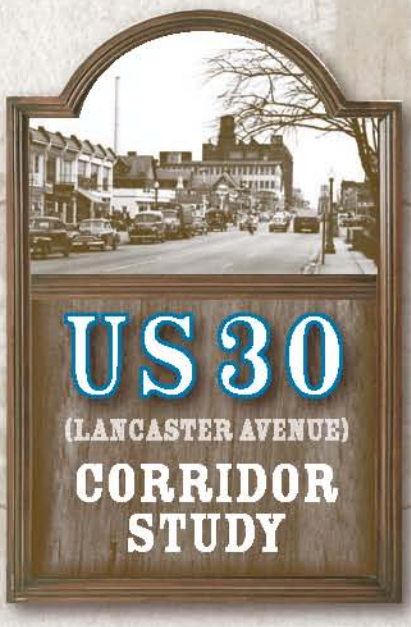


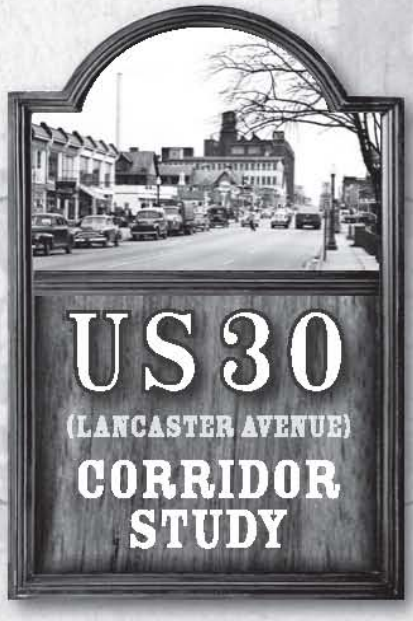
CREATING LINKAGES *and* CONNECTING COMMUNITIES

technical appendix

DECEMBER 2011

DELAWARE VALLEY
dvrpc
REGIONAL
PLANNING COMMISSION

CITY OF PHILADELPHIA | HAVERFORD TOWNSHIP | LOWER MERION TOWNSHIP
NARBERTH BOROUGH | RADNOR TOWNSHIP



CREATING LINKAGES *and* CONNECTING COMMUNITIES

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DELAWARE VALLEY
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CITY OF PHILADELPHIA | HAVERFORD TOWNSHIP | LOWER MERION TOWNSHIP
NARBERTH BOROUGH | RADNOR TOWNSHIP

The Delaware Valley Regional Planning Commission is dedicated to uniting the region's elected officials, planning professionals, and the public with a common vision of making a great region even greater. Shaping the way we live, work, and play, DVRPC builds consensus on improving transportation, promoting smart growth, protecting the environment, and enhancing the economy. We serve a diverse region of nine counties: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey. DVRPC is the federally designated Metropolitan Planning Organization for the Greater Philadelphia Region — leading the way to a better future.

The symbol in 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. The authors, however, are solely responsible for the findings and conclusions herein, which may not represent the official views or policies of the funding agencies.

DVRPC fully complies with Title VI of the Civil Rights Act of 1964 and related statutes and regulations in all programs and activities. DVRPC's website (www.dvrpc.org) may be translated into multiple languages. Publications and other public documents can be made available in alternative languages and formats, if requested. For more information, please call (215) 238-2871.

OVERVIEW

These Technical Appendices are a compendium of information and analysis related to the US 30 (Lancaster Avenue) Corridor Study: Creating Linkages and Connecting Communities (DVRPC publication number 11003B). This study focuses on a segment of US 30 between 52nd Street in West Philadelphia and Old Eagle School Road in Radnor Township and provides a variety of recommendations regarding transportation, land use, and environmental issues to corridor municipalities.

The following appendices provide additional details regarding DVRPC's transporation analysis of the US 30 Study Area.

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A

BICYCLE FACILTIES

FIGURE A.1
BICYCLE FACILITIES

TREDYFFRIN
UPPER MERION
RADNOR
LOWER MERION
NEWTOWN
HAVERFORD
NARBERTH
PHILADELPHIA
UPPER DARBY

Valley Forge Military Academy and College
Cabrini College
Eastern University
Villanova University
Rosemont College
Bryn Mawr College
Bryn Mawr Hospital
Harcum College
Haverford College
Delaware County Community College
St Charles Borromeo Seminary
St Josephs University
Lankenau Hospital
Palmer Theological Seminary

Chester County
Delaware County
Montgomery County
Philadelphia County

Radnor Trail
East Schuylkill River Trail
West Schuylkill River Trail
Manayunk Spur Trail
Cynwyd Trail

476
320
23
30
1

0 0.25 0.5 0.75 1
Miles

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

Source: CCPC, DCPC, DVRPC, MCPC, PADEP, PENNDOT, PADOH, SEPTA, TANA.

- Trail
- Proposed Bike Route Modification
- Planned Bike Network
- Existing City of Philadelphia Bike Network
- Open Space

B

CORRIDOR TRANSIT DATA

FIGURE B.1
TRANSIT SERVICE AREAS

TREDYFFRIN
RADNOR
NEWTOWN
MARPLE
LOWER MERION
NARBERTH
HAVERFORD
PHILADELPHIA
UPPER DARBY

Valley Forge Military Academy and College
Cabrini College
Eastern University
Strafford
Wayne
St. Davids
Radnor
Radnor (NHSL)
Matsonford
County Line
Villanova
Villanova University
Villanova (NHSL)
Stadium (Ithan Avenue)
Rosemont College
Garrett Hill
Rosemont
Bryn Mawr College
Roberts Road
Bryn Mawr Hospital
Bryn Mawr
Bryn Mawr (NHSL)
Harcum College
Paoli / Thorndale Line
Haverford
Haverford (NHSL)
Haverford College
Ardmore
Ardmore Avenue
Ardmore Junction
Wynnewood Road
Wynnewood
Narberth
Merion
St Josephs University
St Charles Borromeo Seminary
Lankenau Hospital
Overbrook
Palmer Theological Seminary
Beechwood-Brookline
Penfield
Township Line Road
Parkview
Millbourne
Cynwyd
Bala
Wynnefield Avenue
Cynwyd Line
Manayunk / Norristown Line

Chester County
Delaware County
Montgomery County
Philadelphia County

105
106
103
44
52
23
30
76
476
320
1
65
40
10
46
G
G Owl
52 Owl
15 Owl
111
21

0 0.25 0.5 0.75 1
Miles

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

Source: DVRPC, PADEP, PENNDOT, PADOH, SEPTA, TANA.

Trolley Route
Bus Route (Selected)
Rail Station: Quarter-Mile Buffer
Bus Route; Quarter-Mile Buffer

CAMPUS SHUTTLES

Bryn Mawr College/Haverford College

The Bryn Mawr Shuttle was discontinued at the end of August, 2009. The 'Lantern Van' replaces the shuttle and can be requested by students through the Public Safety Office. This service runs seven days between 7:00 PM and 1:00 AM. Stop locations include the Bryn Mawr rail stations on both the Paoli/Thorndale line and the NHSL, as well as several on-campus locations.

The bi-college 'Blue Bus' connects Bryn Mawr College and Haverford College. The bus stops at only one location at Bryn Mawr, the Pembroke Arch, located along North Merion Avenue. The bus stops at Stokes Hall, located off College Avenue, at Haverford College. The weekday bus runs from 7:00 AM to 1:15 AM with additional late night service on Friday. The Saturday daytime bus runs from 11:15 AM to 2:45 PM and includes stops at the Acme grocery store and Haverford College Apartments. The Sunday daytime bus runs from 9:30 AM to 3:45 PM. The Saturday and Sunday evening bus runs only between campuses from 5:00 PM to midnight with service until 2:30 AM on Saturday night.

The tri-college Swarthmore van connects the campuses of Bryn Mawr, Haverford, and Swarthmore. Separate vans run between Swarthmore-Bryn Mawr and Swarthmore–Haverford on weekdays between 6:30 AM and 7:15 PM. Additional hours are included on the Swarthmore–Haverford van on Friday nights. On Saturday, the tri-college van runs between 9:40 AM and 3:00 AM. Sunday service runs between noon and 10:30 PM.

Special shuttle services are available before and after holiday breaks, including airport and rail station shuttles.

Cabrini College

Cabrini offers scheduled shuttle service along two routes, one around campus and the rail stations, and another that runs along Lancaster Avenue in the evenings. The 'Weekday' shuttle connects campus with the rail stations on both the Paoli/Thorndale line and the NHSL, the Sullivan Lot, and King of Prussia Mall. This service runs from 6:30 AM to 12:40 AM. The 'Weekend' Cabrini shuttle includes the locations listed above as well as the Wawa in Wayne, and runs from 7:00 AM to midnight.

The 'Lancaster Avenue Loop' runs all seven days between 6:45 PM and 11:45 PM. This shuttle connects campus with the Sullivan Lot, the Wawa in Wayne, the Wayne rail station, and the Acme grocery store. Both shuttles run only while school is in session.

Eastern University

Eastern University does not offer shuttle service, but safety escorts are provided after dark by campus Safety and Security. However, the University provides a pedestrian walkway to campus from Chamounix Road, just north of the St. Davids rail station. There is currently no sidewalk along Chamounix Road linking the campus walkway and the rail station, but Radnor Township has plans to add sidewalk in the near future.

Harcum College

Harcum College does not offer campus transportation of any type. The Paoli/Thorndale regional rail line is directly adjacent to the Harcum campus, and students have direct access to and from the Bryn Mawr rail station.

Rosemont College

Transportation to and from Rosemont College is provided by both Rosemont's 'RoseLine' shuttle van and Villanova's 'Wildcat Shuttle,' both of which link Rosemont's campus with Villanova's campus and the Roberts Road rail station. The RoseLine operates Monday through Friday from 4:30 PM to 10:00 PM between the commuter lounge in Alumnae Hall and the Roberts Road rail station. The RoseLine may operate occasional weekend service depending on student interest.

Rosemont also offers a Safe Ride Program for students needing transportation in emergency situations.

Saint Joseph's University

Saint Joseph's University (SJU) operates two shuttle services, the 'East' shuttle and the 'West' shuttle. SJU also offers an escort service to and from campus to nearby locations not serviced by the shuttle and during hours

when the shuttle does not operate. This includes residential buildings between the Schuylkill Expressway and 63rd Street.

