50 miles	7%	6%	12%
>50 miles	0%	0%	0%
Average Trip Length	**7.7**	**7.2**	**9.2**

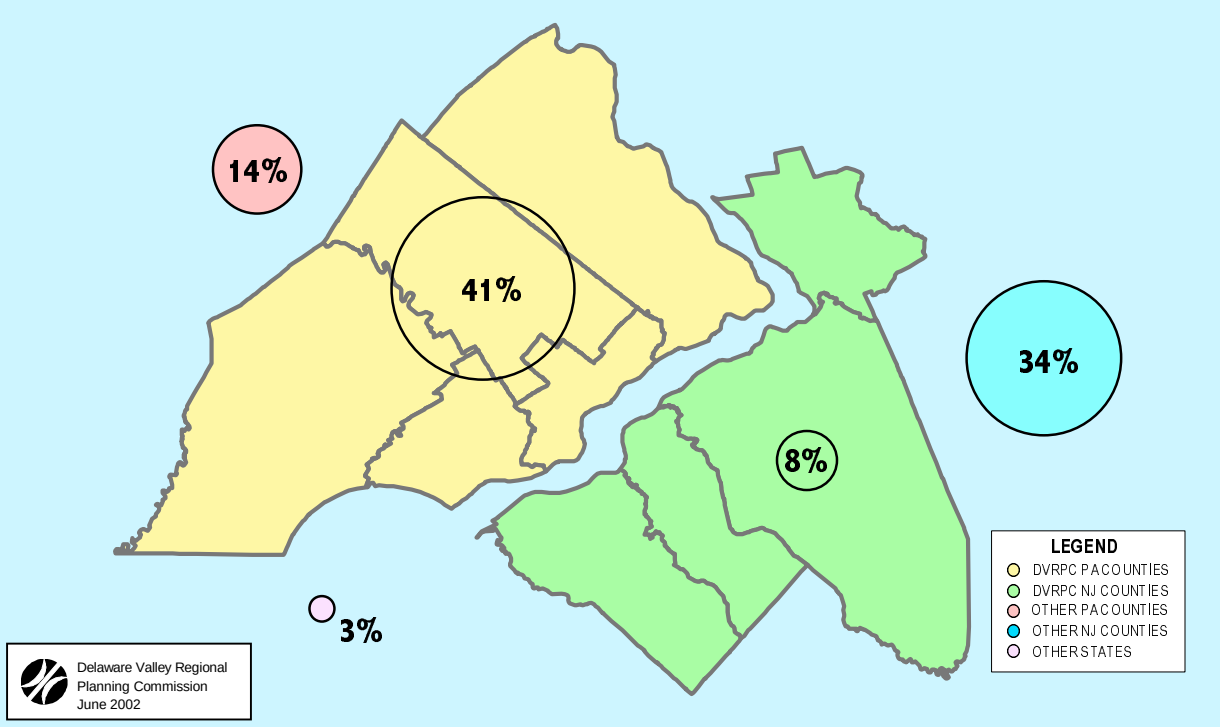
- The results for this query were obtained by using the GIS to compute distances between the cordon station and origins/destinations within the region gathered with the first two questions in the survey. This data is broken out by home-based work trips, passenger vehicle trips and truck trips. The data has been put into five general groupings by the distance traveled: 0-5 miles, 5-10 miles, 10-20 miles, 20-50 miles and above 50 miles. The complete data set is in Table A-13 in the Appendix.

- The average trip lengths vary from about 7 to 9 miles, with truck trips possessing the longest trip length (9 miles) and automobile trips the shortest (about 7 miles). There is a large cluster between 3-4 miles for all three trip types. There were only 4 trips recorded beyond 40 miles.

- Trip lengths for trucks are greater than automobile trips. The 0-10 mile trip length contains 73 percent of the commercial vehicle trips with trips 20 miles and more having a 12 percent share, which is double either of the other two modes.

- Work and automobile trips have 78 and 80 percent shares respectively in the 0 to 10 mile range, and 22 and 19 percent shares in the 10 to 50 mile range. Work and automobile trips both have few traveling greater than 50 miles. There were 1 and 1 trips respectively in this distance category.

Trucks Garaged by State and County



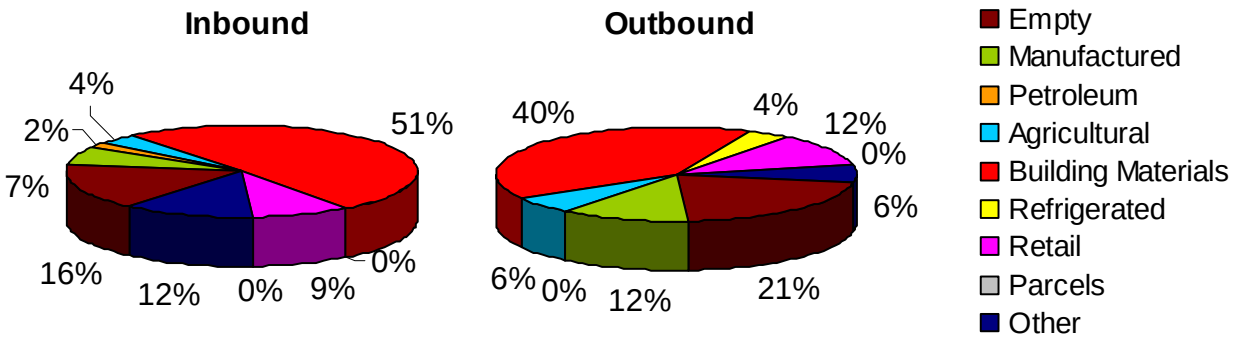
- There were 111 truck drivers asked "In what county is your truck garaged or parked when not in service?" Passenger vehicles were not asked this question. The complete data set is in Table A-14 in the Appendix.

- About half of the surveyed trucks are garaged within the DVRPC region (8% in New Jersey and 41% in Pennsylvania). Truck drivers housing their trucks outside the DVRPC region in New Jersey or Pennsylvania have smaller shares (34% and 14% respectively).

- The remaining 3 percent of the responses are singular miscellaneous locations distributed throughout the United States.

- About 59 percent of the inbound traffic is garaged in Pennsylvania, while about 37 percent of inbound traffic is garaged in New Jersey, with the rest miscellaneous. This distribution of the outbound traffic is about 50 percent garaged in Pennsylvania, while 48 percent did likewise in New Jersey, with the rest miscellaneous.

Type of Commodities Carried by Trucks



- Truck drivers were asked "What type of commodities are you carrying?" Passenger vehicles were not asked this question. The complete data set is in Table A-15 in the Appendix.

- The number of inbound and outbound trucks surveyed were nearly equal (57 versus 52 surveyed trucks). The inbound and outbound results generally mirror each other, though there are some exceptions.

- The largest total response is building materials (46% total) with 51 percent and 40 percent shares inbound and outbound respectively. Empty trucks are about 18 percent of the total, while retail merchandise (10%) and manufactured products (9%) constitute the middle values. Refrigerated products (2%), petroleum products (1%), and parcels (0%) bring up the least common commodities carried by trucks.

- Trucks are less likely to be traveling empty inbound than outbound (16% versus 21%). "Other" products have twice the inbound (12%) as the outbound flow (6%).

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PART 2
US 202 Toll Bridge Survey Summary Results

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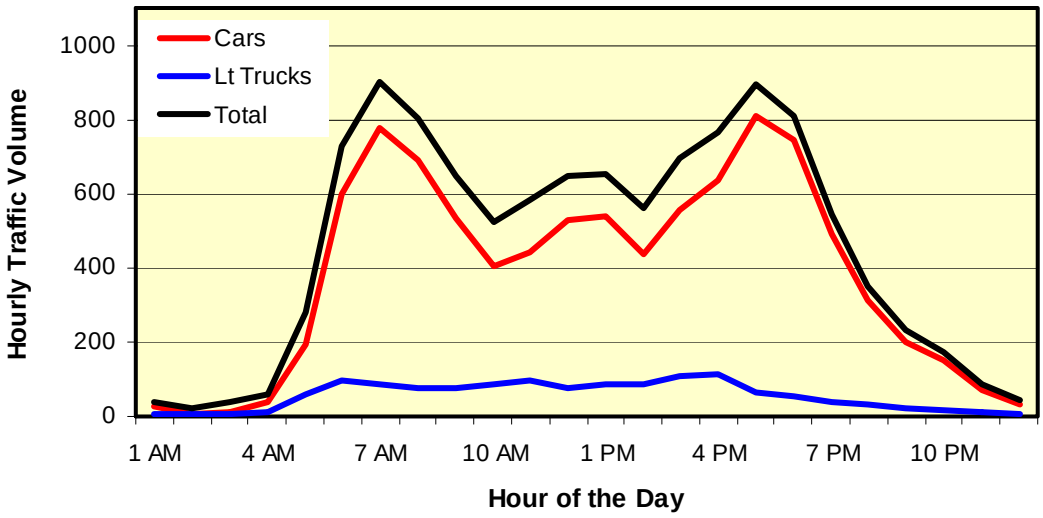
Daily Traffic Counts by Hour of the Day



- Vehicle classification traffic counts were collected during 24 hours preceding the survey. The US 202 north traffic counts were taken at the toll plaza near the Bucks / Hunterdon county boundary, where the field survey was conducted. The traffic volume at that point was 11,076 vehicles classified by vehicle type. The statistical portrait of the classification counts for US 202 is shown in Table B-1 in the Appendix B in the back of the report.

- The AM peak hour traffic occurred between the hours of 6:00 a.m. and 7:00 a.m. The count for that hour was 900 vehicles. This count was 8.1 percent of the 24 hour traffic volume. The PM peak occurred between the hours of 4:00 p.m. and 5:00 p.m. The count for that hour was 894 vehicles. This constitutes 8.1 percent of the 24 hour traffic volume.

- The vehicular counts were dominated by 9,236 automobiles. This is about 83 percent of the 24 hour vehicular count. Light trucks were about 12 percent of the vehicles.

- Heavy trucks, those with more than two axles, make up about 3 percent of the vehicular traffic. Buses and Motorcycles together, were about 1 percent share of the vehicle counts.

Total Interviews by Survey Period

Survey Period	Total Surveys	Inbound Surveys	Inbound % of Total	Outbound Surveys	Outbound % of Total
Morning Shift					
6:30 a.m. - 10:30 a.m.	441	222	27%	219	27%
10:30 a.m. - 1:00 p.m.	390	194	24%	196	24%
Evening Shift					
1:00 p.m. - 4:30 p.m.	384	193	23%	191	24%
4:30 p.m. - 8:00 p.m.	423	216	26%	207	26%
TOTAL	**1,638**	**825**	**100%**	**813**	**100%**

- There were 1,638 drivers responding to survey at this location. This sample is about 96 percent of the desired total of 1,700. The hourly shift totals have been added together to create the table above. The disaggregated numbers are shown in greater detail in Table B-2 in the Appendix.

- There was an equal number of surveys in each direction with 825 inbound and 813 outbound vehicles surveyed at the cordon station The 6:30 a.m. to 8:30 a.m. morning peak time had about 18 percent of the volume, while the 4:30 p.m. to 6:00 p.m. afternoon peak time had about 17 percent the total surveys.

- The inbound and outbound traffic flows were roughly equivalent. The inbound morning peak (6:30 a.m. to 10:30 a.m.) volume and the outbound morning peak volume are similar (27% versus 27% respectively). This pattern is followed throughout the day with the morning off-peak surveys between 10:30 a.m. and 1:00 p.m. (24% inbound versus 24% outbound) and the afternoon off-peak surveys between 1:00 p.m. and 4:30 p.m. (23% inbound and 24% outbound). The inbound and outbound responses in the evening peak are also approximately equal (26% inbound versus 26% outbound).

Place of Trip Origin by Municipality

Inbound Trip Origins		Outbound Trip Origins	
Municipality	**% of Total**	**Municipality**	**% of Total**
1. Raritan	12%	1. New Hope	14%
2. Flemington	10%	2. Solebury	13%
3. Lambertville	8%	3. Buckingham	13%
4. East Amwell	8%	4. Doylestown	11%
5. Bridgewater	5%	5. Philadelphia	3%
6. Morristown	2%	6. Upper Gwynedd	3%
7. Readington	2%	7. Warminster	3%
8. Clinton	2%	8. Warwick	2%
9. Piscataway	2%	9. New Britain	2%
10. Stockton	2%	10. Northampton	2%

- There were 1,544 drivers responding to the question, "Where did you start this trip?" The numbers in the table above show only the trips originating in the top ten municipalities. The disaggregated numbers are shown in detail in Table B-3 in the Appendix.

- About 12 percent of the inbound trips originate in Raritan and about 10 percent originate in Flemington with the remaining trip origins equaling about 35 percent. The smallest shares (not shown above) are four communities with about 1 percent. About 43 percent of the total origins were described as "other". Roughly equal shares of outbound trips originate in four municipalities: New Hope, Solebury, Buckingham, Doylestown (with 14%, 13%, 13%, 11% respectively). The rest of the municipalities combining for about a 22 percent share with about 27 percent of the responses indicating miscellaneous "other" origins.

- About 61 percent of the surveyed trips have home-based trip origins. The distribution of trip origins differ little from the total trips. Inbound, Raritan and Flemington combine for a 22 percent share, while New Hope, Solebury, Buckingham, and Doylestown together have about a 53 percent share outbound of home-based trip origins.

- Truck trips constitute about 15 percent of the drivers surveyed. About 20 percent of the inbound trucks may be attributed to origins in Raritan and Flemington. The "other" category, not shown in the table and composed of miscellaneous responses, had a 51 percent inbound share. The outbound truck origins are concentrated in New Hope, Solebury, and Buckingham, (with 20%, 12%, 11% respectively), and with "other" having a 37 percent share.

Place of Trip Destination by Municipality

Inbound Trip Destination		Outbound Trip Destination	
Municipality	**% of Total**	**Municipality**	**% of Total**
1. New Hope	17%	1. Raritan	13%
2. Doylestown	13%	2. Flemington	10%
3. Solebury	12%	3. Lambertville	6%
4. Buckingham	10%	4. Bridgewater	5%
5. Horsham	3%	5. West Amwell	5%
6. Warminster	3%	6. East Amwell	4%
7. Philadelphia	3%	7. Delaware	3%
8. Warrington	2%	8. Somerville	2%
9. Lansdale	2%	9. Edison	2%
10. Montgomery	2%	10. Franklin	2%

- There were 1,555 drivers responding to the question, "Where will this trip end?" The numbers in the table above show only the trip destinations aggregated for the top ten municipalities in each direction. The disaggregated numbers appear in detail in Table B-4 in the Appendix.

- The largest share of inbound trip destinations are to New Hope, Doylestown, and Solebury (17%, 13%, 12% respectively). Outbound, Raritan and Flemington combine for a 23 percent share of the destinations. The inbound and outbound municipalities have smaller trip shares, though "other" destinations account for 29 and 42 percent shares respectively.

