



Ambler / Bryn Mawr Rail Station Commuter Sheds Study

December 2009



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Executive Summary

The Ambler and Bryn Mawr regional rail stations were surveyed at the request of the Southeastern Pennsylvania Transportation Authority (SEPTA) as part of the FY2009 DVRPC Unified Planning Work Program (UPWP). The intent was to determine and analyze shed areas of the stations in order to better describe the distribution of passenger origins. This data was collected from license plates of automobiles parked in designated SEPTA lots adjacent to the stations. In the case of Bryn Mawr Station, an additional intercept survey of passengers was conducted. This information was stripped of identifiers to ensure privacy and then mapped in a geographic information system (GIS).

Commuter shed data from 2002 and 2009 was available for the Ambler Station. A comparison of passenger origin distributions showed that they had changed very little over the seven year time span. The same seven municipalities from both survey years represented over 80 percent of the origins, with the remaining origins scattered around the station largely to the north and west.

Bryn Mawr Station's small parking-to-boarding ratio necessitated an intercept survey of boarding passengers for a larger sample of passenger origins. The results showed two distribution patterns, one of origins close to the station, likely reflecting proximate high density apartments and colleges. The second was origins strung along great distances on Bryn Mawr Avenue/PA Route 3, and less so on Montgomery Avenue/PA Route 320 and Morris Avenue. Justification for the distance lies in easy road access, high frequency of inbound peak service, and the dominance of express service from the station in the morning peak.

Introduction

Project Background

As part of DVRPC's FY2009 unified Planning Work Program (UPWP), the Southeastern Pennsylvania Transportation Authority (SEPTA) requested that survey work be conducted at regional rail stations: the Ambler Station on the R5 Lansdale line and the Bryn Mawr Station on the R5 Thorndale line. These stations were surveyed (by license plate collection and intercept methods) in order to define areas around the stations by the commuter origins. The point of these surveys was to generalize about the distribution of commuters and describe factors which may influence the choice of a station.

Collection and Description of the Data

The data collection was done using a one day sample of license plates of patron automobiles parked at rail stations. Large parking lots relative to daily boards provide a good sample from which to draw representative conclusions. The collected license plate data was submitted to PennDOT, which provided addresses that were matched in a GIS and then mapped to avoid privacy issues. These address-matched points designate the spatial distribution of the sampled commuters using the station, defining the station sheds. Some addresses were found to be great distances away from the stations (such as Philadelphia or Bucks County). Patrons in these distant areas are not considered to be part of a station's natural market area and are viewed as anomalous.

Some stations where the parking capacity or the number of people parking is small compared to station boardings, required a short intercept survey to enhance the sample size. The intercept survey instrument is a short six question survey focusing on origin of trip and is administered on the train platform to the patron prior to boarding.

Analysis of the Data

The collected data was analyzed across three dimensions. First, the distribution of origins is shown by municipality in a tabular form. This permits a simple breakdown of the distribution where the data is available only by zip code from the surveys. The tabular representation permits easy comparisons, where historic data is available, sometimes revealing shifts in the clustering of

origins not readily apparent from a shed's geography. Where station shed data has been collected previously, comparisons further illuminating changes in the distribution of commuters may be drawn. Where historic data is not available it simply denotes the number of passenger origins by municipality.

Second, the distribution of origins is shown graphically using GIS produced maps. This can show the more precise distribution of origins within the municipalities and in relation to major roads or other means of access. In many cases, the geography speaks to the question of choice: why would someone choose this station over another? Origins clustering near the station may emphasize an easy walking trip, or if the origins are strung out along a major access highway, may reveal direct automobile access. Taken together, both the tabular and geographic displays provide an idea of how the commuters are distributed and some insight into aspects of choice.

The final level of analysis takes into account station characteristics influencing commuter choice. This includes the amount of available parking, fare zones, and service characteristics (peak headways, express trains, travel time, etc). These qualities all exert some influence on the commuter choice and are displayed in a table to highlight factors influencing choice. It has been observed that ridership is particularly sensitive to travel time savings, though frequency and cheaper zonal fares are all good reasons helping describe the station shed area.

Where possible, station assessments provided in previously published reports are put in the Appendices. This material may not deal with commuter sheds specifically, but may focus on other aspects, including bicycle and pedestrian access, Transit Oriented Development (TOD) potential, land use, or highway access. The data taken together provides a basic description of the station, its distribution of patrons, and some insight into mode and facilities used for access.

Ambler Station

Ambler Station Data

License plate surveys at Ambler were performed in 2002 and again in April 2009 by DVRPC staff. The rule of thumb is that there should be at least five years between surveys in order to obtain meaningful results. The seven year time between Ambler Station surveys is viewed as sufficient to assess whether conditions have changed enough to be reflected in the rider origin patterns. It was believed that a license plate survey would provide a large enough sample to generalize about where riders were coming from with about 588 parking spaces and daily inbound boards of about 900 passengers (in 2007).

Table 1 on the next page summarizes the 2002 and 2009 distribution by municipality of origins for Ambler Station. The difference in the number of data points is 346 total versus 479 total. The smaller 2002 survey results may be attributed to the number of parked cars available for survey in 2002 or the number of submitted license plates PennDOT was able to match with an address or it may be an artifact of a single day survey. Historic parking rates between the two survey years are nearly identical, suggesting that an uncharacteristic day or a poor response rate explains the difference, though no definitive answer is available.

