

MicroTraffic

Road Safety Video Analytics

Cyclist Right Hook Risk Study
Washington, DC
Risk Diagnostic Report



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MicroTraffic Risk Diagnostic Report

Near-Miss Data from Traffic Video for Life-Saving Decisions

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General Information

General Report Notes

Report Notes	Detailed conflict, speed and volume records are included in accompanying .csv files.
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Indicator Definitions

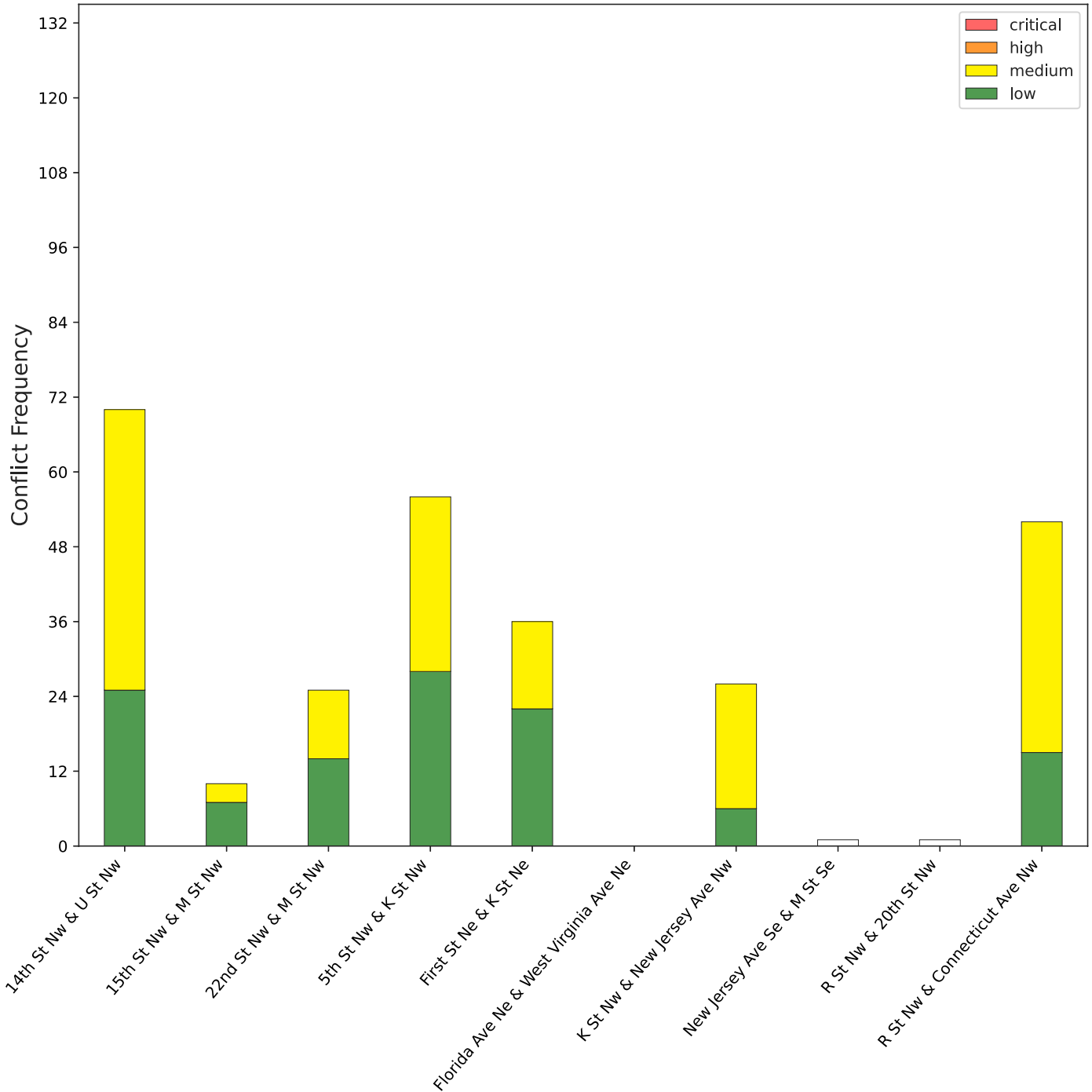
Safe Systems Speed Distributions	The distribution of turning vehicle speeds at a conflict area with a vulnerable road user (VRU), which includes pedestrians, cyclists and e-scooters, references thresholds based on the probability of severe injury (MAIS 3+) for vehicle-pedestrian collisions [1]. This indicator is used to measure risk to VRUs. The distribution of through vehicle speeds at a conflict area with another vehicle references thresholds based on the probability of severe injury (MAIS 3+) for vehicle vs oncoming vehicle collisions [1]. The indicator is used to measure risk to vehicle occupants.
Vulnerable Road User Safe Systems Risk Indicator (VRUss)	VRUss is a categorical risk indicator that is an adapted version of Lareshyn's T2 concept and is a generalized extension of Post- Encroachment Time (PET) and Time-to-Collision (TTC) [2]. Instantaneous vehicle speed is used to calculate the time required for a vehicle or VRU to reach a conflict point along its actual travel path. The minimum time to a conflict point is extracted and combined with the vehicle impact speed at that moment to determine the probability of severe injury (MAIS 3+) for vehicle- pedestrian collisions [1]. This indicator is used to measure risk to VRUs.

[1] Jurewicz, C., Sobhani, A., Woolley, J., Dutschke, J., Corben, B., 2016. Exploration of Vehicle Impact Speed – Injury Severity Relationships for Application in Safer Road Design. Transportation Research Procedia 14, 4247–4256. <https://doi.org/10.1016/j.trpro.2016.05.396>

[2] Lareshyn, A., De Ceunynck, T., Karlsson, C., Svensson, Å., Daniels, S., 2017. In search of the severity dimension of traffic events: Extended Delta-V as a traffic conflict indicator. Accident Analysis & Prevention 98, 46–56. <https://doi.org/10.1016/j.aap.2016.09.026>



Results Summary – Cyclist Safe Systems Risk Indicator





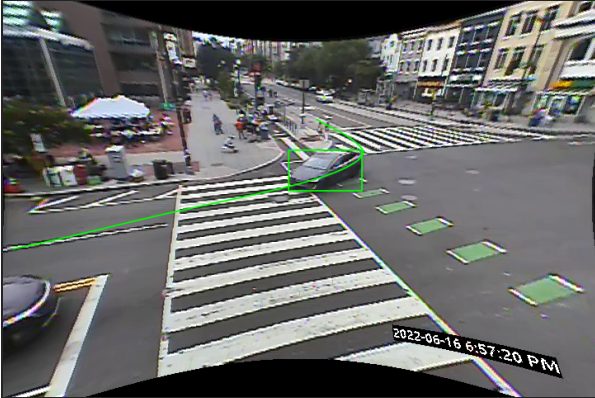
Results Summary – Cyclist Safe Systems Risk Indicator