- Home-based trip destinations constitute about 60 percent of all trips. A combined 29 percent of inbound home-based trips have to New Hope, Doylestown, and Solebury as their destinations. About 21 percent of the home-based outbound trips are destined for Raritan and Flemington.

- Truck trips are a 15 percent share of the surveyed vehicles. The inbound trucks were going to New Hope and Buckingham (20% and 9% respectively), while the outbound trucks are destined for Raritan (11%). Trucks also have a large "other" destination response (39% inbound and 54% outbound).

Trip Stops by Vehicle Type

Survey Period	Passenger Vehicle Stopping	Commercial Vehicle Stopping	Total Stopping
Inbound Trips			
6:30 a.m. - 10:30 a.m.	0.5%	0.0%	0.5%
10:30 a.m. - 1:00 p.m.	0.6%	5.7%	1.5%
1:00 p.m. - 4:30 p.m.	5.0%	0.0%	4.1%
4:30 p.m. - 8:00 p.m.	7.9%	0.0%	6.9%
Outbound			
6:30 a.m. - 10:30 a.m.	1.1%	5.9%	1.8%
10:30 a.m. - 1:00 p.m.	3.8%	2.6%	3.6%
1:00 p.m. - 4:30 p.m.	1.9%	0.0%	1.6%
4:30 p.m. - 8:00 p.m.	1.0%	0.0%	1.0%
TOTAL	**2.7%**	**2.0%**	**2.6%**

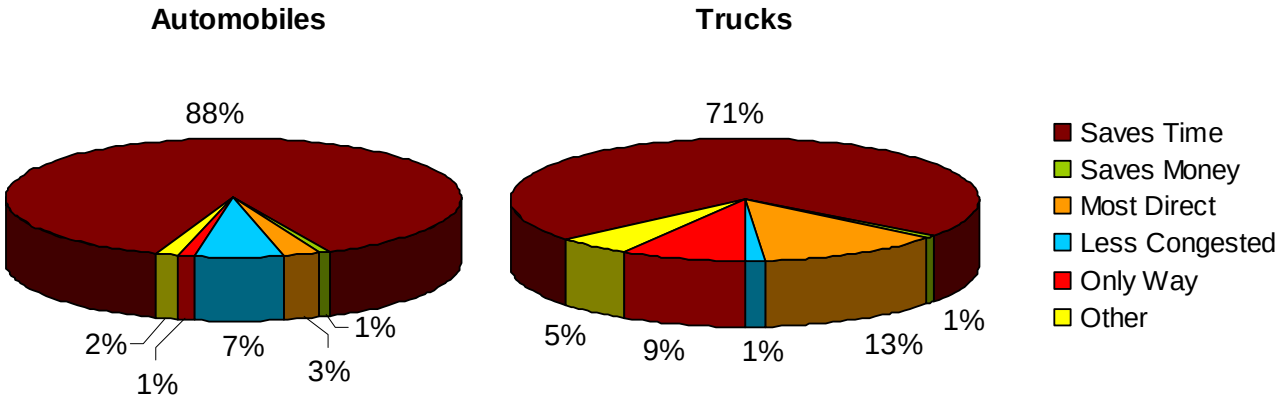
- There were 1,638 drivers responding to the question: "Will you stop before arriving at your destination?" The numbers in the table above were aggregated from the complete data set shown in Table B-5 in the Appendix.

- A total of 43 drivers responded that they were going to stop before arriving at their destination. This consisted of 38 automobiles and 5 trucks responding affirmatively, meaning about 3 percent of responding drivers planned to stop before arriving at their destination.

- Only 25 passenger vehicle drivers traveling inbound had "stop" responses, while 13 outbound drivers had the same response. The hours between 4:30 p.m. and 6:00 p.m. with about 10 percent were the greatest inbound share. During the hours between 12:00 p.m. and 1:00 p.m., about 6 percent of outbound drivers responded that they planned on stopping.

- Trucks had a different, and smaller, pattern of outbound replies. The hours between 10:30 a.m. and 1:00 p.m. inbound and 6:30 a.m. and 8:30 a.m. outbound each had 2 truck drivers responding that they will be stopping.

Reason for Using US 202 Toll Bridge by Automobile and Truck Drivers



*Totals may exceed 100% due to multiple answers

- There were 1,344 passenger and 230 commercial vehicles responding to the question, "Why do you use this road?" The drivers were permitted to provide more than one answer meaning that totals in the Appendix can add to more than 100 percent. The complete data sets are in Tables B-6 and B-7 in the Appendix.

- "Saves time" was the largest response for both vehicle types with 88 percent of the responses for automobiles and 71 percent for trucks. About 1 percent of automobile drivers responded with "saves money" or "only way".

- There are differences between automobile and truck driver responses for "most direct" (3% versus 13% respectively), and "only way" (1% versus 9% respectively).

- Every hour had large shares of automobile drivers responding with "saves time" through out the day. Inbound trucks between 6:30 a.m. and 1:00 p.m. responded with "saves time" about 92 percent of the time.

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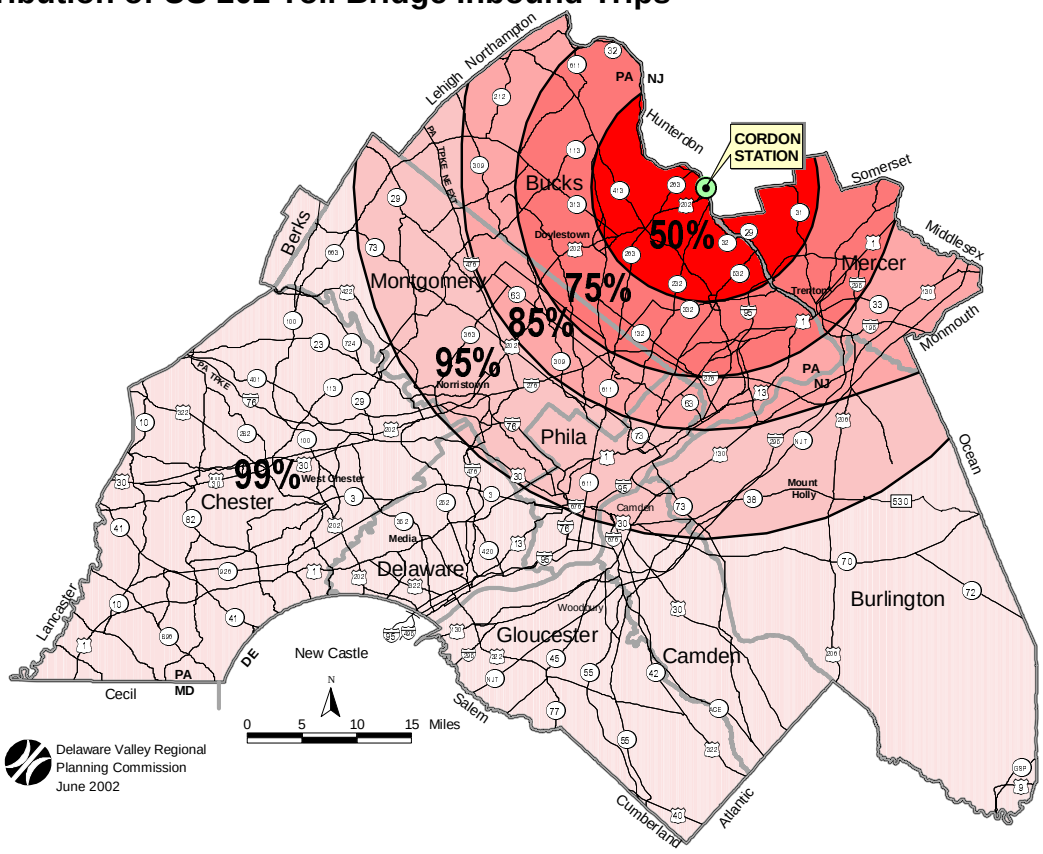
Distribution of US 202 Toll Bridge Inbound Trips



- The map shows the distribution of inbound trips within the DVRPC region, though the percentages also include values outside the region but within the isochrone lines. About 96 percent of the trips end within the region and the through trips are described below.

- Only 3.7 percent of the surveyed vehicles were through trips with destination outside the region. Of these trips, about 2.4 percent of all trips were headed out of the region into western Pennsylvania.

- About 0.2 percent of the through trips went north of Pennsylvania up the PA Turnpike Northeast Extension (I-476) and beyond.

- About 0.6 percent of the trips had destinations outside the region in north New Jersey towards New York City

- Only 0.1 percent of the trips were headed east towards shore points.

Major Roads Taken by all Vehicles

Inbound Traffic		Outbound Traffic	
Roads Used	**% of Total**	**Roads Used**	**% of Total**
1. PA 611	14%	1. I-287	31%
2. PA 263	8%	2. NJ 29	8%
3. I-95	6%	3. NJ 31	8%
4. PA 313	6%	4. I-78	7%
5. I-78	5%	5. I-95	6%
6. PA 22	4%	6. NJ 22	6%

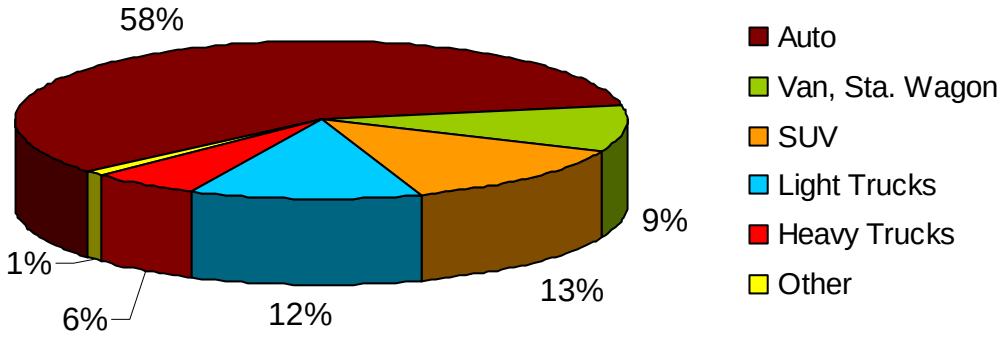
- There were 927 driver responses to the question "What is/are the major roads that you will take to reach your destination after this road?" The complete data set is in Table B-8 in the Appendix.

- About 14 percent of the total inbound drivers responded that PA 611 would be the road they would use to reach their destination. The "other" category had a domnant 53 percent share, with the remaining facilities having small shares of the total inbound volume.

- Outbound traffic had a lesser route response with I-287 with 31 percent. The "other" category had a 32 percent share, with the remaining facilities having small shares of the total outbound volume.

- The order of inbound truck responses were different from the passenger or total responses with PA 263 (14%), PA 413 (10%) and "other" (52%). There are differences in the outbound direction also, with trucks on NJ 29 (18%) and I-287 (15%). Again, "other", a catch-all for miscellaneous responses, was the large response in the outbound direction with 40 percent of the responses. This result affirming the dispersed nature of the routes and destinations outside the region.

Type of Vehicles Surveyed



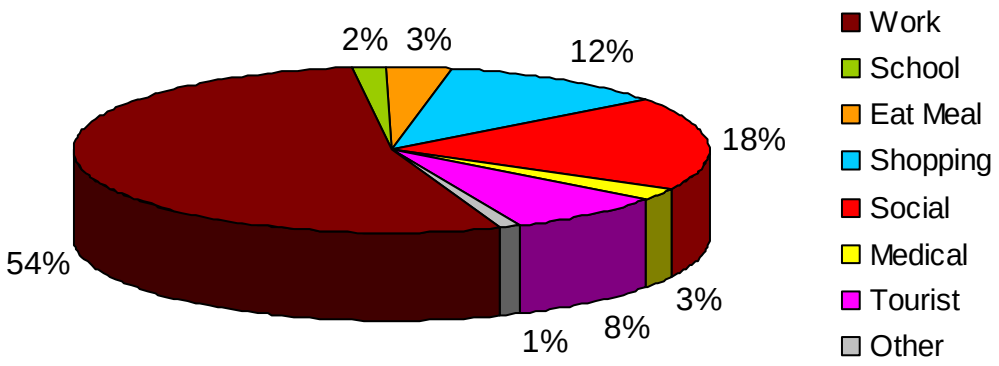
- The response to this question was obtained from observation rather than questioning the 1,638 drivers in the survey sample. The grouped categories are not aggregated the same as the 24 hour vehicle classification count, with some categories broken out and some combined in order to help with the analysis. The complete data set is in Table B-9 in the Appendix.

- The composition of the surveyed vehicles differs from the one-way 24 hour vehicle classification counts. Surveyed passenger vehicles (autos, vans, SUVs) had a greater share than the 24 hour count (81% versus 83%). Light truck traffic (pickup, panel, and single unit) had a similar share during the survey than the 24 hour class count (13% versus 12%).

- Automobiles make up about 58 percent of the surveyed vehicle mix, while vans, with 9 percent and SUVs with about 13 percent, constitute the rest of the passenger vehicles.

- Surveyed heavy trucks had about a 6 percent share, which is twice the 24 hour class count of roughly 3 percent.

Trip Purpose of Passenger Vehicles



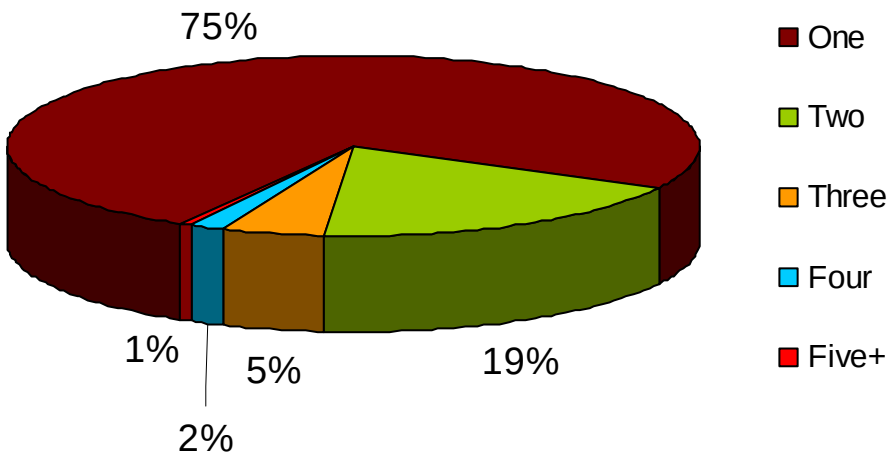
- Drivers in passenger vehicles were asked "What is the purpose of this trip?" Truck and commercial vehicle drivers were not asked this question as their purpose was evident. The complete data set is in Table B-10 in the Appendix.

- The work trip was the most common trip purpose with about 54 percent of the total trips. Work trips dominate the morning peak hours between 6:30 a.m. and 8:30 a.m. with inbound and outbound shares of 77 percent and 88 percent respectively. The afternoon inbound and outbound peak hours between 4:30 p.m. and 6:00 p.m. have lesser shares than the AM peaks with 60 percent and 33 percent respectively.