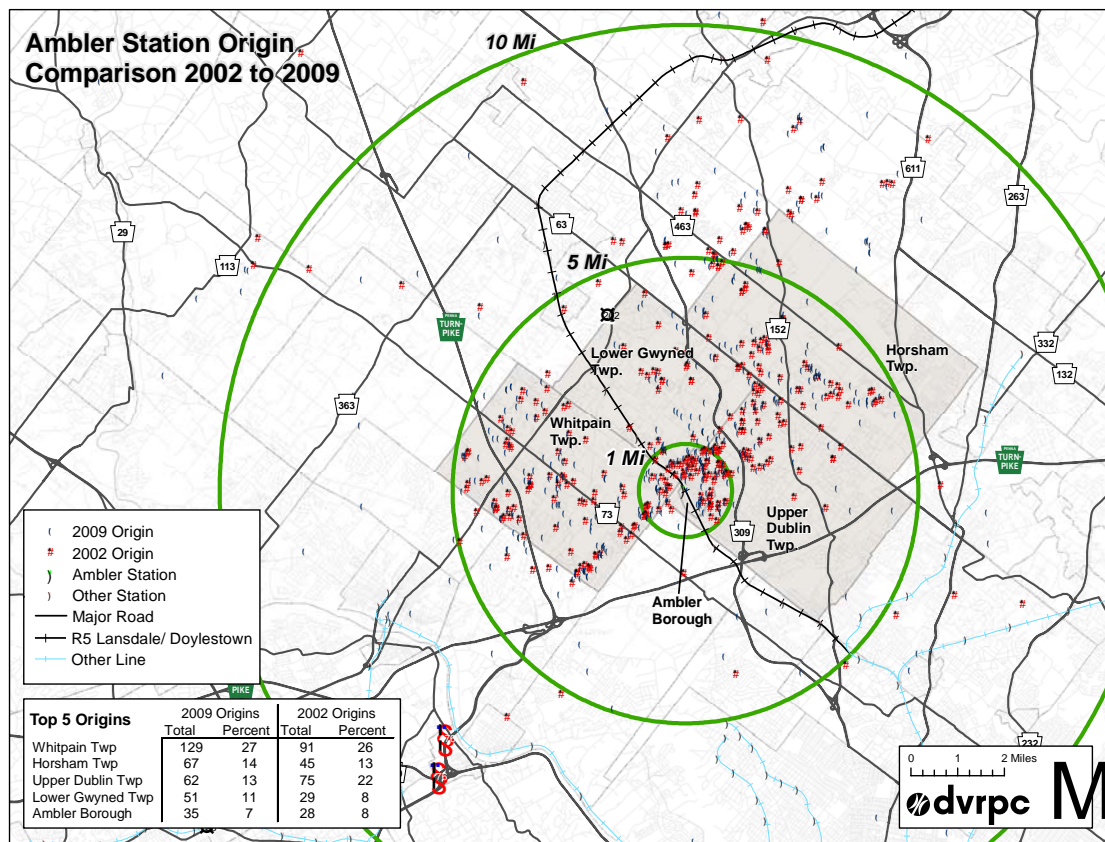
The top seven municipalities shown in the table are the same in both the 2002 and 2009 surveys: Whitpain, Upper Dublin, Horsham, Warrington, Lower Gwynedd, Montgomery townships and Ambler Borough, though the order is rearranged. These seven municipalities represent the overwhelming majority, about 88 percent and 82 percent respectively, of the address matches. The remaining 12 and 18 percent of origins are widely dispersed among other area municipalities. The dispersion of the single origin municipalities is likely an artifact of the single day sample used to collect the data.

Table 1: Ambler Station License Plate Summary by Year and Municipal Frequency

2002 MUNICIPALITY	TOTAL	PERCENT	2009 MUNICIPALITY	TOTAL	PERCENT
Whitpain Township	91	26.3	Whitpain Township	129	26.9
Upper Dublin Township	75	21.7	Horsham Township	67	14.0
Horsham Township	45	13.0	Upper Dublin Township	62	12.9
Lower Gwynedd Township	29	8.4	Lower Gwynedd Township	51	10.6
Ambler Borough	28	8.1	Ambler Borough	35	7.3
Montgomery Township	26	7.5	Warrington Township	26	5.4
Warrington Township	12	3.5	Montgomery Township	22	4.6
Whitemarsh Township	6	1.7	Plymouth Township	12	2.5
Plymouth Township	4	1.2	Philadelphia City	7	1.5
Abington Township	3	0.9	Whitemarsh Township	5	1.0
New Britain Township	3	0.9	Worcester Township	4	0.8
Upper Gwynedd Township	3	0.9	Upper Gwynedd Township	4	0.8
Cheltenham Township	2	0.6	Skippack Township	4	0.8
East Norriton Township	2	0.6	East Norriton Township	4	0.8
Philadelphia City	2	0.6	Springfield Township	3	0.6
Skippack Township	2	0.6	Norristown Borough	3	0.6
Springfield Township	2	0.6	Upper Moreland Township	2	0.4
Bensalem Township	1	0.3	Towamencin Township	2	0.4
Buckingham Township	1	0.3	Radnor Township	2	0.4
Doylestown Township	1	0.3	Marple Township	2	0.4
Hatfield Township	1	0.3	Doylestown Township	2	0.4
Lower Salford Township	1	0.3	Doylestown Borough	2	0.4
New Britain Borough	1	0.3	Cheltenham Township	2	0.4
North Wales Borough	1	0.3	Abington Township	2	0.4
Plumstead Township	1	0.3	West Norriton Township	1	0.2
Towamencin Township	1	0.3	West Goshen Township	1	0.2
Upper Moreland Township	1	0.3	Warminster Township	1	0.2
Worcester Township	1	0.3	Upper Southampton Township	1	0.2
			Upper Saucon Township	1	0.2
			Upper Frederick Township	1	0.2
			Tredyffrin Township	1	0.2
			Plumstead Township	1	0.2
			Phoenixville Borough	1	0.2
			Newtown Township	1	0.2
			New Britain Township	1	0.2
			Lower Providence Township	1	0.2
			Lower Pottsgrove Township	1	0.2
			Lower Frederick Township	1	0.2
			Limerick Township	1	0.2
			Jenkintown Borough	1	0.2
			Jackson Township	1	0.2
			Hereford Township	1	0.2
			Hatfield Township	1	0.2
			Conoy Township	1	0.2
			Colebrookdale Township	1	0.2
			Chalfont Borough	1	0.2
			Bethlehem City	1	0.2
			Bensalem Township	1	0.2
			Bedminster Township	1	0.2
Grand Total	346	100.0	Grand Total	479	100.0

Source: DVRPC 2002, 2009 field surveys.

Figure 1: Ambler Station Passenger Origins



Source: DVRPC 2002, 2009 field surveys.

Figure 1 above graphically displays the distribution of 2002 and 2009 origins derived from the plates. The clustering of rider origins to the west and north around Ambler Station is clearly shown by the tabular and graphic data. There are some far-flung origins eluding explanation (an artifact of the sample, e.g.: spending the night at a friend’s house, etc.), but the majority of the riders appear to be distributed west and north of the station. The geographic distribution raises the question of why these riders chose Ambler Station to board the train over other closer stations. This may be due to, but not limited to, factors such as: the connecting road network, the availability of parking, the frequency of service at the station, fare zones, availability of express service and travel time savings. A matrix of some of these issues is shown on the next page.

