



The Dover/Kent County Metropolitan Planning Organization

Delaware State University Pedestrian Counts



SUMMARY REPORT December 2014

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Introduction

The Dover/Kent County Metropolitan Planning Organization (MPO) and Delaware Department of Transportation requested a pedestrian study be performed along the roadways adjacent to the Delaware State University's (DSU) Dover Campus. The study corridor included US Route 13 between the Delaware State University Commons entrance and College Road & College Road from US Route 13 to University Courtyard Apartments at Jason Court. Pedestrian activity within the study corridor has long been a concern since the residences are on one side of the road with the restaurants and retail centers on the opposite side. Recently the University and DelDOT have completed projects to improve safety through better channelization, improved crosswalks and signalization timing and added bike lanes. These counts will be performed annually to determine if the completed (and future) improvements are affecting the pedestrian's behavior and to identify additional areas of concern.

Pedestrian activity was counted at nine (9) intersections within the study corridor to determine the number of pedestrians and their patterns of movements at those intersections. The counts were conducted on two days in October while DSU classes were in session. The first day, October 16, 2014, was a Thursday the second, October 18, 2014, was a Saturday during a home DSU football game (homecoming). The counts were held between the hours of 9:00 am – 2:00 pm & 3:00 pm – 6:00 pm. Both days were partly cloudy with average temperatures.

The information collected was compared to the pedestrian counts performed at the same locations in 2013. While the number of pedestrian will vary the study looked for trends in pedestrian behavior such as use of pedestrian facilities and locations of non-controlled crossings.

Photos and data from each intersection are shown at the end of this report.

Count Observations

The observations counted all pedestrians that entered the intersection and observed to see if the pedestrians were using the sidewalks, crossing within, or outside, of the designated crosswalks and if there were any bicycles in the intersection. The direction of travel was not recorded for this study. Bikes were counted in the study and their use of non-bicycle facilities noted..

Count Classifications:

- | | |
|--------------------|---|
| Within Crosswalk: | pedestrians crossed the intersection using the designated crossing area. |
| Without Crosswalk: | pedestrians crossed at the intersection but there was not a designate crossing in the area that they crossed. These crossings occurred within twenty feet of the intersection. |
| Midblock Crossing: | pedestrians crossed the roadway but did not cross at an intersection or within a designated crossing area. These crossings occurred more than twenty feet away from the intersection. |

Total Number of Pedestrians at Count Locations 2014 and 2013 Totals

	Thursday 10/16/2014		Saturday 10/18/2014	
Location	9:00am – 2:00pm	3:00pm – 6:00pm	9:00am – 2:00pm	3:00 pm – 6:00pm
1. DSU Commons	14 17	6 13	16 17	9 13
2. Rustic Lane	95 90	65 61	88 66	82 49
3. North Dover Mall	52 63	44 42	77 82	88 71
4. South Dover Mall	85 24	133 24	159 51	287 65
5. DSU Entrance	79 124	78 92	753 180	1173 218
6. Dover Downs	66 97	90 108	180 86	310 71
7. College Road	52 30	52 63	97 56	114 52
8. DSU College Rd	12	9	5	4
9. College Road	267 284	217 241	140 157	345 26
10. Jason Court	278 300	226 213	207 18	376 109

* Location 9 College Road - Old College Rd volumes not included in total since they are internal movements.

** Location 10 Jason Court – Mid-block not included in total since they were captured at the Jason Ct. intersection.

Location 8 not counted in 2014.

Green numbers are pedestrian totals from 2013.

Breakdown of 2014 Pedestrian Crossing Movements by Number

	Thursday 10/16/2014		Saturday 10/18/2014	
Location	9:00am – 2:00pm	3:00pm – 6:00pm	9:00am – 2:00pm	3:00 pm – 6:00pm
1. DSU Commons	14	6	16	9
Within Crosswalk	8	6	15	9
Outside Crosswalk	6	0	1	0
2. Rustic Lane	95	65	88	82
Within Crosswalk	54	49	66	57
Outside Crosswalk	41	16	22	25
3. North Dover Mall	52	44	77	88
Within Crosswalk	45	30	71	60
Outside Crosswalk	7	14	6	28
4. South Dover Mall	85	44	159	287
Within Crosswalk	67	30	129	262
Outside Crosswalk	18	16	30	25
5. DSU Entrance	79	78	753	1173
Within Crosswalk	75	74	708	1103
Outside Crosswalk	4	4	45	70