Estimated Volume by Zone

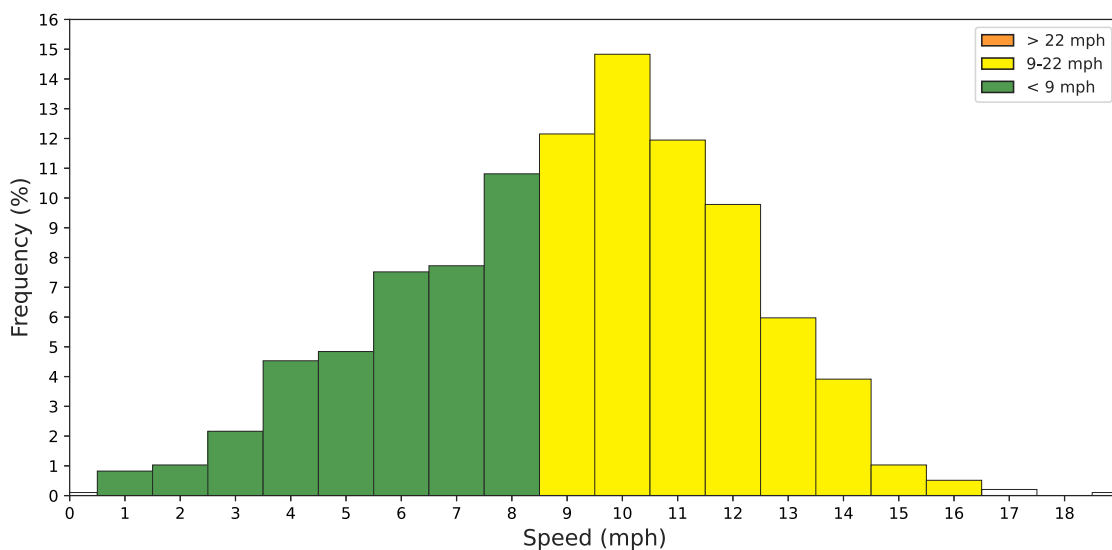
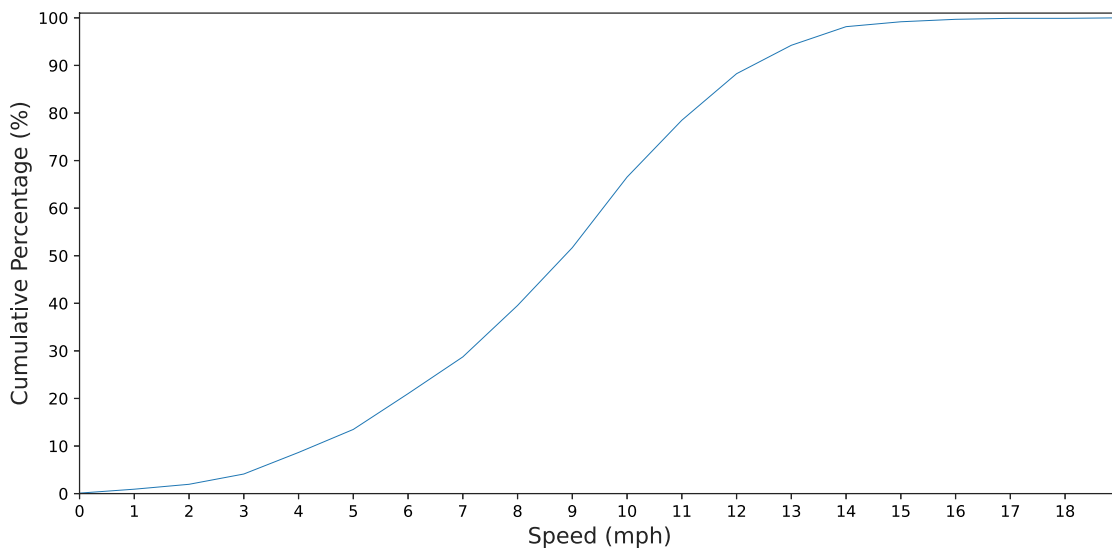
	Total Recording Hours	Right- Turning Vehicle	Cyclist in Bike Lane	Cyclist in Crosswalk	Cyclist in Vehicle Lane	Total Cyclist Volume
14th St Nw & U St Nw	60 hours	4905	1480	535	350	2365
15th St Nw & M St Nw	60 hours	1965	5510	165	125	5800
22nd St Nw & M St Nw	60 hours	8605	1915	110	310	2335
5th St Nw & K St Nw	60 hours	3825	2030	175	45	2250
First St Ne & K St Ne	60 hours	3325	3320	565	15	3900
K St Nw & New Jersey Ave Nw	59 hours	1875	1710	195	40	1945
New Jersey Ave Se & M St Se	59 hours	2345	260	140	20	420
R St Nw & 20th St Nw	60 hours	1015	850	105	45	1000
R St Nw & Connecticut Ave Nw	60 hours	4660	655	245	40	940
Florida Ave Ne & West Virginia Ave Ne	60 hours	50	590	160	20	770



14th St. NW & U St. NW Southbound-Right Vehicle Speed



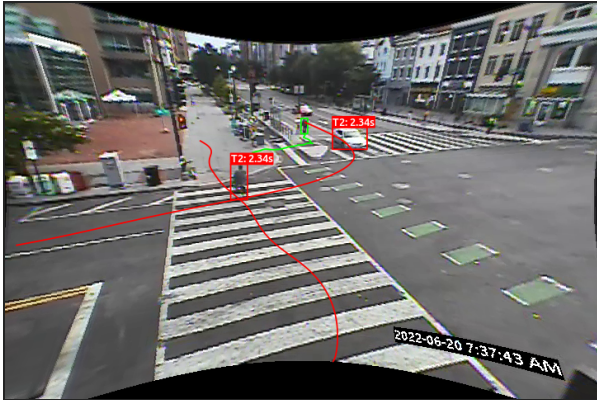
Vehicles < 9 mph	45.6%
Vehicles 9-22 mph	54.4%
Vehicles > 22 mph	0.0%
Average Speed (mph)	9
Standard Deviation	3
85th percentile (mph)	12