- The social trip is the secondary reasons for making a trip, with about 18 percent of total trips. Social trips are low during morning periods in both directions, but reach their greatest concentration inbound between 1:00 p.m. and 4:30 p.m. and outbound between 4:30 p.m. and 8:00 p.m. (20% and 38% respectively).

- The remaining six categories are divided among the remaining 28 percent of trip purposes. Shopping had the largest share of the remaining purposes with 12 percent. Tourist and eat meal each have smaller shares of 8 and 3 percent respectively. The responses "other" and school have 2 percent and 1 percent shares respectively.

Vehicle Occupancy



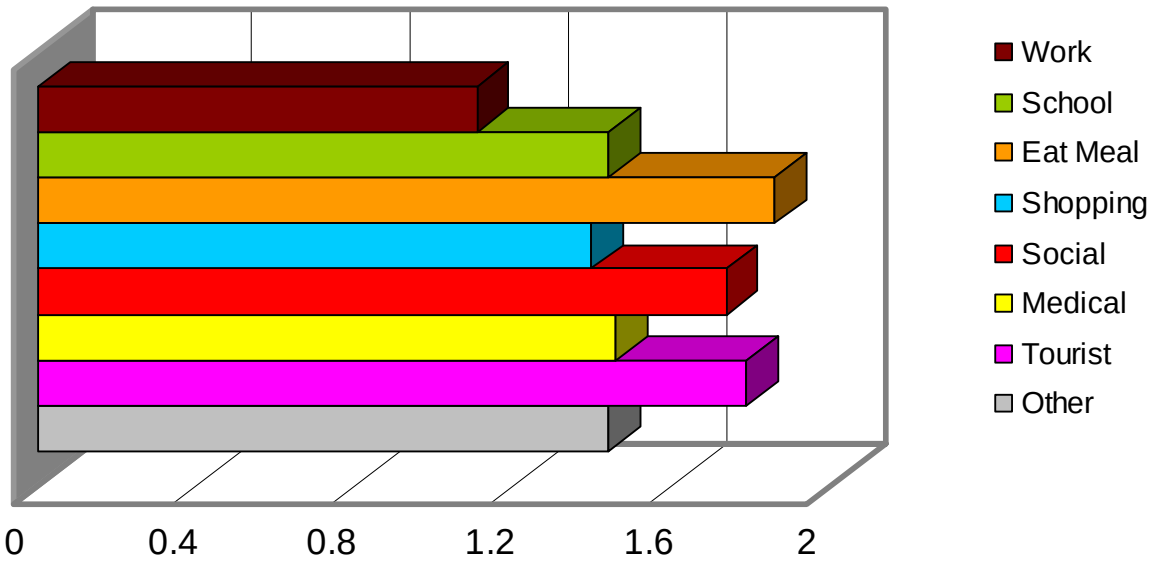
- The answer to the question, "How many people are in the vehicle?" was obtained by observation of 1,384 drivers in the survey sample. This question was used for passenger vehicles only. The complete data set is in Table B-11 in the Appendix.

- Single occupant vehicles were 75 percent of total vehicles surveyed. The greatest share of these was inbound and outbound between 6:30 a.m. and 8:30 a.m. (94% and 95% respectively).

- Two occupant vehicles are 19 percent of the vehicles surveyed. The greatest inbound share is 33 percent during the 1:00 p.m. to 2:30 p.m. period, while the greatest outbound share is 38 percent during the 1:00 p.m. to 2:30 p.m. time period.

- Three and four occupant vehicles combine for about a 7 percent share of the total (5% and 2% respectively). Only eight vehicles had 5+ occupants, giving it the smallest share with about 1 percent of the total.

Average Vehicle Occupancy by Trip Purpose



- Average vehicle occupancy by trip purpose was obtained by cross tabulating the observed vehicle occupancy with the survey question regarding trip purpose. The complete data set is in Table B-12 in the Appendix.

- The total trip purpose with the greatest total occupancy rate is the eat meal category with 1.86 persons per vehicle. Other than work, shopping, school and "other" purposes have the lowest occupancy rates with 1.40, 1.44 and 1.44 respectively.

- Total work trips have the lowest vehicle occupancy rates for any trip purpose (1.11). The occupancy rate in this category for individual vehicles such as automobiles (1.10), SUVs (1.14), and van/station wagons (1.14) is the lowest of any trip purpose.

- The total average for all vehicles is 1.35 persons per vehicle. Average occupancy for the van/station wagons is the greatest (1.68), exceeding the average SUV occupancy (1.37) and average automobile occupancy (1.30).

- The purpose with the greatest occupancy rate, are tourist trips and meal trips with 2.77 and 2.43 persons per van/station wagon respectively. Automobiles and SUVs had their greatest occupancy rates in the "eat meal" trip purpose with 1.73 and 2.00 persons per vehicle respectively.

Vehicle Trip Length Distribution within the DVRPC Region

Trip Length	Work Trips	Auto Trips	Truck Trips
0-5 miles	20%	30%	31%
5-10 miles	17%	17%	14%
10-20 miles	42%	35%	39%
20-50 miles	21%	17%	16%
>50 miles	0%	0%	0%
Average Trip Length	**13.6**	**11.8**	**11.9**

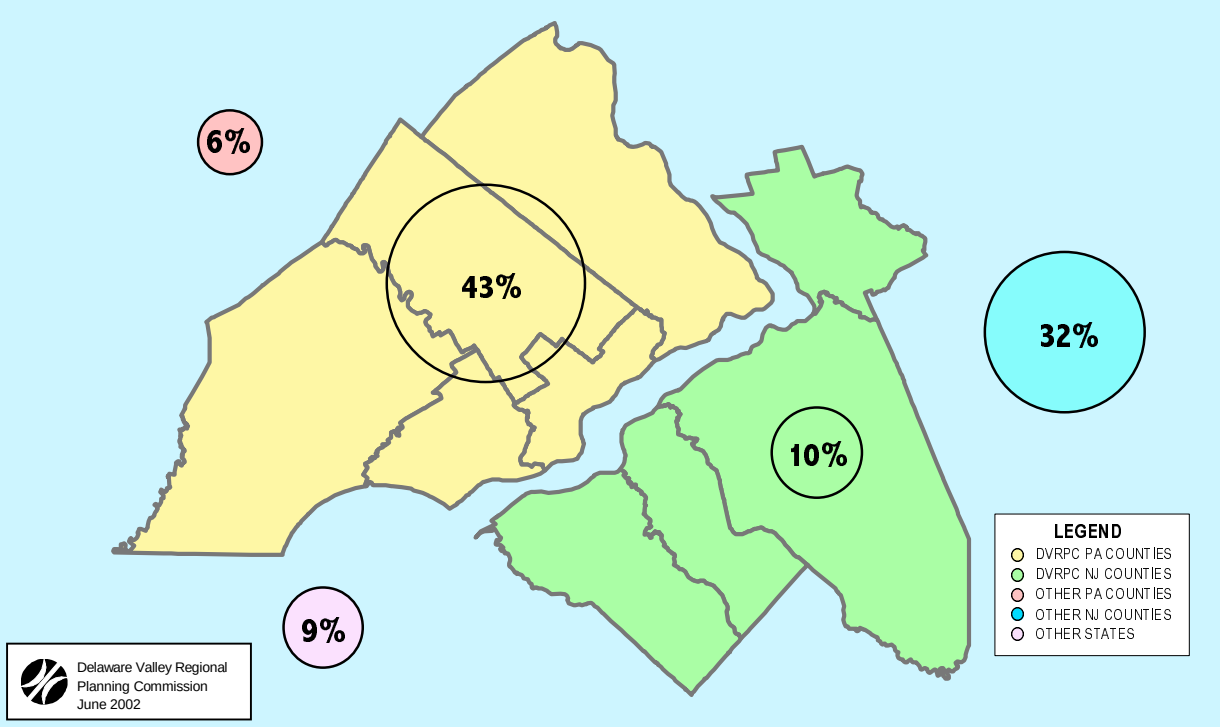
- The results for this query were obtained by using the GIS to compute distances between the cordon station and origins/destinations within the region gathered with the first two questions in the survey. This data is broken out by home-based work trips, passenger vehicle trips and truck trips. The data has been put into five general groupings by the distance traveled: 0-5 miles, 5-10 miles, 10-20 miles, 20-50 miles and above 50 miles. The complete data set is in Table B-13 in the Appendix.

- The average trip lengths vary from about 12 to 14 miles, with home based work trips possessing the longest trip length (14 miles) and automobile and truck trips roughly the same (about 12 miles). Auto and work trips generally mimic one another, while the truck trips show a greater clustering as the distances increase.

- Interestingly, trip lengths for work trips are greater than either truck or automobile trips. Work trips 10 miles and under have a 37 percent share, while the 10-50 mile trip distance contains 63 percent of the trips. Compare this distribution to automobiles and trucks in these two trip distances, each with 47/53 percent and 45/55 percent of the trips respectively.

- Automobile and truck trips have similar shares in the 0 to 5 mile range (30 percent and 31 percent respectively) while the work trip has about 20 percent in that range. The 5 to 10 mile range is similar between all three trip types, but expand for work trips in the 10 to 20 range and beyond.

Trucks Garaged by State and County



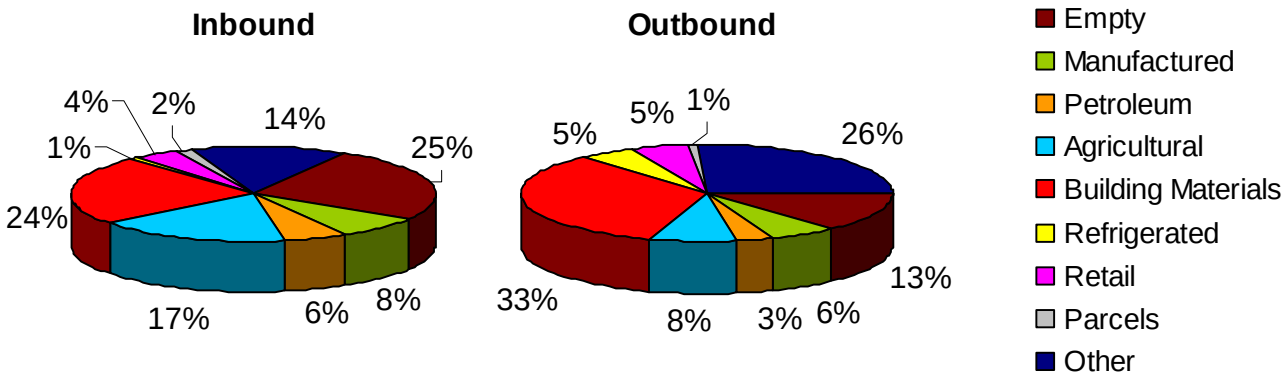
- There were 232 truck drivers responded to the question "In what county is your truck garaged or parked when not in service?" Passenger vehicles were not asked this question. The complete data set is in Table B-14 in the Appendix.

- About 53 percent of the surveyed trucks are garaged within the DVRPC region (43% in Pennsylvania and 10% in New Jersey). A small portion of truck drivers house their trucks outside the DVRPC region in Pennsylvania (6%) and a larger portion do likewise in New Jersey (32%).

- Singular locations distributed throughout the United States have about 9 percent of the truck garage locations.

- About 62 percent of the inbound traffic is garaged in Pennsylvania, and 31 percent are likewise in New Jersey, with the remaining 7 percent in other states. Outbound, this distribution is reversed with about 36 percent garaging in Pennsylvania, while 53 percent garage in New Jersey, and the remaining 11 percent elsewhere.

Type of Commodities Carried by Trucks



- Truck drivers were asked the question "What type of commodities are you carrying?" Passenger vehicles were not asked this question. The complete data set is in Table B-15 in the Appendix.

- The number of inbound and outbound trucks surveyed was nearly equal (123 versus 120 surveyed trucks). The inbound and outbound results often differ with each other by direction.

- The largest total response is building materials (28% total) with inbound and outbound shares at 24 percent and 33 percent. Other (20%), empty (19%), and agricultural products (12%) constitute the middle values. Refrigerated (3%) and parcels (1%) bring up the least common commodities reported by truck drivers.

- Trucks were more likely to be traveling empty inbound than outbound (25% versus 13%). Likewise agricultural products had a greater share inbound than outbound (17% versus 8%). Some commodities had greater shares moving outbound. Building materials had a 24 percent share inbound versus a 33 percent share outbound, while "other" had a lesser percent share inbound than outbound (14% versus 26%).

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APPENDIX A

Survey Responses for Upper Black Eddy Cordon Station at Bridge Street, Milford Borough, Hunterdon County, New Jersey

Table A-1. Daily Vehicle Classification Traffic Counts
(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

Hour of Day	Hourly Counts	% Of Total
12 am - 1 am	24	0.5%
1 am - 2 am	20	0.4%
2 am - 3 am	19	0.4%
3 am - 4 am	10	0.2%
4 am - 5 am	29	0.6%
5 am - 6 am	109	2.2%
6 am - 7 am	294	5.8%
7 am - 8 am	308	6.1%
8 am - 9 am	298	5.9%
9 am -10 am	249	4.9%
10 am -11 am	304	6.0%
11 am -12 pm	325	6.5%
12 pm - 1 pm	258	5.1%
1 pm - 2 pm	282	5.6%
2 pm - 3 pm	316	6.3%
3 pm - 4 pm	359	7.1%
4 pm - 5 pm	355	7.0%
5 pm - 6 pm	354	7.0%
6 pm - 7 pm	332	6.6%
7 pm - 8 pm	256	5.1%
8 pm - 9 pm	228	4.5%
9 pm -10 pm	140	2.8%
10 pm -11 pm	118	2.3%
11 pm -12 am	50	1.0%
TOTAL	**5037**	**100.0%**

Table A-2. Survey Interviews at Upper Black Eddy Bridge by Survey Period

(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

Survey Period	Inbound Traffic		Outbound Traffic		Total Traffic	
	No. of Surveys	% of Total	No. of Surveys	% of Total	No. of Surveys	% of Total
Morning Shift						
6:30 a.m. - 8:30 a.m.	25	5.7%	81	16.9%	106	11.6%
8:30 a.m. - 10:30 a.m.	48	11.0%	42	8.8%	90	9.8%
Subtotal	**73**	**16.7%**	**123**	**25.7%**	**196**	**21.4%**
10:30 a.m. - 12:00 p.m.	67	15.3%	65	13.6%	132	14.4%
12:00 p.m. - 1:00 p.m.	51	11.7%	52	10.9%	103	11.2%
Subtotal	**118**	**27.0%**	**117**	**24.4%**	**235**	**25.7%**
Evening Shift						
1:00 p.m. - 2:30 p.m.	65	14.9%	56	11.7%	121	13.2%
2:30 p.m. - 4:30 p.m.	47	10.8%	51	10.6%	98	10.7%
Subtotal	**112**	**25.6%**	**107**	**22.3%**	**219**	**23.9%**
4:30 p.m. - 6:00 p.m.	82	18.8%	82	17.1%	164	17.9%
6:00 p.m. - 8:00 p.m.	52	11.9%	50	10.4%	102	11.1%
Subtotal	**134**	**30.7%**	**132**	**27.6%**	**266**	**29.0%**
TOTAL	**437**	**100%**	**479**	**100%**	**916**	**100%**

