



District Department of Transportation

Review of

Bicycle and Pedestrian Crash Locations

Year 2010,

Year 2011,

Up to March 2012





Study Report

Bicycle and Pedestrian Crash Locations

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1.0 Introduction

1.1. Project Overview

The principal objective of the Review of Bicycle and Pedestrian Crash Locations is to document an in-depth analysis of the data obtained from the District of Columbia’s TARAS (Traffic Accident Reporting and Analysis System). The Review analyses the number of crashes, locations, and patterns. The results from the Review of Bicycle and Pedestrian Crash Locations will be used to identify safety problems, high top crash locations, and develop an intersection improvements program so that appropriate actions can be initiated to enhance safety in the District.

2.0 Background Review

2.1. Crash Data Analysis

The Department’s Crash Analysis Reporting and Analysis System was utilized as a tool to review the Bicycle and Pedestrian Crashes assembled for the years – 2010, 2011, up to March, 2012. TARAS’s process automatically accesses the Metropolitan Police Department’s (MPD) crash database and extracts information from the “Traffic Crash Report,” or PD-10 form, which contains: crash location, elements considered, date, time, type of collision, and related environment.

It is important to clarify that this study report analyzes the total number of **locations** where the crashes occurred, excluding the information of the total number of pedestrians and bicycles that could have been involved in each crash. The information obtained from TARAS contained a total of 1171 locations involving pedestrians and a total of 754 locations involving bicycles crashes. Since the total numbers were a broad amount, a narrowed list was selected based on the locations with a higher crash occurrence.

The methodology, to analyze the crashes data provided, was similar to the strategies the District Department of Transportation (DDOT) has been using over the years in the Annual Report Highway Safety Improvement Program. This report defines the top 5% high hazard locations using the available data from crash reports. DDOT established three categories of crash statistics to define high hazard intersections: the total number of crashes, the number of injury crashes, and the total number of

injuries. Intersections are ranked from most to least severe in all three categories. As verbalized in the Annual Report, “Intersections featuring twelve or more crashes per year, four or more injury crashes per year, and five or more injuries per year are the established thresholds for identifying hazardous intersections”.

2.2 Additional Report

Another important report used as guidance was the Summary of Evaluation and Recommendations Report prepared by Kittelson & Associates, Inc., in April 2012. This report provided an evaluation of the bicycle facilities installed at three locations in Northwest D.C. The findings in their report were taken into consideration because some of the locations were listed in the TARAS report. Information from the Kittelson & Associates, Inc. report is quoted below:

“16th Street NW/U Street NW/New Hampshire Avenue NW

More bicycle crashes per year were observed at the intersection after installation of the bicycle facilities. There were 5 bicycle crashes at the intersection during the first 13 months after implementation, compared to a total of 4 bicycle crashes during the previous 4 years. The low number of total crashes and limited length of time observed for the after period (13 months) is too short to draw definitive conclusions. The number of crashes per year (adjusted for the increase bicyclist volumes) remained approximately the same before and after installation of the bicycle facilities. Crash patterns should continue to be monitored, particularly as operational changes are made to the intersection to improve bicyclist compliance”.

“Pennsylvania Avenue NW from 3rd Street NW to 15th Street NW

The frequency of bicycle crashes experienced along Pennsylvania Avenue increased after the bicycle facilities were installed. There were 16 bicycle crashes on the corridor during the first 14 months after implementation, compared to a total of 9 bicycle crashes during the previous 4 years. This represents an increase in crash frequency, even when taking into account the observed tripling of cyclist volume on the corridor. The low number of total crashes and limited length of time observed for the after period (14 months) is too short to draw definitive conclusions; however, DDOT should continue to monitor crash patterns to identify potential safety improvements along the corridor”.

“15th Street NW from E Street NW/Pennsylvania Avenue NW to V Street NW

The number of crashes involving bicyclists remained similar after the bicycle facilities were installed, after accounting for the substantial increase in bicyclist volume. Thirteen crashes involving cyclists occurred in the first 14 months after installation of the two-way cycle track, compared to 20 crashes over the 4 years prior to cycle track implementation. As cyclist volumes approximately doubled over this same time period, this represents no significant change in crashes per cyclist. One year of data after installation does not provide conclusive information for the crash patterns occurring along the corridor. However, it appears that crashes involving bicyclists remain a relatively rare event along 15th Street. It is recommended that crash reports continue to be evaluated in future years”.

