TRANSIT POTENTIAL
IN SUBURBAN GROWTH CORRIDORS

SEPTA Service Area Analysis


July 1989

Prepared By

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
Bourse Building, Philadelphia, Pennsylvania

Created in 1965, the Delaware Valley Regional Planning Commission (DVRPC) is an interstate, intercounty and intercity agency which provides continuing, comprehensive and coordinated planning for the orderly growth and development 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. The Commission is an advisory agency which divides its planning and service functions among the Office of the Executive Director, the Office of Public Affairs, and four line Divisions: Transportation Planning, Regional Information Services Center, Strategic Planning, and Finance and Administration. DVRPC's mission for the 1980s is to emphasize technical assistance and services and to conduct high priority studies for member state and local governments, while determining and meeting the needs of the private sector.
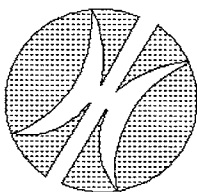
The DVRPC logo is adapted from the official seal of the Commission and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole while the diagonal bar signifies the Delaware River flowing through it. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey. The logo combines these elements to depict the areas served by DVRPC.

DELAWARE VALLEY REGIONAL PLANNING COMMISSION

Publication Abstract

TITLE	Date Published: July 1989
TRANSIT POTENTIAL IN SUBURBAN GROWTH CORRIDORS SEPTA Service Area Analysis	Publication No. 89019

Geographic Area Covered:

The DVRPC region with particular attention to the five counties of Southeastern Pennsylvania (Bucks, Chester, Delaware, Montgomery and Philadelphia) and Mercer County, New Jersey.

Key Words:

Transit, planning, work trips, destination densities, transit potential

ABSTRACT

The purpose of this study was to compile information useful in determining the potential for transit services in suburban growth areas in Pennsylvania. Historically, transit services in the region have been oriented toward the Philadelphia CBD. Now, with the emergence of many suburban employment centers and corridors, it is necessary to explore the need for new services.

This study utilized a special adaptation of the DVRPC travel simulation process. The simulation process and its use in this study are described.

This study also demonstrated the usefulness of computer generated mapping to display thematic data. The ability to portray vast amounts of cold statistics as a map with geographic references, colors, shadings, etc., enables more sophisticated analysis and enhances the data's presentation.

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I.   INTRODUCTION

Travel patterns in the Philadelphia region have been changing in recent years. This phenomenon is particularly evident in suburban locations where significant increases in traffic have occurred. These increases have resulted from continued growth in population and unprecedented growth in suburban employment.

The purpose of this study is to compile information useful in determining the potential for transit services in suburban growth areas in Pennsylvania. Historically, transit services in the region have been oriented toward the Philadelphia CBD. Now, with the emergence of many suburban employment centers and corridors, it is necessary to explore the need for new services.

This study utilizes a special adaptation of the DVRPC travel simulation process. The simulation process and its use in this study are described in the following pages.

Throughout the study, efforts were made to coordinate activities with the Planning and Development Division of the Southeastern Pennsylvania Transportation Authority (SEPTA). SEPTA is the principal provider of transit services in the Pennsylvania portion of the Philadelphia region. The Planning and Development Division is responsible for planning new routes and modifying existing ones in the SEPTA service area.

II.   DVRPC TRAVEL SIMULATION PROCESS

The DVRPC travel simulation process consists of several tasks which culminate in the estimation of travel demand at the census tract level (or block group in Center City Philadelphia). The process adheres to the traditional steps of travel simulation: trip generation, trip distribution, modal split, and travel assignment. Computer programs from the widely utilized Urban Transportation Planning System (UTPS) are integral to the process.

The first step in the process, trip generation, entails the estimation of person, truck, and taxi trips. The estimates are derived from household and employment estimates, established trip rates, automobile ownership, and area type. Estimates of trips include trips into, out of, and through the region. DVRPC divides the region into 1335 zones for travel simulation purposes. In addition, other numerous "external zones" are used to represent the areas beyond the region.

The second step in the simulation process is the allocation of trips to destinations within and around the region. This step is referred to as trip distribution. Trip distribution is based on a formulation of the "gravity model" which regulates travel to a destination according to the attractiveness of the destination (as measured by employment in the case of work trips) and the difficulty of travelling to the destination (as measured by time and cost).

The remaining two steps in the simulation process are modal split and travel assignment. Modal split is the allocation of trips to the transit and highway modes. Travel assignment is the placement of transit and highway trips on specific facilities.

Since the purpose of the study is to provide information on the potential for transit service, the focus is on the person trip movements between zones within the region. Therefore, the data of interest is the output from the trip distribution model. Furthermore, since it is known that 60 to 85 percent of trips made on typical transit routes are for commuting to and from work, only one type of trip was examined: daily home-based work trips. Finally, it was decided that the study should look at current travel patterns. The primary data set resulting from the travel simulation was an origin and destination table of home-based work trips for the 1335 zones in the region. The simulation produced by DVRPC is for the year 1987.

III.   AGGREGATION OF ZONAL DATA

Since the trip table resulting from the trip distribution phase of the simulation process contains nearly 1.8 million cells, the tract level data was aggregated to larger zones to facilitate better analysis and understanding. This process, commonly referred to as compression, is achieved by combining two or more of the original zones into a single study zone.

The choice of which zones to combine was based on several factors. One of the primary determinants was governmental boundaries. Each compressed zone, at some level, reflected a county, county planning district, or municipal boundary. For example, the three southern New Jersey counties in the DVRPC region (Gloucester, Camden, and Burlington) were compressed so that each entire county was represented by a single zone. (Mercer County was not limited to a single zone because of the existence of inter-state rail services emanating from Philadelphia.)

In Pennsylvania, examples of compressed zones which reflected county planning district boundaries can be found within the City of Philadelphia and in the extreme portions of the suburban counties. These zones represent county sub-regions previously identified by county officials. The county planning districts are typically blocks of adjacent municipalities which exhibit similar development characteristics.

Also considered in combining zones were the DVRPC's most recently adopted minor civil division level forecasts of population and employment for 1990, 2000, and 2010. This data was reviewed to insure that key growth areas in the Pennsylvania suburbs were retained at the appropriate scale.

The consideration of these and other factors resulted in the compression of the original 1335 zones into 142 zones. The compressed zones are depicted in Figure 1. It is evident from viewing the figure and noting the relative sizes of the compressed zones that much of the focus of the eventual travel demand analysis is on suburban Pennsylvania areas known to be experiencing significant growth. This is consistent with the original intent of the study. The numbers shown inside the zones (1-142) are for identification purposes.

One additional and noteworthy feature of Figure 1 is the depiction of existing and potential commuter rail lines. Existing rail lines include SEPTA's active regional rail lines, the Norristown High Speed Line, the Media and Sharon Hill Trolleys, the PATCO High Speed Line, AMTRAK's and NJ TRANSIT's Northeast Corridor and Atlantic City rail lines. Existing freight lines believed to possess some potential for commuter rail service are also displayed for informational purposes. These rail lines include the New York Short Line, the Trenton Cut-Off, and lines from Norristown to Reading, from West Trenton to the Raritan Valley in New Jersey, and from Lansdale to the Lehigh Valley.

Once the new zone system was determined and agreed to by DVRPC and SEPTA, the DVRPC simulated home-based work trip table was "compressed" from 1,335 zones to 142 zones. This procedure was accomplished by stipulating within the UTPS programs which original zones were to be combined. The resulting table contained just over 20,000 entries, about 1% of the original table. The data in its revised format was then downloaded to a microcomputer for manipulation by a series of FORTRAN programs. Selected output from these programs was also transferred to a LOTUS spread sheet to facilitate the final analyses.

A summary of the data for the 142 zones is shown in Table I. The zones are displayed in ascending order from 1 to 142. A zone name is furnished for each zone. The zone names, arbitrarily developed by DVRPC, are intended to help indicate the location and composition of the zones. The total area of each zone, in square miles, is also displayed in the table.

The primary data in Table I are the estimates of 1987 home-based work trips for each zone. The trips are separated into three categories: origins (home-based work trips originating from the zone), destinations (home-based work trips destined to the zone), and intras (home-based work trips originating and destined to the same zone).

The data is presented in two different ways. Three columns show category trip totals for each zone; three other columns portray category trip densities. The densities were calculated by dividing the trip estimates for the desired category (origins, destinations, or intras) by the area of the zone (in square miles).