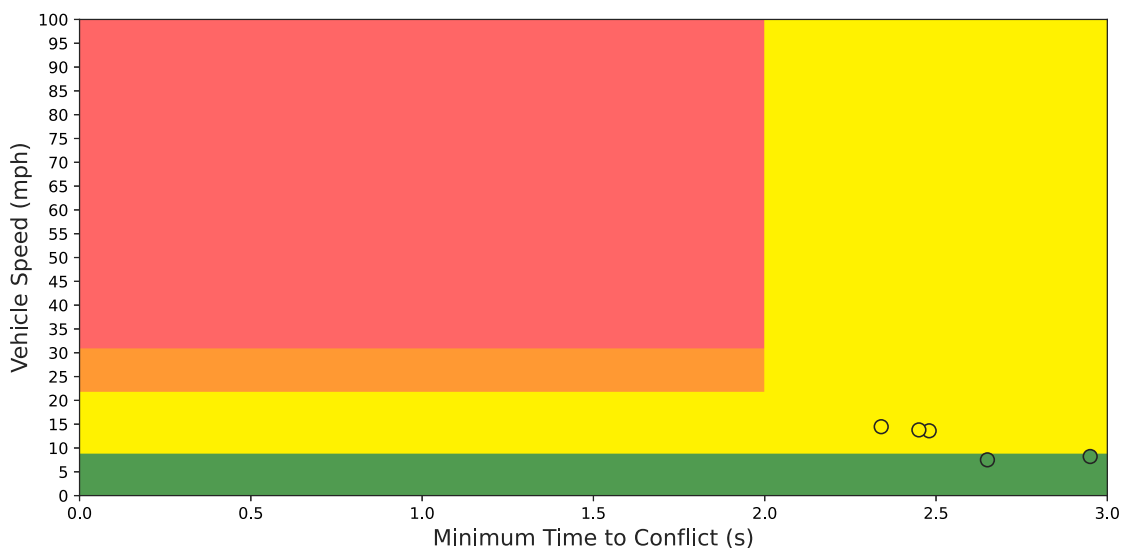
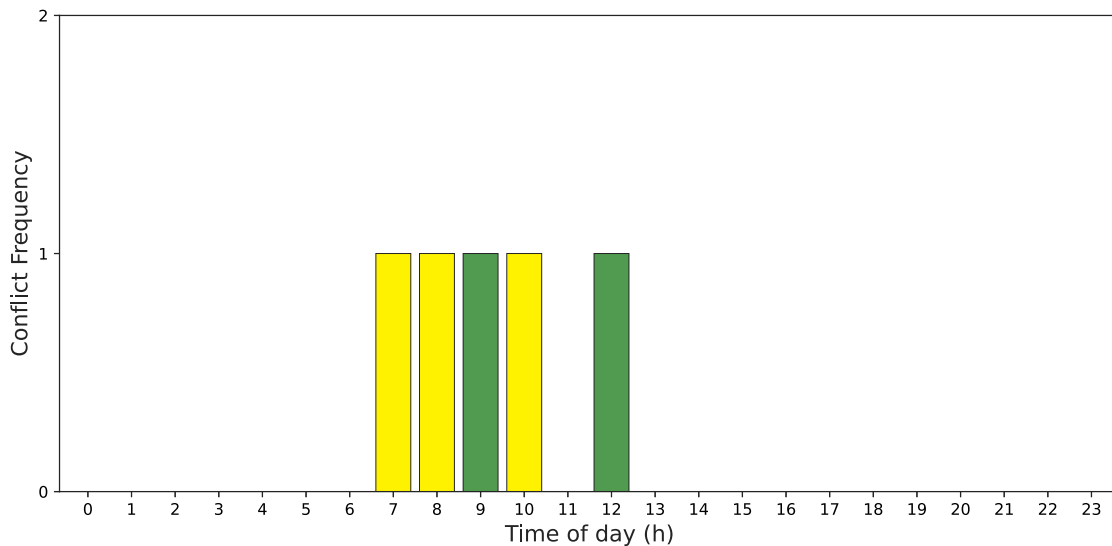
14th St. NW & U St. NW

South-Right Vehicle vs Northbound Cyclist on West Side (South-Right Hook)



Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	3
Low	2
Total	5

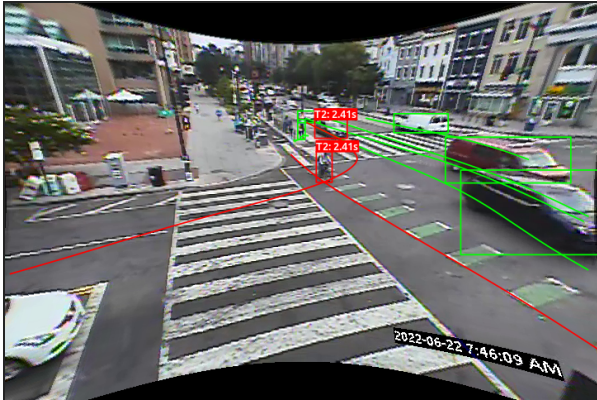
Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	4905
Cyclist in Bike Lane	30
Cyclist in Crosswalk	190
Cyclist in Vehicle Lane	0
Total Cyclist Volume	220





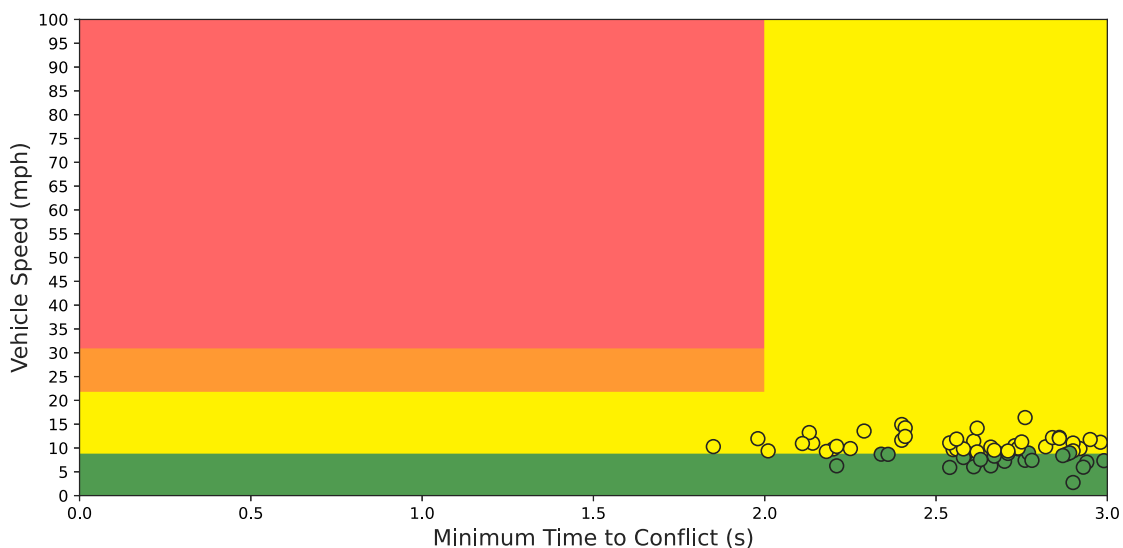
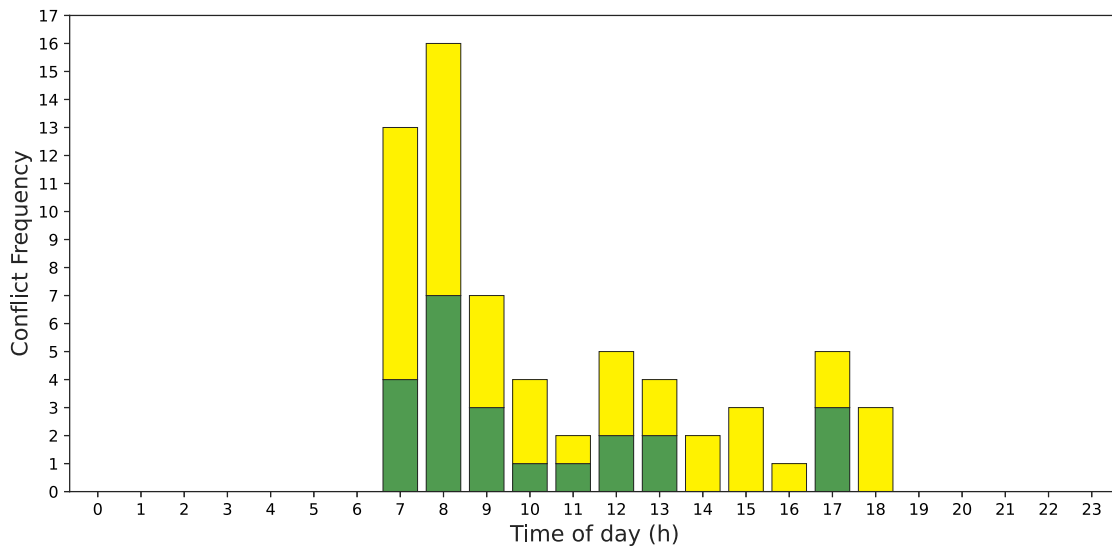
14th St. NW & U St. NW