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After evaluating the locations provided versus both reports mentioned above, a new list was created concentrating only on locations with relatively high number of injuries. Since no locations precisely met the twelve or more crashes per year criteria, as per the Annual Report (previously discussed), the list was based on the other two factors: number of injury crashes and the total number of injuries. Only the locations that met both parameters/ or where a fatal crash occurred were highlighted in a table to represent the most considerable locations to the reports intent.

2.3 Locations Review

It is important to note, The District of Columbia is constantly working on the improvement of the roadway safety. Therefore, after reviewing the new list, a re-search was performed to examine if those locations were under any project stage from the time the crash occurred. These locations are shown in Tables 1 and 2. Additional data details typically shown in TARAS are shown on charts in the Appendices.

Table 1 | Locations with relatively high number of injuries involving **Pedestrians**, including fatalities

LOCATION/ (Year of the crash)	QUAD	Ward	# of Injury Crashes in one Year	Total Injuries in one year	Number of Fatalities	Number of Crashes in three years	Project Stage	Start Date	Finish Date
9TH ST AND E ST (2010)	NW	2	4	5	-	5			
9TH ST AND MASSACHUSETTS AVE (2010)	NW	2	4	4	-	4			
9TH ST AND U ST (2011)	NW	1	4	6	-	4	Construction Phase I	6/11/12	4/12/13
12TH ST AND L ST (2011)	NW	2	4	4	-	4			
13TH ST AND K ST (2010)	NW	2	4	3	-	6	Design Completed	6/3/11	1/31/12
14TH ST AND COLUMBIA RD (2011)	NW	1	4	4	-	4			
14TH ST AND I ST (2011)	NW	2	6	3	-	6	Design Completed	4/12/12	11/30/12
14TH ST AND U ST (2010)	NW	1	4	4	-	7	Construction Phase I	6/11/12	4/12/13
19TH ST AND L ST (2010)	NW	2	4	4	-	7			

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MARTIN LUTHER KING AVE AND HOWARD RD (2011)	SE	8	6	8	-	8	Construction Completed	11/29/11	7/13/12
MINNESOTA AVE AND BENNING RD (2011)	NE	7	4	4	-	4	Under Design	2010	-
NEW YORK AVE AND NORTH CAPITOL ST (2010)	BN	5	4	4	-	5	Construction Completed	8/26/11	2012
SOUTHERN AVE AND S CAPITOL ST (2011)	BN	8	4	4	-	4	Study Completed	1/11/12	9/30/12
6TH ST AND FLORIDA AVE (2011)	NW	1	-	-	1	2			
9TH ST AND T ST (2010)	NE	5	-	-	1	1	Construction Completed	-	2011
14TH ST AND CONSTITUTION AVE (2010)	NW	2	-	-	1	2	Construction completed	4/24/12	11/30/12
18TH ST AND FLORIDA AVE (2010)	NW	1	-	-	1	2	Construction Completed	2/22/11	8/15/12
33RD ST AND RESERVOIR ST (2010)	NW	2	-	-	1	1			
CONNECTICUT AVE AND DEVONSHIRE PL (2011)	NW	3	-	-	1	2	Under Design	9/28/11	-
CONNECTICUT AVE AND N ST (2010)	NW	2	-	-	1	2			
DIVISION AVE AND SHERIFF RD (2010)	BN	7	-	-	1	2	Proposed FED AID Citywide		
FBI: INTERSTATE 295 / FOOTE ST (KENILWOTH AVE) (2010)	NE	7	-	-	1	1			
KENILWORTH AVE AND HAYES ST (2011)	NE	7	-	-	1	2			

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MONTELLO AVE AND MEIGS PL (2010)	NE	5	-	-	1	1	Proposed FED AID Citywide		
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Table 2 | Locations with relatively high number of injuries involving **Bicycles**, including fatalities