Table A-3. Place of Vehicle Trip Origin by Municipality
(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

Municipality of Trip Origin	Home-Based Trips		Total Trips		Truck Trips	
	No. of Trips	% of Total	No. of Trips	% of Total	No. of Trips	% of Total
Inbound Trips						
1. Frenchtown	45	19.8%	76	18.4%	6	10.9%
2. Milford	18	7.9%	44	10.7%	6	10.9%
3. Raritan	23	10.1%	32	7.7%	2	3.6%
4. Franklin	10	4.4%	22	5.3%	4	7.3%
5. Flemington	11	4.8%	22	5.3%	2	3.6%
6. Bridgeton	14	6.2%	19	4.6%	1	1.8%
7. Alexandria	9	4.0%	17	4.1%	3	5.5%
8. Holland	7	3.1%	14	3.4%	3	5.5%
9. Kingwood	7	3.1%	13	3.1%	4	7.3%
10. East Amwell	8	3.5%	9	2.2%	0	0.0%
11. Phillipsburg	4	1.8%	9	2.2%	0	0.0%
12. Princeton	3	1.3%	5	1.2%	2	3.6%
13. Stockton	2	0.9%	4	1.0%	2	3.6%
14. Readington	4	1.8%	4	1.0%	0	0.0%
15. Other	62	27.3%	123	29.8%	20	36.4%
TOTAL	**227**	**100%**	**413**	**100%**	**55**	**100%**
Outbound Trips						
1. Bridgeton	113	31.8%	156	33.0%	16	30.8%
2. Tinicum	77	21.7%	93	19.7%	4	7.7%
3. Nockamixon	39	11.0%	47	9.9%	2	3.8%
4. Doylestown	9	2.5%	14	3.0%	1	1.9%
5. Bedminster	10	2.8%	12	2.5%	4	7.7%
6. Durham	10	2.8%	12	2.5%	0	0.0%
7. Riegelsville	7	2.0%	11	2.3%	0	0.0%
8. Plumstead	6	1.7%	8	1.7%	0	0.0%
9. Bethlehem	5	1.4%	7	1.5%	2	3.8%
10. Easton	4	1.1%	5	1.1%	0	0.0%
11. Hilltown	4	1.1%	5	1.1%	1	1.9%
12. Wilson	4	1.1%	4	0.8%	0	0.0%
13. Northampton	3	0.8%	4	0.8%	1	1.9%
14. Springfield	1	0.3%	3	0.6%	2	3.8%
15. Other	63	17.7%	92	19.5%	19	36.5%
TOTAL	**355**	**100%**	**473**	**100%**	**52**	**100%**

Table A-4. Place of Vehicle Trip Destination by Municipality
(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

Municipality of Trip Destination	Home-Based Trips No. of Trips	Home-Based Trips % of Total	Total Trips No. of Trips	Total Trips % of Total	Truck Trips No. of Trips	Truck Trips % of Total
Inbound Trips						
1. Bridgeton	46	20.9%	114	28.4%	24	45.3%
2. Tinicum	42	19.1%	70	17.5%	3	5.7%
3. Nockamixon	32	14.5%	58	14.5%	9	17.0%
4. Plumstead	13	5.9%	14	3.5%	0	0.0%
5. Doylestown	7	3.2%	13	3.2%	0	0.0%
6. Bedminster	3	1.4%	10	2.5%	2	3.8%
7. Easton	4	1.8%	9	2.2%	1	1.9%
8. Richland	9	4.1%	9	2.2%	1	1.9%
9. Riegelsville	4	1.8%	5	1.2%	0	0.0%
10. Lower Saucon	4	1.8%	5	1.2%	0	0.0%
11. Williams	3	1.4%	4	1.0%	1	1.9%
12. Bethlehem	1	0.5%	4	1.0%	2	3.8%
13. Horsham	1	0.5%	3	0.7%	1	1.9%
14. Springfield	2	0.9%	3	0.7%	0	0.0%
15. Other	49	22.3%	80	20.0%	9	17.0%
TOTAL	**220**	**100%**	**401**	**100%**	**53**	**100%**
Outbound Trips						
1. Milford	76	22.9%	104	23.1%	5	10.4%
2. Frenchtown	52	15.7%	74	16.4%	8	16.7%
3. Alexandria	29	8.7%	36	8.0%	4	8.3%
4. Holland	18	5.4%	27	6.0%	4	8.3%
5. Flemington	16	4.8%	18	4.0%	1	2.1%
6. Phillipsburg	13	3.9%	17	3.8%	1	2.1%
7. Kingwood	7	2.1%	16	3.6%	5	10.4%
8. Raritan	10	3.0%	13	2.9%	1	2.1%
9. Franklin	8	2.4%	12	2.7%	0	0.0%
10. Bridgeton	9	2.7%	10	2.2%	1	2.1%
11. Clinton	6	1.8%	9	2.0%	1	2.1%
12. Delaware	8	2.4%	8	1.8%	0	0.0%
13. Bridgewater	5	1.5%	5	1.1%	0	0.0%
14. Philadelphia	3	0.9%	4	0.9%	0	0.0%
15. Other	72	21.7%	97	21.6%	17	35.4%
TOTAL	**332**	**100%**	**450**	**100%**	**48**	**100%**

Table A-5. Stopping Before Arriving at Final Destination
(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

	Passenger Vehicles			Trucks			Total Vehicles		
Survey Period	No. of Surveyed	Vehicles Stopping	% Stopping	No. of Surveyed	Vehicles Stopping	% Stopping	No. of Surveyed	Vehicles Stopping	% Stopping
Inbound									
6:30 a.m. - 8:30 a.m.	17	1	5.9%	9	1	11.1%	26	2	7.7%
8:30 a.m. - 10:30 a.m.	39	5	12.8%	7	1	14.3%	46	6	13.0%
Subtotal	**56**	**6**	**10.7%**	**16**	**2**	**12.5%**	**72**	**8**	**11.1%**
10:30 a.m. - 12:00 p.m.	58	6	10.3%	9	1	11.1%	67	7	10.4%
12:00 p.m. - 1:00 p.m.	44	1	2.3%	3	0	0.0%	47	1	2.1%
Subtotal	**102**	**7**	**6.9%**	**12**	**1**	**8.3%**	**114**	**8**	**7.0%**
1:00 p.m. - 2:30 p.m.	56	3	5.4%	6	0	0.0%	62	3	4.8%
2:30 p.m. - 4:30 p.m.	44	0	0.0%	8	0	0.0%	52	0	0.0%
Subtotal	**100**	**3**	**3.0%**	**14**	**0**	**0.0%**	**114**	**3**	**2.6%**
4:30 p.m. - 6:00 p.m.	76	1	1.3%	10	0	0.0%	86	1	1.2%
6:00 p.m. - 8:00 p.m.	44	0	0.0%	6	0	0.0%	50	0	0.0%
Subtotal	**120**	**1**	**0.8%**	**16**	**0**	**0.0%**	**136**	**1**	**0.7%**
Outbound									
6:30 a.m. - 8:30 a.m.	71	11	15.5%	10	2	20.0%	81	13	16.0%
8:30 a.m. - 10:30 a.m.	36	1	2.8%	5	0	0.0%	41	1	2.4%
Subtotal	**107**	**12**	**11.2%**	**15**	**2**	**13.3%**	**122**	**14**	**11.5%**
10:30 a.m. - 12:00 p.m.	55	8	14.5%	4	0	0.0%	59	8	13.6%
12:00 p.m. - 1:00 p.m.	47	2	4.3%	7	0	0.0%	54	2	3.7%
Subtotal	**102**	**10**	**9.8%**	**11**	**0**	**0.0%**	**113**	**10**	**8.8%**
1:00 p.m. - 2:30 p.m.	52	3	5.8%	4	0	0.0%	56	3	5.4%
2:30 p.m. - 4:30 p.m.	44	2	4.5%	6	0	0.0%	50	2	4.0%
Subtotal	**96**	**5**	**5.2%**	**10**	**0**	**0.0%**	**106**	**5**	**4.7%**
4:30 p.m. - 6:00 p.m.	78	5	6.4%	23	0	0.0%	101	5	5.0%
6:00 p.m. - 8:00 p.m.	44	0	0.0%	15	0	0.0%	59	0	0.0%
Subtotal	**122**	**5**	**4.1%**	**38**	**0**	**0.0%**	**160**	**5**	**3.1%**
TOTAL	**805**	**49**	**6.1%**	**132**	**5**	**3.8%**	**937**	**54**	**5.8%**

Table A-6. Reasons for Using Upper Black Eddy Bridge by Drivers of Passenger Vehicles
(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

Survey Period	Total Drivers	Saves Time		Saves Money		Most Direct		Less Congested		Only Way		Other Reasons	
		No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total
Inbound													
6:30 a.m. - 8:30 a.m.	17	13	76.5%	0	0.0%	0	0.0%	1	5.9%	2	11.8%	1	5.9%
8:30 a.m. - 10:30 a.m.	37	25	67.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	12	32.4%
Subtotal	**54**	**38**	**70.4%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**1.9%**	**2**	**3.7%**	**13**	**24.1%**
10:30 a.m. - 12:00 p.m.	54	26	48.1%	0	0.0%	0	0.0%	1	1.9%	2	3.7%	25	46.3%
12:00 p.m. - 1:00 p.m.	43	22	51.2%	0	0.0%	0	0.0%	0	0.0%	2	4.7%	19	44.2%
Subtotal	**97**	**48**	**49.5%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**1.0%**	**4**	**4.1%**	**44**	**45.4%**
1:00 p.m. - 2:30 p.m.	52	17	32.7%	0	0.0%	0	0.0%	1	1.9%	7	13.5%	27	51.9%
2:30 p.m. - 4:30 p.m.	42	17	40.5%	0	0.0%	0	0.0%	6	14.3%	0	0.0%	19	45.2%
Subtotal	**94**	**34**	**36.2%**	**0**	**0.0%**	**0**	**0.0%**	**7**	**7.4%**	**7**	**7.4%**	**46**	**48.9%**
4:30 p.m. - 6:00 p.m.	75	21	28.0%	0	0.0%	9	12.0%	14	18.7%	0	0.0%	32	42.7%
6:00 p.m. - 8:00 p.m.	44	10	22.7%	0	0.0%	0	0.0%	1	2.3%	4	9.1%	29	65.9%
Subtotal	**119**	**31**	**26.1%**	**0**	**0.0%**	**9**	**7.6%**	**15**	**12.6%**	**4**	**3.4%**	**61**	**51.3%**
Outbound													
6:30 a.m. - 8:30 a.m.	65	42	64.6%	1	1.5%	0	0.0%	0	0.0%	4	6.2%	21	32.3%
8:30 a.m. - 10:30 a.m.	35	22	62.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	13	37.1%
Subtotal	**100**	**64**	**64.0%**	**1**	**1.0%**	**0**	**0.0%**	**0**	**0.0%**	**4**	**4.0%**	**34**	**34.0%**
10:30 a.m. - 12:00 p.m.	55	22	40.0%	1	1.8%	3	5.5%	0	0.0%	3	5.5%	26	47.3%
12:00 p.m. - 1:00 p.m.	46	22	47.8%	0	0.0%	0	0.0%	0	0.0%	4	8.7%	22	47.8%
Subtotal	**101**	**44**	**43.6%**	**1**	**1.0%**	**3**	**3.0%**	**0**	**0.0%**	**7**	**6.9%**	**48**	**47.5%**
1:00 p.m. - 2:30 p.m.	49	28	57.1%	0	0.0%	0	0.0%	0	0.0%	1	2.0%	20	40.8%
2:30 p.m. - 4:30 p.m.	44	28	63.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	16	36.4%
Subtotal	**93**	**56**	**60.2%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**1.1%**	**36**	**38.7%**
4:30 p.m. - 6:00 p.m.	74	39	52.7%	0	0.0%	7	9.5%	1	1.4%	0	0.0%	27	36.5%
6:00 p.m. - 8:00 p.m.	44	26	59.1%	0	0.0%	7	15.9%	0	0.0%	0	0.0%	11	25.0%
Subtotal	**118**	**65**	**55.1%**	**0**	**0.0%**	**14**	**11.9%**	**1**	**0.8%**	**0**	**0.0%**	**38**	**32.2%**
TOTAL	**776**	**380**	**49.0%**	**2**	**0.3%**	**26**	**3.4%**	**25**	**3.2%**	**29**	**3.7%**	**320**	**41.2%**

Table A-7. Reasons for Using Upper Black Eddy Bridge by Truck Drivers
(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

Survey Period	Total Drivers	Saves Time		Saves Money		Most Direct		Less Congested		Only Way		Other Reasons	
		No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total
Inbound													
6:30 a.m. - 8:30 a.m.	8	5	62.5%	0	0.0%	0	0.0%	0	0.0%	3	37.5%	0	0.0%
8:30 a.m. - 10:30 a.m.	9	7	77.8%	0	0.0%	0	0.0%	0	0.0%	1	11.1%	1	11.1%
Subtotal	**17**	**12**	**70.6%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**4**	**23.5%**	**1**	**5.9%**
10:30 a.m. - 12:00 p.m.	9	8	88.9%	0	0.0%	0	0.0%	0	0.0%	1	11.1%	0	0.0%
12:00 p.m. - 1:00 p.m.	6	3	50.0%	0	0.0%	1	16.7%	0	0.0%	1	16.7%	2	33.3%
Subtotal	**15**	**11**	**73.3%**	**0**	**0.0%**	**1**	**6.7%**	**0**	**0.0%**	**2**	**13.3%**	**2**	**13.3%**
1:00 p.m. - 2:30 p.m.	9	5	55.6%	0	0.0%	2	22.2%	0	0.0%	0	0.0%	2	22.2%
2:30 p.m. - 4:30 p.m.	3	3	100%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Subtotal	**12**	**8**	**66.7%**	**0**	**0.0%**	**2**	**16.7%**	**0**	**0.0%**	**0**	**0.0%**	**2**	**16.7%**
4:30 p.m. - 6:00 p.m.	6	5	83.3%	0	0.0%	0	0.0%	1	16.7%	0	0.0%	0	0.0%
6:00 p.m. - 8:00 p.m.	7	3	42.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	4	57.1%
Subtotal	**13**	**8**	**61.5%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**7.7%**	**0**	**0.0%**	**4**	**30.8%**
Outbound													
6:30 a.m. - 8:30 a.m.	9	8	88.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	11.1%
8:30 a.m. - 10:30 a.m.	6	6	100%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Subtotal	**15**	**14**	**93.3%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**6.7%**
10:30 a.m. - 12:00 p.m.	10	4	40.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	6	60.0%
12:00 p.m. - 1:00 p.m.	5	4	80.0%	0	0.0%	0	0.0%	0	0.0%	1	20.0%	0	0.0%
Subtotal	**15**	**8**	**53.3%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**6.7%**	**6**	**40.0%**
1:00 p.m. - 2:30 p.m.	4	1	25.0%	0	0.0%	2	50.0%	1	25.0%	0	0.0%	2	50.0%
2:30 p.m. - 4:30 p.m.	7	3	42.9%	0	0.0%	1	14.3%	0	0.0%	0	0.0%	4	57.1%
Subtotal	**11**	**4**	**36.4%**	**0**	**0.0%**	**3**	**27.3%**	**1**	**9.1%**	**0**	**0.0%**	**6**	**54.5%**
4:30 p.m. - 6:00 p.m.	4	3	75.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	25.0%
6:00 p.m. - 8:00 p.m.	6	2	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	4	66.7%
Subtotal	**10**	**5**	**50.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**5**	**50.0%**
TOTAL	**108**	**70**	**64.8%**	**0**	**0.0%**	**6**	**5.6%**	**2**	**1.9%**	**7**	**6.5%**	**27**	**25.0%**