Figure 1

SEPTA TRAVEL STUDY
STUDY ZONES

LEGEND

Study Zones

Existing Commuter Rail

Potential Commuter Rail

2 MILES

TABLE I

SEPTA TRAVEL DEMAND ANALYSIS
SUMMARY OF ZONAL WORK TRIP DATA

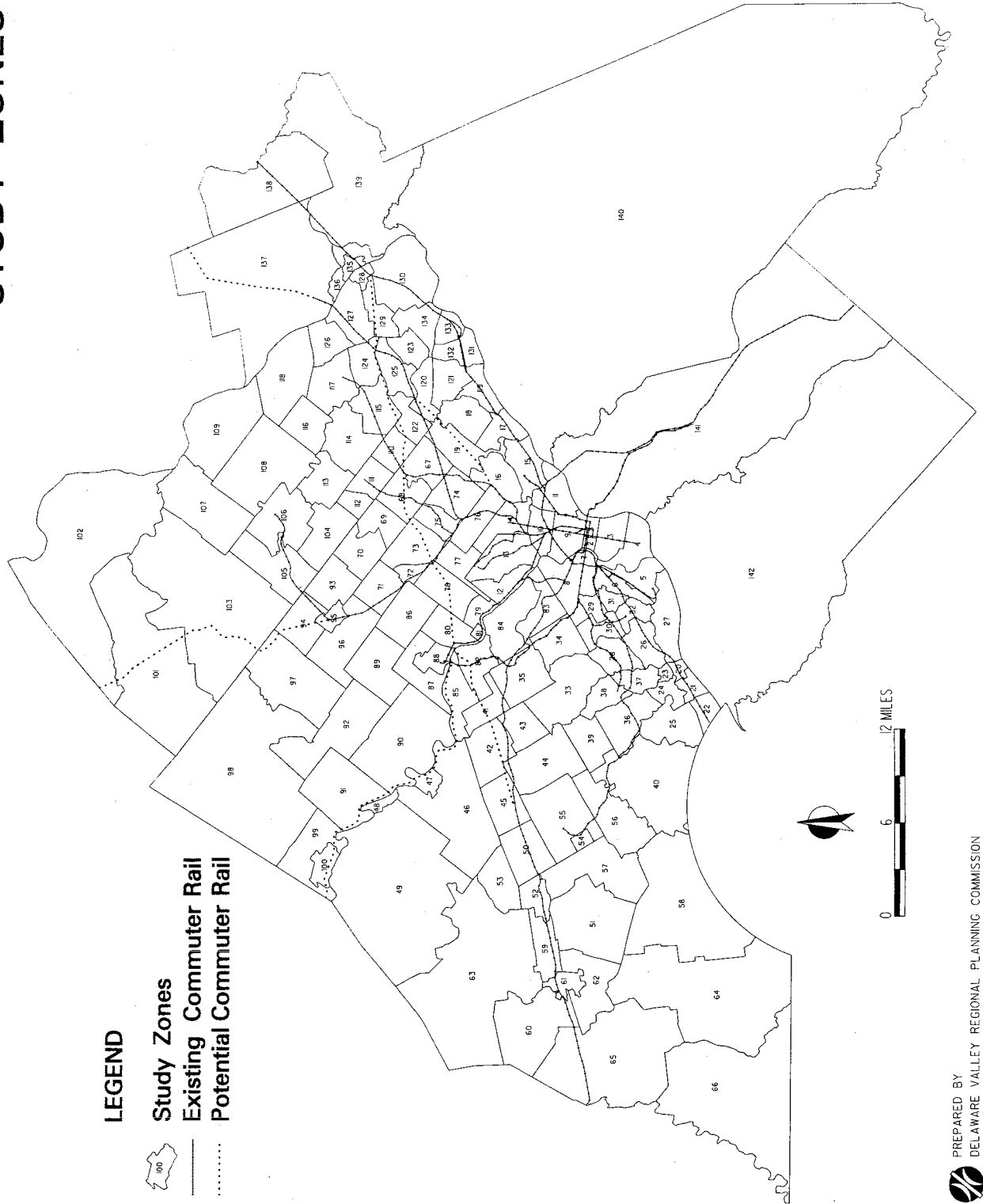| | | | 1987 DVRPC | SIMULATED | TRIPS | TRIP DENSITY (trips/sq mi) | | |
| | | | | | | ORIG | DEST | INTRA |
ZONE NAME	ZONE	AREA	ORIGINS	DEST'NS	INTRAS	DENSITY	DENSITY	DENSITY
CBD EAST	1	1.6	5,388	109,443	1,794	3444	69947	1147
CBD WEST	2	1.0	8,185	98,917	2,464	8554	103374	2575
U SOUTH PHILA	3	7.3	49,684	28,286	5,712	6781	3860	780
L SOUTH PHILA	4	8.0	5,268	23,032	808	655	2865	101
EASTWICK AREA	5	7.2	457	8,072	13	63	1117	2
SOUTHWEST PHILA	6	5.4	25,490	7,898	1,121	4719	1462	208
UNIVERSITY CITY	7	2.2	5,644	38,083	698	2583	17431	319
WEST PHILA	8	12.5	64,488	28,587	6,111	5179	2296	491
L NORTH PHILA	9	8.7	33,489	71,269	6,856	3869	8234	792
U NORTH PHILA	10	6.3	25,803	29,130	2,746	4082	4608	434
KENSINGTON	11	9.0	30,031	28,937	3,550	3347	3225	396
ROXBORO-MANAYNK	12	6.4	17,216	8,199	1,026	2671	1272	159
GERMNTWN-CHSTNTHILL	13	13.4	39,379	22,778	3,848	2941	1701	287
OLNEY-OAK LANE	14	8.8	61,854	22,192	5,158	7011	2516	585
FRNKFRD-HOLMESBURG	15	9.7	43,394	25,561	4,749	4454	2623	487
FX CHASE-OXFORD CIR	16	9.2	44,312	33,165	6,358	4838	3621	694
TORRESDALE	17	6.9	17,028	10,287	1,309	2466	1490	190
N PHILA AIRPORT AREA	18	9.7	20,728	13,266	3,005	2143	1372	311
BUSTLTN-SOMRTN	19	10.9	24,065	14,575	2,956	2205	1335	271
CHESTER CBD	20	1.6	2,898	10,927	512	1819	6860	321
CHESTER (SW)	21	3.4	5,303	2,462	289	1574	731	86
MARCUS HK AREA	22	4.1	3,049	3,783	442	753	934	109
CHESTER (NE)	23	1.1	4,065	1,081	66	3630	965	59
BRKHAVEN AREA	24	4.0	8,105	5,176	687	2035	1300	173
ASTON-U CHICHSTR	25	12.5	12,730	4,852	1,313	1018	388	105
RIDLEY AREA	26	8.1	23,467	10,568	2,398	2910	1310	297
TINICUM AREA	27	11.7	4,306	10,653	589	369	914	51
SPRNGFLD AREA-DELCO	28	8.1	13,058	13,780	1,609	1610	1699	198
U DARBY AREA (E)	29	4.5	19,653	15,354	1,869	4397	3435	418
U DARBY AREA (W)	30	6.1	23,640	8,085	1,369	3899	1333	226
YEADON AREA	31	2.7	8,972	4,677	332	3338	1740	124
SHRN HLL AREA	32	4.5	13,746	6,851	922	3064	1527	206
MARPLE-NEWTOWN	33	20.6	13,817	11,866	1,606	671	577	78
HAVERFORD	34	10.0	20,369	10,082	1,500	2043	1011	150
RADNOR	35	13.8	11,523	14,351	2,001	833	1038	145
MIDDLETOWN-DELCO	36	13.5	4,637	8,693	749	343	644	55
NETHR PROV AREA	37	5.4	5,363	1,420	101	985	261	19
MEDIA AREA	38	6.7	7,235	11,689	1,210	1086	1754	182
EDGMONT	39	9.7	548	521	10	56	54	1
W DELCO	40	39.2	7,092	5,305	1,469	181	135	37
TREDYFFRIN (E)	41	7.0	5,662	3,015	342	811	432	49
TREDYFFRIN (W)	42	12.7	4,767	6,094	626	374	478	49
EASTTOWN	43	8.3	3,639	4,793	416	439	579	50
MALVERN AREA	44	19.6	4,995	3,999	526	254	204	27
E WHITELAND	45	11.0	4,331	8,113	1,044	395	739	95
CHARLESTWN AREA	46	40.1	6,282	2,617	466	156	65	12
PHOENIXVILLE	47	3.9	5,286	5,488	1,110	1370	1423	288
SPRING CITY	48	2.1	1,385	4,277	334	675	2085	163
N CHESCO	49	97.6	8,290	1,688	703	85	17	7
W WHITELAND	50	13.0	4,937	3,975	733	381	307	57

TABLE I (Continued)