The East shuttle connects the eastern edge of campus (Mandeville Hall) and the Presidential and Lincoln Green Apartments, with stops at the Bala rail station, the Bala shopping center, the Target shopping center, and the Crowne Plaza and apartments along Presidential Blvd. The East shuttle operates Monday through Friday between 7:30 AM and 11:30 PM, with additional service on Friday evening until 4:00 AM. Saturday service runs between 9:30 AM and 4:00 AM and Sunday service operates from 9:30 AM to 1:00 AM.

The West shuttle connects central campus and Lancaster Court, with stops at Mandeville Hall, Sourin Hall, Merion Gardens, the Overbrook rail station, and Lancaster Court. The West shuttle operates Monday through Friday between 7:30 AM and 1:00 AM, with additional service on Friday evening until 4:00 AM. Saturday service runs between 9:30 AM and 4:00 AM and Sunday service operates from 9:30 AM to 1:00 AM.

Valley Forge Military Academy and College

Valley Forge does not offer campus transportation service of any kind, with the exception of providing transportation for cadets who wish to observe religious holidays at nearby locations.

Villanova University

Villanova offers various shuttle services. The 'Wildcat Shuttle,' which offers three separate weekday lines: the 'Blue Line' (on-campus loop), the 'White Line' (off-campus loop), and the 'Off-peak White Line' (on/off-campus loop). The Blue line operates from 8:00 AM to 6:00 PM on Monday through Friday. The White line operates from 8:00 AM to 6:00 PM, Monday through Friday, and links Kaul Hall at Rosemont College, the Rosemont Square shopping center, and the Bryn Mawr hospital with Villanova's campus. The Off-peak White line operates on weekday evenings between 6:00 PM and 1:30 AM and connects Kaul Hall and Rosemont Square with campus locations.

A 'Weekend' shuttle is also offered on Saturday between noon and 9:00 PM and on Sunday between noon and 6:00 PM, which connects campus with Kaul Hall, Rosemont Square and Suburban Square shopping centers, Cosi restaurant, Genaurdi's grocery store, and Minella's Diner. A King of Prussia 'Mall' shuttle also runs on Friday and Saturday evenings from 6:00 PM to 12:30 AM. The 'Mobility' shuttle connects the west campus apartments to main campus on weekdays between 9:30 AM and 3:00 PM.

In addition, the Villanova Student Government Association runs a 'Ride Share Board.'

TRANSIT ROUTES

Bus Services West of City Avenue

- **Route 44** has a terminus at Suburban Square in Ardmore and extends eastward using Montgomery Avenue, City Avenue, the Schuylkill Expressway, and ultimately Market Street. It makes key stops at Narberth Station on the Paoli/Thorndale line, St. Joseph's University, Bala Station on the Cynwyd Line, the Philadelphia College of Osteopathic Medicine, and Center City. Headways change throughout the day, ranging from 10 to 15 minutes before 10 AM, hitting 20 minutes from 10 AM to 2 PM, dropping below 15 minutes at 2 PM, and then jumping to 30 minutes around 6:30 PM. On Saturday and Sunday the service uses mostly half-hour headways, and it ends early at about 7:30 PM.
- **Route 103** travels north from 69th Street Terminal through Highland Park, Penfield, and Brookline. It stops at the Ardmore Junction NHSL station via a segregated busway, and continues through Ardmore to the Paoli/Thorndale station and Suburban Square shopping center. The route can sometimes be delayed, however, by an unsignalized crossing on Haverford Road. It also has difficulty making the necessary turns to traverse Woodside Road between Lancaster Avenue and Montgomery Avenue – an issue that Route 106 has as well. Peak service operates at half hour headways, and off-peak, Saturday, and limited Sunday service is hourly. Sunday service is limited to the area between 69th Street Terminal and Overbrook Park.
- **Route 105** follows the route of the Paoli/Thorndale line in an 85-minute journey from 69th Street Station to Paoli Hospital. For most of the day the service runs at half hour headways between 69th Street and Ardmore Station, though there is an evening peak of 15 to 20 minute headways. Service from Bryn Mawr to Paoli is less frequent – only hourly – and it ends quite early at 8:17 PM. On Saturdays and Sundays, this route runs hourly. Service north of Bryn Mawr ends at 6:36 PM on Saturday, and is not available on Sunday.
- **Route 106** travels from 69th Street Terminal to the Paoli/Thorndale Ardmore Station, with selected trips continuing along US 30 to Paoli. This route takes Cardington Road and Haverford Avenue through Overbrook Park, and then takes Argyle Road to reach Ardmore Station and the shopping center. Both 106 and 103 reach Suburban Square from 69th Street in about 25 minutes. Eastbound buses make AM peak hour trips linking Paoli Hospital and 69th Street and westbound buses make PM peak hour trips. Like Route 103, this service has half hour headways during peak service and hourly headways off-peak and Saturdays. This route also lacks Sunday service.

Trolley Services East of City Avenue

- **Route 10** is a trolley line with its eastern terminus in Center City. It travels west parallel to the Market-Frankford Line and then takes Lancaster Avenue through West Philadelphia, turning left on Lansone Avenue and then right to terminate at the Malvern Avenue Loop. Connections to four bus routes are available at the loop. The service on this trolley is excellent, running 24 hours a day with headways ranging from 30 minutes during late night hours to five or six minutes during AM and PM rush hours, and ten minutes during non-peak daytime hours. Saturday and Sunday services peak at 15 and 20 minutes, respectively. This route has the highest ridership in the study area.

Bus Services East of City Avenue

- **Route 1** stops in the study corridor at St. Joseph's University, and extends eastward into Northeast Philadelphia along Hunting Park Avenue. For the most part headways vary from 30 to 60 minutes, though there is a burst of very short headways during the PM peak and a gap in service from 7 through 11 PM. Saturday service is hourly and ends at 7:40 PM. There is no Sunday service.
- **Route 30** serves various areas of West Philadelphia before traveling down Haverford Avenue (the southern boundary of the study area) and terminating at 69th Street Terminal. Its east-west service comes about every 30 minutes on weekdays, and on weekends headways vary 45 minutes to an hour.

- **Route 31** also provides service at the southern edge of the study area. It runs from Overbrook Park east along Lansdowne Avenue before heading south to Market Street and traveling east into Center City. Weekday service runs at non-clock headways such as 17 and 22 minutes, with hourly service for the evening. Saturday's peak headway is 30 minutes and Sunday's peak headway is 40 minutes.
- **Route 40** also serves the eastern edge of the study area, traveling through the Wynnefield area. The overall route snakes south from West Park, through the study area, and through West Philadelphia before heading east to Center City, where it traverses Lombard and South Streets. Service headways on the route are mostly 15 minutes during the week, and 30 minutes on weekends.
- **Route 46** is a bus that travels between Angora Station on the Media/Elwyn Line and the Malvern Avenue Loop in Overbrook, mainly operating on 60th Street. It also connects to the Market-Frankford Line. The bus has peak headways of eight minutes, off-peak headways of 15 minutes, and owl service headways of 20 to 30 minutes. Saturday headways are mostly 20 minutes, while Sunday headways are mostly 30 minutes.
- **Route 52** extends from the Bala Station on the Cynwyd Line and the nearby Bala-Cynwyd Shopping Center, south through the eastern edge of the study area via 54th Street and 52nd Street. It travels through West Philadelphia to end at 49th Street Station on the Media/Elwyn Line. Relevant destinations include the Wynnefield and Overbrook neighborhoods, St. Joseph's University, and Park West shopping center. The service operates at an excellent peak headway of four minutes. Off-peak times range from eight to fifteen minutes, and owl service operates at 20 or 30 minutes. Weekend service peaks at headways of eight minutes on Saturday and 12 minutes on Sunday.
- **Route 65** cuts through the Overbrook neighborhood on its way from Germantown to 69th Street Terminal. The bus stops at Tulpehocken Station on the Chestnut Hill West Line, the Wissahickon Transportation Center on the Manayunk/ Norristown, Bala Station on the Cynwyd, and Overbrook Station on the Paoli/Thorndale. Within the study area, it serves St. Joseph's University and dense residential areas. It operates at a peak headway of eight minutes, and off-peak headways vary from ten to 30 minutes. Saturday and Sunday service has mostly 20 to 30 minute headways, though Saturday's peak is 15 minutes.
- **Route G** takes a rather lengthy journey from South Philadelphia, traveling west over the Schuylkill River and north through West Philadelphia. It enters the study area along 57th Street and proceeds to serve destinations such as St. Joseph's University, the Paoli/Thorndale Overbrook Station, and Lankenau Hospital. This bus runs 24 hours a day and has peak headways of six minutes. Other headways vary incrementally from eight minutes to ten, fifteen, twenty, and thirty. On the weekend, Saturday headways are mostly 15 minutes and Sunday headways are mostly 20 minutes.

FIGURE B.2
RAIL STATION PARKING UTILIZATION

TREDYFFRIN
RADNOR
NEWTOWN
LOWER MERION
NARBERTH
HAVERFORD
MARPLE
UPPER DARBY
PHILADELPHIA

Strafford (72%)
Wayne (84%)
St. Davids (86%)
Radnor (76%)
Radnor (NHSL) (85%)
Villanova (98%)
Villanova (NHSL) (38%)
Rosemont (96%)
Bryn Mawr (88%)
Bryn Mawr (NHSL) (89%)
Haverford (89%)
Haverford (NHSL) (50%)
Ardmore (86%)
Ardmore Avenue (100%)
Ardmore Junction (100%)
Wynnewood Road (100%)
Wynnewood (91%)
Narberth (100%)
Merion (89%)
Overbrook (90%)
Penfield (100%)
Beechwood-Brookline
Matsonford
County Line
Miquon
Ivy Ridge
Manayunk
Cynwyd
Bala
Valley Forge Military Academy and College
Cabrini College
Eastern University
Villanova University
Rosemont College
Bryn Mawr College
Haverford College
Harcum College
St Josephs University
St Charles Borromeo Seminary
Palmer Theological Seminary
Lankenau Hospital
Bryn Mawr Hospital
Garrett Hill
Stadium (Ithan Avenue)
Roberts Road
Paoli / Thorndale Line
Norristown Line
Lincoln Hwy
Township Line Road
Parkview
Millbourne
Wynnefield Avenue
Cynwyd Line
Chester County
Delaware County
Montgomery County
Philadelphia County
I476
US Hwy 30
Iven Ave
Wistar Rd
Lark Ln
Broughton Ln
Beech Rd
Airdale
Rose
Ithan Ave
Conestoga
Barclay Rd
Boxwood
Chandler Ln
Robinhood Rd
Weldon
Lee Ck
Buck Ln
Cherry Ln
Glenn Rd
Glen Rd
Anton Rd
Lancaster Ave
Ballytore Rd
Beechwood Rd
Wiltshire
End Dr
68th St
57th St
Maplewood St
Warne Ave
Brooke Rd
Church Rd
Parkes Run Ln
Chandler Ln
NHSL
76
476
23
30
320
3
1

0 0.25 0.5 0.75 1
Miles

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

Source: DVRPC, PADEP, PENNDOT, PADOH, SEPTA, TANA.