Table A-8. Major Roads Taken by Drivers to Reach Their Destinations
(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

Roads Used	Passenger Vehicles		Trucks		All Vehicles	
	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total
Inbound Traffic						
1. PA 32	104	38.2%	18	33.3%	122	37.4%
2. PA 611	61	22.4%	9	16.7%	70	21.5%
3. I-78	24	8.8%	6	11.1%	30	9.2%
4. US 22	6	2.2%	4	7.4%	10	3.1%
5. US 202	7	2.6%	1	1.9%	8	2.5%
6. I-95	7	2.6%	1	1.9%	8	2.5%
7. PA 309	4	1.5%	1	1.9%	5	1.5%
8. Other	59	21.7%	14	25.9%	73	22.4%
TOTAL	**272**	**100.0%**	**54**	**100.0%**	**326**	**100.0%**
Outbound Traffic						
1. CR 519	78	28.7%	12	23.1%	90	27.8%
2. NJ 12	34	12.5%	6	11.5%	40	12.3%
3. I-78	29	10.7%	6	11.5%	35	10.8%
4. NJ 29	31	11.4%	4	7.7%	35	10.8%
5. CR 513	15	5.5%	0	0.0%	15	4.6%
6. US 202	11	4.0%	3	5.8%	14	4.3%
7. I-95	9	3.3%	2	3.8%	11	3.4%
8. Other	65	23.9%	19	36.5%	84	25.9%
TOTAL	**272**	**100%**	**52**	**100%**	**324**	**100%**

Table A-9. Type of Vehicles Used for the Trip
(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

	Inbound Traffic					Outbound Traffic					
Vehicle Type	AM Peak (% of Total)	AM Off-Peak (%. of Total)	PM Off-Peak (% of Total)	PM Peak (% of Total)	Inbound Traffic (% of Total)	AM Peak (% of Total)	AM Off-Peak (% of Total)	PM Off-Peak (% of Total)	PM Peak (% of Total)	Outbound Traffic (% of Total)	TOTAL Traffic (% of Total)
Passenger Vehicles											
Auto	37.8%	53.4%	39.1%	45.9%	44.8%	45.1%	50.4%	54.8%	50.8%	50.1%	47.6%
Van, Sta. Wagon	12.2%	10.3%	16.4%	12.0%	12.7%	12.3%	8.7%	11.5%	12.3%	11.3%	11.9%
SUV	12.2%	7.8%	8.2%	12.8%	10.2%	11.5%	11.3%	9.6%	13.1%	11.5%	10.8%
Other	2.7%	0.9%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.8%	0.2%	0.4%
Subtotal	**64.9%**	**72.4%**	**63.6%**	**70.7%**	**68.4%**	**68.9%**	**70.4%**	**76.0%**	**76.9%**	**73.0%**	**70.8%**
Light Trucks											
Pickup	10.8%	10.3%	22.7%	20.3%	16.6%	17.2%	18.3%	15.4%	18.5%	17.4%	17.0%
Panel	2.7%	4.3%	6.4%	7.5%	5.5%	3.3%	1.7%	1.9%	0.8%	1.9%	3.7%
Single Unit	13.5%	8.6%	2.7%	1.5%	5.8%	4.9%	5.2%	2.9%	0.8%	3.4%	4.5%
Other	1.4%	0.9%	0.9%	0.0%	0.7%	0.8%	1.7%	0.0%	0.0%	0.6%	0.7%
Subtotal	**28.4%**	**24.1%**	**32.7%**	**29.3%**	**28.6%**	**26.2%**	**27.0%**	**20.2%**	**20.0%**	**23.4%**	**25.9%**
Heavy Trucks											
Tractor-Trailer	4.1%	1.7%	3.6%	0.0%	2.1%	3.3%	1.7%	3.8%	3.1%	3.0%	2.5%
Double-Trailer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other	2.7%	1.7%	0.0%	0.0%	0.9%	1.6%	0.9%	0.0%	0.0%	0.6%	0.8%
Subtotal	**6.8%**	**3.4%**	**3.6%**	**0.0%**	**3.0%**	**4.9%**	**2.6%**	**3.8%**	**3.1%**	**3.6%**	**3.3%**
TOTAL	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table A-10. Trip Purpose by Direction
(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

Survey Period	Work (% of Total)	School (% of Total)	Eat Meal (% of Total	Shopping (% of Total)	Social Recreation (% of Total)	Medical (% of Total)	Visitor/ Tourist (% of Total)	Other (% of Total)	All Purposes
Inbound									
6:30 a.m. - 8:30 a.m.	88.2%	0.0%	5.9%	0.0%	0.0%	0.0%	5.9%	0.0%	100%
8:30 a.m. - 10:30 a.m.	35.9%	12.8%	7.7%	20.5%	10.3%	2.6%	5.1%	5.1%	100%
Subtotal	**51.8%**	**8.9%**	**7.1%**	**14.3%**	**7.1%**	**1.8%**	**5.4%**	**3.6%**	**100%**
10:30 a.m. - 12:00 p.m.	31.6%	3.5%	5.3%	28.1%	12.3%	3.5%	7.0%	8.8%	100%
12:00 p.m. - 1:00 p.m.	38.1%	7.1%	4.8%	19.0%	14.3%	4.8%	7.1%	4.8%	100%
Subtotal	**34.3%**	**5.1%**	**5.1%**	**24.2%**	**13.1%**	**4.0%**	**7.1%**	**7.1%**	**100%**
1:00 p.m. - 2:30 p.m.	40.8%	4.1%	8.2%	18.4%	14.3%	4.1%	6.1%	4.1%	100%
2:30 p.m. - 4:30 p.m.	56.8%	4.5%	4.5%	4.5%	6.8%	2.3%	11.4%	9.1%	100%
Subtotal	**48.4%**	**4.3%**	**6.5%**	**11.8%**	**10.8%**	**3.2%**	**8.6%**	**6.5%**	**100%**
4:30 p.m. - 6:00 p.m.	73.3%	4.0%	0.0%	10.7%	6.7%	0.0%	4.0%	1.3%	100%
6:00 p.m. - 8:00 p.m.	65.9%	0.0%	4.5%	13.6%	9.1%	2.3%	0.0%	4.5%	100%
Subtotal	**70.6%**	**2.5%**	**1.7%**	**11.8%**	**7.6%**	**0.8%**	**2.5%**	**2.5%**	**100%**
Outbound									
6:30 a.m. - 8:30 a.m.	89.9%	1.4%	4.3%	0.0%	2.9%	0.0%	0.0%	1.4%	100%
8:30 a.m. - 10:30 a.m.	72.2%	0.0%	8.3%	8.3%	5.6%	0.0%	2.8%	2.8%	100%
Subtotal	**83.8%**	**1.0%**	**5.7%**	**2.9%**	**3.8%**	**0.0%**	**1.0%**	**1.9%**	**100%**
10:30 a.m. - 12:00 p.m.	50.0%	0.0%	9.3%	18.5%	18.5%	3.7%	0.0%	0.0%	100%
12:00 p.m. - 1:00 p.m.	16.3%	2.3%	18.6%	32.6%	18.6%	9.3%	2.3%	0.0%	100%
Subtotal	**35.1%**	**1.0%**	**13.4%**	**24.7%**	**18.6%**	**6.2%**	**1.0%**	**0.0%**	**100%**
1:00 p.m. - 2:30 p.m.	24.5%	6.1%	8.2%	42.9%	2.0%	0.0%	14.3%	2.0%	100%
2:30 p.m. - 4:30 p.m.	33.3%	11.9%	2.4%	21.4%	19.0%	2.4%	7.1%	2.4%	100%
Subtotal	**28.6%**	**8.8%**	**5.5%**	**33.0%**	**9.9%**	**1.1%**	**11.0%**	**2.2%**	**100%**
4:30 p.m. - 6:00 p.m.	29.6%	2.8%	5.6%	22.5%	28.2%	0.0%	11.3%	0.0%	100%
6:00 p.m. - 8:00 p.m.	27.9%	0.0%	7.0%	25.6%	23.3%	0.0%	11.6%	4.7%	100%
Subtotal	**28.9%**	**1.8%**	**6.1%**	**23.7%**	**26.3%**	**0.0%**	**11.4%**	**1.8%**	**100%**
TOTAL	**48.2%**	**3.7%**	**6.2%**	**18.2%**	**12.5%**	**2.1%**	**5.9%**	**3.1%**	**100%**

Table A-11. Vehicle Occupancy by Traffic Direction and Time Period
(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

Survey Period	One Occupant	% of Total	Two Occupants	% of Total	Three Occupants	% of Total	Four Occupants	% of Total	Five+ Occupants	% of Total	Total Passenger Vehicles	Average Vehicle Occupancy
Inbound												
6:30 a.m. - 8:30 a.m.	14	82.4%	2	11.8%	1	5.9%	0	0.0%	0	0.0%	17	1.24
8:30 a.m. - 10:30 a.m.	27	69.2%	7	17.9%	5	12.8%	0	0.0%	0	0.0%	39	1.44
Subtotal	**41**	**73.2%**	**9**	**16.1%**	**6**	**10.7%**	**0**	**0.0%**	**0**	**0.0%**	**56**	**1.38**
10:30 a.m. - 12:00 p.m.	44	75.9%	12	20.7%	0	0.0%	2	3.4%	0	0.0%	58	1.31
12:00 p.m. - 1:00 p.m.	35	81.4%	7	16.3%	1	2.3%	0	0.0%	0	0.0%	43	1.21
Subtotal	**79**	**78.2%**	**19**	**18.8%**	**1**	**1.0%**	**2**	**2.0%**	**0**	**0.0%**	**101**	**1.27**
1:00 p.m. - 2:30 p.m.	41	74.5%	9	16.4%	5	9.1%	0	0.0%	0	0.0%	55	1.35
2:30 p.m. - 4:30 p.m.	37	84.1%	7	15.9%	0	0.0%	0	0.0%	0	0.0%	44	1.16
Subtotal	**78**	**78.8%**	**16**	**16.2%**	**5**	**5.1%**	**0**	**0.0%**	**0**	**0.0%**	**99**	**1.26**
4:30 p.m. - 6:00 p.m.	63	82.9%	12	15.8%	1	1.3%	0	0.0%	0	0.0%	76	1.18
6:00 p.m. - 8:00 p.m.	34	77.3%	9	20.5%	1	2.3%	0	0.0%	0	0.0%	44	1.25
Subtotal	**97**	**80.8%**	**21**	**17.5%**	**2**	**1.7%**	**0**	**0.0%**	**0**	**0.0%**	**120**	**1.21**
Outbound												
6:30 a.m. - 8:30 a.m.	64	91.4%	3	4.3%	2	2.9%	1	1.4%	0	0.0%	70	1.14
8:30 a.m. - 10:30 a.m.	32	88.9%	4	11.1%	0	0.0%	0	0.0%	0	0.0%	36	1.11
Subtotal	**96**	**90.6%**	**7**	**6.6%**	**2**	**1.9%**	**1**	**0.9%**	**0**	**0.0%**	**106**	**1.13**
10:30 a.m. - 12:00 p.m.	49	89.1%	5	9.1%	1	1.8%	0	0.0%	0	0.0%	55	1.13
12:00 p.m. - 1:00 p.m.	30	63.8%	13	27.7%	4	8.5%	0	0.0%	0	0.0%	47	1.45
Subtotal	**79**	**77.5%**	**18**	**17.6%**	**5**	**4.9%**	**0**	**0.0%**	**0**	**0.0%**	**102**	**1.27**
1:00 p.m. - 2:30 p.m.	37	71.2%	12	23.1%	1	1.9%	2	3.8%	0	0.0%	52	1.38
2:30 p.m. - 4:30 p.m.	33	75.0%	9	20.5%	2	4.5%	0	0.0%	0	0.0%	44	1.30
Subtotal	**70**	**72.9%**	**21**	**21.9%**	**3**	**3.1%**	**2**	**2.1%**	**0**	**0.0%**	**96**	**1.34**
4:30 p.m. - 6:00 p.m.	48	61.5%	18	23.1%	10	12.8%	2	2.6%	0	0.0%	78	1.56
6:00 p.m. - 8:00 p.m.	27	61.4%	13	29.5%	2	4.5%	2	4.5%	0	0.0%	44	1.52
Subtotal	**75**	**61.5%**	**31**	**25.4%**	**12**	**9.8%**	**4**	**3.3%**	**0**	**0.0%**	**122**	**1.55**
TOTAL	**615**	**76.7%**	**142**	**17.7%**	**36**	**4.5%**	**9**	**1.1%**	**0**	**0.0%**	**802**	**1.30**

Table A-12. Average Vehicle Occupancy by Trip Purpose
(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

Trip Purpose	Auto (Persons Per Vehicle)	Van/ Station Wagon (Persons Per Vehicle)	SUV (Persons Per Vehicle)	Total (Persons Per Vehicle)
Work	1.11	1.19	1.11	1.13
School	1.79	2.71	1.33	1.90
Eat Meal	1.55	1.67	1.67	1.56
Shopping	1.44	1.53	1.47	1.41
Social/Recreation	1.55	1.53	1.42	1.47
Medical	1.67	1.50	1.00	1.44
Visitor/Tourist	1.38	1.50	1.40	1.35
Other	1.28	1.25	1.50	1.25
All Purposes	**1.32**	**1.43**	**1.28**	**1.30**

Table A-13. External-Internal and Internal-External Trip Length Frequency Distribution Within The DVRPC Region