SEPTA TRAVEL DEMAND ANALYSIS
SUMMARY OF ZONAL WORK TRIP DATA

| | | | 1987 DVRPC | SIMULATED | TRIPS | TRIP DENSITY (trips/sq mi) | | |
ZONE NAME	ZONE	AREA	ORIGINS	DEST'NS	INTRAS	ORIG DENSITY	DEST DENSITY	INTRA DENSITY
W BRDFRD-NWLN	51	30.3	3,593	1,034	323	118	34	11
DOWNINGTWN AREA	52	6.1	4,559	7,494	1,454	752	1236	240
UWCHALN	53	10.5	3,907	4,595	766	373	439	73
WEST CHESTER	54	1.8	6,667	8,727	1,913	3615	4732	1037
E,W GOSHEN	55	22.3	12,450	9,227	2,735	558	413	122
WESTTOWN AREA	56	18.9	4,028	1,751	257	213	93	14
E BRDFRD-POCPSN	57	23.6	2,086	2,411	322	88	102	14
KENNETT AREA	58	58.5	8,202	6,428	3,654	140	110	62
CALN	59	9.4	3,574	3,124	657	381	333	70
VALLEY-W CALN	60	27.9	3,543	1,633	476	127	58	17
COATESVILLE	61	4.0	4,065	7,745	2,055	1010	1924	511
E FALLOWFLD	62	15.7	1,446	163	36	92	10	2
U BRANDYWINE AREA (CHESCO	63	89.4	8,668	3,093	1,894	97	35	21
AVON-GROVE AREA	64	80.1	5,641	3,337	1,813	70	42	23
OCTORARO AREA	65	65.8	4,676	2,477	1,555	71	38	24
OXFORD AREA	66	81.5	5,003	3,376	2,800	61	41	34
BRYN ATHYN AREA	67	9.4	4,975	5,472	305	531	585	33
U MORELAND	68	9.5	13,292	13,098	1,953	1393	1373	205
HORSHAM (SE)	69	7.4	5,390	6,619	643	731	898	87
HORSHAM (NW)	70	10.2	1,966	1,741	64	192	170	6
L GWYNEDD	71	9.4	2,555	5,021	224	271	533	24
AMBLER AREA	72	2.9	5,137	4,152	346	1761	1423	119
FT WASH AREA	73	11.4	6,724	15,518	1,222	588	1357	107
ABINGTON (SE)	74	10.8	11,581	16,251	1,429	1073	1506	132
ABINGTON (NW)	75	5.9	13,998	10,127	1,204	2372	1716	204
CHELTENHAM	76	9.2	14,003	13,926	1,245	1516	1508	135
SPRNGFLD (MONTCO)	77	7.0	7,626	6,161	454	1092	882	65
WHITEMARSH (N)	78	11.4	3,483	7,950	321	307	700	28
WHITEMARSH (S)	79	3.6	2,451	1,179	48	687	330	13
PLYMOUTH	80	8.6	7,361	10,718	995	852	1241	115
CONSHOHOCKEN	81	1.0	3,057	2,583	109	2936	2480	105
U MERION (SE)	82	9.3	6,220	17,215	1,140	667	1846	122
L MERION (S)	83	9.7	15,419	28,231	2,489	1586	2904	256
L MERION (N)	84	15.1	7,963	5,657	378	528	375	25
KING OF PRUSSIA	85	9.9	8,061	21,277	1,813	812	2144	183
WHITPAIN	86	13.1	6,052	9,249	1,027	463	707	79
E,W NORRITON	87	12.5	10,784	8,843	1,342	863	708	107
NORRISTOWN	88	4.0	12,509	15,840	2,576	3116	3946	642
WORCESTER	89	16.5	1,899	1,357	89	115	82	5
COLLGVLLE AREA	90	38.0	14,122	12,792	2,932	371	336	77
LIMERICK AREA	91	24.0	3,768	5,702	1,028	157	238	43
SCHWNKSVLL AREA	92	27.9	4,915	3,543	793	176	127	28
MONTGOMERY TWP	93	10.8	2,738	8,719	531	253	807	49
HATBORO AREA	94	10.5	7,696	4,507	1,070	731	428	102
LANSDALE	95	3.0	7,319	9,281	1,563	2434	3086	520
N WALES AREA	96	18.8	11,588	10,566	2,419	616	562	129
TELFORD AREA	97	30.5	10,879	7,744	2,882	357	254	95
U PERKIOMEN AREA (MONTCO)	98	103.4	12,950	6,920	4,865	125	67	47
U,L,W POTTSGROVE	99	15.7	5,809	5,154	1,420	370	329	91
POTTSTOWN	100	5.0	7,531	12,476	4,155	1507	2497	831

TABLE I (Continued)

SEPTA TRAVEL DEMAND ANALYSIS
SUMMARY OF ZONAL WORK TRIP DATA

| | | | 1987 DVRPC | SIMULATED | TRIPS | TRIP DENSITY (trips/sq mi) | | |
| | | | | | | ORIG | DEST | INTRA |
ZONE NAME	ZONE	AREA	ORIGINS	DEST'NS	INTRAS	DENSITY	DENSITY	DENSITY
QUAKERTOWN AREA	101	73.6	10,528	8,936	5,590	143	121	76
PALISADES AREA (BUCKS)	102	102.0	5,542	1,694	1,498	54	17	15
PENNRIDGE AREA (BUCKS)	103	95.4	14,616	12,086	5,706	153	127	60
WARRINGTON	104	14.3	4,776	3,087	406	333	215	28
CHALFONT AREA	105	18.1	5,712	4,116	842	315	227	46
DOYLESTOWN	106	18.5	7,785	11,787	3,262	422	639	177
PLUMSTEAD	107	27.5	2,140	1,972	468	78	72	17
BUCKINGHAM	108	32.8	3,550	2,905	759	108	89	23
NEW HOPE AREA	109	28.8	3,407	1,887	1,012	118	66	35
U SOUTHAMPTON	110	6.5	6,280	4,995	528	960	763	81
WARMINSTER (SE)	111	6.8	8,928	11,461	1,501	1321	1696	222
WARMINSTER (NW)	112	3.9	5,819	1,638	200	1501	423	52
WARWICK	113	11.1	1,222	644	45	110	58	4
NORTHAMPTON (NW)	114	14.8	5,975	3,534	623	404	239	42
NORTHAMPTON (SE)	115	11.2	5,596	800	109	498	71	10
WRIGHTSTOWN	116	10.1	940	916	79	93	91	8
NEWTOWN	117	12.6	4,158	5,951	865	330	473	69
U MAKEFIELD	118	21.4	1,873	909	164	88	43	8
BENSALEM (S)	119	6.2	4,795	6,162	508	774	995	82
BENSALEM (N)	120	6.9	8,031	10,129	1,205	1171	1477	176
BENSALEM (CEN)	121	8.0	10,113	6,657	1,020	1268	835	128
L SOUTHAMPTON	122	6.8	7,688	5,243	639	1135	774	94
MIDDLETOWN (SE-BUCKS)	123	5.7	11,647	2,230	434	2042	391	76
MIDDLETOWN (N-BUCKS)	124	7.0	990	130	5	141	18	1
LANGHORNE AREA	125	8.6	5,793	10,329	1,062	676	1205	124
L MAKEFIELD (NW)	126	8.1	1,798	361	34	221	44	4
L MAKEFIELD (SE)	127	11.1	8,001	2,158	485	720	194	44
MORRISVILLE	128	2.4	3,882	3,185	396	1639	1345	167
FALLS (N)	129	6.4	7,008	12,614	1,868	1088	1958	290
TULLYTOWN AREA	130	22.5	8,027	4,841	795	357	215	35
BRISTOL TWP (S)	131	3.8	1,734	4,145	203	453	1082	53
BRISTOL TWP (W)	132	3.3	4,124	1,349	113	1246	408	34
BRISTOL BORO AREA	133	4.3	5,074	9,242	1,134	1178	2146	263
BRISTOL TWP (N)	134	8.1	14,496	3,705	961	1788	457	119
TRENTON CBD	135	2.2	5,947	29,368	2,186	2653	13103	975
TRENTON FRINGE	136	5.7	21,209	18,055	3,871	3721	3168	679
EWING-HPEWELL	137	98.4	31,166	39,845	14,612	317	405	149
PRINCETON AREA	138	45.0	16,287	25,654	11,002	362	571	245
HMLTN-WSHNGTN	139	78.1	50,150	30,997	18,555	642	397	238
BURLINGTON CO	140	830.5	147,151	111,529	79,491	177	134	96
CAMDEN CO	141	225.0	182,211	172,837	110,064	810	768	489
GLOUCESTER CO	142	340.0	73,684	58,636	37,679	217	172	111
TOTAL		3845.6	1,858,835	1,858,835	467,388	483	483	122

IV.   TRANSIT POTENTIAL

The process of determining the transit potential of existing and new service areas begins with a close examination of the estimated travel flows. The work trip table produced in the preceding tasks serves as the foundation for this analysis. The objective is to identify those high density employment zones to which a significant number of work trips are destined from a series of zones along a linear corridor. The identified corridors possess the potential for successful transit service.