6. Dover Downs	66	90	180	310
Within Crosswalk	49	41	126	212
Outside Crosswalk	17	49	54	98
7. College Road	52	52	97	114
Within Crosswalk	33	47	76	107
Outside Crosswalk	19	5	21	7
8. DSU College Rd	12	9	5	4
Within Crosswalk	7	7	2	4
Outside Crosswalk	5	5	3	0
9. College Road	267	217	140	345
Within Crosswalk	223	181	116	238
Outside Crosswalk	44	36	24	107
10. Jason Court	278	226	207	376
Within Crosswalk	23	22	10	51
Outside Crosswalk	255	204	197	325

Breakdown of 2014 Pedestrian Crossing Movements by Percentage

Location	Thursday 10/16/2014		Saturday 10/18/2014	
	9:00am – 2:00pm	3:00pm – 6:00pm	9:00am – 2:00pm	3:00 pm – 6:00pm
1. DSU Commons	14	6	16	9
Within Crosswalk	57%	100%	94%	100%
Outside Crosswalk	43%	0%	6%	0%
2. Rustic Lane	95	65	88	82
Within Crosswalk	57%	75%	75%	70%
Outside Crosswalk	43%	25%	25%	30%
3. North Dover Mall	52	44	77	88
Within Crosswalk	87%	68%	92%	68%
Outside Crosswalk	13%	32%	8%	32%
4. South Dover Mall	85	138	159	287
Within Crosswalk	79%	85%	81%	91%
Outside Crosswalk	21%	15%	19%	9%
5. DSU Entrance	79	78	753	1173
Within Crosswalk	95%	95%	94%	94%
Outside Crosswalk	5%	5%	6%	6%
6. Dover Downs	66	90	180	310
Within Crosswalk	74%	46%	70%	68%
Outside Crosswalk	26%	54%	30%	32%

7. College Road	52	52	97	114
Within Crosswalk	63%	90%	78%	94%
Outside Crosswalk	37%	10%	22%	10%
8. DSU College Rd	12	9	5	4
Within Crosswalk	58%	78%	40%	100%
Outside Crosswalk	42%	22%	60%	0%
9. College Road	267	217	140	345
Within Crosswalk	84%	83%	83%	69%
Outside Crosswalk	16%	17%	17%	31%
10. Jason Court	278	226	207	376
Within Crosswalk	8%	10%	5%	14%
Outside Crosswalk	92%	90%	95%	86%

Yearly Comparison of Percentage of Pedestrians Outside of the Crosswalk				
Location	Weekday 2013	Weekday 2014	Weekend 2013	Weekend 2014
1. DSU Commons	13%	30%	3%	4%
2. Rustic Lane	21%	36%	30%	28%
3. North Dover Mall	15%	22%	23%	21%
4. South Dover Mall	4%	26%	2%	12%
5. DSU Entrance	7%	5%	16%	6%
6. Dover Downs	33%	42%	17%	31%
7. College Road	17%	23%	8%	13%
8. DSU College Rd	48%	--	33%	--
9. College Road	11%	17%	17%	27%
10. Jason Court	7%	91%	94%	90%

Count Summary

Location 1 – DSU Commons

Summary: There was very little crossing activity at this location primarily due to the destinations being south of the intersection. There were some midblock crossings on the north side of the intersection particularly on the weekday mornings. This was consistent with the 2013 counts. A sidewalk along the frontage of US 13 was installed in the spring of 2014 and pedestrians were observed using this sidewalk. This appeared to help better direct the users but many still went across the Common's parking lot to get to the entrance. The overall pedestrian patterns were similar to that of the previous counts.

Approximately seven cyclists were counted at this location. The cyclists rode within bike lanes along US 13.

Concerns: Pedestrians were cutting across the parking lot to get to the Commons's entrance.

Recommendation: An additional option is to explore the opportunity to provide a trail connection to DSU's campus west of US 13 behind the frontage properties. This would reduce the need to walk/ride along US 13.

Location 2 – Rustic Lane

Summary: This location had consistent pedestrian traffic with two main movements: crossing US 13 to go to the Sonic and Wawa, and traveling to/from the Commons and DSU's campus. This intersection has a diagonal crosswalk of US 13 which was used by several people. The majority of the movement was along the western side of US 13 and the pedestrians stayed within the crosswalk. A significant number of people cross north of the intersection to travel between the Commons and the Wawa/Sonic. These movements were consistent with the data from 2013 but the number of mid-block crossings was higher than the prior year.

A total of 4 bicyclists were observed in the northbound and southbound bike lanes on US 13. Some of the riders were traveling in the wrong direction (against traffic) but the majority obeyed the rules of the road.

There is a transit stop on the northbound side of US 13, north of Rustic Lane.