Table 2: Ambler Station Choice Matrix by Ridership Issue

Ridership Issue	Data	Comment
Average travel / express time	45min / 37min	6 express or limited trains
Inbound trains-total / A.M. peak	32 total / 10 peak	
Average peak headway	Every 18 minutes	
Zone / peak trip / monthly cost	Zone 3 / \$5 / \$142 monthly	First Zone 3 station inbound
2008 parking use	588 spaces @ 100%	

Source: SEPTA 2009 rail schedule, 2008 parking utilization survey.

Table 2 shows that one-third of the inbound trains originating at Ambler fall into the morning peak. There are also six express or limited trains in the morning peak originating from Ambler, which is the second to the last stop before closed door service (for expresses). This means that Ambler is one of the last locations to board an inbound express or limited train in the morning peak. A typical inbound trip from Ambler takes about 45 minutes, but an express train in the peak averages 37 minutes and as fast as 34 or 35 minutes. This is a good time savings, and it has been established previously that ridership is sensitive to time savings.

The clustering of origins north of Ambler may be partially explained by contrasting it to the adjacent Penllyn Station to the north. Penllyn falls into the Zone 4 fare zone, rather than Ambler's Zone 3 fare, with a higher cost to travel (\$5.50 versus \$5 one way peak, \$163 versus \$142 monthly). Additionally, Penllyn has less available parking with only about 60 parking spaces. These two factors logically push riders from the north to the southern Ambler Station. This suggests that riders are prepared to travel a little further in order to secure a cheaper ride, and with nearly ten times the parking capacity, secure a parking space.

Bryn Mawr Station

Bryn Mawr Station Data

No license plate surveys had been done previously at Bryn Mawr Station, so comparisons with earlier survey work were not possible. The strategy then was to collect the largest sample to represent the ridership origins for Bryn Mawr Station. Parking areas adjacent to the station were surveyed on two occasions, once in April 2009, and again in May 2009. The May parking surveys were done in coordination with an intercept survey of passengers. The intercept survey was to enhance the sample size of origins, knowing that many automobile plates recorded in the two station lots would be repeat cars from the month before. The license plate results by municipality are shown on the next page in Table 3.

Table 3 shows the combined results of surveying the two parking locations at Bryn Mawr Station, the adjacent daily spaces (46 spaces) and the nearby permit lot (146 spaces) on two occasions. The lot totals differ slightly from the 81 and 143 numbers shown on the SEPTA website, but field staff was not able to reconcile this difference with on the ground counts. There were a total of 320 plates recorded and submitted to PennDOT with 305 matched addresses for a 95 percent match ratio. It was determined that there were 207 unique origins, once the duplicate addresses had been removed during the data cleaning.

The five townships of Lower Merion, Radnor, Newtown, Haverford, and Marple represent about 74 percent of the municipal origins with the remaining 26 percent scattered individually in the station's vicinity. The small numbers for the other municipalities may represent remnant of the collection method; or they may be singular representations from either collection day.

Table 3: Bryn Mawr Station License Plate Summary by Municipal Frequency

MCD	Total	Percent
Lower Merion Township	55	26.6%
Radnor Township	45	21.7%
Newtown Township	28	13.5%
Haverford Township	25	12.1%
Marple Township	8	3.9%
Edgmont Township	5	2.4%
Upper Merion Township	5	2.4%
East Goshen Township	3	1.4%
Easttown Township	3	1.4%
Tredyffrin Township	3	1.4%
Willistown Township	3	1.4%
Philadelphia City	2	1.0%
Upper Providence Township	2	1.0%
Uwchlan Township	2	1.0%
West Goshen Township	2	1.0%
Bensalem Township	1	0.5%
Collegeville Borough	1	0.5%
East Whiteland Township	1	0.5%
Fairview Township	1	0.5%
Hatfield Borough	1	0.5%
Lower Providence Township	1	0.5%
Middletown Township	1	0.5%
Nazareth Borough	1	0.5%
Norristown Borough	1	0.5%
Pennsbury Township	1	0.5%
Plymouth Township	1	0.5%
Pottstown Borough	1	0.5%
Royersford Borough	1	0.5%
Upper Darby Township	1	0.5%
West Sadsbury Township	1	0.5%
Westtown Township	1	0.5%
Total	207	100.0%

Source: DVRPC 2009 field surveys.

The passenger intercept survey at Bryn Mawr Station was used to increase the sample size of rail riders who did not drive and park at the stations. This was necessitated in part by the small number of parking spaces (192) relative to daily inbound boards (923 boards in 2007). This suggests that a large proportion of the passengers are either walk ups or drop offs. This thesis is supported by a concentration of mid-rise apartment buildings and two colleges (Bryn Mawr and Harcum) in the immediate area. There is also the possibility of bus transfers from the #105 bus, but it runs a couple blocks away paralleling the regional rail, rather than acting as a feeder service to the station. No bus transfers were observed in the field.

Previous success with a short six question intercept survey conducted at Malvern and Daylesford stations in 2008 suggested an acceptable sample of trip origins could be garnered with this method. Consequently, the intercept survey was used to increase the sample size of passenger origins at Bryn Mawr Station. Intercept data is summarized below in Table 4.