To efficiently examine the commuter flows embodied in these trip tables, realizing there are still over 20,000 different possible trip interchanges, the study focused its attention on three factors. The first two concentrate on where people are trying to go, the third on where they are coming from. In looking at where people are going, attention is given to those zones with the highest total number of work trip destinations and those areas with the greatest densities of commuter travel. These two factors are then combined to identify the high activity zones that should be considered for further analysis. Finally, a close look is taken at the zones of origin of the workers who travel to selected high activity work zones.

Total Trip Destinations

One way of identifying new service areas or where service should be strengthened is to consider where the largest numbers of work trips are destined.   This examination was facilitated by the rearrangement of the Table I zone data in descending order of total trip destinations to the zone.

The ranking of the zones according to total number of trip destinations suggested five categories. These categories are:

1.   fewer than 5,000 destinations
2.   5,000 - 9,999 destinations
3.   10,000 - 19,999 destinations
4.   20,000 - 39,999 destinations
5.   more than 39,999 destinations

The cartographic representation of these categories is shown in Figure II. Please note that categories 1 and 2 are combined in the figure.

As can be seen in Figure II, the zones in the Philadelphia CBD are the most prominent destination zones in the region. The zones which rank the next highest in terms of destinations are generally found adjacent to the Philadelphia CBD. The data for Gloucester, Camden, and Burlington counties, as well as for Mercer County except Trenton, were not considered in Figure II since the aggregation of data to such large areas would distort the presentation of total destinations.

Figure II

SEPTA TRAVEL STUDY
TOTAL DESTINATIONS

LEGEND

Greater than 39,999

20,000 – 39,999

10,000 – 19,999

Less than 10,000

PREPARED BY
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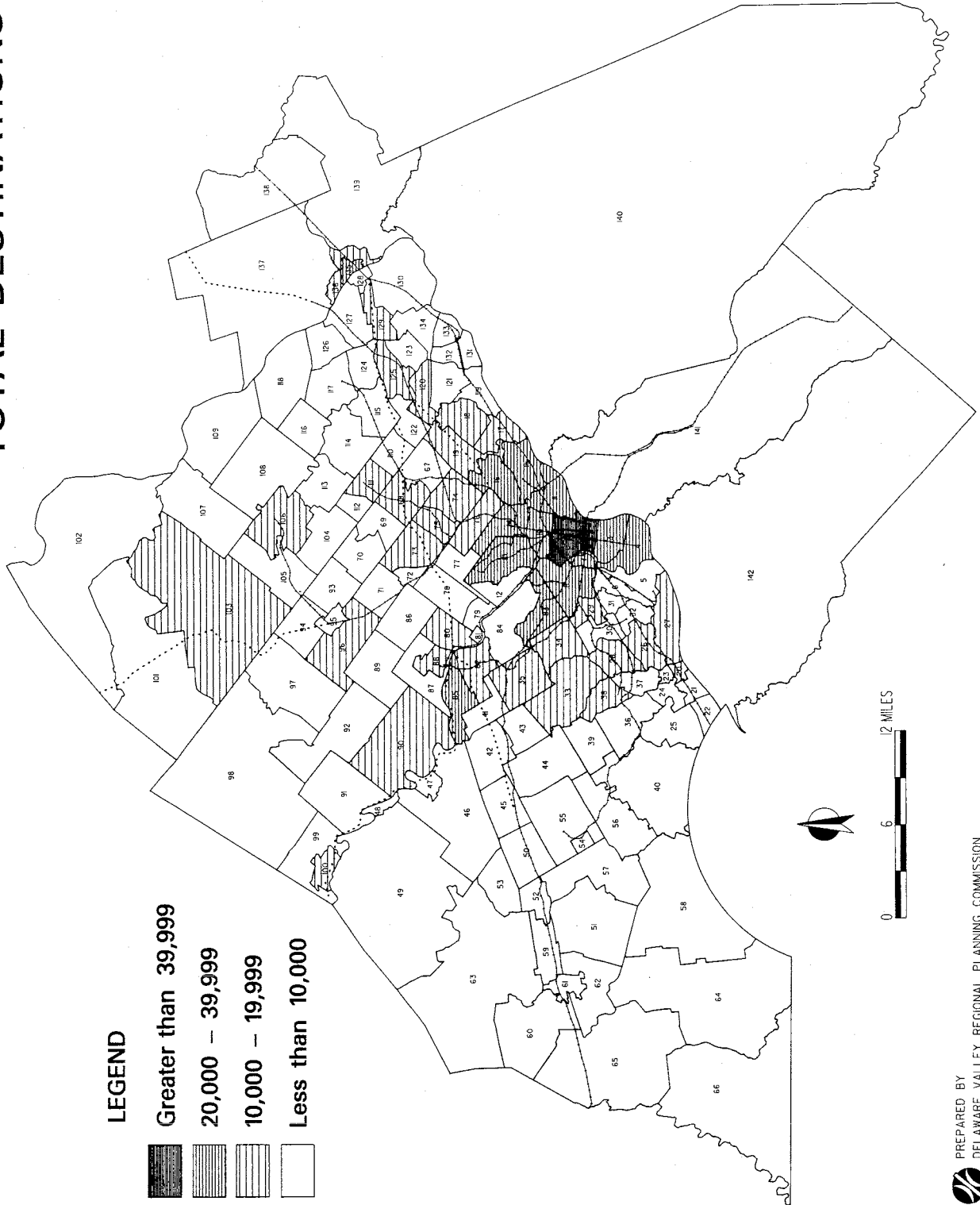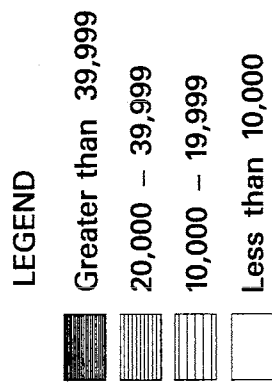
Destination Densities

Transit functions best in areas of sufficient density, where the travel needs of many can be satisfied within the limited path of the transit route. To facilitate this analysis, the zones were rearranged in descending order of destination density. This produced a new ranking of zones which accounted for zone size in addition to the number of work trips destined to the zone.

The destination densities ranged in value from over 100,000 trips per square mile in the western portion of Philadelphia CBD to 10 trips per square mile in East Fallowfield. The range and clustering of density values led to the identification of distinct groupings of zones, as follows:

1.   less than 700 destinations per sq. mile
2.   700   - 1,599
3.   1,600 - 4,999
4.   more than 5,000 destinations per sq. mile

A depiction of the zones ranked according to these density groupings is shown in Figure III. The figure shows that several zones within the City of Philadelphia rank in the top categories. However, unlike the figure depicting total destinations, prominent zones according to destination density are also found in a number of suburban locations.

High Activity Zones

In this study, the zones of greatest interest were those with high numbers of trips destined to concentrated locations in the Pennsylvania suburbs. These zones, prime candidates for further evaluations of transit service, are referred to as the high activity zones. These zones are defined as those that exceed the minimum values of total destinations (10,000) and destination density (700 destinations per square mile).

To facilitate this analysis, the basic data from Table I was supplemented with three sets of codes. The codes reflect the groupings discussed under Total Trip Destinations and Destination Densities. To this a third code was added reflecting whether or not a zone met the criteria for a High Activity zone. Table II shows the pertinent data and the codes used in the groupings. The zones have been sorted by Destination Density for both the High Activity zones (shown at the top of the table) and for the remaining zones.

Forty-two travel zones met the established criteria for consideration as high activity zones. These zones are highlighted in Figure IV.