Concerns: The primary concern was the midblock crossing north of Rustic Lane. The majority of these crossings seemed to be going to/from the Commons where the direct path is to cross before Rustic Lane.

Recommendation: Continue to educate the residents and users of the Commons facility to cross at designated crossing locations. Signs can also be added to guide pedestrians to the nearest crossing. A post and chain fence could be considered along the auto dealership to reduce the opportunity to cross but utility and clear zones (if not breakaway) will need to be considered.

Location 3 – North Dover Mall Entrance

Summary: This location has some of the lower pedestrian volumes. The western leg had the majority of pedestrian traffic traveling in the north/south direction. Once at the intersection the pedestrians used the crosswalk. There was a sizeable amount of pedestrian traffic crossing in between Rustic Lane and the north Dover Mall Entrance. It appeared that the pedestrians were heading between the State Police and Auto dealership properties. A sidewalk was constructed in 2014 in front of the Capital Inn of Dover (between Lowes and hhgregg) which was being used by pedestrians. The pedestrian movements were similar to that of 2013 but with a higher percentage of people not using the crosswalks in the late afternoon counts (32% - 16%; 22% - 15% for the entire day).

There is a transit stop on the southbound side of US 13, south of Rustic Lane.

A total of ten (10) bicyclists were observed in the north and southbound bike lanes on US 13. The majority of the riders were on the west side (southbound) of the road. Some of the riders were traveling in the wrong direction (against traffic) and some others were observed riding on the sidewalk.

Concerns: The primary concern was the midblock crossing north of the Dover Mall Entrance. It appears that the pedestrians are crossing in the long median between traffic signals to go to the State Police campus.

Recommendation: Install additional sidewalks to make a complete system on the east side of the road so there will be access to the traffic signals on both the north and southbound directions. Consider physical treatments (post and chain fence) to prevent crossings into the median area.

Location 4 – South Dover Mall Entrance

Summary: The majority of pedestrians at this location use the designated crosswalks along US 13. This can be attributed to the alignment of the path from DSU's campus and the addition of sidewalks at the Dover Mall. There were numerous pedestrians crossing east of the traffic signal across Mall Road to get to the Dover Commons.

The pedestrian patterns are very similar to those from 2013 with the majority of pedestrians using the crosswalks. There were substantially more pedestrians during the 2014 counts; a total increase of 307%.

Bikes were observed in both the northbound and southbound bike lanes on US 13 but the majority of the riders used the sidewalk along the DSU's frontage. Nine (9) bikes were counted at this location. Several riders made use of the crosswalk to cross US13. A portion of the riders were traveling in the wrong direction (against traffic)

Concerns: A determination should be made if cyclists should be permitted on the sidewalk along the DSU's frontage or if they should be directed to the on-road facilities. People were also observed crossing between cars and outside of the crosswalk along the Mall Road.

Recommendation: Place a physical barrier such as landscaping or fencing to prevent people from crossing across Mall Road.

Location 5 – Delaware State University Entrance

Summary: This location was one of the busiest during the week but had the most pedestrian activity on the weekend due to people parking at the Dover Mall and walking over to the stadium for homecoming. While the majority of people (over 95%) used the crosswalks there were some that crossed mid-block or on the north side of the intersection where there are no markings. The pedestrian patterns are very similar to those from 2013.

Bicycles were observed on all legs of the intersection and along the sidewalk fronting DSU. A total of five (5) bikes were counted. Several riders were seen riding in the opposite direction along the sidewalk; four of the five bikes were on the sidewalk.

Concerns: The number of people crossing on the north side of the intersection during the week was low. The higher numbers during homecoming were likely skewed due to the number of people crossing at the same time. Some of these people were heading to/from Best Buy and the Dover Mall.

Recommendation: For DSU's football games the entrance is closed and they have a police presence which helps to control traffic and protect pedestrians. This should be continued especially during the larger crowds such as homecoming.

Location 6 – Dover Downs Entrance

Summary: This location is a three legged intersection that has comparatively low pedestrian volumes but a high number that cross. It appears that the pedestrian were crossing to go to the restaurants (Boston Market, Chipotle, Grottos) on the east side of US 13. A large number of pedestrians walked from the parking lot on DSU's campus and crossed immediately at the end of the brick wall. This is very similar to the pedestrian patterns observed with the 2013 counts. The number of pedestrians was less than the previous year.

Fourteen cyclists were seen in the north and southbound directions along US 13. Some of the riders were in the bike lane, but a larger number of bikes were using the sidewalk along the frontage of DSU.

Concerns: There is significant pedestrian traffic coming from the DSU campus and parking lot which crosses US 13 where the brick wall ends. Since the higher mid-block crossings occurred during the weekday counts it is assumed that this activity happens when classes are in session. This would result in a large number of crossings that don't occur at a crosswalk.