(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

Trip Length (Miles)	Home-Based Work Trips		Passenger Vehicle Trips		Truck Trips	
	No. of Trips	% of Total	No. of Trips	% of Total	No. of Trips	% of Total
<1	5	2.5%	9	1.4%	0	0.0%
1-2	15	7.4%	38	5.8%	1	1.1%
2-3	11	5.4%	57	8.7%	3	3.4%
3-4	61	30.2%	252	38.4%	42	47.2%
4-5	11	5.4%	33	5.0%	0	0.0%
5-6	10	5.0%	34	5.2%	3	3.4%
6-7	17	8.4%	47	7.2%	9	10.1%
7-8	9	4.5%	15	2.3%	1	1.1%
8-10	19	9.4%	43	6.5%	6	6.7%
10-12	7	3.5%	17	2.6%	3	3.4%
12-14	6	3.0%	11	1.7%	2	2.2%
14-16	6	3.0%	29	4.4%	1	1.1%
16-18	5	2.5%	21	3.2%	3	3.4%
18-20	6	3.0%	9	1.4%	4	4.5%
20-23	4	2.0%	10	1.5%	2	2.2%
23-26	4	2.0%	10	1.5%	3	3.4%
26-29	1	0.5%	3	0.5%	1	1.1%
29-32	2	1.0%	4	0.6%	0	0.0%
32-36	1	0.5%	7	1.1%	1	1.1%
36-40	1	0.5%	6	0.9%	3	3.4%
40-45	0	0.0%	0	0.0%	1	1.1%
45-50	1	0.5%	1	0.2%	0	0.0%
50-60	0	0.0%	1	0.2%	0	0.0%
60-70	0	0.0%	0	0.0%	0	0.0%
70-80	0	0.0%	0	0.0%	0	0.0%
> 80	0	0.0%	0	0.0%	0	0.0%
Average Trip Length	**7.67**	**100%**	**7.16**	**100%**	**9.22**	**100%**

Table A-14. County Where Trucks Are Garaged or Parked When Not in Service
(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

County	Inbound Traffic		Outbound Traffic		Total Traffic	
	No. of Trucks	% of Total	No. of Trucks	% of Total	No. of Trucks	% of Total
Bucks	26	44.1%	15	28.8%	41	36.9%
Chester	0	0.0%	0	0.0%	0	0.0%
Delaware	0	0.0%	0	0.0%	0	0.0%
Montgomery	2	3.4%	1	1.9%	3	2.7%
Philadelphia	0	0.0%	1	1.9%	1	0.9%
Other PA	7	11.9%	9	17.3%	16	14.4%
Subtotal	**35**	**59.3%**	**26**	**50.0%**	**61**	**55.0%**
Burlington	1	1.7%	2	3.8%	3	2.7%
Camden	0	0.0%	0	0.0%	0	0.0%
Gloucester	0	0.0%	1	1.9%	1	0.9%
Mercer	3	5.1%	2	3.8%	5	4.5%
Other NJ	18	30.5%	20	38.5%	38	34.2%
Subtotal	**22**	**37.3%**	**25**	**48.1%**	**47**	**42.3%**
Other States	2	3.4%	1	1.9%	3	2.7%
Subtotal	**2**	**3.4%**	**1**	**1.9%**	**3**	**2.7%**
TOTAL	**59**	**100%**	**52**	**100%**	**111**	**100%**

Table A-15. Type of Commodities Carried by Trucks
(Upper Black Eddy Cordon Station at Bridge St., Milford Borough)

Commodity Carried	Inbound Traffic		Outbound Traffic		Total Traffic	
	No. of Trucks	% of Total	No. of Trucks	% of Total	No. of Trucks	% of Total
Empty	9	15.8%	11	21.2%	20	18.3%
Manufactured Products	4	7.0%	6	11.5%	10	9.2%
Petroleum Products	1	1.8%	0	0.0%	1	0.9%
Agricultural Products	2	3.5%	3	5.8%	5	4.6%
Building Materials	29	50.9%	21	40.4%	50	45.9%
Refrigerated Products	0	0.0%	2	3.8%	2	1.8%
Retail Store Merchandise	5	8.8%	6	11.5%	11	10.1%
Parcels	0	0.0%	0	0.0%	0	0.0%
Other	7	12.3%	3	5.8%	10	9.2%
TOTAL	**57**	**100%**	**52**	**100%**	**109**	**100%**

APPENDIX B

Survey Responses for US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township, Bucks County, Pennsylvania

Table B-1. Daily Vehicle Classification Traffic Counts

(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

Hour of Day	Vehicle Type 1	2	3	4	5	6	7	8	9	10	11	12	13	Hourly Counts	% of Total
12 am - 1 am	0	28	3	4	2	0	0	0	2	0	0	0	0	**39**	**0.4%**
1 am - 2 am	0	5	6	2	1	0	0	0	7	0	0	0	0	**21**	**0.2%**
2 am - 3 am	0	12	4	3	4	0	2	1	11	0	0	0	0	**37**	**0.3%**
3 am - 4 am	0	40	9	0	2	1	0	2	6	0	0	0	0	**60**	**0.5%**
4 am - 5 am	0	194	62	5	0	1	0	1	14	1	2	0	0	**280**	**2.5%**
5 am - 6 am	0	599	78	10	19	4	2	2	15	0	0	0	0	**729**	**6.6%**
6 am - 7 am	0	779	74	15	13	3	3	3	10	0	0	0	0	**900**	**8.1%**
7 am - 8 am	0	691	65	6	11	6	5	8	13	0	0	0	0	**805**	**7.3%**
8 am - 9 am	0	533	63	9	11	6	2	8	17	0	0	0	0	**649**	**5.9%**
9 am -10 am	1	407	75	7	12	2	2	6	7	2	0	0	0	**521**	**4.7%**
10 am -11 am	0	440	75	5	24	7	0	6	25	0	0	0	0	**582**	**5.3%**
11 am -12 pm	1	526	59	9	19	2	2	3	22	2	0	0	0	**645**	**5.8%**
12 pm - 1 pm	0	541	67	11	17	2	0	3	13	1	0	0	0	**655**	**5.9%**
1 pm - 2 pm	1	436	67	12	18	7	1	3	14	1	0	0	0	**560**	**5.1%**
2 pm - 3 pm	1	558	90	9	20	0	0	8	9	1	0	0	0	**696**	**6.3%**
3 pm - 4 pm	1	638	91	2	21	0	0	4	8	0	0	0	0	**765**	**6.9%**
4 pm - 5 pm	1	809	57	3	8	3	0	4	7	1	0	0	1	**894**	**8.1%**
5 pm - 6 pm	2	742	43	2	11	0	0	3	4	0	0	0	0	**807**	**7.3%**
6 pm - 7 pm	1	492	34	4	4	1	0	2	6	0	0	0	0	**544**	**4.9%**
7 pm - 8 pm	0	311	28	1	6	0	0	0	5	0	0	0	0	**351**	**3.2%**
8 pm - 9 pm	1	202	17	2	5	0	0	1	5	0	0	0	0	**233**	**2.1%**
9 pm -10 pm	0	153	13	1	2	0	0	0	4	0	0	0	0	**173**	**1.6%**
10 pm -11 pm	0	70	5	0	5	0	0	1	5	0	0	0	0	**86**	**0.8%**
11 pm -12 am	0	30	4	0	2	0	0	1	7	0	0	0	0	**44**	**0.4%**
TOTAL	**10**	**9236**	**1089**	**122**	**237**	**45**	**19**	**70**	**236**	**9**	**2**	**0**	**1**	**11076**	**100%**
% Of Total	**0.1%**	**83.4%**	**9.8%**	**1.1%**	**2.1%**	**0.4%**	**0.2%**	**0.6%**	**2.1%**	**0.1%**	**0.0%**	**0.0%**	**0.0%**	**100%**	

Legend

1. Motorcycle, Bicycle
2. Cars Trailers
3. Two Axle Long
4. Buses
5. Two Axle, Six Tire
6. Three Axle Single
7. Four Axle Single
8. Less Than Five Axle Double
9. Five Axle Double
10. Greater Than Five Axle Double
11. Less Than Six Axle Multi
12. Six Axle Multi
13. Greater Than Six Axle Multi

Table B-2. Survey Interviews at US 202 by Survey Period

(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

Survey Period	Inbound Traffic		Outbound Traffic		Total Traffic	
	No. of Surveys	% of Total	No. of Surveys	% of Total	No. of Surveys	% of Total
Morning Shift						
6:30 a.m. - 8:30 a.m.	136	16.5%	151	18.6%	287	17.5%
8:30 a.m. - 10:30 a.m.	86	10.4%	68	8.4%	154	9.4%
Subtotal	**222**	**26.9%**	**219**	**26.9%**	**441**	**26.9%**
10:30 a.m. - 12:00 p.m.	104	12.6%	106	13.0%	210	12.8%
12:00 p.m. - 1:00 p.m.	90	10.9%	90	11.1%	180	11.0%
Subtotal	**194**	**23.5%**	**196**	**24.1%**	**390**	**23.8%**
Evening Shift						
1:00 p.m. - 2:30 p.m.	108	13.1%	112	13.8%	220	13.4%
2:30 p.m. - 4:30 p.m.	85	10.3%	79	9.7%	164	10.0%
Subtotal	**193**	**23.4%**	**191**	**23.5%**	**384**	**23.4%**
4:30 p.m. - 6:00 p.m.	138	16.7%	132	16.2%	270	16.5%
6:00 p.m. - 8:00 p.m.	78	9.5%	75	9.2%	153	9.3%
Subtotal	**216**	**26.2%**	**207**	**25.5%**	**423**	**25.8%**
TOTAL	**825**	**100%**	**813**	**100%**	**1638**	**100%**

Table B-3. Place of Vehicle Trip Origin by Municipality
(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

Municipality of Trip Origin	Home-Based Trips		Total Trips		Truck Trips	
	No. of Trips	% of Total	No. of Trips	% of Total	No. of Trips	% of Total
Inbound Trips						
1. Raritan	50	11.7%	87	11.6%	10	9.0%
2. Flemington	44	10.3%	74	9.9%	12	10.8%
3. Lambertville	40	9.4%	61	8.1%	5	4.5%
4. East Amwell	33	7.7%	59	7.9%	10	9.0%
5. Bridgewater	22	5.2%	35	4.7%	2	1.8%
6. Morristown	11	2.6%	18	2.4%	1	0.9%
7. Readington	10	2.3%	18	2.4%	4	3.6%
8. Clinton	12	2.8%	16	2.1%	0	0.0%
9. Piscataway	6	1.4%	11	1.5%	0	0.0%
10. Stockton	8	1.9%	11	1.5%	1	0.9%
11. West Amwell	5	1.2%	10	1.3%	3	2.7%
12. Hopewell	5	1.2%	10	1.3%	3	2.7%
13. Hillsborough	7	1.6%	10	1.3%	0	0.0%
14. Newark	2	0.5%	10	1.3%	4	3.6%
15. Other	171	40.1%	321	42.7%	56	50.5%
TOTAL	**426**	**100%**	**751**	**100%**	**111**	**100%**
Outbound Trips						
1. New Hope	66	12.9%	114	14.4%	24	19.8%
2. Solebury	72	14.0%	105	13.2%	14	11.6%
3. Buckingham	65	12.7%	99	12.5%	13	10.7%
4. Doylestown	68	13.3%	89	11.2%	6	5.0%
5. Philadelphia	17	3.3%	23	2.9%	1	0.8%
6. Upper Gwynedd	16	3.1%	22	2.8%	1	0.8%
7. Warminster	11	2.1%	21	2.6%	4	3.3%
8. Warwick	14	2.7%	18	2.3%	4	3.3%
9. New Britain	12	2.3%	17	2.1%	2	1.7%
10. Northampton	13	2.5%	16	2.0%	2	1.7%
11. Horsham	10	1.9%	16	2.0%	1	0.8%
12. Plumstead	7	1.4%	15	1.9%	2	1.7%
13. Abington	10	1.9%	15	1.9%	1	0.8%
14. Warrington	8	1.6%	12	1.5%	1	0.8%
15. Other	124	24.2%	211	26.6%	45	37.2%
TOTAL	**513**	**100%**	**793**	**100%**	**121**	**100%**

Table B-4. Place of Vehicle Trip Destination by Municipality
(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

Municipality of Trip Destination	Home-Based Trips No. of Trips	Home-Based Trips % of Total	Total Trips No. of Trips	Total Trips % of Total	Truck Trips No. of Trips	Truck Trips % of Total
Inbound Trips						
1. New Hope	67	14.6%	135	16.8%	24	19.7%
2. Doylestown	64	14.0%	102	12.7%	3	2.5%
3. Solebury	58	12.7%	93	11.6%	6	4.9%
4. Buckingham	43	9.4%	77	9.6%	11	9.0%
5. Horsham	23	5.0%	27	3.4%	2	1.6%
6. Warminster	13	2.8%	24	3.0%	10	8.2%
7. Philadelphia	11	2.4%	20	2.5%	4	3.3%
8. Warrington	12	2.6%	19	2.4%	2	1.6%
9. Lansdale	10	2.2%	17	2.1%	5	4.1%
10. Montgomery	7	1.5%	16	2.0%	3	2.5%
11. Upper Gwynedd	6	1.3%	11	1.4%	1	0.8%
12. Plumstead	7	1.5%	11	1.4%	2	1.6%
13. Whitpain	8	1.7%	11	1.4%	1	0.8%
14. Abington	7	1.5%	10	1.2%	0	0.0%
15. Other	122	26.6%	232	28.8%	48	39.3%
TOTAL	**458**	**100%**	**805**	**100%**	**122**	**100%**
Outbound Trips						
1. Raritan	53	11.0%	95	12.7%	13	11.1%
2. Flemington	47	9.8%	74	9.9%	9	7.7%
3. Lambertville	34	7.1%	48	6.4%	4	3.4%
4. Bridgewater	25	5.2%	39	5.2%	4	3.4%
5. West Amwell	21	4.4%	38	5.1%	7	6.0%
6. East Amwell	25	5.2%	27	3.6%	1	0.9%
7. Delaware	12	2.5%	21	2.8%	2	1.7%
8. Somerville	14	2.9%	16	2.1%	2	1.7%
9. Edison	8	1.7%	15	2.0%	4	3.4%
10. Franklin	12	2.5%	14	1.9%	1	0.9%
11. Hillsborough	10	2.1%	13	1.7%	2	1.7%
12. Clinton	9	1.9%	12	1.6%	2	1.7%
13. Readington	3	0.6%	11	1.5%	3	2.6%
14. Morristown	8	1.7%	10	1.3%	0	0.0%
15. Other	199	41.5%	317	42.3%	63	53.8%
TOTAL	**480**	**100%**	**750**	**100%**	**117**	**100%**

Table B-5. Stopping Before Arriving at Final Destination
(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