South-Right Vehicle vs Southbound Cyclist on West Side (South-Right Hook)



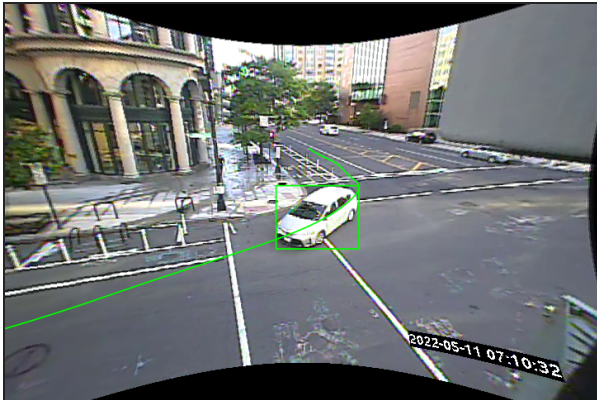
Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	42
Low	23
Total	65

Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	4905
Cyclist in Bike Lane	1450
Cyclist in Crosswalk	345
Cyclist in Vehicle Lane	350
Total Cyclist Volume	2145

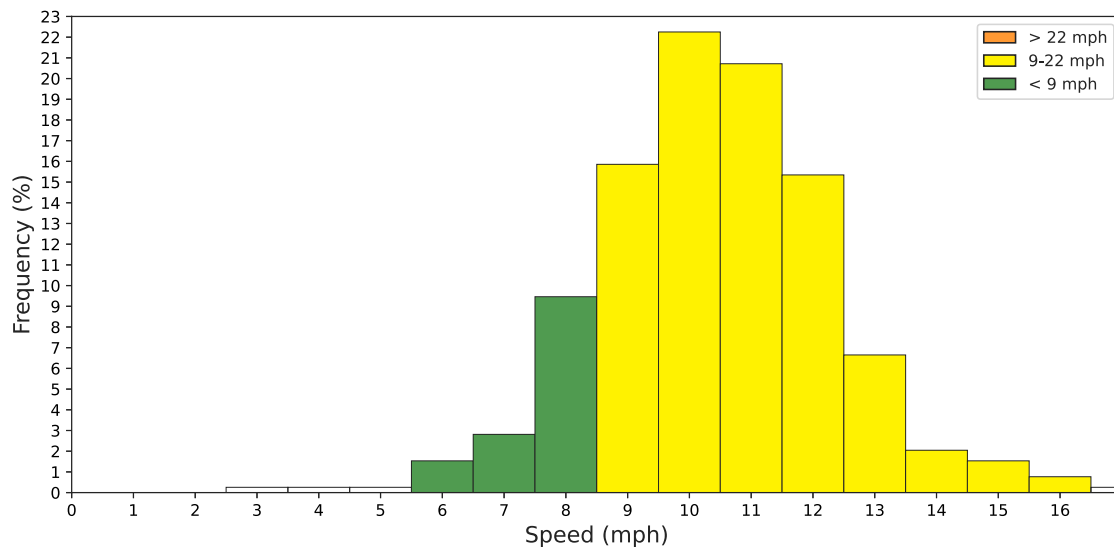
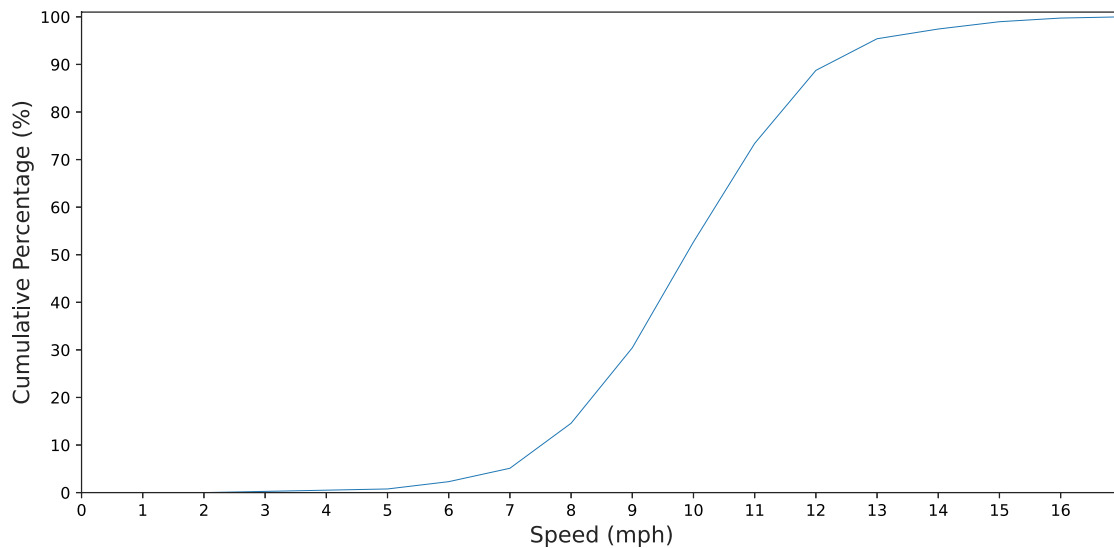




15th St. NW & M St. NW Southbound-Right Vehicle Speed



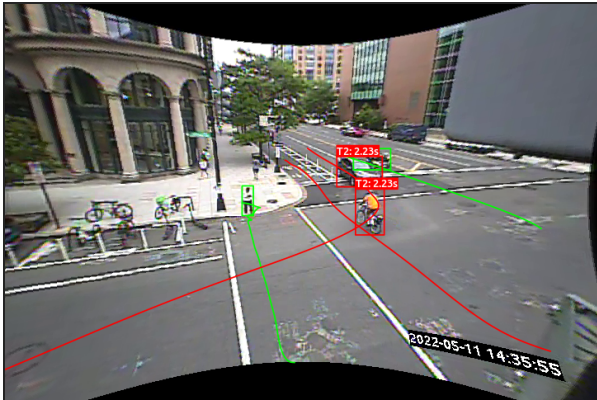
Vehicles < 9 mph	18.4%
Vehicles 9-22 mph	81.6%
Vehicles > 22 mph	0.0%
Average Speed (mph)	10
Standard Deviation	2
85th percentile (mph)	12