Unused Parking Spaces	Total Parking Spaces
1	10
10	50
100	100

Note: (%) indicates parking utilization as of 2008 (R5) and 2009 (NHSL).

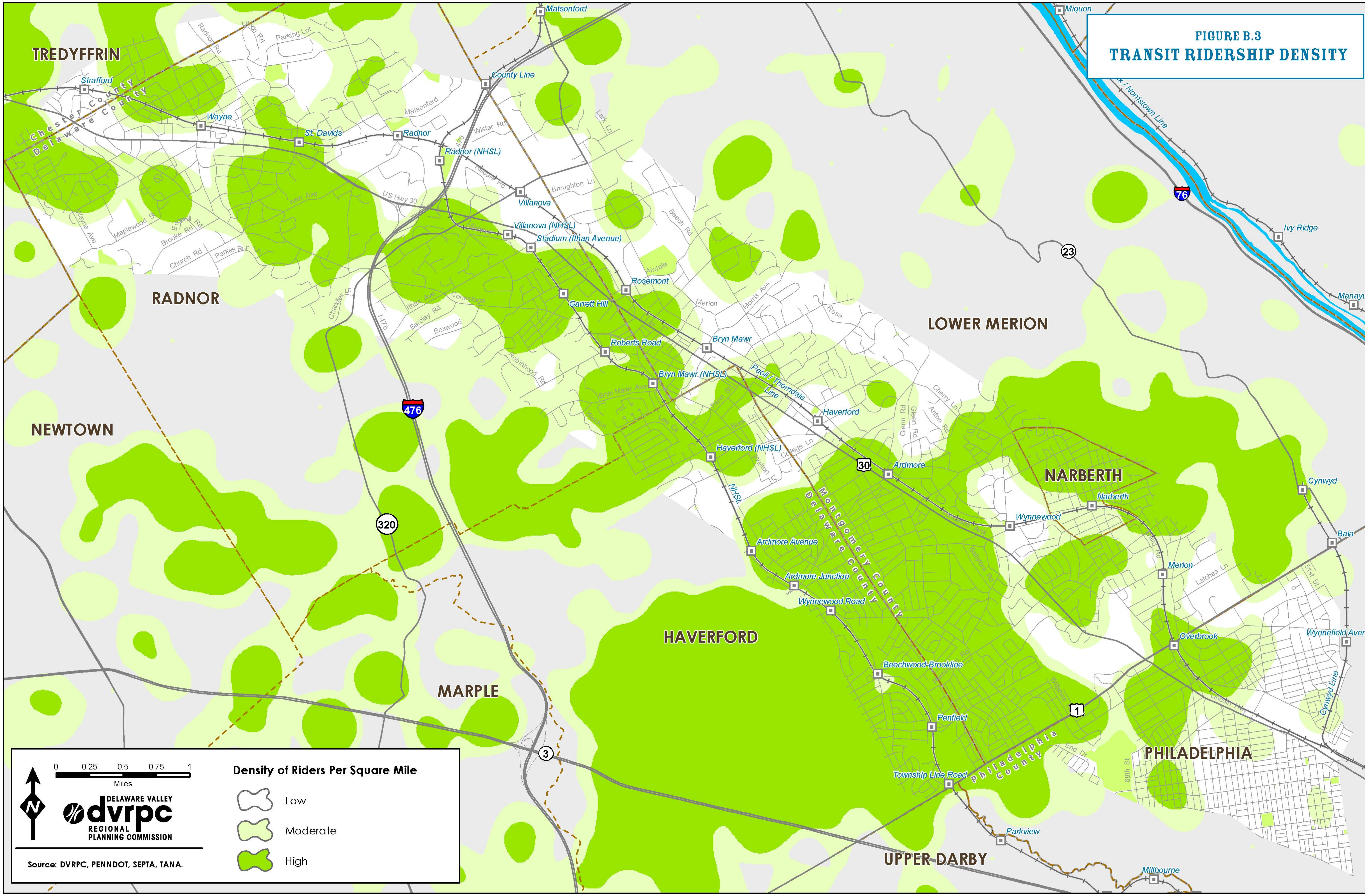
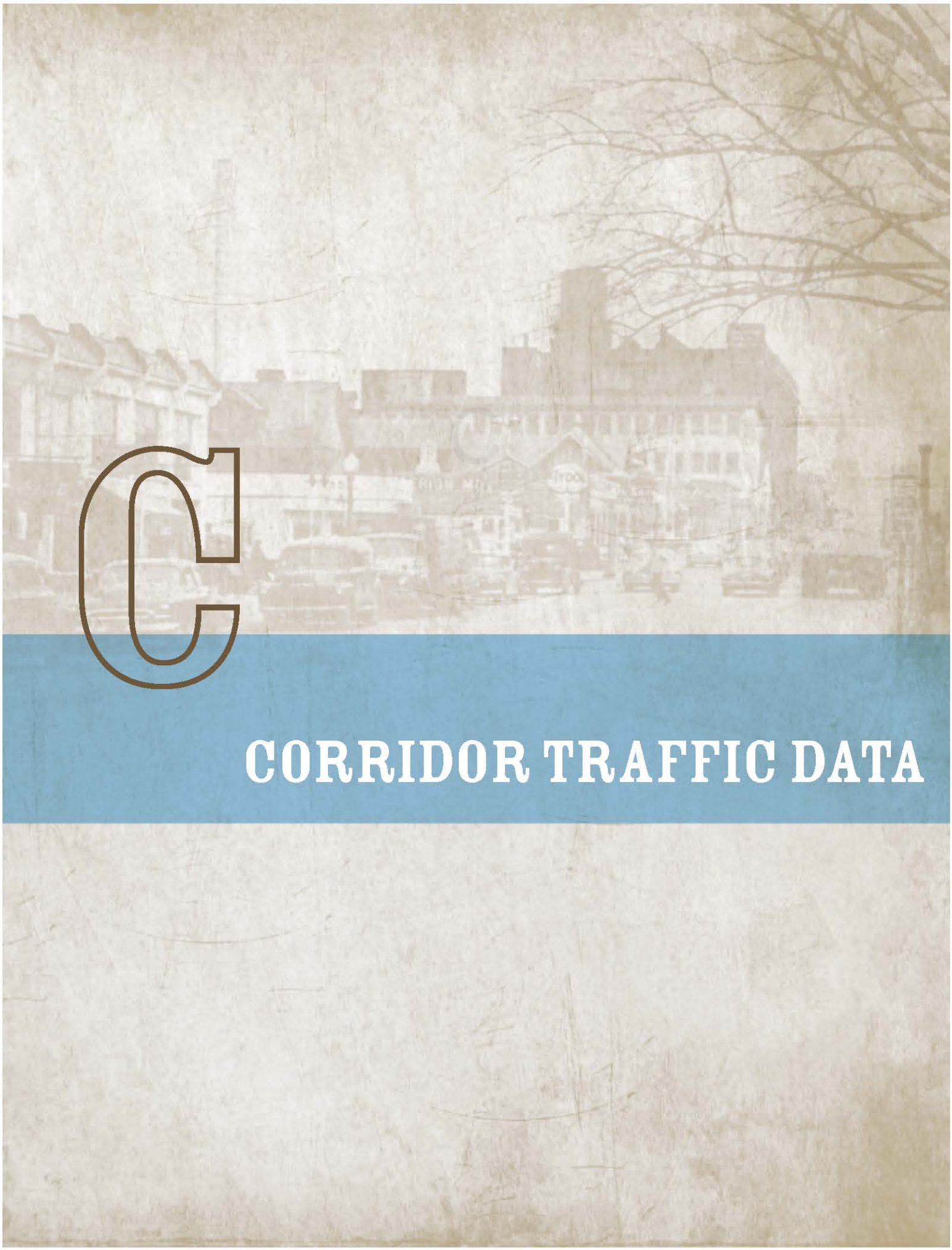