LOCATION/ (Year of the crash)	QUAD	Ward	# of Injury Crashes in one year	Total Injuries in one Year	Number of Fatalities	Number of Crashes in three years	Project Stage	Start Date	Finish Date
7TH ST AND H ST (2010)	NW	2	4	4	-	4			
11TH ST AND FLORIDA AVE (2011)	NW	1	4	5	-	5	Under Design	2011	-
14TH ST AND COLUMBIA RD (2011)	NW	1	4	3	-	6			
14TH ST AND U ST (2011)	NW	1	7	7	-	9	Construction Phase I	6/11/12	4/12/13
14TH ST AND V ST (2011)	NW	1	5	4	-	6			
15TH ST AND RHODE ISLAND AVE (2010)	NW	5	4	1	-	5			
16TH ST AND NEW HAMPSHIRE AVE (2010)	NW	1	4	4	-	6			
39TH ST AND VAN NESS ST (2010)	NW	3	4	1	-	4			
FLORIDA AVE AND RHODE ISLAND AVE (2011)	NW	1	4	3	-	5	Design Completed	4/10/12	11/30/12
H ST AND NORTH CAPITOL ST (2010)	BN	6	4	4	-	4			
6TH ST AND MASSACHUSETTS AVE (2010)	NW	6	-	-	1	3	Under Review	2013	-

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12TH ST AND NEW YORK AVE (2010)	NW	2	-	-	1	1			
18TH ST AND BRYANT ST (2011)	NE	5	-	-	1	1			
SOUTHERN AVE AND VALLEY TERR (2010)	SE	8	-	-	1	1			

As a final step, a review of the PD-10 Forms was performed for all the locations that were not found under a project stage to help determining the possible cause of the crash.

Furthermore, after reviewing the PD-10s, a field review was conducted at the locations where the crash was not due to inattention or a violation. The purpose of the field review was to inspect physical, operational, and safety deficiencies helping to identify potential recommendations that could be implemented to improve the safety at those locations.

3.0 Safety Analysis

3.1. Analysis of Existing Conditions

Design Elements

The design elements such as lane configuration, roadway classification, and posted speed limit were evaluated at each location, and when dealing with fatal intersection crashes it involved: sight distance, roadway geometry, traffic operation, signalization, signage, and environment review.

Pavement Conditions

An observation of the roadways conditions was made to identify locations with pavement cracks that were considered deficient.

Pedestrian and Bicycle Needs

Sidewalks were reviewed to identify possible tripping hazards, substandard slopes, and deteriorated pavers. The District’s approach is to repair any location that requires maintenance and to upgrade pedestrian ramps that do not meet ADA standards.

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The roadway was also reviewed at locations where bicycle crashes occurred to identify if the conditions were safe and if they were free of physical obstructions.

Signing and Pavement Markings

Traffic control devices such as signing and pavement markings were evaluated since these shall be updated to comply with the current edition of the MUTCD, the Manual on Uniform Traffic Studies.

4.0 Safety Improvements

4.1 Observations and Recommendations

Performing this Report led to a prioritization of which locations needed improvements in the District of Columbia. It is clear after reading each Detailed Narrative of the PD-10 Forms, Field 179, a very high percentage of the crashes were a result of an inadequate behavior of the pedestrians, bicyclists, and drivers. This concludes human behavior was the main crash contribution factor when those crashes occurred.

Based on the findings, the following summarizes the contributing circumstances, observations and recommendations for each prioritized location.

PEDESTRIAN

LOCATION/ (Year of the crash)	QUAD	Primary Contributing Circumstances	Observations/ Recommendations
9TH ST AND E ST (2010)	NW	<u>Other</u> Driver struck Pedestrian <u>Driver Inattention</u> Driver struck Pedestrian <u>Pedestrian Violation</u> Driver collided with two pedestrians <u>Driver Inattention</u> Driver struck Pedestrian while exiting the parking garage	Due to the pattern of the crashes happening while the vehicles were attempting to make a left turn. <u>Additional signage</u> is recommended to improve the driver's awareness to yield to pedestrians. <u>Addition of left turn signal phase</u> is recommended for vehicles traveling on E St. westbound
9TH ST AND MASSACHUSETTS AVE (2010)	NW	<u>No Violation</u> Pedestrian intoxicated crossed the street against the traffic signal <u>Driver Inattention</u> Driver struck Pedestrian who had the right of way when crossing the crosswalk	<u>Pavement Markings</u> improvement is recommended to increase the visibility of the pedestrian crossing