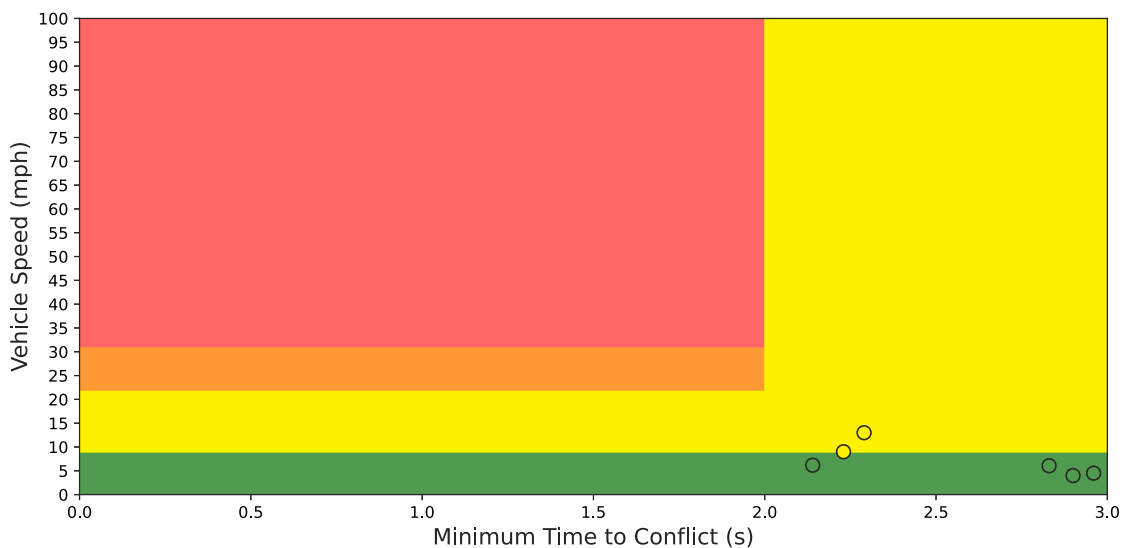
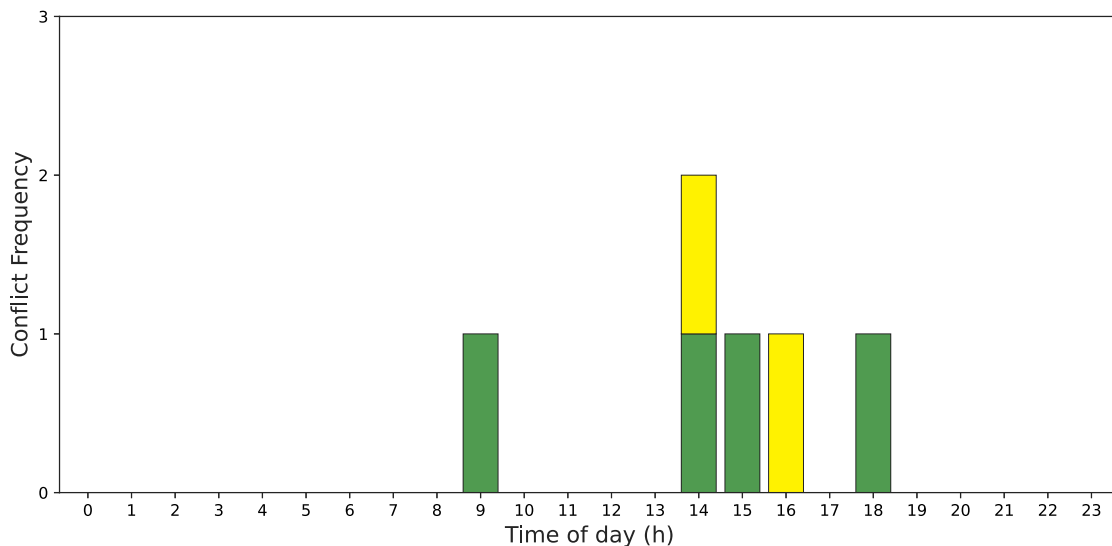
15th St. NW & M St. NW

South-Right Vehicle vs Northbound Cyclist on West Side (South-Right Hook)



Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	2
Low	4
Total	6

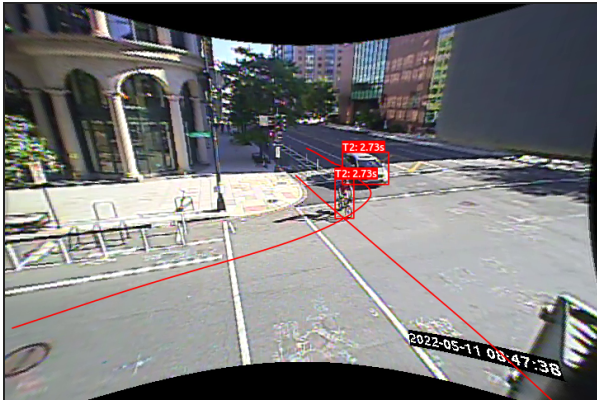
Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	1965
Cyclist in Bike Lane	2640
Cyclist in Crosswalk	40
Cyclist in Vehicle Lane	50
Total Cyclist Volume	2730