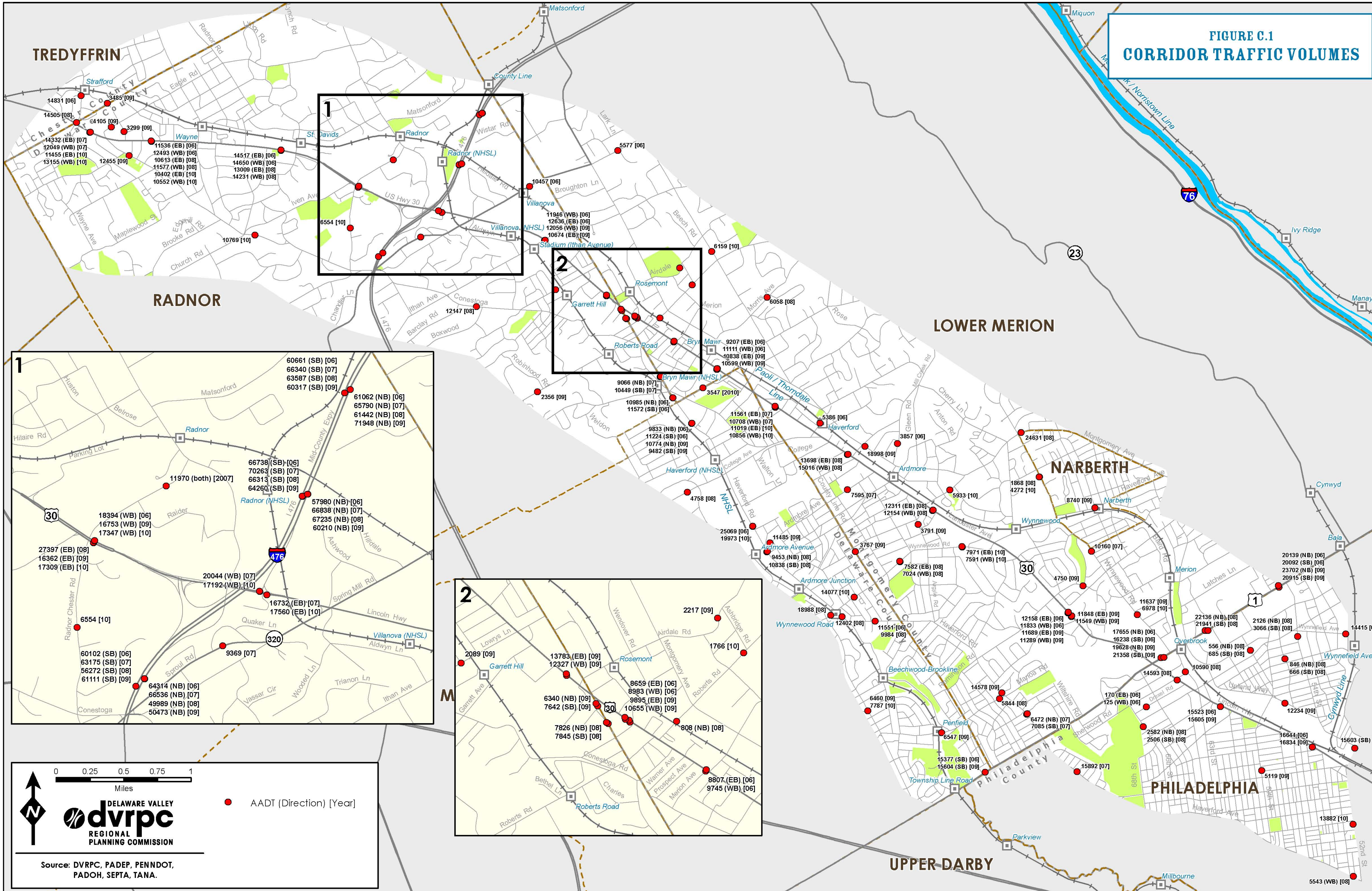
FIGURE B.3
TRANSIT RIDERSHIP DENSITY

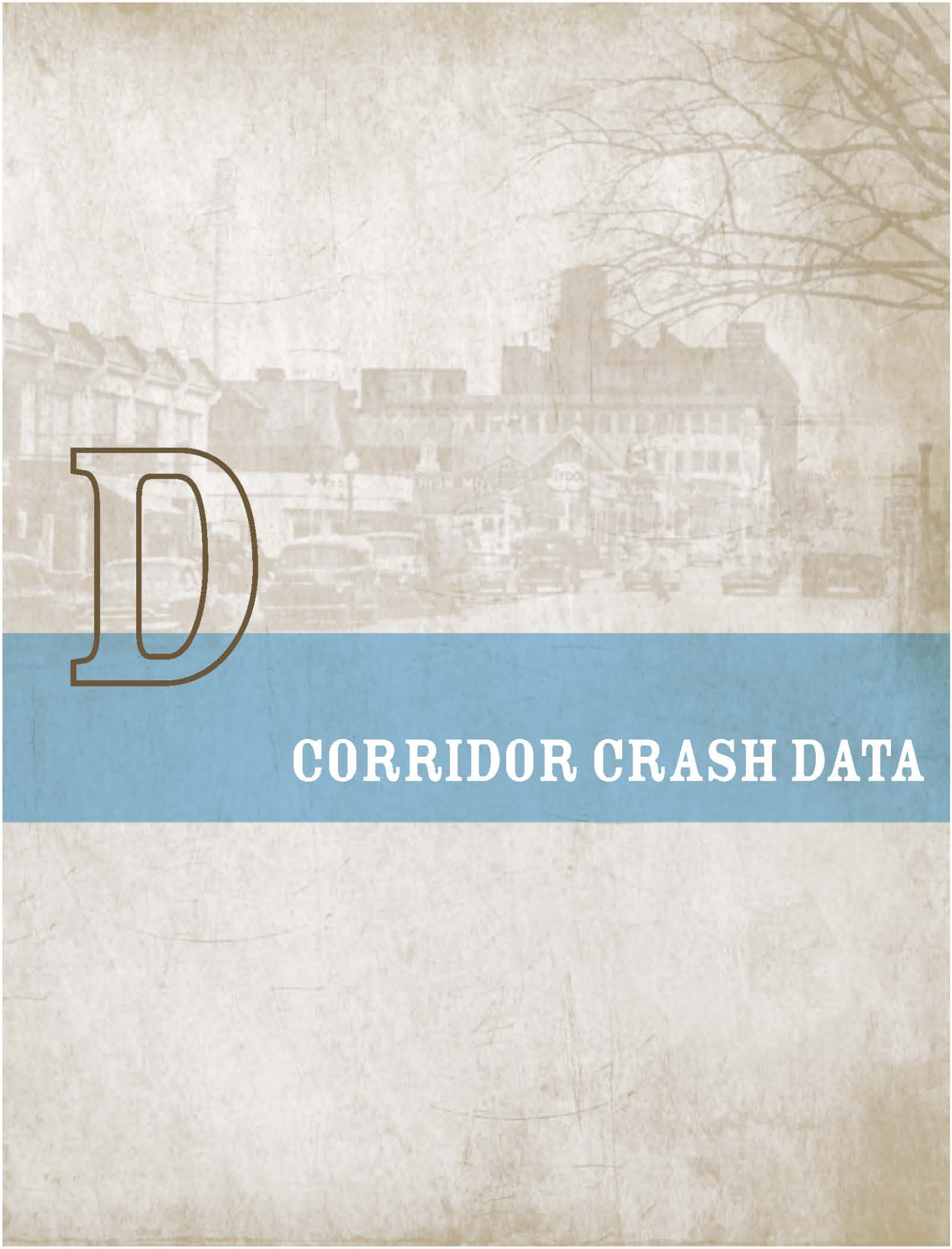


C

CORRIDOR TRAFFIC DATA

FIGURE C.1
CORRIDOR TRAFFIC VOLUMES





D

CORRIDOR CRASH DATA

DETAILED CRASH INFORMATION

US 30 (Lancaster Avenue)

As part of the analysis of the US 30 corridor, crash data for Lancaster Avenue and Montgomery Avenue was obtained for Lancaster Avenue for the most recent five years. This data was obtained from PennDOT for the years 2004 through 2008, the most recent complete data when the US 30 study kicked-off.

As stated in the report, this data was used to determine the 10 intersections along US 30 with the highest number of crashes.

The following detailed summary tables shows the breakdown of the crash data by collision type, severity, road condition, and illumination for Lancaster Avenue.

Table D.1: Intersection Crash Summary - Lancaster Avenue (2004-2008)

	Wynne-wood Road	Haverford Station Road	PA 320	Radnor Chester Road	52nd Street	Aberdeen Avenue	Remington Road	City Avenue	Banbury Way	59th Street	Roadway Total
Collision Type	Number of Crashes (Percent of Intersection Total)										
Angle	35 (47%)	53 (76%)	23 (34%)	30 (54%)	21 (40%)	30 (61%)	33 (69%)	16 (44%)	14 (45%)	12 (40%)	267 (52%)
Hit Fixed Object	5 (7%)	2 (3%)	1 (1%)	5 (9%)	1 (2%)	2 (4%)	2 (4%)	2 (6%)	9 (29%)	-	29 (6%)
Head-On	11 (15%)	3 (4%)	3 (4%)	4 (7%)	5 (9%)	4 (8%)	4 (8%)	3 (8%)	3 (10%)	5 (17%)	45 (9%)
Non-Collision	-	-	2 (3%)	-	-	1 (2%)	-	-	1 (3%)	-	4 (<1%)
Pedestrian	1 (1%)	-	4 (6%)	1 (2%)	8 (15%)	2 (4%)	-	1 (3%)	-	6 (20%)	23 (4%)
Rear-End	22 (29%)	10 (14%)	33 (49%)	13 (23%)	13 (25%)	8 (16%)	8 (17%)	11 (31%)	3 (10%)	7 (23%)	128 (25%)
Sideswipe (Opp. Dir.)	-	1 (1%)	-	1 (2%)	1 (2%)	-	-	2 (6%)	-	-	5 (1%)
Sideswipe (Same Dir.)	1 (1%)	1 (1%)	1 (1%)	1 (2%)	3 (6%)	2 (4%)	-	1 (3%)	1 (3%)	-	11 (2%)
Other	-	-	-	1 (2%)	1 (2%)	-	1 (2%)	-	-	-	3 (<1%)
Severity											
Fatality	-	-	-	-	-	-	-	-	-	-	-
Injury	23 (31%)	27 (39%)	19 (28%)	10 (18%)	31 (58%)	10 (20%)	22 (46%)	18 (50%)	9 (29%)	19 (63%)	188 (37%)
Property Damage Only	32 (43%)	26 (37%)	29 (43%)	24 (43%)	4 (8%)	25 (51%)	17 (35%)	9 (25%)	18 (58%)	3 (10%)	187 (36%)
Unknown	20 (27%)	17 (24%)	19 (28%)	22 (39%)	18 (34%)	14 (29%)	9 (19%)	9 (25%)	4 (13%)	8 (27%)	140 (27%)
Road Condition											
Dry	53 (71%)	57 (81%)	54 (81%)	38 (68%)	41 (77%)	41 (84%)	37 (77%)	26 (72%)	25 (81%)	19 (63%)	391 (76%)
Ice/Slush/Snow	-	1 (1%)	2 (3%)	-	-	-	1 (2%)	-	-	1 (3%)	5 (1%)
Wet	22 (29%)	12 (17%)	11 (16%)	18 (32%)	11 (21%)	8 (16%)	10 (21%)	10 (28%)	6 (19%)	9 (30%)	117 (23%)
Other	-	-	-	-	1 (2%)	-	-	-	-	1 (3%)	2 (<1%)
Illumination											
Dawn/Dusk	-	3 (4%)	1 (1%)	3 (5%)	-	4 (8%)	1 (2%)	2 (6%)	-	1 (3%)	15 (3%)
Daylight	58 (77%)	57 (81%)	47 (70%)	41 (73%)	41 (77%)	31 (63%)	39 (81%)	20 (56%)	21 (68%)	24 (80%)	379 (74%)
Street Lights	17 (23%)	10 (14%)	19 (28%)	12 (21%)	12 (23%)	14 (29%)	8 (17%)	14 (39%)	10 (32%)	5 (17%)	121 (23%)
Intersection Total	75 (15%)	70 (14%)	67 (13%)	56 (11%)	53 (10%)	49 (10%)	48 (9%)	36 (7%)	31 (6%)	30 (6%)	515 (100%)

Source: PENNDOT, 2010

Montgomery Avenue

As a parallel route to US 30, safety is the focus for analysis of this route for the study. Because Montgomery Avenue is a local roadway, PennDOT crash data was not available for this route. In order to be consistent, crash data was obtained from Lower Merion Township Police Department for the years 2004–2008. (It should be noted that not all 2004 data was available for analysis of Montgomery Avenue; only electronically scanned information was available and used for this analysis).