Figure III

SEPTA TRAVEL STUDY
DESTINATION DENSITY

LEGEND

Greater than 4,999

1,600 – 4,999

700 – 1,599

Less than 700

12 MILES

0   6

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TABLE II

SEPTA TRAVEL DEMAND ANALYSIS
HIGH ACTIVITY ZONES

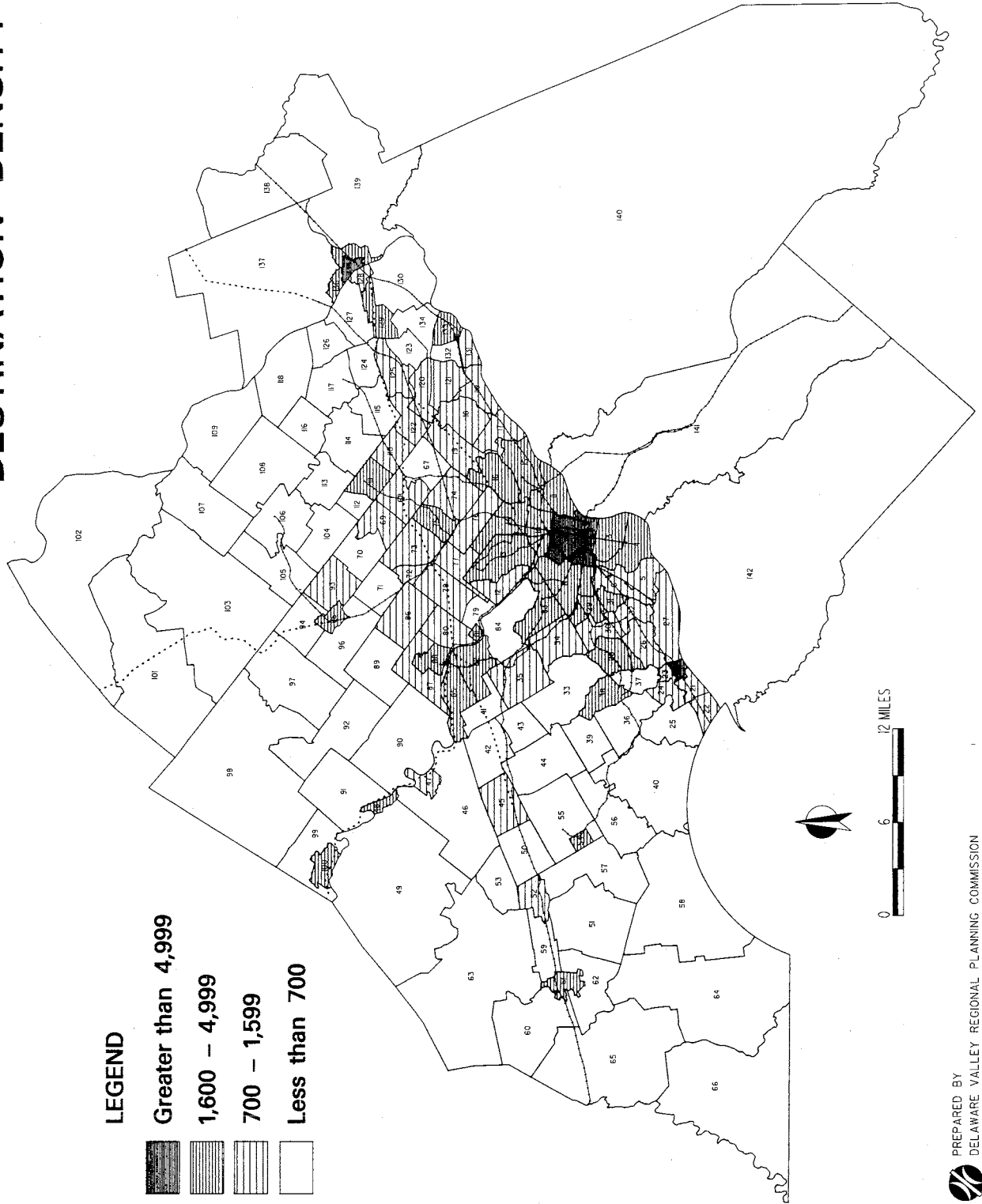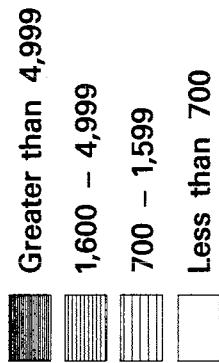| ZONE NAME	ZONE	DEST'NS	DEST DENSITY	Tot Dest Code	Dest Dens Code	Dest 10000 Dens 700
CBD WEST	2	98,917	103374	1	1	1
CBD EAST	1	109,443	69947	1	1	1
UNIVERSITY CITY	7	38,083	17431	2	1	1
TRENTON CBD	135	29,368	13103	2	1	1
L NORTH PHILA	9	71,269	8234	1	1	1
CHESTER CBD	20	10,927	6860	3	1	1
U NORTH PHILA	10	29,130	4608	2	2	1
NORRISTOWN	88	15,840	3946	3	2	1
U SOUTH PHILA	3	28,286	3860	2	2	1
FX CHASE-OXFORD CIR	16	33,165	3621	2	2	1
U DARBY AREA (E)	29	15,354	3435	3	2	1
KENSINGTON	11	28,937	3225	2	2	1
TRENTON FRINGE	136	18,055	3168	3	2	1
L MERION (S)	83	28,231	2904	2	2	1
L SOUTH PHILA	4	23,032	2865	2	2	1
FRNKFRD-HOLMESBURG	15	25,561	2623	2	2	1
OLNEY-OAK LANE	14	22,192	2516	2	2	1
POTTSTOWN	100	12,476	2497	3	2	1
WEST PHILA	8	28,587	2296	2	2	1
KING OF PRUSSIA	85	21,277	2144	2	2	1
FALLS (N)	129	12,614	1958	3	2	1
U MERION (SE)	82	17,215	1846	3	2	1
MEDIA AREA	38	11,689	1754	3	2	1
ABINGTON (NW)	75	10,127	1716	3	2	1
GERMNTWN-CHSTNTHILL	13	22,778	1701	2	2	1
SPRNGFLD AREA-DELCO	28	13,780	1699	3	2	1
WARMINSTER (SE)	111	11,461	1696	3	2	1
CHELTENHAM	76	13,926	1508	3	3	1
ABINGTON (SE)	74	16,251	1506	3	3	1
TORRESDALE	17	10,287	1490	3	3	1
BENSALEM (N)	120	10,129	1477	3	3	1
U MORELAND	68	13,098	1373	3	3	1
N PHILA AIRPORT AREA	18	13,266	1372	3	3	1
FT WASH AREA	73	15,518	1357	3	3	1
BUSTLTN-SOMRTN	19	14,575	1335	3	3	1
RIDLEY AREA	26	10,568	1310	3	3	1
PLYMOUTH	80	10,718	1241	3	3	1
LANGHORNE AREA	125	10,329	1205	3	3	1
RADNOR	35	14,351	1038	3	3	1
HAVERFORD	34	10,082	1011	3	3	1
TINICUM AREA	27	10,653	914	3	3	1
CAMDEN CO	141	172,837	768	1	3	1
WEST CHESTER	54	8,727	4732	4	2	0
LANSDALE	95	9,281	3086	4	2	0
CONSHOHOCKEN	81	2,583	2480	5	2	0
BRISTOL BORO AREA	133	9,242	2146	4	2	0
SPRING CITY	48	4,277	2085	5	2	0
COATESVILLE	61	7,745	1924	4	2	0
YEADON AREA	31	4,677	1740	5	2	0
SHRN HLL AREA	32	6,851	1527	4	3	0

TABLE II (Continued)

