

Howard University Transportation Research Center
ROAD TO ZERO
BICYCLE NEAR-MISSES IN DC ROADS

Summary of Preliminary Results
January 2023

Submitted to:



Prepared by:



Introduction

The District of Columbia is experiencing consistent growth in its resident bicycling community. Whether as a primary mode of transportation or leisure, more and more people have resorted to bikes to travel within DC. In the past couple of years, the District Department of Transportation (DDOT) has installed various new dedicated bike lanes in the District to promote this mode of choice. Nevertheless, most residents still perceive biking as a risky activity because of which, the expansion of the bike community in the District has been negatively impacted. Focusing only on reported bike-related incidents may provide a skewed scenario of actual incidents involving bicycles on the streets. Based on the Washington Area Bicyclist Association's (WABA) records of bike-related incidents, there are significantly more incidents where a bicyclist felt in danger and lost stability on the bike and/or needed to take action to avoid an accident/crash. These are classified as near-miss incidents. These subjective records are self-reported to WABA by bicyclists involved in such interactions.

Thus far, near-miss data have not been included in the analysis that decision-makers could use to improve road and bicyclists' safety in DC. However, due to the frequency of data related to near-miss incidents, it could provide a more comprehensive picture of the risk factors associated with bicycle incidents, as well as provide a basis for recommending countermeasures.

Bicycle safety studies usually encompass number of reported crashes, and associated injuries and fatalities. However, near-miss incidents could provide critical information regarding common types of driver/bicyclist behavior and or road infrastructure that may lead to injuries. In addition, they may provide insight on bicyclist risk perception. Near-miss incidents may discourage riders from cycling, at a time when cycling is promoted as one of the primary modes of transportation. Thus, this report presents the results of video observation to record vehicular and bicycle activities that include such near-miss incidents at selected study segments near high schools and middle schools in the District of Columbia.

Site Selection

The District of Columbia crash database (TARAS 2.0) was analyzed to develop a bicycle crash incident heat map. Eighteen (18) sites (segments or intersections) in Wards 7 and 8 with the highest number of bicycle-related crashes that were close to Middle/ High schools within the past 5 years were identified. Based on the preliminary spatial analysis, the selected sites for the bicycle/ vehicular interaction study have been presented in Table 1.

Table 1: Study Sites in Relation with School and Crash Frequency

#	Street 1	Street 2	Quad	Ward	# Crashes	# Blocks from School	School Name	Crossing Guard
1	S Capitol St	Elmira St	SE	8	1	0	Patterson Elementary School	Y
2	Mississippi Ave	4 th St	SE	8	1	0	Simon Elementary School	N
3	Alabama Ave	6 th St	SE	8	2	1	King Elementary School	N
4	Martin Luther King Ave	Randle Pl & Raleigh Pl	SE	8	2	2	King Elementary School	Y
5	Alabama Ave	Stanton Rd	SE	8	4	0	Turner Elementary School	N
6	Alabama Ave	23 rd St	SE	8	2	3	Garfield Elementary School	Y
7	Alabama Ave	Naylor Rd	SE	8	2	0	Stanton Elementary School	N
8	Martin Luther King Ave	Stanton Rd	SE	8	1	0	Excel Academy Public School	Y
9	Good Hope Rd	Minnesota Ave	SE	8	2	0	Ketcham Elementary School	N

10	Minnesota Ave	Naylor Rd	SE	8	2	0	Boone Elementary School	Y
11	Minnesota Ave	27 th St	SE	7	3	2	Saint Francis Xavier School	N
12	Benning Rd	H St	SE	7	1	6	Bard High School Early College DC	Y
13	Benning Rd	Minnesota Ave	SE	7	7	2	Global Citizens Public Charter School	N
14	44 th St	Clay St	NE	7	1	0	Smothers Elementary School	Y
15	Benning Rd	34 th St	NE	7	4	1	River Terrace Education Campus	N
16	Stanton Rd	Jasper Pl	SE	8	1	1	John Hayden Johnson Middle School	N
17	Benning Rd	42 nd St	NE	7	1	0	DC Prep Elementary School	Y
18	Nannie Helen Burroughs Ave	44 th St	NE	8	2	4 from parks	Marvin Gaye Mosaic Park	N

From Table 1, it can be observed that the highest number of crashes (7) in the past 5 years involving bicycles occurred around Global Citizens Public Charter School. The institution is approximately two blocks from the intersection of Benning Road and Minnesota Avenue, SE.