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		<u>Auto/Pedestrian Right of Way</u> Driver struck Pedestrian who was crossing in the crosswalk with the walk signal <u>No Violation</u> Driver struck Pedestrian who had the right of way to cross	
12TH ST AND L ST (2011)	NW	<u>Unknown</u> Driver struck Pedestrian <u>Auto/Pedestrian Right of Way</u> Investigation undetermined <u>Driver Inattention</u> Driver struck Pedestrian <u>Pedestrian Violation</u> Pedestrian was walking in the middle of the street	<i>Location up to standards.</i> There were not consistent patterns. Crashes were caused due to inattention.
14TH ST AND COLUMBIA RD (2011)	NW	<u>Pedestrian Violation</u> Pedestrian walked in front of the bus into oncoming traffic <u>Pedestrian Violation</u> Pedestrian was J-walking <u>Unknown</u> Pedestrian walking in the street beside a parked Vehicle <u>No Violation</u> Pedestrian was crossing between intersection	There were not consistent patterns. Crashes were caused due to inattention. <u>Pavement Makings</u> improvement is recommended
19TH ST AND L ST (2010)	NW	<u>Auto/Pedestrian Right of Way</u> Driver struck Pedestrian <u>Auto/Pedestrian Right of Way</u> Driver struck Pedestrian <u>Pedestrian Violation</u> Pedestrian ran out into the street <u>Driver Inattention</u> Driver struck Pedestrian	Due to the pattern of the crashes happening while the vehicles were attempting to make a left turn. <u>Additional signage</u> is recommended to improve the driver's awareness to yield to pedestrians
6TH ST AND FLORIDA AVE (2011)	NW	<u>Other</u> Examination of crime scene revealed Pedestrian had been struck by an unknown Vehicle	<i>Location up to standards.</i> Unclear fatality.
33RD ST AND RESERVOIR ST (2010)	NW	<u>Pedestrian Violation</u> Pedestrian was running across the roadway outside of the crosswalk and against the traffic signal	Even the fatality was not in crosswalk, <u>Pavement Makings</u> improvement is recommended
CONNECTICUT AVE AND N ST (2010)	NW	<u>Alcohol/Drug Influence</u> Driver was under the influence, striking a Pedestrian and side wiped another Vehicle <u>Pedestrian Violation</u> Pedestrian jumped under Vehicle creating a hazard	<i>Location up to standards.</i> Fatality was due to Alcohol/Drug influence.
DIVISION AVE AND SHERIFF RD (2010)	BN	<u>Driver Inattention</u> Driver struck Bike	Even the fatality was not in crosswalk, <u>Pavement Makings</u> improvement is recommended and the implementation of high-visibility crosswalk
FBI: INTERSTATE 295 / FOOTE ST (KENILWOTH AVE) (2010)	NE	<u>Alcohol/Drug Influence</u> Vehicle collided with Vehicle #2 as well as with a Pedestrian that was standing outside Vehicle #2	<i>Location up to standards.</i> Fatality was due to Alcohol/Drug influence.

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KENILWORTH AVE AND HAYES ST (2011)	NE	<u>Pedestrian Violation</u> Vehicle collided with a Pedestrian that was walking in the middle of the roadway on I-295 ramp	<i>Location up to standards.</i> Fatality was in the middle of I-295 ramp.
MONTELLO AVE AND MEIGS PL (2010)	NE	<u>Pedestrian Violation</u> Pedestrian entered the roadway in pursuit of a basketball	<u>Upgrade all ramps</u> in accordance with current ADA requirements and DDOT standards is recommended.