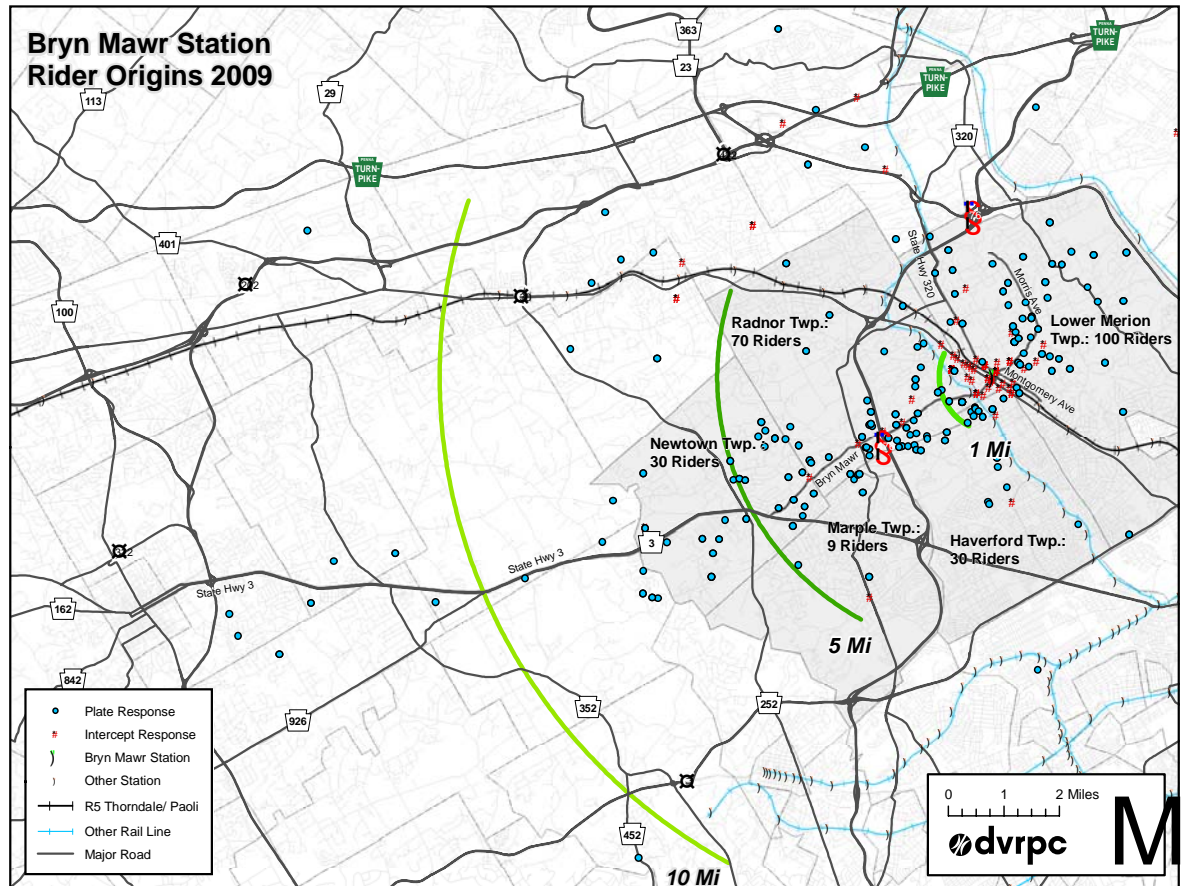
Table 4: Bryn Mawr Station Intercept Summary by Municipal Frequency

MCD	Total	Percent
Lower Merion Township	45	48.4%
Radnor Township	25	26.9%
Haverford Township	5	5.4%
Tredyffrin Township	3	3.2%
Upper Merion Township	3	3.2%
Newtown Township	2	2.2%
Easttown Township	2	2.2%
Marple Township	1	1.1%
Philadelphia City	1	1.1%
Buckingham Township	1	1.1%
Caln Township	1	1.1%
London Grove Township	1	1.1%
North Whitehall Township	1	1.1%
Whitemarsh Township	1	1.1%
Total	93	100.0%

Source: DVRPC 2009 field surveys.

The data summarized in Table 4 above was derived from completed intercept surveys conducted on the May 5, 2009 during the peak morning hours from 5:38 to 9:18 A.M. A copy of the survey instrument is included in Appendix A. The 93 individuals surveyed did not arrive at the station by driving and parking (drive and parking patrons would create redundancy when the parking lot license plates were collected). The top three origin municipalities of the 93 individuals were distributed similarly to the license plate origins in Lower Merion, Radnor and Haverford townships. The number of total municipalities is fewer and they are clustered closer to the station. This finding is to be expected given that most are either being dropped off or walking from the nearby mid-rise apartment complexes or colleges (Bryn Mawr and Harcum). This finding is displayed geographically in Figure 2 on the next page.

Figure 2: Bryn Mawr Station Passenger Origins



Source: DVRPC 2009 field surveys.

Figure 2 above displays the distribution of both license plate origins (shown with circles) and intercept survey origins (shown with triangles). The municipalities with the greatest number of rider origins are also shaded to emphasize the relative proximity to the station. In this display the red triangles largely originate quite close (less than a mile) to the station. Not surprisingly, the distribution of many of the origins lies roughly along three access highways: Bryn Mawr Avenue/PA Route 3 and less so on Montgomery Avenue/PA Route 320 and Morris Avenue. There appears to be clustering of origins around these road facilities from both surveys, and some travel in excess of five miles to the station when other train service is closer.

This geographic distribution raises the question of why these riders chose Bryn Mawr Station to ride the train over other closer stations. This may be due to, but not limited to, a combination of factors such as the connecting road network, the availability of parking, the frequency of service at the station, fare zones, availability of express service and travel time savings.

Table 5: Bryn Mawr Station Choice Matrix by Ridership Issue

Ridership Issue	Data	Comment
Average travel / express time	27min / 20min	7 express trains
Inbound trains-total / A.M. peak	40 total / 15 peak	
Average peak headway	Every 13 minutes	
Zone / peak trip / monthly cost	Zone 3 / \$5 / \$142 monthly	First Zone 3 station
2008 parking use	192 spaces @ 100%	

Source: SEPTA 2009 rail schedule, 2008 parking utilization survey.

Table 5 shows that over one-third of the inbound trains occur in the morning peak and are leaving the station every 13 minutes. There are seven trains which operate as express service from Bryn Mawr, which is the last stop before closed door express service. The number of peak trains, the frequency and the dominance of express service originating at Bryn Mawr are collectively a powerful draw. These express trains save an average of seven minutes or nearly a quarter of the travel time, again enhancing their attractiveness.

Bryn Mawr is the last inbound station with a Zone 3 fare designation on the R5 line. Rosemont and the next few Zone 3 stations have similar ridership issues to the Bryn Mawr Station. The difference is that there are six less trains scheduled from these other stations. Bryn Mawr benefits from being the last inbound local train before going express and the first local train service originating inbound on the R5 line in the peak. Since everything either stops or originates at Bryn Mawr, unlike other stations up or down the line, the extra cost to ride is not viewed as a deterrent to ridership. In fact it is the frequency and number of express trains which make it a strong attractor for passengers.