SEPTA TRAVEL DEMAND ANALYSIS
HIGH ACTIVITY ZONES

ZONE NAME	ZONE	DEST'NS	DEST DENSITY	Tot Dest Code	Dest Dens Code	Dest 10000 Dens 700
SOUTHWEST PHILA	6	7,898	1462	4	3	0
AMBLER AREA	72	4,152	1423	5	3	0
PHOENIXVILLE	47	5,488	1423	4	3	0
MORRISVILLE	128	3,185	1345	5	3	0
U DARBY AREA (W)	30	8,085	1333	4	3	0
BRKHAVEN AREA	24	5,176	1300	4	3	0
ROXBORO-MANAYNK	12	8,199	1272	4	3	0
DOWNINGTWN AREA	52	7,494	1236	4	3	0
EASTWICK AREA	5	8,072	1117	4	3	0
BRISTOL TWP (S)	131	4,145	1082	5	3	0
BENSALEM (S)	119	6,162	995	4	3	0
CHESTER (NE)	23	1,081	965	5	3	0
MARCUS HK AREA	22	3,783	934	5	3	0
HORSHAM (SE)	69	6,619	898	4	3	0
SPRNGFLD (MONTCO)	77	6,161	882	4	3	0
BENSALEM (CEN)	121	6,657	835	4	3	0
MONTGOMERY TWP	93	8,719	807	4	3	0
L SOUTHAMPTON	122	5,243	774	4	3	0
U SOUTHAMPTON	110	4,995	763	5	3	0
E WHITELAND	45	8,113	739	4	3	0
CHESTER (SW)	21	2,462	731	5	3	0
E,W NORRITON	87	8,843	708	4	3	0
WHITPAIN	86	9,249	707	4	3	0
WHITEMARSH (N)	78	7,950	700	4	3	0
MIDDLETOWN-DELCO	36	8,693	644	4	4	0
DOYLESTOWN	106	11,787	639	3	4	0
BRYN ATHYN AREA	67	5,472	585	4	4	0
EASTTOWN	43	4,793	579	5	4	0
MARPLE-NEWTOWN	33	11,866	577	3	4	0
PRINCETON AREA	138	25,654	571	2	4	0
N WALES AREA	96	10,566	562	3	4	0
L GWYNEDD	71	5,021	533	4	4	0
TREDYFFRIN (W)	42	6,094	478	4	4	0
NEWTOWN	117	5,951	473	4	4	0
BRISTOL TWP (N)	134	3,705	457	5	4	0
UWCHALN	53	4,595	439	5	4	0
TREDYFFRIN (E)	41	3,015	432	5	4	0
HATBORO AREA	94	4,507	428	5	4	0
WARMINSTER (NW)	112	1,638	423	5	4	0
E,W GOSHEN	55	9,227	413	4	4	0
BRISTOL TWP (W)	132	1,349	408	5	4	0
EWING-HPEWELL	137	39,845	405	2	4	0
HMLTN-WSHNGTN	139	30,997	397	2	4	0
MIDDLETOWN (SE-BUCKS)	123	2,230	391	5	4	0
ASTON-U CHICHSTR	25	4,852	388	5	4	0
L MERION (N)	84	5,657	375	4	4	0
COLLGVLLE AREA	90	12,792	336	3	4	0
CALN	59	3,124	333	5	4	0
WHITEMARSH (S)	79	1,179	330	5	4	0
U,L,W POTTSGROVE	99	5,154	329	4	4	0

TABLE II (Continued)

SEPTA TRAVEL DEMAND ANALYSIS
HIGH ACTIVITY ZONES

| ZONE NAME	ZONE	DEST'NS	DEST DENSITY	Tot Dest Code	Dest Dens Code	Dest 10000 Dens 700
W WHITELAND	50	3,975	307	5	4	0
NETHR PROV AREA	37	1,420	261	5	4	0
TELFORD AREA	97	7,744	254	4	4	0
NORTHAMPTON (NW)	114	3,534	239	5	4	0
LIMERICK AREA	91	5,702	238	4	4	0
CHALFONT AREA	105	4,116	227	5	4	0
TULLYTOWN AREA	130	4,841	215	5	4	0
WARRINGTON	104	3,087	215	5	4	0
MALVERN AREA	44	3,999	204	5	4	0
L MAKEFIELD (SE)	127	2,158	194	5	4	0
GLOUCESTER CO	142	58,636	172	1	4	0
HORSHAM (NW)	70	1,741	170	5	4	0
W DELCO	40	5,305	135	4	4	0
BURLINGTON CO	140	111,529	134	1	4	0
SCHWNKSVLL AREA	92	3,543	127	5	4	0
PENNRIDGE AREA (BUCKS)	103	12,086	127	3	4	0
QUAKRTOWN AREA	101	8,936	121	4	4	0
KENNETT AREA	58	6,428	110	4	4	0
E BRDFRD-POCPSN	57	2,411	102	5	4	0
WESTTOWN AREA	56	1,751	93	5	4	0
WRIGHTSTOWN	116	916	91	5	4	0
BUCKINGHAM	108	2,905	89	5	4	0
WORCESTER	89	1,357	82	5	4	0
PLUMSTEAD	107	1,972	72	5	4	0
NORTHAMPTON (SE)	115	800	71	5	4	0
U PERKIOMEN AREA (MONTCO)	98	6,920	67	4	4	0
NEW HOPE AREA	109	1,887	66	5	4	0
CHARLESTWN AREA	46	2,617	65	5	4	0
VALLEY-W CALN	60	1,633	58	5	4	0
WARWICK	113	644	58	5	4	0
EDGMONT	39	521	54	5	4	0
L MAKEFIELD (NW)	126	361	44	5	4	0
U MAKEFIELD	118	909	43	5	4	0
AVON-GROVE AREA	64	3,337	42	5	4	0
OXFORD AREA	66	3,376	41	5	4	0
OCTORARO AREA	65	2,477	38	5	4	0
U BRANDYWINE AREA (CHESCO	63	3,093	35	5	4	0
W BRDFRD-NWLN	51	1,034	34	5	4	0
MIDDLETOWN (N-BUCKS)	124	130	18	5	4	0
N CHESCO	49	1,688	17	5	4	0
PALISADES AREA (BUCKS)	102	1,694	17	5	4	0
E FALLOWFLD	62	163	10	5	4	0

TOTAL 1,858,835   483

Figure IV

SEPTA TRAVEL STUDY
HIGH ACTIVITY ZONES

LEGEND

Zones with more than
10,000 Destinations and
Destination Density over
700 trips per sq. mile

0   6   12 MILES

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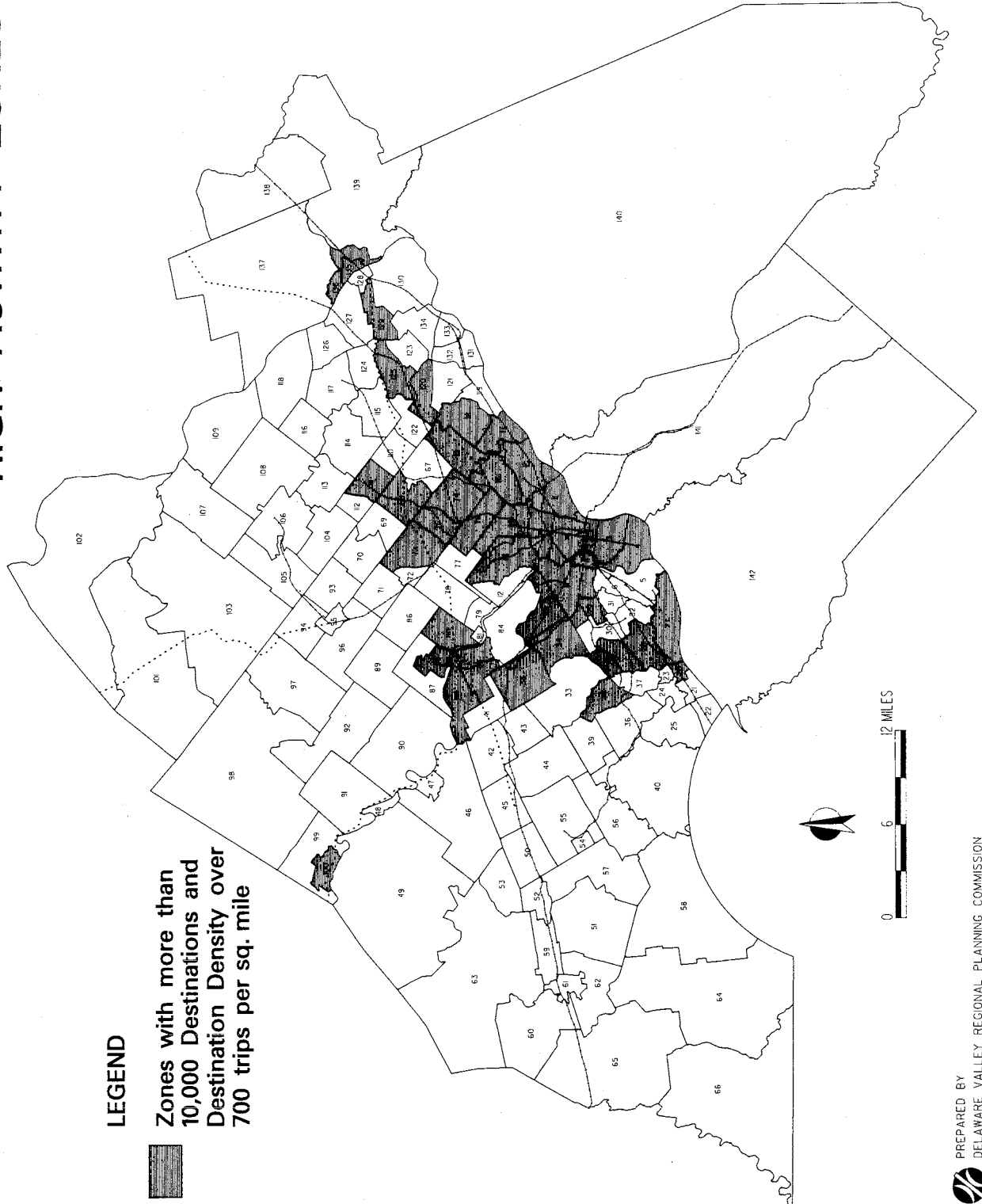
Origin Zones

The origin of trips is also an important consideration in the formulation of transit services. The proper identification of trip origins, combined with an appropriate understanding of trip destinations, can lead to the development of successful, well-utilized routes.