Collision diagrams and a detailed summary table illustrate the data obtained for three major intersections: Church Road, Morris Avenue, and Spring Mill Road. These locations were chosen based on their proximity to schools and rail stations.

Table D.2: Intersection Crash Summary - Montgomery Avenue (2004-2008)

	Morris Road	PA 320	Church Road	Roadway Total
Collision Type	Number of Crashes (Percent of Intersection Total)			
Angle	17 (65%)	8 (73%)	2 (40%)	27 (64%)
Hit Fixed Object	2 (8%)	1 (9%)	-	3 (7%)
Head-On	1 (4%)	-	1 (20%)	2 (5%)
Non-Collision	-	-	-	-
Pedestrian	2 (8%)	-	-	2 (5%)
Rear-End	4 (15%)	2 (18%)	1 (20%)	7 (17%)
Sideswipe (Opp. Dir.)	-	-	-	-
Sideswipe (Same Dir.)	-	-	1 (20%)	1 (2%)
Other	-	-	-	-
Severity				
Fatality	-	-	1 (20%) *	1 (2%) *
Injury	11 (42%)	4 (36%)	3 (60%)	18 (43%)
Property Damage Only	15 (58%)	7 (64%)	1 (20%)	23 (55%)
Unknown	-	-	-	-
Road Condition				
Dry	24 (92%)	6 (55%)	4 (80%)	34 (81%)
Ice/Slush/Snow	-	-	-	-
Wet	2 (8%)	5 (45%)	1 (20%)	8 (19%)
Other	-	-	-	-
Illumination				
Dawn/Dusk	2 (8%)	1 (9%)	1 (20%)	4 (10%)
Daylight	16 (62%)	6 (55%)	2 (40%)	24 (57%)
Street Lights	8 (31%)	4 (36%)	2 (40%)	14 (33%)
Intersection Total	26 (62%)	11 (26%)	5 (12%)	42 (100%)