APPENDIX A



Survey Instruments

License Plate Survey Form

Bryn Mawr Station License Plate Survey (Job Number: XXX-XXX)

Survey Date: ___ / ___ / ___

Survey Day:

Station or Park-and-Ride Lot Name (check one):

1.	2.	3.	page	of
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Specify Parking Area (see parking sheet):

	LICENSE PLATE NO.	STATE		LICENSE PLATE NO.	STATE
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		

Source: DVRPC 2009.

Intercept Survey Form

SEPTA Regional Rail Station Origin/Destination Survey

Station: Bryn Mawr Station

Platform: Inbound

Date: 5 May 2009

Time: _____

Good morning. We are doing an Origin/Destination survey to help SEPTA with service and station planning. This should take about 30 seconds.

1	<p>How did you arrive at this station?</p> <p>Drove / Park Drop off Walk Bike Bus# Other:</p>
2	<p>How many days of the week do you use this station?</p>
3	<p>Where did you begin this trip? Home? Work? Other:</p>
4	<p>Address or nearest intersection (apartment complex):</p>
5	<p>Zip code:</p> <p>19010 19041 Other:</p>
6	<p>Which station is your destination?</p> <p>30th Street Suburban St. Market East Other:</p>

Thank You!

Source: DVRPC 2009.

APPENDIX B



Report Excerpt: Increasing Intermodal Access to Transit: Phase IV

Below is an excerpt from the 2007 publication *Increasing Intermodal Access to Transit: Phase IV* (DVRPC pub. 07017). This is provided as a courtesy for the interested reader and acts to bring together previously completed work at the Bryn Mawr Station. It serves to flesh out the transit work there with an evaluation of bicycle and pedestrian issues influencing access around the station.

BRYN MAWR STATION

Introduction/summary

Bryn Mawr Station is located near the boundary of Delaware and Montgomery counties, roughly 20 miles outside Philadelphia, on Morris Avenue near Bryn Mawr Avenue. Bryn Mawr is an older suburb, with commercial development centered around the train station on Lancaster Avenue. Its street network is typically interconnected and with sidewalks, which translates into many of the street segments in the quarter mile study area having favorable pedestrian LOS grades of 'B.'

The scores for bicycle level of service were not as favorable. Most of the road segments received grades of 'C' or lower, and more than half of the segments received grades of 'D' or 'E.' Scores for some of these roads were impaired by high vehicular intensities and speed limits in excess of 30 MPH, making it less safe for bicyclists in the area.

Transit service summary

Bryn Mawr Station is served by SEPTA's R5 Regional Rail line, which runs from Center City Philadelphia to Thorndale. According to SEPTA's 2005 Regional Rail Ridership Census, a weekday average of 800 riders board the train at Bryn Mawr every day, making it the second busiest station on the R5 line. Bryn Mawr is also served by the Route 100 high-speed line at a nearby facility, providing access to the Norristown Transportation Center and Center City by way of a transfer to the Market-Frankford Line at 69th Street Terminal.

Station area land use

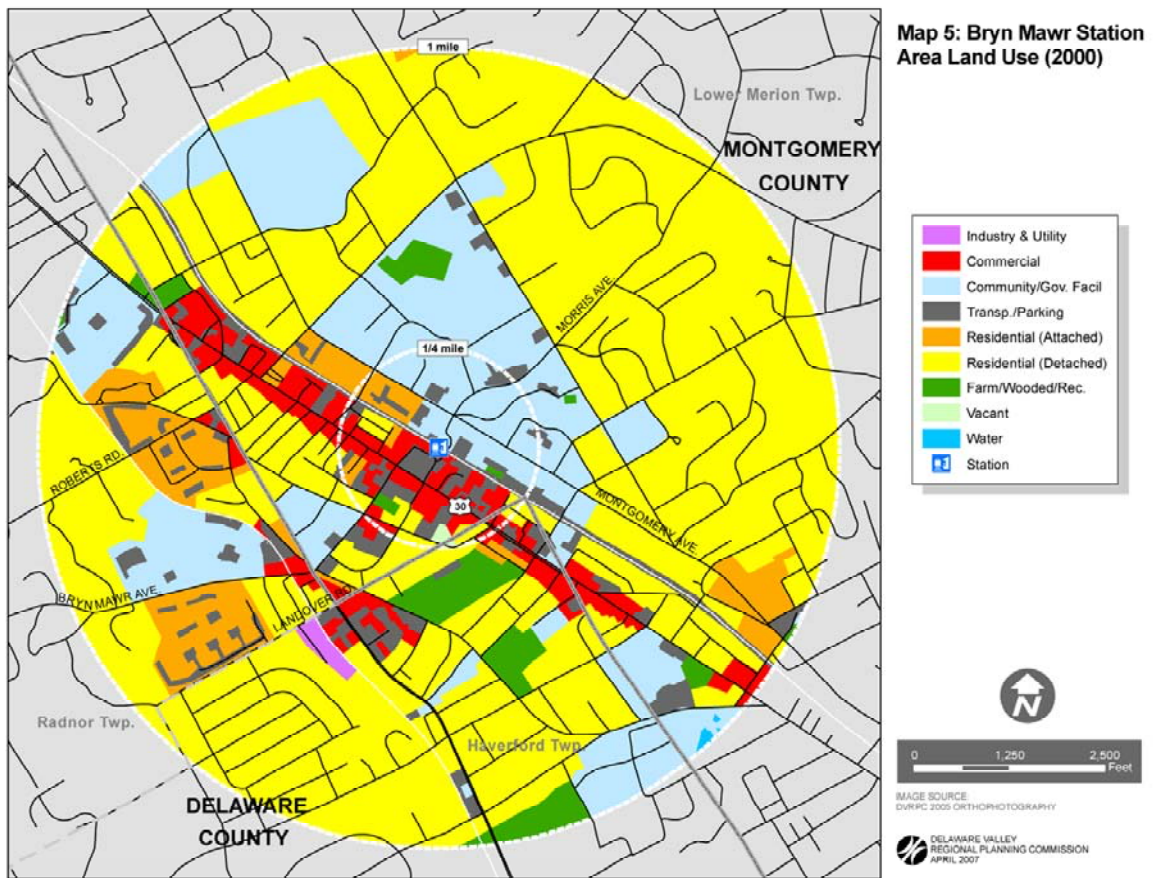
As illustrated in Table 7 and Map 5 below, single family detached residences are the predominant form of land use in the study area. There is, however, little residential land use within the quarter

mile radius. Most of that area is comprised of commercial uses. The Bryn Mawr Station area also includes a high concentration of community/government land uses, due to the presence of Bryn Mawr College and several other schools to the north of Montgomery Avenue (as well as other public uses, including a hospital and library, within the study area). The various schools in the station vicinity are particularly significant in terms of generating bicycle and pedestrian traffic.