The analysis of the origins of all home-based work trips for the 142 zones in the travel simulation would be an arduous undertaking. However, a more practical and productive alternative does exist: examine the trip origins of only a carefully selected group of zones chosen because of their significance as commuter destinations. This two-step process focuses the analysis on only those locations where the potential for successful transit is highest.

The identification of the high activity zones in the region provided a rational and manageable set of zones to examine in terms of trip origins. Originally numbering 42, the number of high activity zones was reduced by eliminating the zones which corresponded to Philadelphia locations and the New Jersey counties included as single zones. The remaining 25 zones, which coincided with the focus of the analysis, were located in the Pennsylvania suburbs (23) and Mercer County, New Jersey (2).

The trip origins for the selected 25 zones were obtained individually by one of the special DVRPC programs. An example is shown in Table III. This table lists the trip origins for zone 85, named "King of Prussia". The zone of origin for all trips to King of Prussia are shown in descending order of total trip destinations.

DVRPC reviewed the trip origin data for the 25 selected High Activity zones and noted that a further screening was possible. Those zones with numerous origins over 500 trips, excluding the superzones in New Jersey, were accorded the highest ranking. Eight zones were placed in this category: Springfield Area (Delaware County), Upper Darby Area (E), Abington (SE), Cheltenham, Upper Merion Area (SE), Lower Merion (N), King of Prussia, and Falls Twp (N).

V.   TRAVEL CORRIDORS

In many instances, a series of origin and destination locations can be linked together to form distinct travel corridors. These corridors, if not already served by transit, possess genuine potential for the introduction of transit services.

At the request of SEPTA's Planning and Development Division, this study included a special examination of the travel corridor adjacent to the Conrail rail line, the Trenton Cut-off. This corridor extends from central Chester County to southern Bucks County and parallels portions of US 1, the Pennsylvania Turnpike (I-276) and US 202. It represents a purely suburban corridor which circumvents the Philadelphia CBD. The rail line which provides the corridor its name is currently limited to freight operations, although the addition of passenger service has been discussed.

TABLE III

SEPTA TRAVEL DEMAND ANALYSIS
ORIGINS OF TRIPS TO ZONE 85 - KING OF PRUSSIA

ZONE	NAME	TRIPS	ZONE	NAME	TRIPS
85	KING OF PRUSSIA	1813	54	WEST CHESTER	134
90	COLLGVLLE AREA	1685	53	UWCHALN	129
88	NORRISTOWN	1239	100	POTTSTOWN	128
87	E,W NORRITON	1125	95	LANSDALE	127
82	U MERION (SE)	815	99	U,L,W POTTSGROVE	120
41	TREDYFFRIN (E)	751	77	SPRNGFLD (MONTCO)	116
35	RADNOR	706	26	RIDLEY AREA	114
46	CHARLESTWN AREA	625	16	FX CHASE-OXFORD CIR	113
42	TREDYFFRIN (W)	529	10	U NORTH PHILA	110
47	PHOENIXVILLE	515	89	WORCESTER	109
80	PLYMOUTH	403	15	FRNKFRD-HOLMESBURG	108
34	HAVERFORD	363	79	WHITEMARSH (S)	107
33	MARPLE-NEWTOWN	349	9	L NORTH PHILA	106
43	EASTTOWN	334	3	U SOUTH PHILA	105
96	N WALES AREA	316	140	BURLINGTON CO	104
44	MALVERN AREA	315	78	WHITEMARSH (N)	103
8	WEST PHILA	309	28	SPRNGFLD AREA-DELCO	102
55	E,W GOSHEN	308	94	HATBORO AREA	100
14	OLNEY-OAK LANE	297	68	U MORELAND	98
83	L MERION (S)	297	38	MEDIA AREA	91
13	GERMNTWN-CHSTNTHILL	284	52	DOWNINGTWN AREA	91
45	E WHITELAND	271	75	ABINGTON (NW)	91
84	L MERION (N)	265	11	KENSINGTON	84
86	WHITPAIN	242	72	AMBLER AREA	84
12	ROXBORO-MANAYNK	230	76	CHELTENHAM	80
49	N CHESCO	230	48	SPRING CITY	74
92	SCHWNKSVLL AREA	222	56	WESTTOWN AREA	74
30	U DARBY AREA (W)	191	142	GLOUCESTER CO	73
91	LIMERICK AREA	191	25	ASTON-U CHICHSTR	71
81	CONSHOHOCKEN	179	103	PENNRIDGE AREA (BUCKS)	71
141	CAMDEN CO	171	6	SOUTHWEST PHILA	70
50	W WHITELAND	169	73	FT WASH AREA	70
97	TELFORD AREA	168	32	SHRN HLL AREA	67
98	U PERKIOMEN AREA (MONTCO)	167	40	W DELCO	59
29	U DARBY AREA (E)	157	58	KENNETT AREA	57
63	U BRANDYWINE AREA (CHESCO)	150	59	CALN	57

TABLE III (Continued)

SEPTA TRAVEL DEMAND ANALYSIS
ORIGINS OF TRIPS TO ZONE 85 - KING OF PRUSSIA

ZONE	NAME	TRIPS	ZONE	NAME	TRIPS
111	WARMINSTER (SE)	53	122	L SOUTHAMPTON	18
74	ABINGTON (SE)	50	7	UNIVERSITY CITY	16
31	YEADON AREA	47	70	HORSHAM (NW)	16
51	W BRDFRD-NWLN	46	125	LANGHORNE AREA	15
19	BUSTLTN-SOMRTN	45	27	TINICUM AREA	14
71	L GWYNEDD	44	62	E FALLOWFLD	14
105	CHALFONT AREA	44	4	L SOUTH PHILA	13
24	BRKHAVEN AREA	43	139	HMLTN-WSHNGTN	13
37	NETHR PROV AREA	42	20	CHESTER CBD	12
36	MIDDLETOWN-DELCO	41	22	MARCUS HK AREA	12
69	HORSHAM (SE)	41	115	NORTHAMPTON (SE)	12
60	VALLEY-W CALN	40	127	L MAKEFIELD (SE)	12
61	COATESVILLE	39	1	CBD EAST	11
101	QUAKRTOWN AREA	39	39	EDGMONT	11
57	E BRDFRD-POCPSN	37	108	BUCKINGHAM	11
93	MONTGOMERY TWP	35	129	FALLS (N)	10
64	AVON-GROVE AREA	34	130	TULLYTOWN AREA	10
65	OCTORARO AREA	33	133	BRISTOL BORO AREA	10
18	N PHILA AIRPORT AREA	32	137	EWING-HPEWELL	9
112	WARMINSTER (NW)	32	107	PLUMSTEAD	8
17	TORRESDALE	31	109	NEW HOPE AREA	8
106	DOYLESTOWN	30	117	NEWTOWN	8
104	WARRINGTON	29	119	BENSALEM (S)	8
110	U SOUTHAMPTON	27	113	WARWICK	7
120	BENSALEM (N)	26	132	BRISTOL TWP (W)	7
134	BRISTOL TWP (N)	26	136	TRENTON FRINGE	7
2	CBD WEST	25	128	MORRISVILLE	6
102	PALISADES AREA (BUCKS)	24	118	U MAKEFIELD	4
121	BENSALEM (CEN)	24	126	L MAKEFIELD (NW)	3
123	MIDDLETOWN (SE-BUCKS)	24	131	BRISTOL TWP (S)	3
114	NORTHAMPTON (NW)	23	116	WRIGHTSTOWN	2
21	CHESTER (SW)	21	124	MIDDLETOWN (N-BUCKS)	2
66	OXFORD AREA	20	138	PRINCETON AREA	2
23	CHESTER (NE)	19	5	EASTWICK AREA	1
67	BRYN ATHYN AREA	18	135	TRENTON CBD	0

Table IV shows the trip matrix generated for the Trenton Cut-off corridor. The table is structured like a traditional origin/destination trip table; that is, origin zones are displayed as rows and destination zones as columns. Contrary to most trip matrices, this table has more origin zones than destination zones. This was done to take into account the fact that the market area for the origin of a rail trip extends further from the line than the market area of the destination: commuters typically can drive from home <u>to</u> a line but must walk <u>from</u> it at the work end. Even in the event of 200-type shuttle service, the destination cannot be excessively far from the line.