Recommendation: The primary recommendation will be to extend the existing wall to at least the signalized intersection, possibly down to College Road, to create a permanent barrier between the campus and the mid-block crossing. Secondary recommendation would be to continue the landscaping or post and chain fence along the frontage of the DSU campus and along the east side of US 13 to discourage the people on the sidewalk from trying to cross mid-block.

Location 7 – College Road/US 13

Summary: The Acme shopping center makes the fourth leg of this intersection. The crosswalks were well used but there were still a number of midblock crossings on the northern side of the intersection. The people crossing midblock were going to and from the various stores in the shopping center. The crossing patterns were similar to the 2013 counts but there were more people crossing midblock.

This location had the highest number of bicycles along US13 – Twenty-one (21). The bicycles were using the north and southbound bike lanes along US 13 with the majority traveling in the proper direction. Some riders accessed the sidewalk along DSU's frontage at this point.

Concerns: The number of people crossing mid-block is too high. The pedestrians were making use of the grass median and gaps in traffic to get to the shopping center.

Recommendation: The landscaping and physical barriers mentioned in Location 6 could be extended down to College Road to encourage the crossings at the signalized intersections.

Location 8 – College Road from US 13 to DSU's First Entrance

Summary: This location was not counted in 2014 due to the very low pedestrian counts of 2013.

Location 9 – College Road at Old College Road

Summary: This was one of the busiest locations in the study. There was significant pedestrian traffic coming from the University Courtyard Apartments on College Road as well as large volumes of pedestrians within Old College Road to get to the facilities on DSU's campus. Very few people were observed crossing at the intersection at College Road since the existing sidewalk ties into Old College Road before the intersection. There is no sidewalk on the south side of the road, east of the bridge, but there were a high number that crossed mid-block between the bridge and west of the intersection. There was also numerous pedestrians who would walk along the shoulder of College Road after crossing the bridge before they accessed the sidewalk. The pedestrian patterns are very similar to those in 2013.

A large number of bicycles were observed on College Road and the riders primarily rode in the shoulders. The riders were traveling to DSU's campus and were turning onto Old College Road.

Concerns: College Road is on a curve as it approaches the intersection resulting in poor sight lines to pedestrians who are crossing the street. This is further compounded by the appearance the vehicles are traveling faster than the posted speed limit (35MPH). Even with these conditions there were still a high volume of pedestrians crossing mid-block.

Recommendation: As in 2013, this location and location 10 should have additional study to determine the most effective way to improve the safety for pedestrians crossing College Road. Due to limited space where the sidewalk runs along the roadway/bridge, options for physical barriers are limited but items such as a post and chain fence may still be feasible. Other options could include reviewing the pathways at the apartments to see if they can be modified to direct pedestrians to the crosswalk, construction of a larger sidewalk on the north side of College Road to accommodate the number of users. Signage and education to encourage pedestrians to cross at designated locations should be encouraged. This may be a location where enforcement of both pedestrian and vehicle activity should be considered to reduce vehicle speeds and direct pedestrian crossings at the appropriate locations. A speed study may also be performed to determine if the speed limit is appropriate for the roadway.

Location 10 – Jason Court

Summary: As in 2013, this location had the largest pedestrian volumes during the weekday count which is consistent with its proximity to the University Courtyard Apartments. There was significant pedestrian traffic going to/from the University Courtyard Apartments traveling toward DSU's campus but very few people used the marked crosswalk on College Road. There is existing sidewalk on both sides of the road between the entrance and the bridge. The pedestrian patterns are very similar to those of 2013.

Bicycle traffic was observed in both shoulders along College Road. Some of the cyclists were seen traveling in the wrong direction within the shoulders. A total of thirty-six (36) bikes were counted. Bike riders were coming from the apartments and farther down College Road.

There is a transit stop in front of the University Courtyard Apartments

Concerns: As with the previous location, the curvature of College Road reduces sight distance and vehicles appear to travel faster than the posted speed limit (35MPH). Even with these conditions an extremely high volume of pedestrians crossed mid-block. Many of the pedestrians who cross the road are distracted by their phones or friends making for an even more dangerous condition.

Recommendation: Due to the large number of pedestrians this location should be considered for additional crossing features such as warning signs, reduced crosswalk width or High-Intensity Activated crosswalk beacons. The location of the crosswalk should be reviewed to see if it would be more appropriate on the east leg of the intersection since that is closer to the destination. Signage and education to encourage pedestrians to cross at designated locations should be encouraged. Enforcement of both pedestrian and vehicle activity should also be considered to reduce vehicle speeds and direct crossings at the appropriate locations.