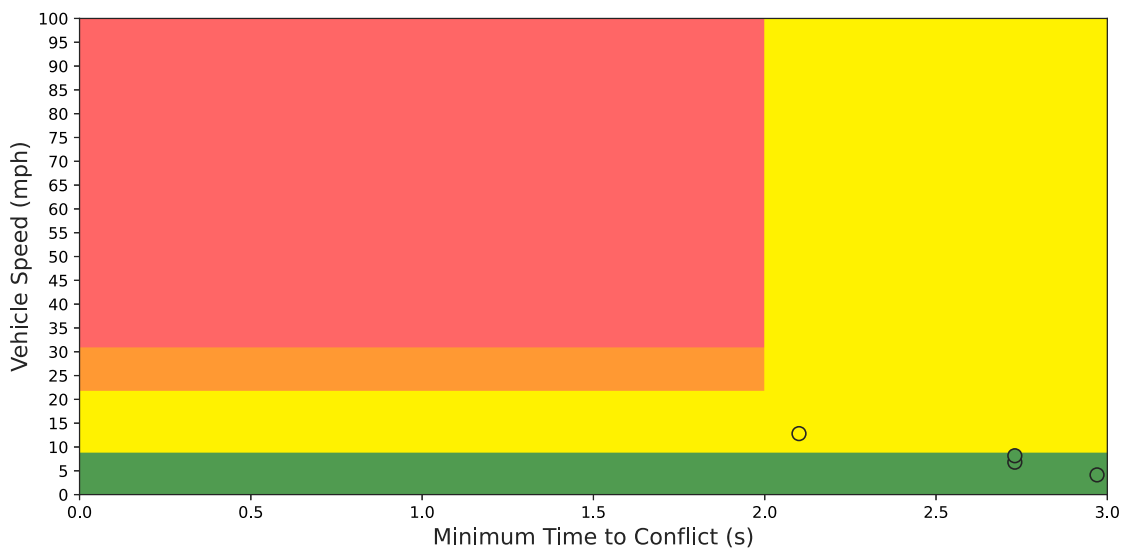
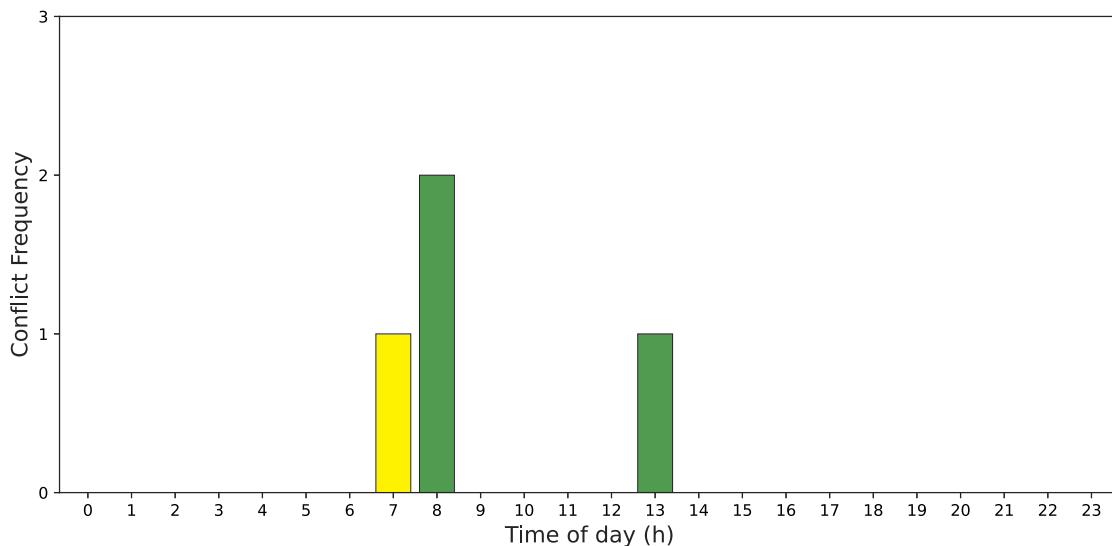
15th St. NW & M St. NW

South-Right Vehicle vs Southbound Cyclist on West Side (South-Right Hook)



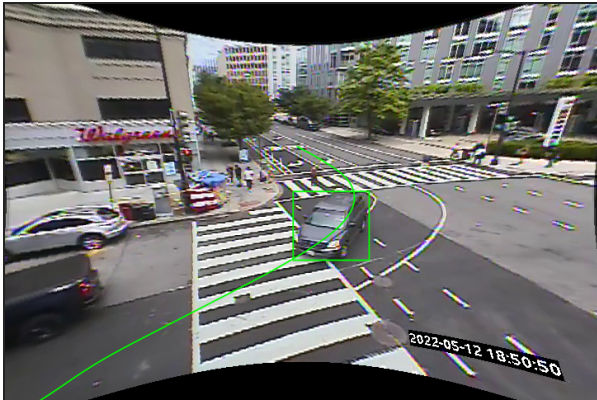
Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	1
Low	3
Total	4

Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	1965
Cyclist in Bike Lane	2870
Cyclist in Crosswalk	125
Cyclist in Vehicle Lane	75
Total Cyclist Volume	3070

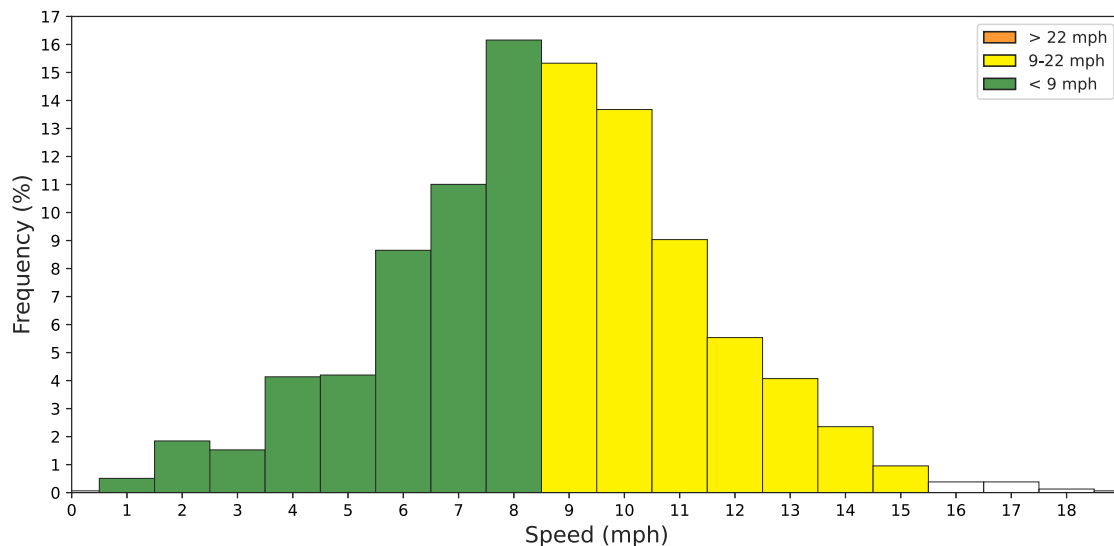
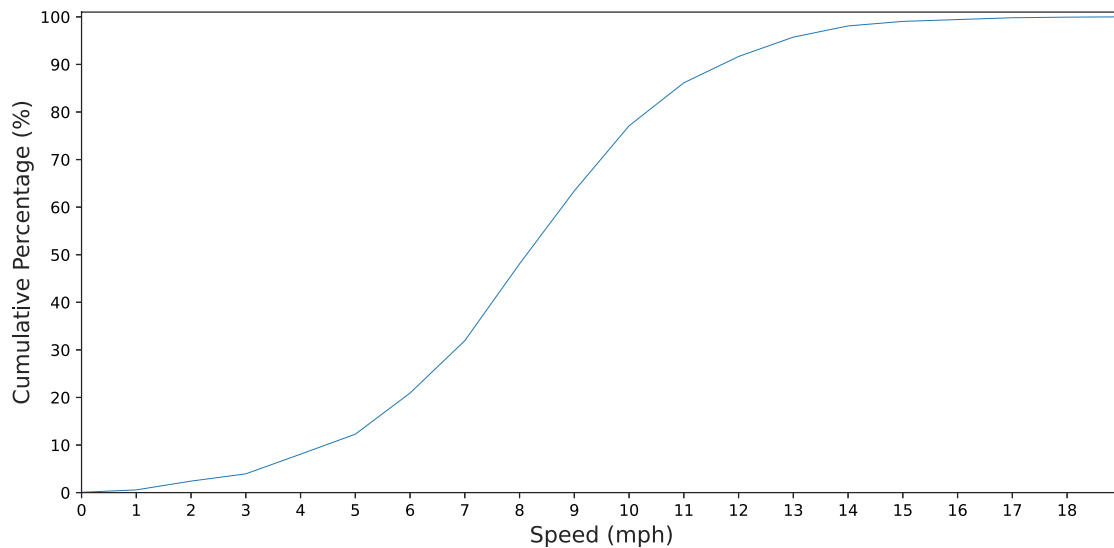