Table 7: Bryn Mawr Station Area Land Use Summary

Land Use	Acreage	% of total land covg.
Residential (Detached)	1,221.4	60.6%
Community & Government Facilities	387.1	19.2%
Transp./Parking	123.9	6.2%
Residential (Attached)	113.4	5.6%
Commercial	100.3	5.0%
Recreation	59.8	3.0%
Total	2,005.9	100%

Source: DVRPC 2000 land use.



Pedestrian LOS results and summary

Table 8 below contains the PLOS scores calculated for road segments within one quarter mile of Bryn Mawr Station. Road segments are arranged alphabetically for ease of reference. These scores are also depicted on Map 6.

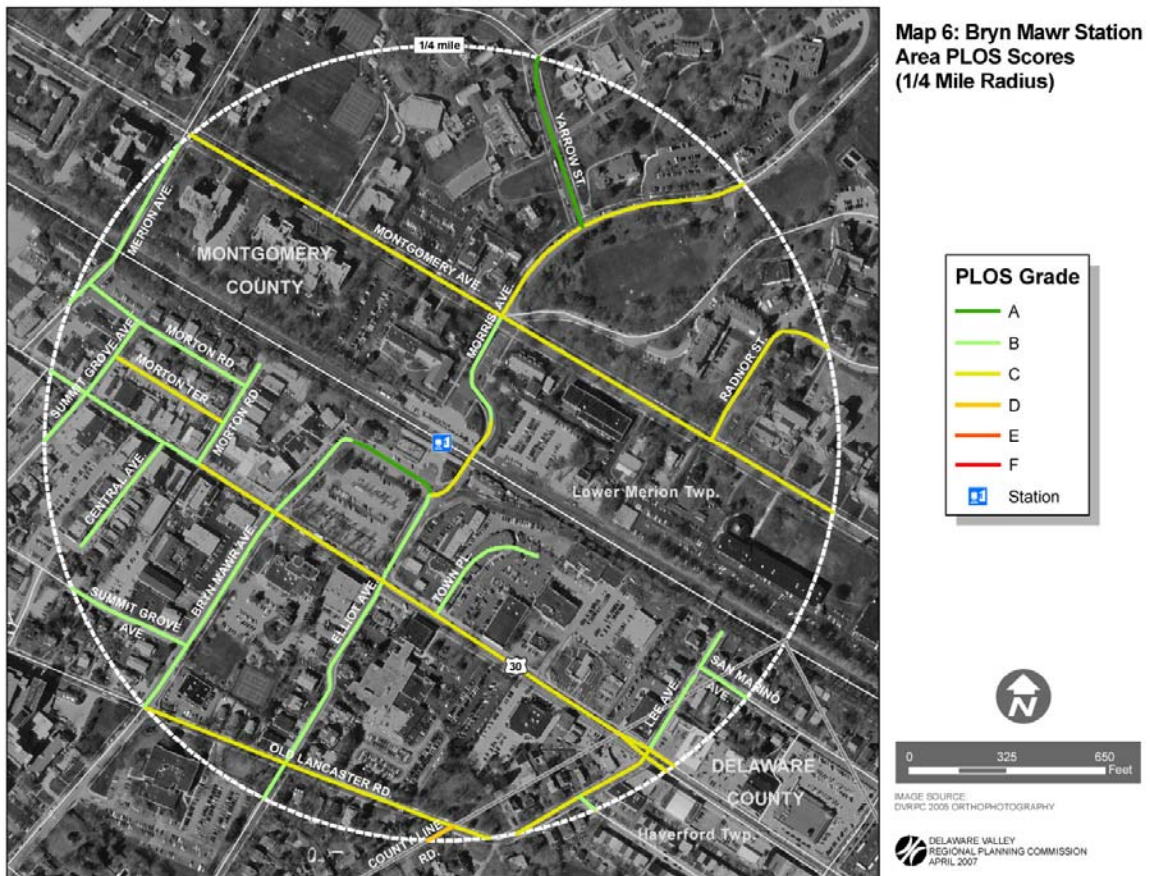
Table 8: Bryn Mawr Station Area PLOS Summary

Road Segment	Location	PLOS Score	PLOS Grade
Bryn Mawr Ave.	Abutting station	1.44	A
Bryn Mawr Ave.	North of Route 30	1.69	B
Bryn Mawr Ave.	South of Route 30	2.04	B
Central Ave.	South of Lancaster Ave.	1.97	B
County Line Rd.	South of Old Lancaster Rd.	3.78	D
Dayton Rd.	East of Old Lancaster Rd.	1.80	B
Elliot Ave.	Route 30 to Old Lancaster Rd.	2.42	B
Lancaster Ave.	Bryn Mawr Ave. to Morton Rd.	2.58	C
Lancaster Ave.	West of Morton Rd.	2.05	B
Lancaster Ave.	Bryn Mawr Ave. to Morris Rd.	2.69	C
Lancaster Ave.	East of Morris Ave.	2.54	C
Lee Ave.	North of Lancaster Ave.	1.87	B
Merion Rd.	South of Montgomery Ave.	1.65	B
Merion Rd.	Morton Rd. to Lancaster Ave.	2.03	B
Montgomery Ave.	Entire length	2.72	C
Morris Ave.	Station Underpass to Bryn Mawr Ave.	2.84	C
Morris Ave.	Station access from Montgomery Ave.	1.54	B
Morris Ave.	North of Montgomery Ave.	2.63	C
Morris Ave.	Lancaster to Ave. to Bryn Mawr Ave.	2.26	B
Morton Rd	North of Lancaster Ave.	1.89	B
Morton Rd.	East of Summit Grove Ave.	1.93	B
Morton Rd.	Summit Grove Ave. to Merion Rd.	1.74	B
Morton Terrace	Morton Rd. to Summit Rd.	3.15	C
Old Lancaster Rd.	Entire length	2.51	C
Pennsylvania Ave.	South of Old Lancaster Rd.	2.28	B
Radnor St.	North of Montgomery Ave.	2.69	C
San Marino Dr.	East of Lee St.	1.86	B
Summit Grove Ave.	West of Bryn Mawr Ave.	2.25	B
Summit Grove Ave.	South of Lancaster Ave.	2.22	B
Town Place	Entire length	2.12	B
Yarrow Rd.	West of Morris Ave.	1.32	A

Source: DVRPC fieldwork and model output, 2006.