* Alcohol Related Crash

Source: Lower Merion Township Police Department, 2010

Figure D.1: Montgomery Avenue Collision Diagram - Church Road

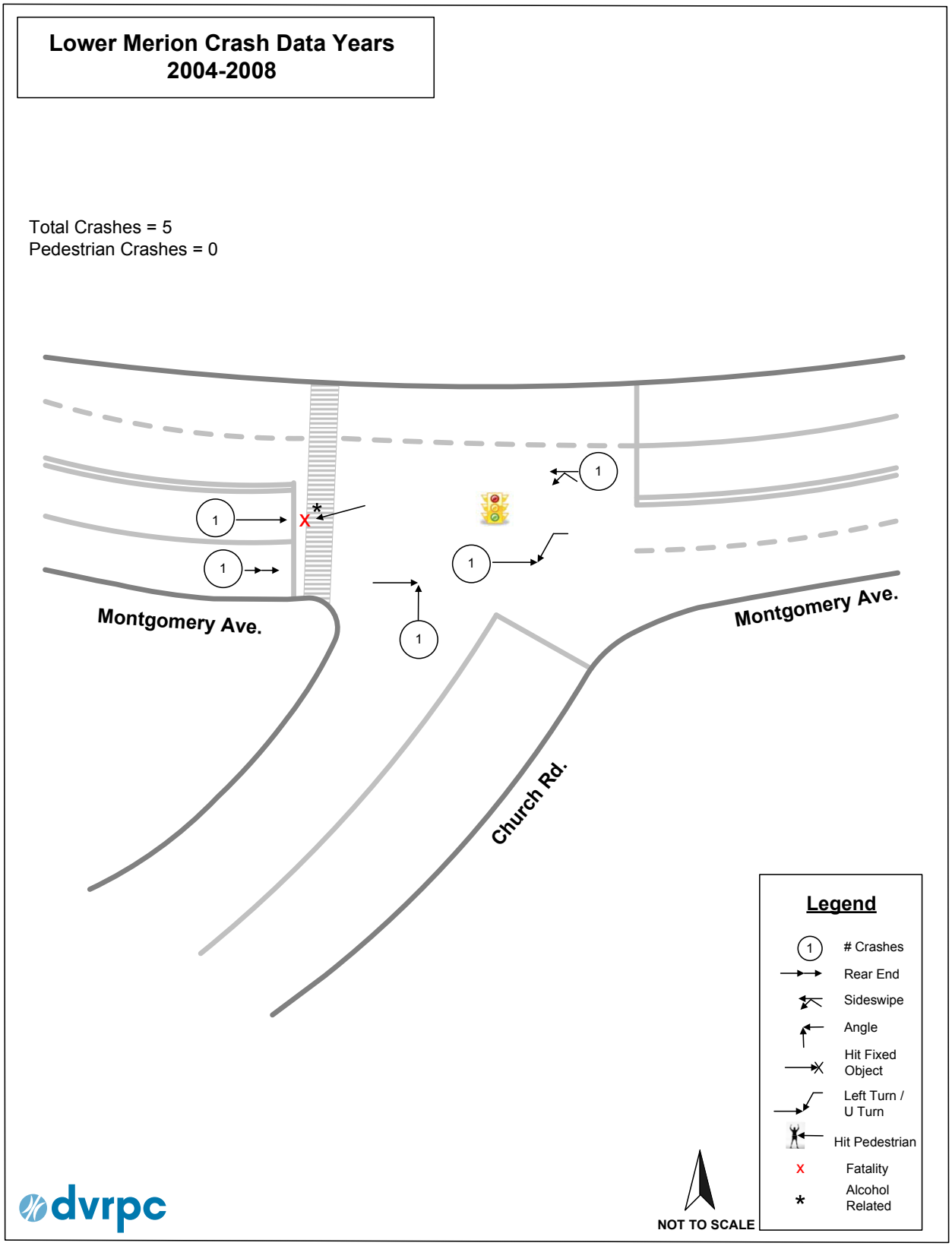


Figure D.2: Montgomery Avenue Collision Diagram - Morris Avenue

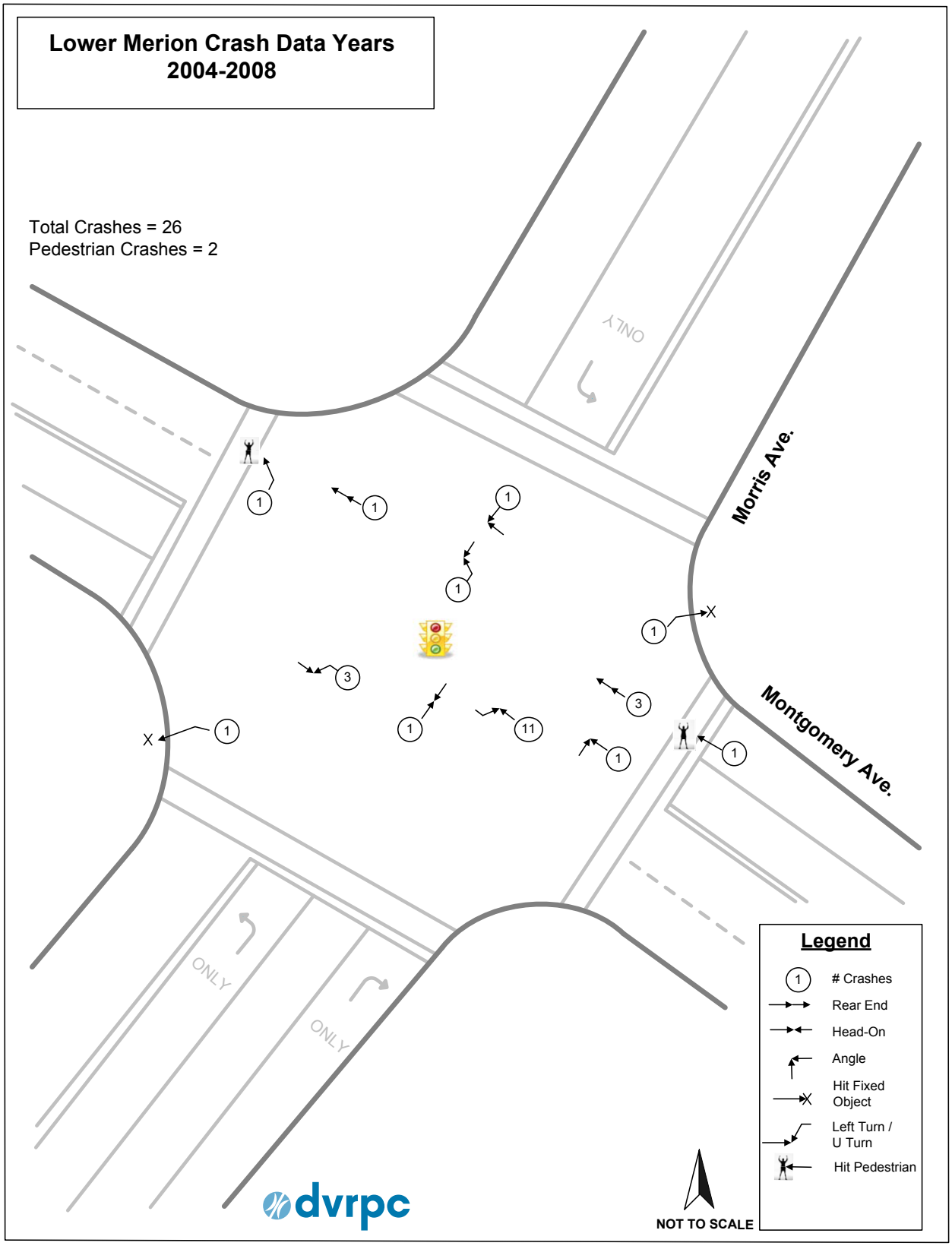
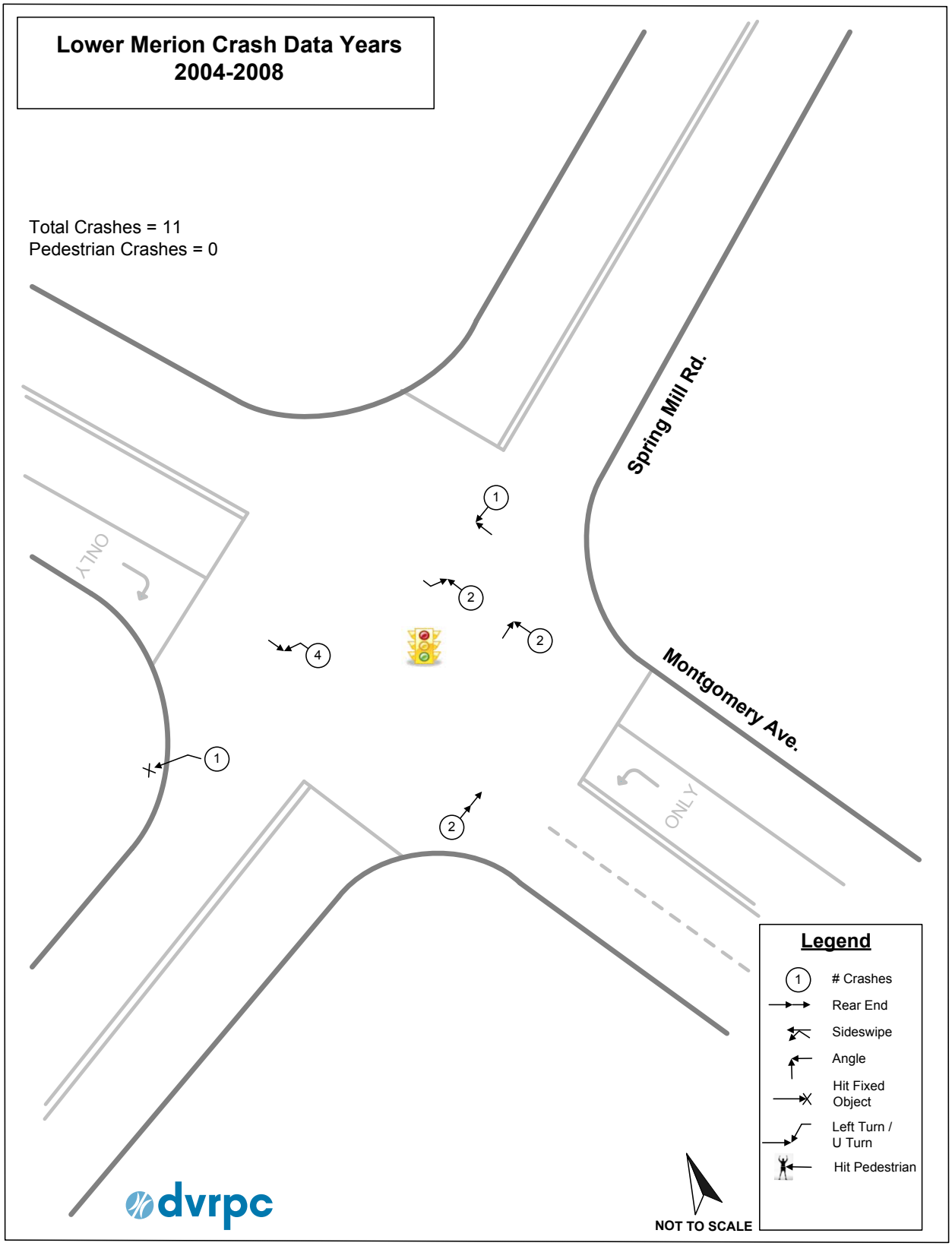
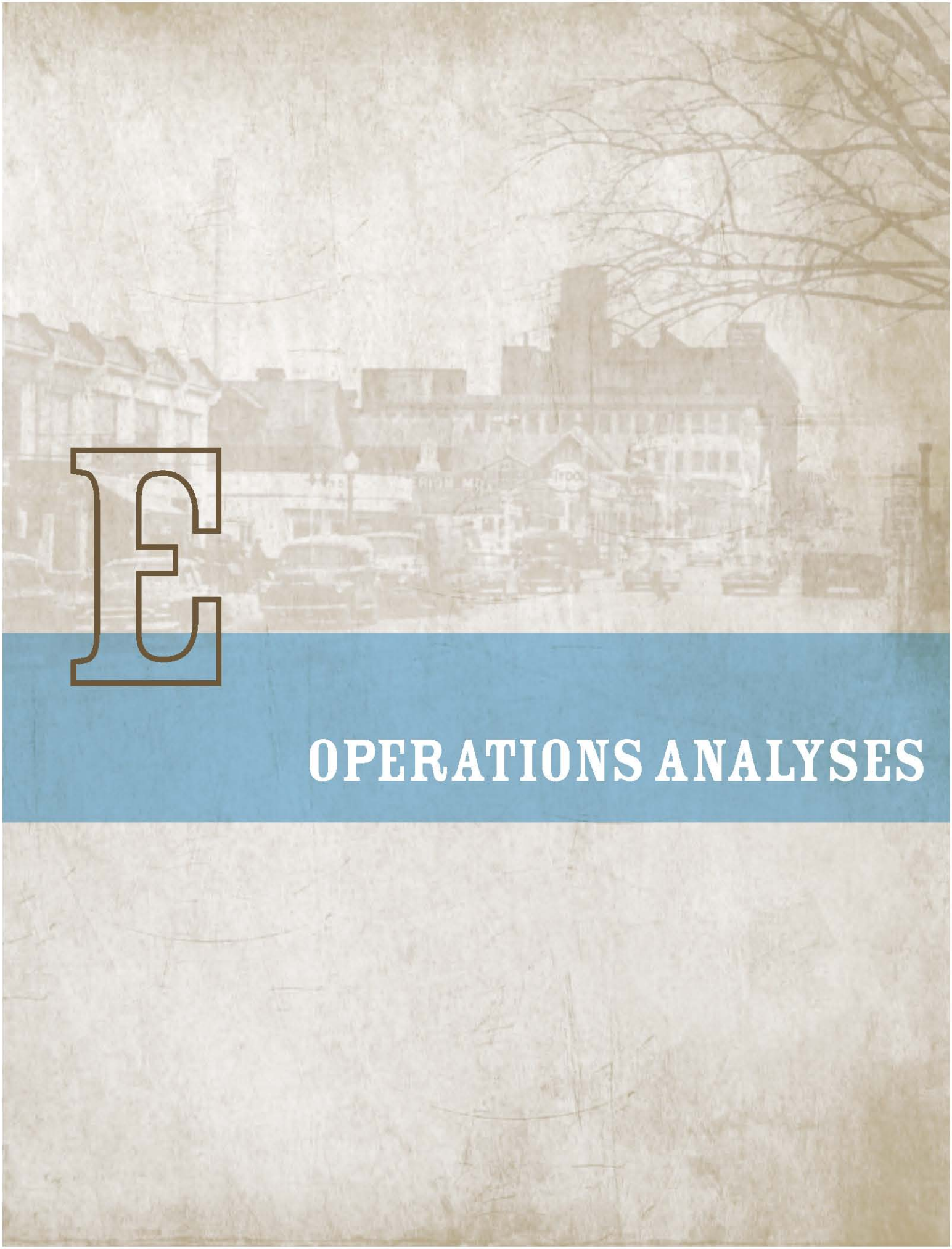


Figure D.3: Montgomery Avenue Collision Diagram - Spring Mill Road





E

OPERATIONS ANALYSES

INTERSECTION OPERATIONS ANALYSES FOR KEY INTERSECTIONS

In order to identify the transportation issues along the corridor, DVRPC solicited guidance from the technical advisory committee, comprised of representatives of local municipalities, counties, and PennDOT among others. Some of the corridor issues can be addressed corridor-wide while others need to be more specifically addressed. This appendix addresses key intersections along the corridor that required in-depth analysis. This Level of Service (LOS) analysis was completed using Synchro software. Summary charts showing the alternatives as well as their corresponding LOS result can be found in this section.

Analysis and Recommended Improvements

The LOS for existing conditions was compared against potential alternative improvements to determine the best recommendation for each intersection. Traffic signal timing and geometric information was input into the Synchro software for both existing and possible alternative scenarios in order to determine if operational improvements. The results were compared in order to determine which alternative recommendation would have the greatest reduction in delay for the intersection.

US 30 (Lancaster Avenue) at 52nd Street

This intersection is one of the crash cluster locations along Lancaster Avenue. Fifty-three crashes occurred at this intersection between the years of 2004–2008. Forty percent of these crashes were angle type crashes, 25 percent were rear-ends, and 15 percent were pedestrian crashes. Of these crashes, 77 percent occurred during daylight hours on dry pavement.

The intersection experiences a very high demand headed eastbound along Lancaster Avenue making left-turns onto 52nd Street toward Fairmount Park. The volume of turning vehicles is approximately the same as the volume of through and right-turning vehicles (610 vph and 631 vph respectively). This is a very high volume for an exclusive left-turn lane to handle, not to mention a shared through/left-turn lane as in this case.