Data Collection

Video cameras were installed at the selected locations along the corridors to record vehicular and bicycle activities including near-miss incidents. The video data for the sites were obtained for 13 hours on a typical weekday (Tuesday – Thursday) from 6:00 AM to 7:00 PM during the third and fourth weeks of September 2022. A snapshot of a sample study corridor as captured by the video camera is presented in Figure 1.



Figure 1: Sample Video Feed for Study Location of Alabama Avenue and 6th Street, SE (Near King Elementary School)

From the observations made in the video playbacks the following data parameters regarding the usage of the street were extracted:

1. Total Number of bicyclists on the street during the 13-hour duration
2. Total Number of bicyclists on the sidewalk during the 13-hour duration
3. Total number of near-miss incidents on street
4. Total number of near-miss incidents on sidewalk
5. Type of near-miss incident (involving a car/ pedestrian/ another bicyclist)

Data Extraction

Table 2 presents the results of the video data observation tally at all 18 study locations. The tallies include the number of bicyclists who were riding on the street as well as on the sidewalk.

Table 2: Video Data Observation Tally

Location	Video Tally			Type of Near-Miss Incident (involving Car/ Pedestrian/ another Bicyclist)	
	Number of Bicyclists on the Street	Number of Bicyclists on the Sidewalk	Total Number of Bicyclists Observed	Total number of Near-miss Incidents on Street	Total number of Near-miss Incidents on Sidewalk
1	3	13	16	0	0
2	2	11	13	C	0
3	15	19	34	0	0
4	23	9	32	0	0
5	4	7	11	0	0
6	8	16	24	0	0
7	10	19	29	0	P, P, P, P
8	42	11	53	0	0
9	20	11	31	0	0
10	24	67	91	C	0
11	0	0	0	0	0
12	14	12	26	C, C, C	0
13	10	53	63	0	C (Driveway Exit incident)
14	4	16	20	0	0
15	12	2	14	0	0
16	0	0	0	0	0
17	10	37	47	C	P, P
18	15	30	45	C, P	0
TOTAL	216	333	549		

In total, there were 549 bicycle observations of which 216 bicyclists were observed riding on the street while 333 bicyclists were observed on the sidewalk. From Table 2, Location 10 (Minnesota Avenue and Naylor Road, SE, near Boone Elementary School) had the highest overall number of bicycle usage with 91 bicycles tallied in the 13-hour duration. Location 10 also had the highest number of bicyclists riding on the sidewalk (67). Location 8 (Excel Academy Public School) at Martin Luther King Avenue and Stanton Road, SE had the highest number of bicyclists on the street in the 13-hour duration. No bicycles were observed at Locations 11 and 16. Table 2 also presents the type of near-miss incidents experienced by the bicyclists as observed from the video data. Another breakdown of the near-miss frequency is presented in Table 3.

Table 3: Bicycle Near-Miss Incident Observations Involving Cars, Pedestrians or Another Bicycle

Near-miss Location Incidents	Car	Pedestrian	Another Bicycle	Total
On Street	7	1	0	8
On Sidewalk	1	6	0	7
Total	8	7	0	15

Overall, there were 15 bicycle near-miss incidents that were captured from the 13-hour video recordings at the 18 selected locations. Of the 15 incidents, 8 incidents involved near-misses with a car while 7 bicycle near-misses involved pedestrians. There were also 8 and 7 incidents that were observed on the street and sidewalk, respectively. It should be noted that the car incident tally on the sidewalk was for a bicycle who had to stop for a car trying to exit a driveway in front of the bicyclist.