	Passenger Vehicles			Trucks			Total Vehicles		
	No. of	Vehicles	%	No. of	Vehicles	%	No. of	Vehicles	%
Survey Period	Surveyed	Stopping	Stopping	Surveyed	Stopping	Stopping	Surveyed	Stopping	Stopping
Inbound									
6:30 a.m. - 8:30 a.m.	117	0	0.0%	19	0	0.0%	136	0	0.0%
8:30 a.m. - 10:30 a.m.	74	1	1.4%	12	0	0.0%	86	1	1.2%
Subtotal	**191**	**1**	**0.5%**	**31**	**0**	**0.0%**	**222**	**1**	**0.5%**
10:30 a.m. - 12:00 p.m.	87	1	1.1%	17	1	5.9%	104	2	1.9%
12:00 p.m. - 1:00 p.m.	72	0	0.0%	18	1	5.6%	90	1	1.1%
Subtotal	**159**	**1**	**0.6%**	**35**	**2**	**5.7%**	**194**	**3**	**1.5%**
1:00 p.m. - 2:30 p.m.	91	6	6.6%	17	0	0.0%	108	6	5.6%
2:30 p.m. - 4:30 p.m.	69	2	2.9%	16	0	0.0%	85	2	2.4%
Subtotal	**160**	**8**	**5.0%**	**33**	**0**	**0.0%**	**193**	**8**	**4.1%**
4:30 p.m. - 6:00 p.m.	116	11	9.5%	22	0	0.0%	138	11	8.0%
6:00 p.m. - 8:00 p.m.	73	4	5.5%	5	0	0.0%	78	4	5.1%
Subtotal	**189**	**15**	**7.9%**	**27**	**0**	**0.0%**	**216**	**15**	**6.9%**
Outbound									
6:30 a.m. - 8:30 a.m.	132	0	0.0%	19	2	10.5%	151	2	1.3%
8:30 a.m. - 10:30 a.m.	53	2	3.8%	15	0	0.0%	68	2	2.9%
Subtotal	**185**	**2**	**1.1%**	**34**	**2**	**5.9%**	**219**	**4**	**1.8%**
10:30 a.m. - 12:00 p.m.	85	2	2.4%	21	1	4.8%	106	3	2.8%
12:00 p.m. - 1:00 p.m.	72	4	5.6%	18	0	0.0%	90	4	4.4%
Subtotal	**157**	**6**	**3.8%**	**39**	**1**	**2.6%**	**196**	**7**	**3.6%**
1:00 p.m. - 2:30 p.m.	92	0	0.0%	20	0	0.0%	112	0	0.0%
2:30 p.m. - 4:30 p.m.	65	3	4.6%	14	0	0.0%	79	3	3.8%
Subtotal	**157**	**3**	**1.9%**	**34**	**0**	**0.0%**	**191**	**3**	**1.6%**
4:30 p.m. - 6:00 p.m.	120	2	1.7%	12	0	0.0%	132	2	1.5%
6:00 p.m. - 8:00 p.m.	73	0	0.0%	2	0	0.0%	75	0	0.0%
Subtotal	**193**	**2**	**1.0%**	**14**	**0**	**0.0%**	**207**	**2**	**1.0%**
TOTAL	**1391**	**38**	**2.7%**	**247**	**5**	**2.0%**	**1638**	**43**	**2.6%**

Table B-6. Reasons for Using US 202 by Drivers of Passenger Vehicles
(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

Survey Period	Total Drivers	Saves Time		Saves Money		Most Direct		Less Congested		Only Way		Other Reasons	
		No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total
Inbound													
6:30 a.m. - 8:30 a.m.	110	97	88.2%	3	2.7%	0	0.0%	8	7.3%	3	2.7%	6	5.5%
8:30 a.m. - 10:30 a.m.	71	60	84.5%	2	2.8%	0	0.0%	8	11.3%	2	2.8%	0	0.0%
Subtotal	**181**	**157**	**86.7%**	**5**	**2.8%**	**0**	**0.0%**	**16**	**8.8%**	**5**	**2.8%**	**6**	**3.3%**
10:30 a.m. - 12:00 p.m.	84	76	90.5%	0	0.0%	2	2.4%	1	1.2%	2	2.4%	3	3.6%
12:00 p.m. - 1:00 p.m.	72	65	90.3%	1	1.4%	2	2.8%	5	6.9%	1	1.4%	0	0.0%
Subtotal	**156**	**141**	**90.4%**	**1**	**0.6%**	**4**	**2.6%**	**6**	**3.8%**	**3**	**1.9%**	**3**	**1.9%**
1:00 p.m. - 2:30 p.m.	85	83	97.6%	0	0.0%	0	0.0%	2	2.4%	0	0.0%	1	1.2%
2:30 p.m. - 4:30 p.m.	68	66	97.1%	0	0.0%	0	0.0%	2	2.9%	0	0.0%	0	0.0%
Subtotal	**153**	**149**	**97.4%**	**0**	**0.0%**	**0**	**0.0%**	**4**	**2.6%**	**0**	**0.0%**	**1**	**0.7%**
4:30 p.m. - 6:00 p.m.	115	104	90.4%	1	0.9%	0	0.0%	9	7.8%	0	0.0%	2	1.7%
6:00 p.m. - 8:00 p.m.	73	69	94.5%	1	1.4%	0	0.0%	3	4.1%	0	0.0%	0	0.0%
Subtotal	**188**	**173**	**92.0%**	**2**	**1.1%**	**0**	**0.0%**	**12**	**6.4%**	**0**	**0.0%**	**2**	**1.1%**
Outbound													
6:30 a.m. - 8:30 a.m.	130	99	76.2%	2	1.5%	12	9.2%	12	9.2%	2	1.5%	4	3.1%
8:30 a.m. - 10:30 a.m.	50	42	84.0%	0	0.0%	3	6.0%	3	6.0%	0	0.0%	2	4.0%
Subtotal	**180**	**141**	**78.3%**	**2**	**1.1%**	**15**	**8.3%**	**15**	**8.3%**	**2**	**1.1%**	**6**	**3.3%**
10:30 a.m. - 12:00 p.m.	80	75	93.8%	0	0.0%	0	0.0%	5	6.3%	0	0.0%	0	0.0%
12:00 p.m. - 1:00 p.m.	70	59	84.3%	0	0.0%	0	0.0%	10	14.3%	1	1.4%	0	0.0%
Subtotal	**150**	**134**	**89.3%**	**0**	**0.0%**	**0**	**0.0%**	**15**	**10.0%**	**1**	**0.7%**	**0**	**0.0%**
1:00 p.m. - 2:30 p.m.	86	79	91.9%	0	0.0%	1	1.2%	6	7.0%	0	0.0%	1	1.2%
2:30 p.m. - 4:30 p.m.	61	53	86.9%	0	0.0%	3	4.9%	3	4.9%	0	0.0%	3	4.9%
Subtotal	**147**	**132**	**89.8%**	**0**	**0.0%**	**4**	**2.7%**	**9**	**6.1%**	**0**	**0.0%**	**4**	**2.7%**
4:30 p.m. - 6:00 p.m.	118	95	80.5%	1	0.8%	12	10.2%	7	5.9%	2	1.7%	2	1.7%
6:00 p.m. - 8:00 p.m.	71	66	93.0%	0	0.0%	0	0.0%	4	5.6%	1	1.4%	0	0.0%
Subtotal	**189**	**161**	**85.2%**	**1**	**0.5%**	**12**	**6.3%**	**11**	**5.8%**	**3**	**1.6%**	**2**	**1.1%**
TOTAL	**1344**	**1188**	**88.4%**	**11**	**0.8%**	**35**	**2.6%**	**88**	**6.5%**	**14**	**1.0%**	**24**	**1.8%**

Table B-7. Reasons for Using US 202 by Truck Drivers

(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

Survey Period	Total Drivers	Saves Time		Saves Money		Most Direct		Less Congested		Only Way		Other Reasons	
		No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total
Inbound													
6:30 a.m. - 8:30 a.m.	17	17	100%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
8:30 a.m. - 10:30 a.m.	10	8	80.0%	0	0.0%	1	10.0%	0	0.0%	0	0.0%	1	10.0%
Subtotal	**27**	**25**	**92.6%**	**0**	**0.0%**	**1**	**3.7%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**3.7%**
10:30 a.m. - 12:00 p.m.	16	15	93.8%	0	0.0%	0	0.0%	1	6.3%	0	0.0%	0	0.0%
12:00 p.m. - 1:00 p.m.	17	15	88.2%	0	0.0%	0	0.0%	2	11.8%	0	0.0%	0	0.0%
Subtotal	**33**	**30**	**90.9%**	**0**	**0.0%**	**0**	**0.0%**	**3**	**9.1%**	**0**	**0.0%**	**0**	**0.0%**
1:00 p.m. - 2:30 p.m.	14	11	78.6%	0	0.0%	2	14.3%	0	0.0%	0	0.0%	1	7.1%
2:30 p.m. - 4:30 p.m.	15	5	33.3%	0	0.0%	5	33.3%	0	0.0%	3	20.0%	2	13.3%
Subtotal	**29**	**16**	**55.2%**	**0**	**0.0%**	**7**	**24.1%**	**0**	**0.0%**	**3**	**10.3%**	**3**	**10.3%**
4:30 p.m. - 6:00 p.m.	21	12	57.1%	0	0.0%	6	28.6%	0	0.0%	0	0.0%	3	14.3%
6:00 p.m. - 8:00 p.m.	5	3	60.0%	0	0.0%	1	20.0%	0	0.0%	0	0.0%	1	20.0%
Subtotal	**26**	**15**	**57.7%**	**0**	**0.0%**	**7**	**26.9%**	**0**	**0.0%**	**0**	**0.0%**	**4**	**15.4%**
Outbound													
6:30 a.m. - 8:30 a.m.	18	7	38.9%	0	0.0%	0	0.0%	0	0.0%	9	50.0%	2	11.1%
8:30 a.m. - 10:30 a.m.	15	13	86.7%	1	6.7%	0	0.0%	0	0.0%	1	6.7%	0	0.0%
Subtotal	**33**	**20**	**60.6%**	**1**	**3.0%**	**0**	**0.0%**	**0**	**0.0%**	**10**	**30.3%**	**2**	**6.1%**
10:30 a.m. - 12:00 p.m.	19	17	89.5%	0	0.0%	0	0.0%	0	0.0%	2	10.5%	1	5.3%
12:00 p.m. - 1:00 p.m.	17	15	88.2%	0	0.0%	1	5.9%	0	0.0%	1	5.9%	0	0.0%
Subtotal	**36**	**32**	**88.9%**	**0**	**0.0%**	**1**	**2.8%**	**0**	**0.0%**	**3**	**8.3%**	**1**	**2.8%**
1:00 p.m. - 2:30 p.m.	20	11	55.0%	0	0.0%	7	35.0%	0	0.0%	2	10.0%	0	0.0%
2:30 p.m. - 4:30 p.m.	12	5	41.7%	0	0.0%	5	41.7%	0	0.0%	2	16.7%	0	0.0%
Subtotal	**32**	**16**	**50.0%**	**0**	**0.0%**	**12**	**37.5%**	**0**	**0.0%**	**4**	**12.5%**	**0**	**0.0%**
4:30 p.m. - 6:00 p.m.	12	8	66.7%	1	8.3%	2	16.7%	0	0.0%	0	0.0%	1	8.3%
6:00 p.m. - 8:00 p.m.	2	2	100%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Subtotal	**14**	**10**	**71.4%**	**1**	**7.1%**	**2**	**14.3%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**7.1%**
TOTAL	**230**	**164**	**71.3%**	**2**	**0.9%**	**30**	**13.0%**	**3**	**1.3%**	**20**	**8.7%**	**12**	**5.2%**

Table B-8. Major Roads Taken by Drivers to Reach Their Destinations
(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

Roads Used	Passenger Vehicles		Trucks		All Vehicles	
	No. of Drivers	% of Total	No. of Drivers	% of Total	No. of Drivers	% of Total
Inbound Traffic						
1. PA 611	53	16.3%	6	6.3%	59	14.0%
2. PA 263	22	6.8%	13	13.5%	35	8.3%
3. I-95	21	6.5%	6	6.3%	27	6.4%
4. PA 313	17	5.2%	6	6.3%	23	5.5%
5. I-78	20	6.2%	2	2.1%	22	5.2%
6. PA 22	14	4.3%	3	3.1%	17	4.0%
7. PA 413	4	1.2%	10	10.4%	14	3.3%
8. Other	174	53.5%	50	52.1%	224	53.2%
TOTAL	**325**	**100%**	**96**	**100%**	**421**	**100%**
Outbound Traffic						
1. I-287	138	36.9%	20	15.2%	158	31.2%
2. NJ 29	17	4.5%	24	18.2%	41	8.1%
3. NJ 31	24	6.4%	14	10.6%	38	7.5%
4. I-78	33	8.8%	1	0.8%	34	6.7%
5. I-95	18	4.8%	13	9.8%	31	6.1%
6. NJ 22	25	6.7%	4	3.0%	29	5.7%
7. CR 514	10	2.7%	3	2.3%	13	2.6%
8. Other	109	29.1%	53	40.2%	162	32.0%
TOTAL	**374**	**100%**	**132**	**100%**	**506**	**100%**

Table B-9. Type of Vehicles Used for the Trip
(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

	Inbound Traffic					Outbound Traffic					
Vehicle Type	AM Peak (% of Total)	AM Off-Peak (%. of Total)	PM Off-Peak (% of Total)	PM Peak (% of Total)	Inbound Traffic (% of Total)	AM Peak (% of Total)	AM Off-Peak (% of Total)	PM Off-Peak (% of Total)	PM Peak (% of Total)	Outbound Traffic (% of Total)	TOTAL Traffic (% of Total)
Passenger Vehicles											
Auto	56.7%	50.3%	49.5%	63.8%	55.5%	64.5%	54.9%	58.5%	65.0%	60.9%	58.2%
Van, Sta. Wagon	9.7%	11.2%	17.9%	4.2%	10.4%	5.5%	7.3%	9.0%	11.7%	8.3%	9.4%
SUV	15.5%	12.8%	13.0%	16.0%	14.5%	10.6%	13.0%	13.3%	11.2%	11.9%	13.2%
Other	0.0%	0.0%	0.5%	0.0%	0.1%	0.5%	0.0%	0.0%	0.0%	0.1%	0.1%
Subtotal	**81.9%**	**74.3%**	**81.0%**	**84.0%**	**80.6%**	**81.1%**	**75.1%**	**80.9%**	**87.9%**	**81.3%**	**81.0%**
Light Trucks											
Pickup	3.8%	5.6%	1.1%	5.2%	3.9%	5.1%	5.7%	2.1%	5.8%	4.7%	4.3%
Panel	2.1%	1.1%	2.7%	1.4%	1.8%	1.4%	0.5%	5.3%	1.0%	2.0%	1.9%
Single Unit	3.8%	12.8%	5.4%	4.2%	6.3%	6.9%	11.9%	4.8%	0.5%	6.0%	6.1%
Other	0.0%	0.0%	0.0%	0.9%	0.2%	0.0%	1.0%	0.5%	0.5%	0.5%	0.4%
Subtotal	**9.7%**	**19.6%**	**9.2%**	**11.7%**	**12.3%**	**13.4%**	**19.2%**	**12.8%**	**7.8%**	**13.2%**	**12.7%**
Heavy Trucks											
Tractor-Trailer	8.4%	6.1%	6.0%	3.3%	6.0%	4.6%	5.7%	5.9%	3.9%	5.0%	5.5%
Double-Trailer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.1%	0.1%
Other	0.0%	0.0%	3.8%	0.9%	1.1%	0.9%	0.0%	0.5%	0.0%	0.4%	0.7%
Subtotal	**8.4%**	**6.1%**	**9.8%**	**4.2%**	**7.1%**	**5.5%**	**5.7%**	**6.4%**	**4.4%**	**5.5%**	**6.3%**
TOTAL	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table B-10. Trip Purpose by Direction