This intersection contains a plethora of visual information along with interaction between pedestrians, trolleys, buses, and autos. It is recommended that the intersection be simplified and clarified as much as possible in order for drivers to be aware of the important information at the intersection, the traffic control devices, and pedestrians entering and exiting the trolley. In order to accomplish this, a sign inventory should be conducted to classify and prioritize signs and eliminate unnecessary sign clutter. Traffic signals should also be made as visible as possible, especially due to the catenary wires at the intersection. Both primary signal heads should be mounted overhead with backplates rather than just one of the signal heads. The latest MUTCD states that overhead mounting of signal heads on the far side of the intersection provides safer operation than post-mounted signal heads at the roadside (2009 MUTCD, pg. 460). Lane control signage can also clarify which movements are permitted from each lane as Lancaster Avenue flares from one lane to two lanes at the intersections. In the long-term, relocation of the eastbound trolley tracks to the curb lane should be considered. This would allow the inside lane to be striped as a left-turn only lane.

US 30 (Lancaster Avenue) at Wynnewood Road

This intersection has the highest number of crashes along Lancaster Avenue. Seventy-five crashes occurred at this intersection between the years of 2004–2008. Forty-seven percent of these crashes were angle crashes; while 29 percent were rear-end type crashes. Over 70 percent of the crashes occurred during daylight hours and on dry pavement. The driver action listed most often as a contributing factor was improper or careless turn or improper entrance to highway. This shows that drivers may be misjudging the gaps in traffic or becoming impatient and accepting smaller gaps in order to make turns onto Lancaster Avenue.

The existing operations of the Wynnewood Road intersection during the AM peak hour are LOS C, while the PM peak hour operates at LOS E, with the southbound and eastbound approaches operating at almost LOS F (73 seconds of delay). Striping the eastbound inside lane as a left-turn only lane and optimizing the intersection splits improves the overall intersection LOS by 11 seconds, but improves the eastbound approach by 21 seconds in the PM peak hour. These improvements can be made without extending the footprint of the intersection approaches.

At the Old Wynnewood Road intersection, the southbound approach is near LOS E in the PM peak hour due to the volume of vehicles attempting to exit the Whole Foods plaza and the backup along Lancaster Avenue. Restricting lefts at the Old Wynnewood intersection during the peak hours (7–9 AM and 4–7 PM) would allow the northbound vehicles to more easily access the Whole Foods plaza and make permitted left-turns.

Due to the constraints on widening the intersection for left-turn lanes, it is recommended that left-turns be restricted from the westbound direction during peak hours (7–9 AM and 4–7 PM). Left turns from the Whole Foods drive will be required to travel straight through the intersection to eventually make a right-turn onto Lancaster from Wynnewood Road. Improvements at the intersection of Old Wynnewood Road and Wynnewood Road such as side-street warning signs and traffic calming to reduce the

Table E.1: Wynnewood Road Intersection - Peak Hour LOS

	Existing Geometry		Existing Geometry		Add EB Left Lane		Stripe EB Inside Lane as Left	
	Existing Timing		Split Optimized		Existing Timing		Split Optimized	
Direction	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS
AM Peak Hour	90 second cycle		90 second cycle		90 second cycle		90 second cycle	
Wynnewood Road (NB)	48	D	36	D	48	D	36	D
Wynnewood Road (SB)	19	B	17	B	19	B	17	B
Lancaster Avenue (EB)	12	B	15	B	10	B	16	B
Lancaster Avenue (WB)	23	C	26	C	23	C	25	C
Overall Intersection	**29**	**C**	**26**	**C**	**29**	**C**	**26**	**C**
Old Wynnewood Road (NB)	40	D	40	D	40	D	40	D
Whole Foods Drive (SB)	32	C	32	C	32	C	32	C
Lancaster Avenue (EB)	4	A	4	A	4	A	4	A
Lancaster Avenue (WB)	2	A	1	A	2	A	1	A
Overall Intersection	**6**	**A**	**6**	**A**	**6**	**A**	**6**	**A**
PM Peak Hour	100 second cycle		100 second cycle		100 second cycle		100 second cycle	
Wynnewood Road (NB)	30	C	28	C	30	C	29	C
Wynnewood Road (SB)	73	E	53	D	73	E	64	E
Lancaster Avenue (EB)	73	E	52	D	30	C	61	E
Lancaster Avenue (WB)	30	C	43	D	27	C	64	E
Overall Intersection	**57**	**E**	**46**	**D**	**43**	**D**	**56**	**E**
Old Wynnewood Road (NB)	30	C	34	C	30	C	60	E
Whole Foods Drive (SB)	52	D	69	E	52	D	48	D
Lancaster Avenue (EB)	17	B	15	B	17	B	12	B
Lancaster Avenue (WB)	8	A	4	A	8	A	5	A
Overall Intersection	**17**	**B**	**16**	**B**	**17**	**B**	**15**	**B**

Source: DVRPC, 2010

speed of vehicles traveling east on Wynnewood Road will be necessary in order to provide adequate gaps for these relocated left-turns.

US 30 (Lancaster Avenue) at Haverford Station Road

This intersection has the second highest concentration of crashes along Lancaster. Seventy-six percent of these crashes are angle crashes, which tend to be more severe crashes. The vast majority (81%) of the crashes occurred on dry roadways in daylight conditions. Twenty-six percent of the crashes sighted "improper or careless turn" as the driver action. These crashes occurred when a driver was attempting to make a left-turn and were struck by oncoming traffic.

The existing operations of the intersection during the AM peak hour are LOS F, with delay in excess of 170 seconds per vehicle. The westbound direction sees delay of 290 seconds. The delay in the westbound direction is due to the high volume of westbound traffic (over 1100 vehicles in the peak hour), which are effectively restricted to the curb lane because of the high volume of vehicles turning left from the shared through/left-turn lane. In the PM, the intersection performs better, with a LOS C overall. The typical way to improve the intersection is to add left-turn lanes along Lancaster Avenue. This does reduce the delay and improve the LOS to C. Further improvement can be achieved by adding an exclusive northbound left-turn lane in addition to the left-turn lanes along Lancaster.

Due to the constraints on widening the intersection for left-turn lanes, it is recommended that left-turns be restricted from the westbound direction during peak hours (7–9 AM and 3–5 PM). These left turns will be relocated to the intersection of Lancaster Avenue with Buck Lane, where an exclusive left-turn lane can be installed. This restriction will mainly affect vehicles traveling to the Haverford School, including buses which are currently required to enter the Lower School at a right-in, right-out bus driveway.

Table E.2: Haverford Station Road Intersection - Peak Hour LOS

	Existing Geometry		Stripe EB Inside Lane as Left		Add EB and WB Left Lanes		Add EB, WB and NB Left Lanes	
	Existing Timing		Split Optimized		Split Optimized		Split Optimized	
Direction	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS
AM Peak Hour	90 second cycle		90 second cycle		90 second cycle		90 second cycle	
Haverford Station Road (NB)	79	E	423	F	85	F	41	D
Haverford Station Road (SB)	31	C	48	D	30	C	46	D
Lancaster Avenue (EB)	39	D	30	C	24	C	18	B
Lancaster Avenue (WB)	290	F	203	F	22	C	15	B
Overall Intersection	**173**	**F**	**159**	**F**	**29**	**C**	**22**	**C**
PM Peak Hour	100 second cycle		100 second cycle		100 second cycle		100 second cycle	
Haverford Station Road (NB)	87	F	81	F	97	F	42	D
Haverford Station Road (SB)	40	D	40	D	41	D	50	D
Lancaster Avenue (EB)	12	B	20	C	18	B	15	B
Lancaster Avenue (WB)	23	C	19	B	10	A	8	A
Overall Intersection	**29**	**C**	**29**	**C**	**26**	**C**	**20**	**C**

Source: DVRPC, 2010

US 30 (Lancaster Avenue) at PA 320 (Spring Mill Road/Sproul Road)

Sixty-seven crashes occurred between the years of 2004–2008. Forty-nine percent were rear-end crashes and 34 percent were angle type crashes. Seventy percent occurred during daylight hours, 81percent during dry roadway conditions. Driver actions include "driver was distracted" and "improper/careless turn." According to the DVRPC GIS crash layer, many of the crashes are occurring in the area around the Villanova Center driveways.

The existing intersection configuration and timing plan operates at LOS E and LOS F in the AM and PM peak hours respectively. Optimization of the timing plan yields an improvement to LOS D in the AM peak hour. Restricting the minor side-streets to right-in, right-out operation and optimizing the intersection cycle length improves the LOS to E in the PM peak hour (Alternative 1). Rerouting the Aldwyn Lane approach, restricting the Kenilworth Road approach to RIRO, and adding the NE and SW lanes (Alternative 2) allows the intersection operation to improve to LOS C in both the AM and PM peak hours; 21 seconds and 32 seconds of delay respectively. (The cycle lengths are shortened to 55 seconds and 75 seconds in the AM and PM peak hours under this scenario).

Consider relocating the left-turn lane into Villanova Center to the signalized entrance in order to permit this movement to be made easier and alleviate driver confusion of the two different left-turn locations queuing in a single lane. This could be leading to rear-end crashes (lead left-turn phase; driver expecting vehicles in front to move forward and turn at spring mill, not into center and potential rear-end crash). In order to better align the PA 320 approaches to the intersection with the addition of a second northeast bound left-turn lane and a southwest bound right-turn lane, the northeast approach needs to be relocated to the east. This requires taking frontage from the Sovereign Bank area southeast of the intersection. In order to compensate for this, the Sovereign Bank parking lots on either side of Aldwyn Lane could be combined and redesigned into a business campus if Aldwyn Lane were to be rerouted north of the NHSL. This would also allow Villanova to have more flexible use of the parcel in the future if the Sovereign Bank lease were allowed to expire.

Haverford Road at Ardmore Avenue

Operations at this complex intersection are further complicated by the fact that a large pine tree, the "Christmas Tree", is in a small island immediately adjacent to the intersection. Analysis was conducted at this location in order to determine if enlarging this island in order to accommodate pedestrian amenities (sidewalk and curb ramps) would impact the operations of the intersection. Enlarging the island would eliminate the ability for vehicles headed southwest bound wishing to make right turns to bypass the traffic signal by cutting through around the tree.