22nd St. NW & M St. NW Westbound-Right Vehicle Speed



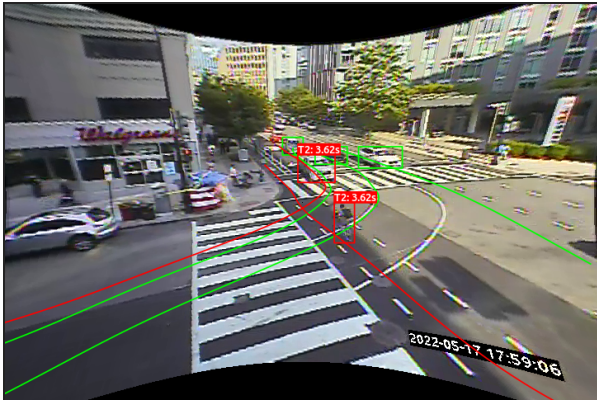
Vehicles < 9 mph	56.1%
Vehicles 9-22 mph	44.0%
Vehicles > 22 mph	0.0%
Average Speed (mph)	9
Standard Deviation	3
85th percentile (mph)	11





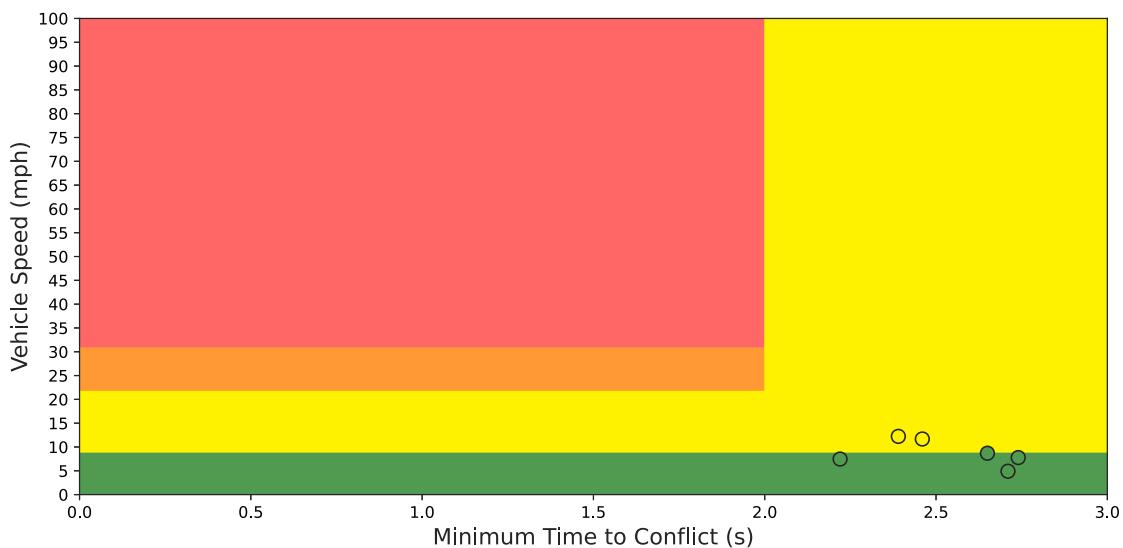
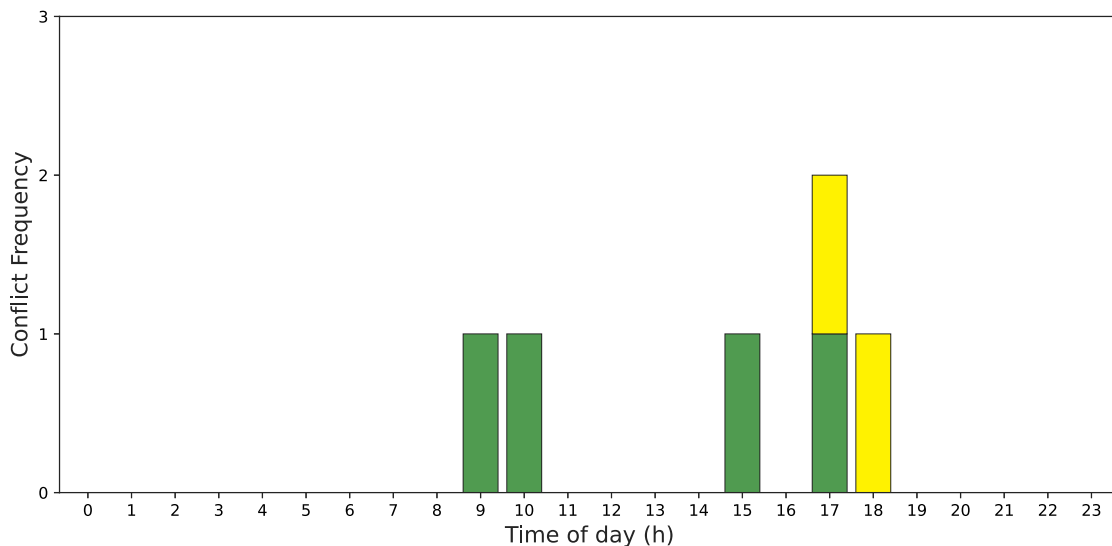
22nd St. NW & M St. NW

West-Right Vehicle vs Eastbound Cyclist on North Side (West-Right Hook)



Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	2
Low	4
Total	6

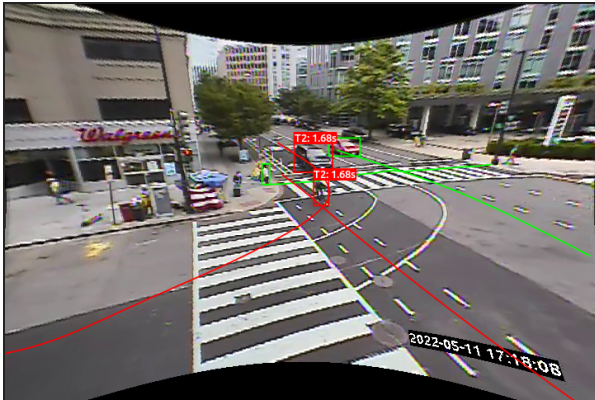
Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	8605
Cyclist in Bike Lane	130
Cyclist in Crosswalk	75
Cyclist in Vehicle Lane	10
Total Cyclist Volume	215