Conclusions

As in the previous year, there is significant pedestrian activity within this corridor that is largely related to Delaware State University. During the home football games, especially homecoming, the volumes of pedestrians increase during the hours around the game. Along US 13 85% of the pedestrians use the crosswalks while only 42% used the crosswalks on College Road. These numbers are comparable to those of 2013 but with fewer pedestrians using the crosswalks on College Road (83% & 50% respectively, in 2013). The consistency in the numbers along US 13 show that the pedestrians have learned to use the designated areas. However, due to the large numbers of pedestrians who cross US 13, and the existing traffic volumes, additional improvements should be pursued to encourage even more pedestrians to use the designated facilities and crossings.

Additionally, people were observed using the crosswalk when there was a gap in traffic and they did not have the protection of the signal. They did not appear to press the button or want to wait for the pedestrian signal to change. There are signs posted on the pedestrian poles instructing how to use the signal.

On College Road the pedestrian habits seemed to be consistent as well, but with limited use of the crosswalks. The pedestrians walk along both shoulders and cross when there is a break in traffic. Many times they are distracted with phones or with others in their group.

Cyclist activity was also observed during the counts and is significantly less than pedestrian movements. Bike lanes have recently been installed along US 13 and some riders were making use of these lanes but many used the existing sidewalks off of the roadway. While the majority of cyclists rode with traffic while in the road, several cyclists were riding the wrong way. While on the sidewalks, the riders would ride in both directions. Consideration should be given to widening the sidewalks throughout the study area to provide for an off-road pathway.

LOCATION 1 – DSU COMMONS ENTRANCE (SHERATON)



DSU Commons entrance looking north on US13



DSU Commons entrance looking east towards US13

LOCATION 1 – DSU COMMONS ENTRANCE (SHERATON)



DSU Commons entrance looking south on US13

LOCATION 2 – RUSTIC LANE



East side of US13 looking northwest towards W. Rustic Ln



East side of US13 looking southwest towards W. Rustic Lane

LOCATION 2 – RUSTIC LANE



West side of US13 looking northeast towards Wawa

LOCATION 3 – NORTH DOVER MALL ENTRANCE



East side of US13 looking west towards HH Gregg



East side of US13 looking southwest towards DSU

LOCATION 3 – NORTH DOVER MALL ENTRANCE



West side of US13 looking northeast towards Dover Mall



West side of US13 looking southeast towards Dover Mall

LOCATION 4 – SOUTH DOVER MALL ENTRANCE



East side of US13 looking northwest towards DSU Stadium



East side of US13 looking southwest towards Dover

LOCATION 4 – SOUTH DOVER MALL ENTRANCE



East side of US13 looking south towards Dover



West side of US13 looking east towards Dover Mall

LOCATION 5 – DELAWARE STATE UNIVERSITY ENTRANCE



East side of US13 looking west towards DSU



East side of US13 looking west towards DSU

LOCATION 5 – DELAWARE STATE UNIVERSITY ENTRANCE



West side of US13 looking northeast towards Dover Mall



West side of US13 looking east towards BestBuy

LOCATION 5 – DELAWARE STATE UNIVERSITY ENTRANCE



East side of US13 looking southwest towards DSU

LOCATION 6 – DOVER DOWNS ENTRANCE



East side of US13 looking south towards Dover



East side of US13 looking west towards DSU

LOCATION 6 – DOVER DOWNS ENTRANCE



West side of US13 looking East towards Dover Downs

LOCATION 7 – COLLEGE ROAD/US 13



East side of US13 looking south towards Dover



East side of US13 looking northwest towards DSU

LOCATION 7 – COLLEGE ROAD/US 13



West side of US13 looking east towards Staples



West side of US13 looking southeast towards Acme

LOCATION 8 – COLLEGE RD AT OLD COLLEGE ROAD



DSU's entrance at Old College Rd looking west on College Rd



DSU's entrance at Old College Rd looking west towards College Rd

LOCATION 8 – COLLEGE RD AT OLD COLLEGE ROAD



DSU's entrance at Old College Rd looking northwest towards entrance

COLLEGE RD CURVE AT DSU ENTRANCE



Looking east on College Rd towards DSU's entrance at Old College Rd.



Looking east on College Rd towards DSU's entrance at Old College Rd.

LOCATION 9 – JASON COURT



University Courtyard Apartments looking north toward College Rd



University Courtyard Apartments looking east on College Rd

LOCATION 9 – JASON COURT



University Courtyard Apartments looking west on College Rd



University Courtyard Apartments looking east on College Rd