In order to determine the impact to the operations, the intersection was modeled first as a typical four-leg intersection, ignoring the fact that right turning vehicles are able to bypass the signal. In the AM peak hour the intersection operates at LOS D and in the PM peak hour LOS E. Once these results were obtained, the intersection was modeled again, this time allowing short continuous right-turn lanes in order to accommodate the ability of right turning vehicles to bypass the signal. This scenario produced identical results to the scenario where rights were required to pass through the traffic signal. These results allow one to draw the conclusion that even though some vehicles may be able to bypass the signal, the majority of vehicles are blocked from doing so due to the queue of through vehicles that forms at the intersection during the red indication.

In order to determine what operational improvements could be obtained at the intersection, the two scenarios were modeled again, this time the splits and cycle length were optimized in order to obtain the best LOS results. Again, the two scenarios produced identical results, with the exception that the optimized cycle length in the PM peak hour is 10 seconds longer when the right turns are restricted by an enlarged island. This analysis shows that closing off the ability for right turns by enlarging the island does not have a negative impact on operations at the intersection. Enlarging the island around the "Christmas Tree" is recommended because it will allow for ADA compliant pedestrian facilities to be constructed at this intersection.

Table E.3: Spring Mill Road Intersection - Peak Hour LOS

	Existing Geometry		Restrict Minor Side Streets		Restrict Minor Side Streets and Add SW Right Lane		Restrict Kenilworth, Reroute Aldwyn Add SW and NE Lanes	
	Existing Timing		Optimized		Existing Timing		Split Optimized	
Direction	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS
AM Peak Hour	165 second cycle		70 second cycle		70 second cycle		55 second cycle	
Sproul Road (NEB)	91	F	39	D	35	C	27	C
Spring Mill Road (SWB)	74	E	61	E	42	D	31	C
Lancaster Avenue (EB)	38	D	28	C	23	C	15	B
Lancaster Avenue (WB)	48	D	34	C	29	C	23	C
Aldwyn Lane (NB)	76	E	-	-	-	-	-	-
Kenilworth Road (SB)	47	D	-	-	-	-	-	-
Overall Intersection	**56**	**E**	**35**	**D**	**29**	**C**	**21**	**C**
PM Peak Hour	165 second cycle		90 second cycle		80 second cycle		75 second cycle	
Sproul Road (NEB)	285	F	70	E	82	F	45	D
Spring Mill Road (SWB)	107	F	106	F	62	E	46	D
Lancaster Avenue (EB)	59	E	34	C	28	C	20	C
Lancaster Avenue (WB)	181	F	66	E	59	E	34	C
Aldwyn Lane (NB)	130	F	-	-	-	-	-	-
Kenilworth Road (SB)	63	E	-	-	-	-	-	-
Overall Intersection	**139**	**F**	**60**	**E**	**51**	**D**	**32**	**C**

Source: DVRPC, 2010

Table E.4: Haverford Road at Ardmore Road Intersection - Peak Hour LOS

	Existing Geometry		Existing Geometry (Rights Allowed)		Existing Geometry (Rights Allowed)		Existing Geometry (Rights Restricted)	
	Existing Timing		Existing Timing		Optimized		Optimized	
Direction	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS
AM Peak Hour	77 second cycle		77 second cycle		90 second cycle		90 second cycle	
Haverford Road (NWB)	101	F	101	F	27	C	27	C
Haverford Road (SEB)	27	C	27	C	20	C	20	C
Ardmore Avenue (NEB)	25	C	25	C	52	D	52	D
Ardmore Avenue (SWB)	31	C	31	C	55	E	55	D
Overall Intersection	**52**	**D**	**52**	**D**	**37**	**D**	**37**	**D**
PM Peak Hour	90 second cycle		90 second cycle		80 second cycle		90 second cycle	
Haverford Road (NWB)	75	E	75	E	33	C	33	C
Haverford Road (SEB)	69	E	69	E	26	C	29	C
Ardmore Avenue (NEB)	19	B	19	B	26	C	28	C
Ardmore Avenue (SWB)	35	D	35	D	57	E	51	D
Overall Intersection	**56**	**E**	**56**	**E**	**33**	**C**	**34**	**C**

Source: DVRPC, 2010

ROAD DIET ANALYSIS FOR WYNNEWOOD EAST SUB-AREA

Road Diet Recommendations

As discussed in the sub-areas section, a road diet analysis was conducted for the Wynnewood East sub-area, the area between Clover Hill Road and City Avenue. This preliminary analysis indicates that the implementation of a road diet along this segment of roadway does increase delay and cause some queuing at signalized intersections, but not to the point that vehicles are expected to divert to alternate routes.

Three road diet scenarios were analyzed: 1) No road diet or existing conditions, 2) Road diet with left-turn lanes at signalized intersections, and 3) Road diet with modified phasing at Remington Road. Synchro software was used to conduct this analysis of the arterial level of service (LOS) for Lancaster Avenue. Table E.5 illustrates the results of the analysis.

As expected, the road diet increases the signal delay of the segments of Lancaster Avenue compared to that of existing conditions. Optimization of the splits at the internal intersections improves the LOS of Lancaster Avenue, but does so at the cost of added delay for the side streets. As far as queues resulting from the delays, queuing is expected in the segment between Clover Hill Road and Remington Road. The delay at this intersection is in the eastbound direction (33 seconds in the AM peak hour and 52 seconds in the PM peak hour). Removing the westbound lead left phasing greatly improves the signal delay at the Remington Road intersection (16 seconds and 9.5 seconds in the AM and PM peak hours respectively). However, removing the phase does increase the delay of westbound Lancaster Avenue, but only to a point where the delay is balanced between the Lancaster Avenue approaches.

As this analysis is preliminary and the results from the software may not accurately predict the operations of the road diet in the field, additional detailed analysis may be required by PennDOT. The study team recommends the implementation of a striping only demonstration project. This will permit PennDOT to further test the operations of the modified roadway and allow area residents and drivers to become familiar with the road diet concept. As illustrated in the Wynnewood East sub-area section, the current four-lane cross section could be modified to a three-lane cross section by striping 5-foot shoulders/buffer areas and a center island which can be striped as exclusive left-turn lanes at the signalized intersections.

Table E.5: Road Diet Analysis for Wynnewood East Sub-area - Arterial LOS

	No Road Diet (Existing Conditions)				Road Diet				Road Diet	
	Existing Intersection Timing				Internal Intersections Split Optimized Timing				Modified Remington Phasing	
AM Peak Hour - Eastbound										
	Wynnewood to Clover Hill	Clover Hill to Remington	Remington to Lankenau		Wynnewood to Clover Hill	Clover Hill to Remington	Remington to Lankenau		Clover Hill to Remington	Remington to Lankenau
Running Time (seconds)	26.2	38.2	58.9		26.2	38.2	58.9		38.2	58.9
Signal Delay (seconds)	9.6	8.2	18.2		14.5	41.0	33.7		23.4	37.9
Travel Time (seconds)	35.8	46.4	77.1		40.7	79.2	92.6		61.6	96.8
Arterial LOS	D	B	B		D	D	C		C	C
AM Peak Hour - Westbound										
		Remington to Clover Hill	Lankenau to Remington	City Avenue to Lankenau		Remington to Clover Hill	Lankenau to Remington	City Avenue to Lankenau	Remington to Clover Hill	Lankenau to Remington
Running Time (seconds)		38.2	58.9	28.6		38.2	58.9	28.6	38.2	58.9
Signal Delay (seconds)		16.3	21.6	5.5		30.3	19.8	5.6	30.7	32.1
Travel Time (seconds)		54.5	80.5	34.1		68.5	78.7	34.2	68.9	91.0
Arterial LOS		C	B	C		D	B	C	D	C
PM Peak Hour - Eastbound										
	Wynnewood to Clover Hill	Clover Hill to Remington	Remington to Lankenau		Wynnewood to Clover Hill	Clover Hill to Remington	Remington to Lankenau		Clover Hill to Remington	Remington to Lankenau
Running Time (seconds)	26.2	38.2	58.9		26.2	38.2	58.9		38.2	58.9
Signal Delay (seconds)	6.1	10.1	22.7		1.6	62.0	22.4		19.6	30.6
Travel Time (seconds)	32.3	48.3	81.6		27.8	100.2	81.3		57.8	89.5
Arterial LOS	C	B	B		C	E	B		C	C
PM Peak Hour - Westbound										
		Remington to Clover Hill	Lankenau to Remington	City Avenue to Lankenau		Remington to Clover Hill	Lankenau to Remington	City Avenue to Lankenau	Remington to Clover Hill	Lankenau to Remington
Running Time (seconds)		38.2	58.9	28.6		38.2	58.9	28.6	38.2	58.9
Signal Delay (seconds)		2.7	16.9	11.0		16.5	15.9	14.6	16.8	17.2
Travel Time (seconds)		40.9	75.8	39.6		54.7	74.8	43.2	55.0	76.1
Arterial LOS		A	B	C		C	B	D	C	B

Source: DVRPC, 2011

Publication Title: US 30 (Lancaster Avenue) Corridor Study: Creating Linkages and Connecting Communities – Technical Appendix

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Abstract: This study was conducted by DVRPC to help coordinate transportation and land use planning across the municipalities that line a portion of US 30. The study focuses on US 30 (Lancaster Avenue) between 52nd Street in West Philadelphia and Old Eagle School Road in Radnor. By coordinating these efforts, DVRPC seeks to promote a more sustainable region and implement the goals and objectives presented in *Connections: The Regional Plan for a Sustainable Future*. This study seeks to address transportation and livability issues such as safety, walkability, traffic circulation, stormwater management, and natural resource protection while enhancing the existing historic and cultural assets of the corridor. The suggested recommendations promote vehicular, pedestrian and bicycle safety; improved access to transit; and new development that aesthetically and functionally complements the character of the study area.

Staff Contact:

David A. Anderson, AICP
Manager, Office of Transportation & Corridor Studies
☏ (215) 238-2825
danderson@dvrpc.org

Andrew Svekla, AICP
Planning & Design Analyst
☏ (215) 238-2810
asvekla@dvrpc.org

Delaware Valley Regional Planning Commission
190 N. Independence Mall West, 8th Floor
Philadelphia PA 19106
Phone: (215) 592-1800
Fax: (215) 592-9125
Internet: www.dvrpc.org

CREATING LINKAGES

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8TH FLOOR | PHILADELPHIA, PA 19106
PHONE 215.592.1800 | WEB WWW.DVRPC.ORG

US 30