Highest PLOS scoring:

As depicted in Table 8, many segments of the study area scored a favorable grade of 'B,' but there were two that received an 'A.' Yarrow Road west of Morris Avenue had the highest pedestrian LOS score (1.32; LOS 'A') due to its large sidewalk and buffer and low estimated vehicular intensities. Bryn Mawr Avenue abutting the station also received a good score (1.44; LOS 'A') due to wide shoulders and a high percentage of occupied on-street parking.



Lowest PLOS scoring:

The lowest PLOS score in the study area occurred on County Line Road, south of Old Lancaster Road (3.78; LOS 'D'). This was the only segment to score below a 'C' in the entire pedestrian study area. Even though this segment had moderate vehicular intensities, its complete lack of sidewalks and narrow lane width contributed to its relatively poor score. It should be noted that this study area contained two major roadways (Lancaster and Montgomery Avenues) which generally maintained 'C' levels of service despite very high traffic intensities.

Bicycle LOS results and summary

Table 9 below contains the BLOS scores calculated for road segments within one mile of Bryn Mawr Station. Road segments are arranged alphabetically for ease of reference. These scores are also depicted on Map 7.

Table 9: Bryn Mawr Station Area BLOS Summary

Road Segment	Location	BLOS Score	BLOS Grade
Bryn Mawr Ave.	Abutting station	2.27	B
Bryn Mawr Ave.	North of Lancaster Ave.	0.00	A
Bryn Mawr Ave.	Lancaster Ave. to County Line Rd.	4.06	D
Bryn Mawr Ave.	South of County Line Rd.	4.47	D
Fishers Rd/Hillbrook Rd.	North of Montgomery Ave.	2.82	C
Lancaster Ave.	Entire length	4.32	D
Landover / County Line Rd.	Old Lancaster Rd. to Coopertown Rd.	3.78	D
Montgomery Ave.	Entire length	5.10	E
Morris Ave.	North of New Gulph Rd.	3.84	D
Morris Ave.	Montgomery Ave. to New Gulph Rd.	4.55	E
Morris Ave.	Station access from Montgomery Ave.	1.91	B
Morris Ave.	Station underpass to Bryn Mawr Ave.	2.76	C
Morris Ave.	Bryn Mawr Ave. to Lancaster Ave.	3.96	D
Old Lancaster Ave.	Lancaster Ave. to Landover Ave.	3.06	C
Roberts Rd.	South of Lancaster Ave.	3.26	C

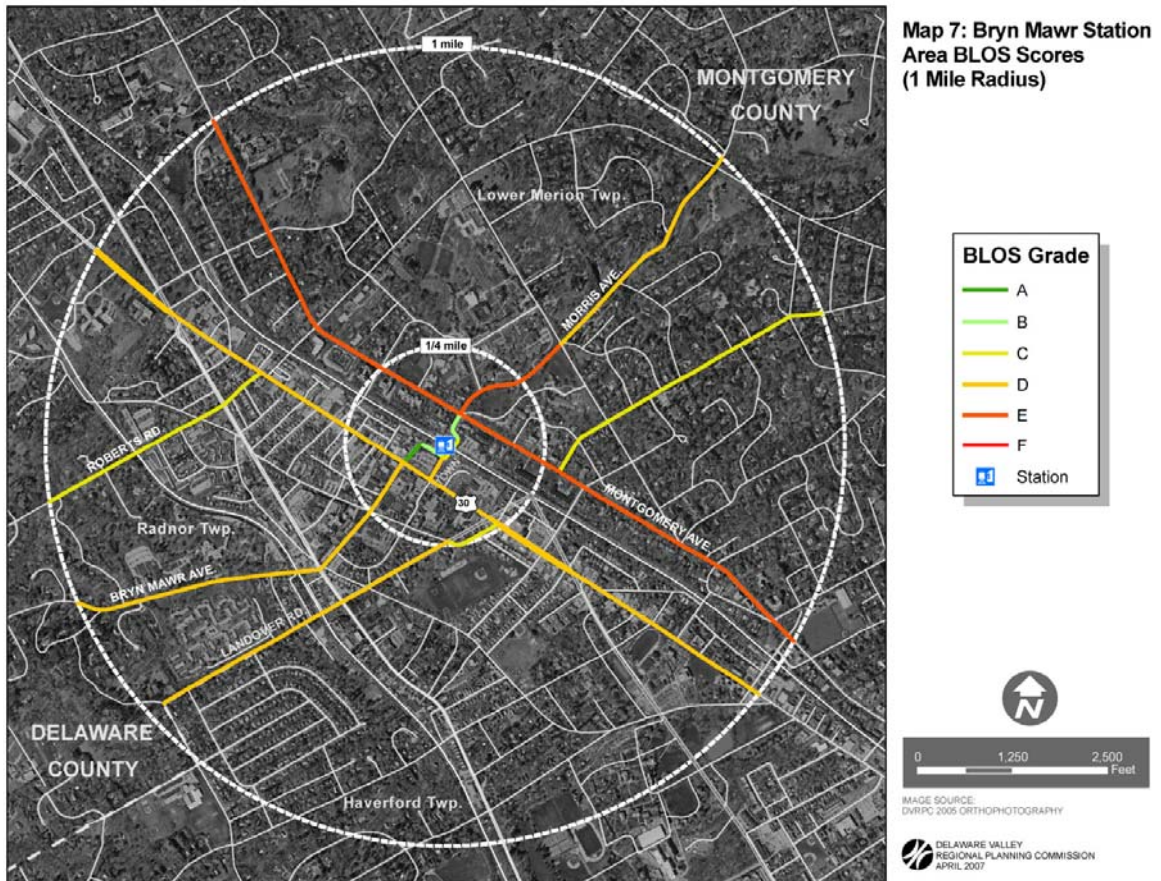
Source: DVRPC fieldwork and model output, 2006.