(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

Survey Period	Work (% of Total)	School (% of Total)	Eat Meal (% of Total	Shopping (% of Total)	Social Recreation (% of Total)	Medical (% of Total)	Visitor/ Tourist (% of Total)	Other (% of Total)	All Purposes
Inbound									
6:30 a.m. - 8:30 a.m.	86.3%	3.4%	0.0%	5.1%	3.4%	0.0%	1.7%	0.0%	100%
8:30 a.m. - 10:30 a.m.	61.6%	4.1%	0.0%	11.0%	12.3%	2.7%	5.5%	2.7%	100%
Subtotal	**76.8%**	**3.7%**	**0.0%**	**7.4%**	**6.8%**	**1.1%**	**3.2%**	**1.1%**	**100%**
10:30 a.m. - 12:00 p.m.	44.7%	2.4%	4.7%	15.3%	18.8%	7.1%	7.1%	0.0%	100%
12:00 p.m. - 1:00 p.m.	43.1%	1.4%	8.3%	19.4%	9.7%	5.6%	9.7%	2.8%	100%
Subtotal	**43.9%**	**1.9%**	**6.4%**	**17.2%**	**14.6%**	**6.4%**	**8.3%**	**1.3%**	**100%**
1:00 p.m. - 2:30 p.m.	41.4%	2.3%	2.3%	23.0%	19.5%	1.1%	10.3%	0.0%	100%
2:30 p.m. - 4:30 p.m.	42.6%	4.4%	4.4%	13.2%	20.6%	1.5%	10.3%	2.9%	100%
Subtotal	**41.9%**	**3.2%**	**3.2%**	**18.7%**	**20.0%**	**1.3%**	**10.3%**	**1.3%**	**100%**
4:30 p.m. - 6:00 p.m.	60.0%	1.7%	2.6%	6.1%	19.1%	0.9%	8.7%	0.9%	100%
6:00 p.m. - 8:00 p.m.	64.4%	0.0%	8.2%	5.5%	13.7%	0.0%	8.2%	0.0%	100%
Subtotal	**61.7%**	**1.1%**	**4.8%**	**5.9%**	**17.0%**	**0.5%**	**8.5%**	**0.5%**	**100%**
Outbound									
6:30 a.m. - 8:30 a.m.	94.7%	0.8%	0.0%	0.8%	1.5%	0.8%	0.8%	0.8%	100%
8:30 a.m. - 10:30 a.m.	71.2%	3.8%	0.0%	1.9%	19.2%	0.0%	0.0%	3.8%	100%
Subtotal	**88.0%**	**1.6%**	**0.0%**	**1.1%**	**6.6%**	**0.5%**	**0.5%**	**1.6%**	**100%**
10:30 a.m. - 12:00 p.m.	38.1%	0.0%	4.8%	19.0%	19.0%	7.1%	10.7%	1.2%	100%
12:00 p.m. - 1:00 p.m.	42.3%	1.4%	4.2%	15.5%	22.5%	5.6%	7.0%	1.4%	100%
Subtotal	**40.0%**	**0.6%**	**4.5%**	**17.4%**	**20.6%**	**6.5%**	**9.0%**	**1.3%**	**100%**
1:00 p.m. - 2:30 p.m.	29.2%	2.2%	1.1%	16.9%	20.2%	1.1%	27.0%	2.2%	100%
2:30 p.m. - 4:30 p.m.	42.9%	1.6%	3.2%	20.6%	20.6%	3.2%	7.9%	0.0%	100%
Subtotal	**34.9%**	**2.0%**	**2.0%**	**18.4%**	**20.4%**	**2.0%**	**19.1%**	**1.3%**	**100%**
4:30 p.m. - 6:00 p.m.	32.8%	0.0%	3.4%	17.6%	31.9%	3.4%	10.9%	0.0%	100%
6:00 p.m. - 8:00 p.m.	31.5%	1.4%	8.2%	5.5%	46.6%	2.7%	4.1%	0.0%	100%
Subtotal	**32.3%**	**0.5%**	**5.2%**	**13.0%**	**37.5%**	**3.1%**	**8.3%**	**0.0%**	**100%**
TOTAL	**53.5%**	**1.8%**	**3.2%**	**11.9%**	**17.9%**	**2.6%**	**8.1%**	**1.0%**	**100%**

Table B-11. Vehicle Occupancy by Traffic Direction and Time Period
(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

Survey Period	One Occupant	% of Total	Two Occupants	% of Total	Three Occupants	% of Total	Four Occupants	% of Total	Five+ Occupants	% of Total	Total Passenger Vehicles	Average Vehicle Occupancy
Inbound												
6:30 a.m. - 8:30 a.m.	109	94.0%	6	5.2%	1	0.9%	0	0.0%	0	0.0%	116	1.07
8:30 a.m. - 10:30 a.m.	63	85.1%	5	6.8%	6	8.1%	0	0.0%	0	0.0%	74	1.23
Subtotal	**172**	**90.5%**	**11**	**5.8%**	**7**	**3.7%**	**0**	**0.0%**	**0**	**0.0%**	**190**	**1.13**
10:30 a.m. - 12:00 p.m.	58	66.7%	21	24.1%	7	8.0%	1	1.1%	0	0.0%	87	1.44
12:00 p.m. - 1:00 p.m.	53	73.6%	11	15.3%	7	9.7%	1	1.4%	0	0.0%	72	1.39
Subtotal	**111**	**69.8%**	**32**	**20.1%**	**14**	**8.8%**	**2**	**1.3%**	**0**	**0.0%**	**159**	**1.42**
1:00 p.m. - 2:30 p.m.	60	68.2%	23	26.1%	4	4.5%	1	1.1%	0	0.0%	88	1.39
2:30 p.m. - 4:30 p.m.	46	67.6%	13	19.1%	4	5.9%	3	4.4%	2	2.9%	68	1.56
Subtotal	**106**	**67.9%**	**36**	**23.1%**	**8**	**5.1%**	**4**	**2.6%**	**2**	**1.3%**	**156**	**1.40**
4:30 p.m. - 6:00 p.m.	89	77.4%	19	16.5%	7	6.1%	0	0.0%	0	0.0%	115	1.29
6:00 p.m. - 8:00 p.m.	56	76.7%	16	21.9%	1	1.4%	0	0.0%	0	0.0%	73	1.25
Subtotal	**145**	**77.1%**	**35**	**18.6%**	**8**	**4.3%**	**0**	**0.0%**	**0**	**0.0%**	**188**	**1.27**
Outbound												
6:30 a.m. - 8:30 a.m.	125	94.7%	6	4.5%	1	0.8%	0	0.0%	0	0.0%	132	1.06
8:30 a.m. - 10:30 a.m.	42	80.8%	9	17.3%	1	1.9%	0	0.0%	0	0.0%	52	1.21
Subtotal	**167**	**90.8%**	**15**	**8.2%**	**2**	**1.1%**	**0**	**0.0%**	**0**	**0.0%**	**184**	**1.10**
10:30 a.m. - 12:00 p.m.	66	77.6%	18	21.2%	0	0.0%	1	1.2%	0	0.0%	85	1.25
12:00 p.m. - 1:00 p.m.	52	72.2%	13	18.1%	5	6.9%	2	2.8%	0	0.0%	72	1.40
Subtotal	**118**	**75.2%**	**31**	**19.7%**	**5**	**3.2%**	**3**	**1.9%**	**0**	**0.0%**	**157**	**1.32**
1:00 p.m. - 2:30 p.m.	45	48.9%	35	38.0%	4	4.3%	4	4.3%	4	4.3%	92	1.77
2:30 p.m. - 4:30 p.m.	46	70.8%	15	23.1%	2	3.1%	0	0.0%	2	3.1%	65	1.44
Subtotal	**91**	**58.0%**	**50**	**31.8%**	**6**	**3.8%**	**4**	**2.5%**	**6**	**3.8%**	**157**	**1.43**
4:30 p.m. - 6:00 p.m.	75	62.5%	31	25.8%	7	5.8%	7	5.8%	0	0.0%	120	1.55
6:00 p.m. - 8:00 p.m.	46	63.0%	17	23.3%	6	8.2%	4	5.5%	0	0.0%	73	1.56
Subtotal	**121**	**62.7%**	**48**	**24.9%**	**13**	**6.7%**	**11**	**5.7%**	**0**	**0.0%**	**193**	**1.55**
TOTAL	**1031**	**74.5%**	**258**	**18.6%**	**63**	**4.6%**	**24**	**1.7%**	**8**	**0.6%**	**1384**	**1.35**

Table B-12. Average Vehicle Occupancy by Trip Purpose
(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

Trip Purpose	Auto (Persons Per Vehicle)	Van/ Station Wagon (Persons Per Vehicle)	SUV (Persons Per Vehicle)	Total (Persons Per Vehicle)
Work	1.10	1.14	1.14	1.11
School	1.50	1.00	1.60	1.44
Eat Meal	1.73	2.43	2.00	1.86
Shopping	1.34	1.79	1.30	1.40
Social/Recreation	1.68	2.11	1.79	1.74
Medical	1.29	1.33	1.25	1.46
Visitor/Tourist	1.60	2.77	1.95	1.79
Other	1.60	1.50	1.17	1.44
All Purposes	**1.30**	**1.68**	**1.37**	**1.35**

Table B-13. External-Internal and Internal-External Trip Length Frequency Distribution Within The DVRPC Region

(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

Trip Length (Miles)	Home-Based Work Trips		Passenger Vehicle Trips		Truck Trips	
	No. of Trips	% of Total	No. of Trips	% of Total	No. of Trips	% of Total
<1	11	2.2%	38	2.9%	6	2.6%
1-2	62	12.5%	285	21.7%	57	25.0%
2-3	9	1.8%	26	2.0%	2	0.9%
3-4	5	1.0%	16	1.2%	2	0.9%
4-5	12	2.4%	25	1.9%	4	1.8%
5-6	2	0.4%	17	1.3%	6	2.6%
6-7	12	2.4%	54	4.1%	3	1.3%
7-8	12	2.4%	23	1.8%	5	2.2%
8-10	59	11.9%	134	10.2%	17	7.5%
10-12	74	14.9%	173	13.2%	18	7.9%
12-14	34	6.8%	70	5.3%	19	8.3%
14-16	27	5.4%	65	5.0%	20	8.8%
16-18	33	6.6%	69	5.3%	12	5.3%
18-20	42	8.5%	86	6.6%	20	8.8%
20-23	46	9.3%	85	6.5%	16	7.0%
23-26	14	2.8%	31	2.4%	2	0.9%
26-29	9	1.8%	33	2.5%	5	2.2%
29-32	11	2.2%	29	2.2%	3	1.3%
32-36	10	2.0%	28	2.1%	6	2.6%
36-40	2	0.4%	4	0.3%	2	0.9%
40-45	8	1.6%	13	1.0%	3	1.3%
45-50	2	0.4%	5	0.4%	0	0.0%
50-60	0	0.0%	2	0.2%	0	0.0%
60-70	0	0.0%	0	0.0%	0	0.0%
70-80	1	0.2%	1	0.1%	0	0.0%
> 80	0	0.0%	0	0.0%	0	0.0%
Average Trip Length	**13.55**	**100%**	**11.78**	**100%**	**11.87**	**100%**

Table B-14. County Where Trucks Are Garaged or Parked When Not in Service
(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

County	Inbound Traffic		Outbound Traffic		Total Traffic	
	No. of Trucks	% of Total	No. of Trucks	% of Total	No. of Trucks	% of Total
Bucks	55	49.5%	28	23.1%	83	35.8%
Chester	3	2.7%	0	0.0%	3	1.3%
Delaware	0	0.0%	1	0.8%	1	0.4%
Montgomery	0	0.0%	8	6.6%	8	3.4%
Philadelphia	4	3.6%	1	0.8%	5	2.2%
Other PA	7	6.3%	6	5.0%	13	5.6%
Subtotal	**69**	**62.2%**	**44**	**36.4%**	**113**	**48.7%**
Burlington	1	0.9%	2	1.7%	3	1.3%
Camden	0	0.0%	1	0.8%	1	0.4%
Gloucester	0	0.0%	1	0.8%	1	0.4%
Mercer	6	5.4%	12	9.9%	18	7.8%
Other NJ	27	24.3%	48	39.7%	75	32.3%
Subtotal	**34**	**30.6%**	**64**	**52.9%**	**98**	**42.2%**
Other States	8	7.2%	13	10.7%	21	9.1%
Subtotal	**8**	**7.2%**	**13**	**10.7%**	**21**	**9.1%**
TOTAL	**111**	**100%**	**121**	**100%**	**232**	**100%**

Table B-15. Type of Commodities Carried by Trucks
(US 202 Toll Bridge Cordon Station South of the Delaware River, Solebury Township)

Commodity Carried	Inbound Traffic		Outbound Traffic		Total Traffic	
	No. of Trucks	% of Total	No. of Trucks	% of Total	No. of Trucks	% of Total
Empty	31	25.2%	16	13.3%	47	19.3%
Manufactured Products	10	8.1%	7	5.8%	17	7.0%
Petroleum Products	7	5.7%	4	3.3%	11	4.5%
Agricultural Products	21	17.1%	9	7.5%	30	12.3%
Building Materials	29	23.6%	40	33.3%	69	28.4%
Refrigerated Products	1	0.8%	6	5.0%	7	2.9%
Retail Store Merchandise	5	4.1%	6	5.0%	11	4.5%
Parcels	2	1.6%	1	0.8%	3	1.2%
Other	17	13.8%	31	25.8%	48	19.8%
TOTAL	**123**	**100%**	**120**	**100%**	**243**	**100%**

Cordon Line Highway Survey for the Delaware Valley Region - Report No. 4
Upper Black Eddy Bridge and US 202 Toll Bridge Cordon Stations in Bucks County

Publication No. : 02039

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Geographic Area Covered: Delaware Valley metropolitan region comprised of five counties in Pennsylvania (Bucks, Chester, Delaware, Montgomery, and Philadelphia); and four counties in New Jersey (Burlington, Camden, Gloucester and Mercer) and includes some counties adjoining the region: (Lancaster, Berks, and Lehigh in PA; Hunterdon, Middlesex, Ocean, Cumberland and Salem in NJ; and New Castle County in Delaware).

Key Words: Traffic count, geocoding, cordon line, survey station, travel trends, vehicle trips, person trips, AM and PM peak hour, origin and destination, average vehicular occupancy, commodities.

ABSTRACT
A cordon line survey of traffic entering and leaving the Delaware Valley region was conducted during the summer of 2001. This is a summary report describing the characteristics of traffic crossing the regional cordon line at 2 locations in Pennsylvania: Upper Black Eddy Bridge and US 202 Toll Bridge. This includes information regarding the data collection, data summaries, and complete data tables in the Appendices.

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