BICYCLES

LOCATION/ (Year of the crash)	QUAD	Primary Contributing Circumstances	Observations/ Recommendations
7TH ST AND H ST (2010)	NW	<u>Other</u> Driver struck Bike <u>No Violation</u> Driver struck Bike making a left turn in front of the Vehicle without proper hand signal <u>Open Door to Traffic</u> Bicycle traveling at a high rate struck Vehicle while people existing a cab <u>Open Door to Traffic</u> Bicycle struck Vehicle's open door	Inappropriate left turns were made even though there are "No Left Turn" posted signs at the intersection <u>Addition of electronic fiber optic "No Left Turn" sign</u> is recommended on top of the traffic signal to improve the prohibited left turn movements
14TH ST AND COLUMBIA RD (2011)	NW	<u>Driver Inattention</u> Driver failed to yield the right of way <u>Auto/Pedestrian Right of Way</u> Bike failed to yield right of way to bus trying to go around <u>Other</u> Driver exited the curb while impeding traffic <u>Red Light Violation</u> Vehicle entered the intersection on a red light	<u>Additional signage</u> is recommended to ensure drivers awareness of bicyclist in the area
14TH ST AND V ST (2011)	NW	<u>Pedestrian Violation</u> Bicycle struck Pedestrian that suddenly walked between parked vehicles <u>Open Door to Traffic</u> Bicycle struck Vehicle's open door <u>Other</u> Bicycle struck Vehicle <u>Unknown</u> Vehicle struck Bicycle <u>Unknown</u> Bicycle struck Vehicle that was making and illegal U-Turn	There were not consistent patterns. Crashes were caused due to inattention. <u>Pavement Makings</u> improvement is recommended
15TH ST AND RHODE ISLAND AVE (2010)	NW	<u>Changing Lanes W/O Caution</u> Driver struck Bike <u>Auto/Pedestrian Right of Way</u> Bike struck Taxi <u>Auto/Pedestrian Right of Way</u> Driver failed to yield the right of way and hit Bicyclist <u>Driver Inattention</u> Driver struck Bike	Crashes were caused due to driver's failure to yield right of way. It is noted 15 th St NW is a one way street that allows bicyclist to travel with and against traffic. <u>Addition of warning sign</u> is recommended to aware vehicles to yield to pedestrians and bicyclist

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16TH ST AND NEW HAMPSHIRE AVE (2010)	NW	<u>Other</u> Bicycle struck Vehicle when improperly passing a taxi <u>Unknown</u> Bicycle struck Vehicle rear passenger side <u>Auto/Pedestrian Right of Way</u> Driver struck Bike. Driver failed to yield the right of way <u>Driver Inattention</u> Bike stated he was confused by the new configuration of the bicycle lane	There were not consistent patterns. Crashes were caused due to inattention. <u>Pavement Makings</u> improvement is recommended
39TH ST AND VAN NESS ST (2010)	NW	<u>Open Door to Traffic</u> Driver was dropping off passenger while stopped on a red signal. Bicycle collided with the door <u>Unknown</u> Both Bike and Vehicle side swiped each other <u>Unknown</u> Driver struck Bike <u>Other</u> Driver struck Bike. Driver failed to yield the right of way	There were not consistent patterns. Crashes were caused due to inattention. <u>Pavement Makings</u> improvement is recommended
H ST AND NORTH CAPITOL ST (2010)	BN	<u>Unknown</u> Collision between a Vehicle and Bike <u>Red Light Violation</u> Vehicle entered the intersection on a red light <u>No Violation</u> Driver struck Bike <u>Open Door to Traffic</u> Driver opened door to traffic without ensuring traffic was clear	There were not consistent patterns. Crashes were caused due to inattention. <u>Pavement Makings</u> improvement is recommended
12TH ST AND NEW YORK AVE (2010)	NW	<u>Driver Inattention</u> Vehicle struck Bike	Fatality due to driver's inattention. <u>Pavement Makings</u> improvement is recommended
18TH ST AND BRYANT ST (2011)	NE	<u>Pedestrian Violation</u> Bicyclist collided with Pedestrian that was entering the roadway just south of the crosswalk	Fatality case under investigation. <u>Pavement Makings</u> improvement is recommended
SOUTHERN AVE AND VALLEY TERR (2010)	SE	<u>Unknown</u> Bike struck by two Vehicles	<u>Upgrade all ramps</u> in accordance with current ADA requirements and DDOT standards is recommended.

DDOT's goal is to have a fully integrated active transportation networks. In addition to the recommendations presented, improving safety at the high top crash locations can also be achieved through community outreach, much of which can be accomplished throughout the implementation of brochures. These brochures are constantly redeveloped and updated to increase the roadway users' awareness of the Safety Tips, Programs, and Projects in the District.

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