Highest BLOS scoring:

As summarized in Table 9, BLOS scores for the study area were generally poor. The only road segment that received a bicycle level of service grade of 'A' was Bryn Mawr Avenue north of Lancaster Avenue (0.00; LOS 'A'). This is significant in that this road segment directly accesses the station.

Lowest BLOS scoring:

The lowest study area BLOS score occurred for the entire length of Montgomery Avenue (5.10; LOS 'E'). This road had the highest speed limit in the study area, as well as a high traffic volume and relatively narrow lanes. It bears noting that the northern sidewalk of Montgomery Avenue is a designated bidirectional bicycle lane – bicycle travel in the roadway is discouraged in this case.



Conditions for pedestrians/bicyclists in the immediate station vicinity

While the typical level of service grade for pedestrians in the vicinity of Bryn Mawr Station was a 'B,' the presence of two major streets that can be challenging to cross, Montgomery and Lancaster Avenues, hinders pedestrian access to the station. Pedestrians coming from the northern and southern edges of the quarter mile study area have no choice but to cross one of these roads to access the station. Montgomery Avenue in particular is significant, as it separates the station from the largest concentration of educational institutions in the study area. While both Montgomery and Lancaster Avenues have well defined pedestrian crosswalks at several key intersections (and in-street pedestrian yield signs and special pavement markings in the case of Lancaster Ave. near the station), the high traffic intensity and frequency of turns can nevertheless make crossings troublesome.

The streets immediately adjacent to the station provide favorable conditions for pedestrians, and the station itself has an underground passageway providing access between platforms. The Morris Avenue underpass, the one road segment adjacent to the station that scored below a 'B' in PLOS, can be avoided by pedestrians through the use of this below-grade passageway. However, during field views DVRPC staff witnessed many pedestrians crossing over the train

tracks at grade rather than use the underground passageway, despite multiple hazard warning signs.

Because there are relatively few residences in the quarter-mile study area, it is likely more realistic for many nearby residents to bike to the station than walk. This can be challenging, as the area is not very friendly to bicycles. The streets in the immediate station vicinity scored well, but to get to those streets, cyclists have to traverse many segments where conditions are much less favorable. Montgomery Avenue in particular acts as a barrier for cyclists because of its high traffic densities and 35 MPH speed limit. However, a sidewalk along the northern frontage of Montgomery Avenue is a designated bidirectional bicycle route, accommodating east-west travel safely. The station itself does have bicycle racks on both platforms.



An underground passageway allows transfer between both sides of the station.



Well-marked crosswalk over Lancaster Ave. south of the station with in-street pedestrian yield sign.

Most of the residential uses in the study area occur to the south of Lancaster Avenue (on the south side of the station). Of all the segments of Lancaster Avenue examined, the segment just south of the train station, between Bryn Mawr and Morris Avenues, scored the lowest for pedestrian level of service (2.69; LOS 'C'). An additional 'full-featured' crosswalk such as the one present to the west of Bryn Mawr Avenue (see photo above) could be installed to the east in order to make Lancaster Avenue less of a barrier.

The intersection of Montgomery and Morris Avenues is the most significant crossing point for students walking/biking to or from Bryn Mawr Station. As a result, every effort should be made to enhance crossability at this intersection. This may be a particularly useful location for a traffic calming device such as a raised or textured intersection, or textured crosswalks. At a minimum, the existing crosswalks should be repainted and made more obvious. Additionally, as noted above, many R5 riders cross over the tracks in the platform area rather than use the dedicated underpass that has been provided. A fence to prevent this movement should be considered if it would not impair rail operations. Better lighting and signage would also make the underpass more visible and attractive.

Concerning bicycle access, bicycle lanes should be considered along both Montgomery and Lancaster Avenues, as well as on Bryn Mawr Avenue, Morris Avenue, and Landover Avenue. Bike lanes along any or all roadways would enhance bicycle station access from residential

areas. As an alternative to full bicycle lanes, shared lane pavement markings (or ‘sharrows’) may be viable, particularly where on-street parking is present.



The north sidewalk of Montgomery Avenue is a designated bicycle route.



Bryn Mawr Station and Morris Avenue viewed from northwest corner of Morris and Lancaster Aves.

Relevant aspects of regional and state bicycle and pedestrian plans

Several roads in the study area are mentioned in the most recent Southeastern Pennsylvania Bicycle and Pedestrian Mobility Plan (1995) as proposed routes. These were Montgomery Avenue, which already features a designated bicycle lane on the north sidewalk, as well as Bryn Mawr Avenue and Roberts Avenue north and south of Lancaster Avenue. Old Gulph Road and Haverford Avenue, which were not examined in this study but could nonetheless affect station accessibility, are proposed as a lower priority bicycle links (Old Gulph Rd. is proposed for a route within the right-of-way, and Haverford Avenue is proposed as a route of undefined configuration).

Relevant Transportation Improvement Program (TIP) projects

The interlocking at Bryn Mawr Station will be upgraded as part of the ongoing Keystone Corridor Improvement project (MPMS number 59917). Depending on the details of this work, it may provide an opportunity to install fencing between the eastbound and westbound platforms as referenced in this report.

Publication Title: Ambler/Bryn Mawr Rail Station Commuter Sheds Study

Publication Number: 09053

Date Published: December 2009

Geographic Area Covered: Ambler Station, Bryn Mawr Station, Montgomery County

Key Words: Regional Rail, Ambler Station, Bryn Mawr Station, Montgomery County, Commuter Sheds, Rail Surveys, SEPTA

Abstract: As part of the FY09 Unified Planning Work Program (UPWP), surveys were conducted at SEPTA's Ambler and Bryn Mawr regional rail station to determine commuter sheds. Data collection included both license plate and intercept surveys with the resulting information displayed in tables and maps. Historic data for the Ambler Station show little change in commuter distribution, while intercept surveys at the Bryn Mawr Station showed strong walk up ridership and distribution along great distances on Bryn Mawr Avenue/PA Route 3 and less so on Montgomery Avenue/PA Route 320 and Morris Avenue. Additionally, an excerpt from a 2007 report detailing bicycle and pedestrian access to the Bryn Mawr Station is included.

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