Typically, in zones of this size, the single largest source of trips to a zone is the zone itself. These trip movements are referred to as intra-zonal trips. In a trip matrix with equal numbers of origins and destinations, these movements would lie along the diagonal from upper left to lower right. In Table IV, these movements are underlined for clarity. All but four destination zones exhibit the usual pattern. The greatest zone of origin for each of these four zones is noted with an asterisk (*).

Also noted in the table is the significant origin group for each destination. The grouping is based on an origin zone contributing more than 100 trips to a destination and includes all intermediate zones between those meeting the criteria. The groups are indicated in the table by vertical bars (|).

A review of the 1987 work trip data for the selected origin and destination zones along the Trenton Cut-off corridor reveals the following points:

- The Trenton CBD (135) and the Princeton Area (138) zones receive the most work trips from the selected origin zones. However, 82% of these work trips to the Trenton CBD and nearly all (96%) of those to the Princeton Area are from the three Mercer County origin zones (135, 136, 138). The remaining trips to these zones come primarily from just across the Delaware River in Bucks County as far as the Langhorne Area (125). This data would suggest a possible limited market for rail service from Bucks County to the Trenton CBD, but bus service may be more strongly suggested due to the short distances.

- Within the Pennsylvania suburbs, the King of Prussia (85) zone receives the greatest number of work trips from the selected origin zones. Furthermore, the grouping of significant origins stretches over a long corridor, from West Whiteland (50) to Springfield-Montco (77). This corridor could easily extend from the Downingtown Area (52) to Upper Moreland (68), if the criteria were relaxed to 90 trips.

- The Upper Merion SE (82) zone, adjacent to the King of Prussia zone, is the next greatest destination for corridor trips within the Pennsylvania suburbs. Like the King of Prussia zone, this zone draws trips from a number of zones along the corridor. However, many trips are from nearby zones.

TABLE IV

SEPTA TRAVEL DEMAND ANALYSIS
SELECTED CORRIDOR TRIP TABLE MATRIX - TRENTON CUT-OFF CORRIDOR

DESTINATION ZONES --->

ORIGIN ZONES		45	42	41	85	82	80	78	73	68	67	110	122	115	125	124	129	128	135	136	138	TOTAL
CALN	59	132	35	10	57	34	9	4	4	1	1	0	1	0	1	0	0	0	2	0	0	291
DOWNINGTWN AREA	52	227	60	17	91	55	17	7	4	2	0	1	0	0	0	0	0	1	0	0	0	482
W WHITELAND	50	485	129	35	169	95	25	9	9	4	0	0	0	0	1	0	1	1	0	1	1	964
E, W GOSHEN	55	738	288	70	308	189	48	18	14	5	1	1	1	0	2	0	2	1	1	0	0	1687
E WHITELAND	45	1044	231	57	271	168	37	13	10	4	2	2	0	0	0	0	2	0	0	0	0	1841
MALVERN AREA	44	434	430	73	315	199	43	17	14	5	2	0	1	0	2	0	1	0	0	1	1	1537
TREDYFFRIN (W)	42	262	626	142	529	300	67	24	16	7	1	1	1	0	2	0	1	0	1	0	2	1983
TREDYFFRIN (W)	41	157	278	342	751	478	91	35	26	9	2	2	1	0	2	0	1	0	1	1	1	2176
KING OF PRUSSIA	85	95	146	98	1813	1095	305	77	54	15	4	2	2	0	2	0	4	0	1	0	1	3716
U MERION (SE)	82	68	99	80	815	1140	210	67	46	9	4	2	2	0	2	0	2	1	3	1	0	2550
NORRISTOWN	88	97	125	82	1239	1246*	872	207	145	34	8	4	3	1	5	0	5	1	0	2	1	4076
PLYMOUTH	80	34	49	31	403	452	995	290	181	36	7	7	2	0	7	0	4	1	4	2	0	2506
CONSHOHOCKEN	81	20	27	19	179	253	229	98	57	11	3	2	0	0	2	0	2	0	0	1	0	903
WHITEMARSH (S)	79	12	16	11	107	148	191	137	69	14	3	2	1	0	1	0	2	0	0	0	0	715
WHITEMARSH (N)	78	11	14	10	103	126	256	321	204	32	8	6	3	0	4	0	2	0	1	1	2	1104
AMBLER AREA	72	9	11	7	84	96	180	211	758	94	19	14	5	1	9	0	5	1	4	2	2	1512
SPRNGFLD-MONTCO	77	14	15	12	116	125	210	437*	628	132	36	21	12	1	13	0	7	1	4	2	2	1788
FT WASH AREA	73	9	10	6	70	69	124	191	1222	307	52	37	19	1	16	0	6	3	3	5	1	2151
ABINGTON (NW)	75	12	16	8	91	93	144	281	1080	772	186	102	62	7	53	2	22	5	16	5	7	2964
U MORELAND	68	14	16	11	98	66	104	143	746	1953	293	284	112	15	91	0	34	7	20	13	9	4029
BRYN ATHYN AREA	67	2	2	3	18	17	21	35	138	362	305	228	124	12	84	0	29	9	18	8	6	1421
U SOUTHAMPTON	110	5	5	2	27	19	22	33	154	467	244	528	206	37	140	3	54	11	28	20	15	2020
L SOUTHAMPTON	122	4	4	1	18	12	17	25	82	218	207	265	639	52	671	5	177	37	75	43	26	2578
NORTHAMPTON (SE)	115	1	1	2	12	9	11	17	59	160	109	214	282	109	411	7	150	32	72	42	34	1734
LANGHORNE AREA	125	2	4	1	15	12	14	12	35	72	63	75	187	26	1062	7	337	66	134	66	40	2230
MIDDLETOWN (N-BUCKS)	124	1	0	0	2	2	3	1	4	11	10	13	24	6	134	5	69	13	25	15	12	350
L MAKEFIELD (SE)	127	2	3	0	12	7	12	8	25	41	30	42	77	16	381	8*	1392	364	702	354	165	3641
FALLS (N)	129	2	1	2	10	6	10	7	21	34	27	34	72	12	360	6	1868	267	433	224	106	3502
MORRISVILLE	128	1	1	1	6	2	4	3	9	15	11	14	29	5	134	2	611	396	493	250	104	2091
TRENTON CBD	135	0	1	1	0	2	0	2	5	4	1	3	7	1	20	1	82	42	2186	997	290	3645
TRENTON FRINGE	136	0	2	0	7	3	6	1	7	12	10	13	17	4	75	3	260	138	6316*	3871	1149	11895
PRINCETON AREA	138	0	1	0	2	0	0	1	2	5	2	3	5	2	15	1	42	22	688	402	11002	12195
CORRIDOR TOTAL		3894	2646	1134	7738	6518	4277	2733	5828	4847	1651	1922	1897	308	3701	50	5174	1419	11231	6329	12980	86277

- Norristown (88) supplies a very high proportion of the trips to both the King of Prussia and the Upper Merion SE zones, as well as to Plymouth (80).

- The third highest PA suburban destination zone for corridor trips is the Ft. Washington (73) zone. Whereas King of Prussia's significant group stretches in both directions from the Schuylkill River, the Ft. Washington group is all to the east of the river.

VI. CONCLUSIONS

This study was intended to provide regional planners with data useful in determining the potential for transit service in growing areas within the Pennsylvania suburbs. The data has been submitted to SEPTA for the use of its planning staff. The techniques employed will be of value to all parties concerned with determining how best to serve our changing region.

This study has demonstrated the flexibility and usefulness of the DVRPC travel simulation process for transit planning. The process is an effective planning tool which can greatly assist decisionmakers. Several steps of the usual process were enhanced in this study. They included the identification of top employment activity zones, the generation of origin data for the high activity zones, and the consideration of a specific travel corridor. These enhancements were helpful in focusing attention on the relevant areas where transit might be considered in Pennsylvania suburbs.

This study also demonstrated the usefulness of computer generated mapping to display thematic data. The ability to portray vast amounts of cold statistics as a map with geographic references, colors, shadings, etc., enables more sophisticated analysis and enhances the data's presentation.

Future applications of these techniques are also suggested by this study. For example, additional analyses might include considerations of non-work trips, trips by mode or those using a specific facility. Refinements can be made to provide order of magnitude estimates of ridership based on mode, distances and density. This type of analysis should aid SEPTA in developing specific proposals and recommendations for transit service.