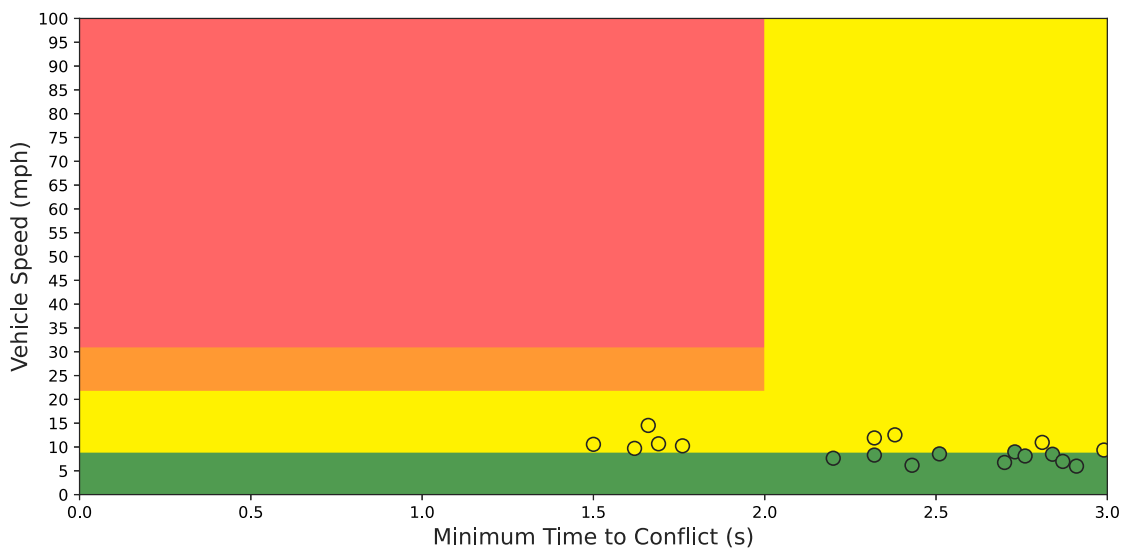
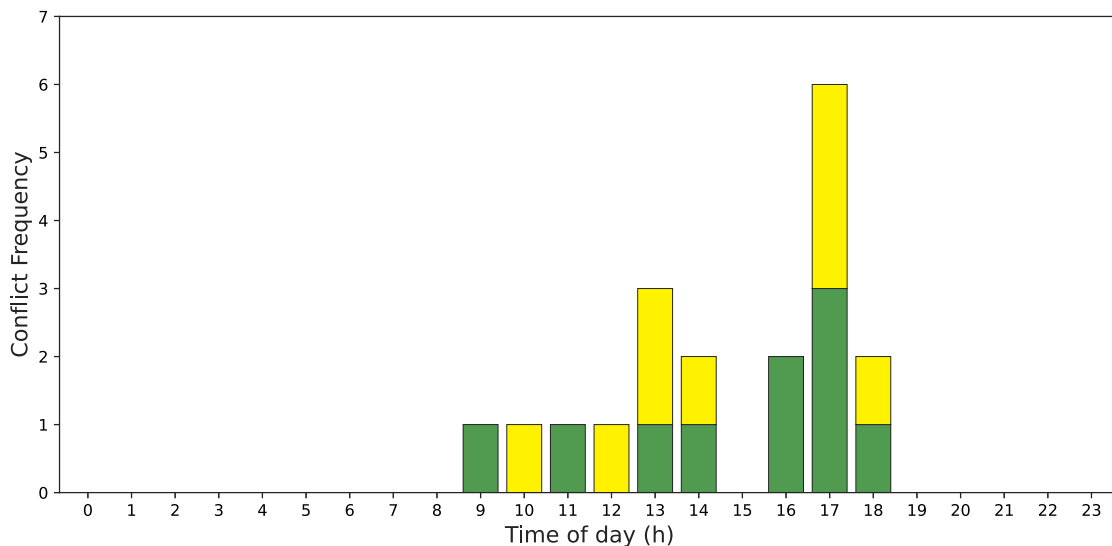
22nd St. NW & M St. NW

West-Right Vehicle vs Westbound Cyclist on North Side (West-Right Hook)



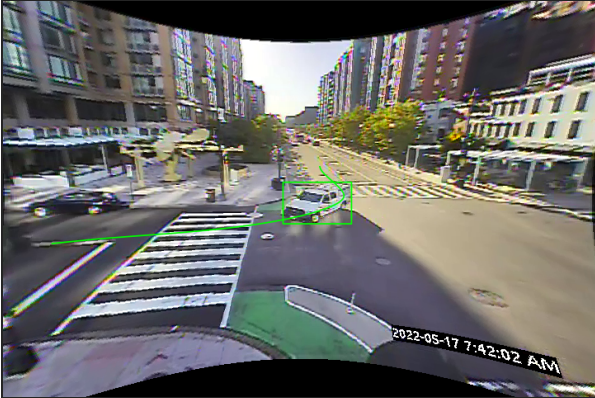
Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	9
Low	10
Total	19

Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	8605
Cyclist in Bike Lane	1785
Cyclist in Crosswalk	35
Cyclist in Vehicle Lane	300
Total Cyclist Volume	2120

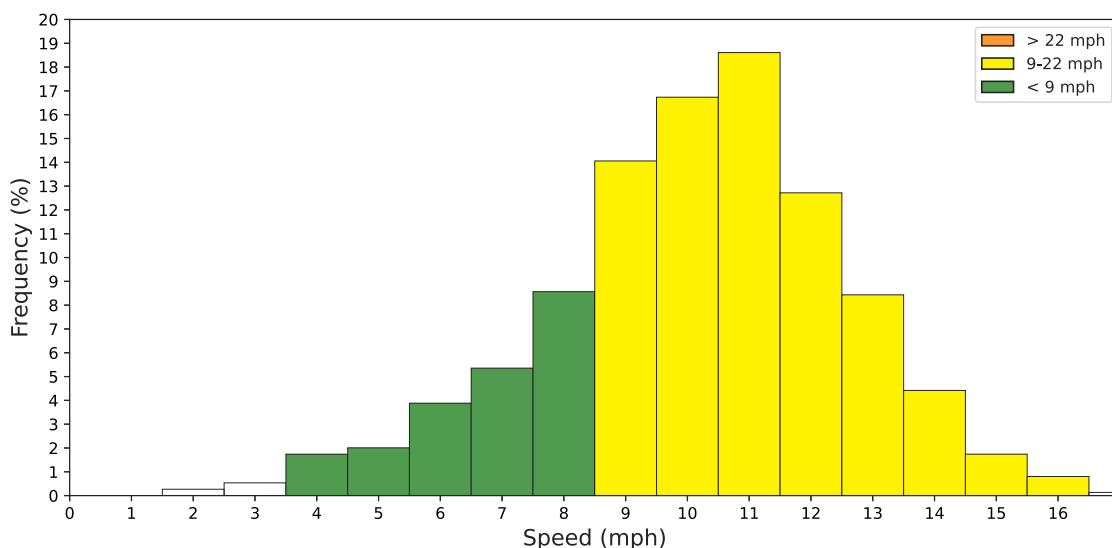
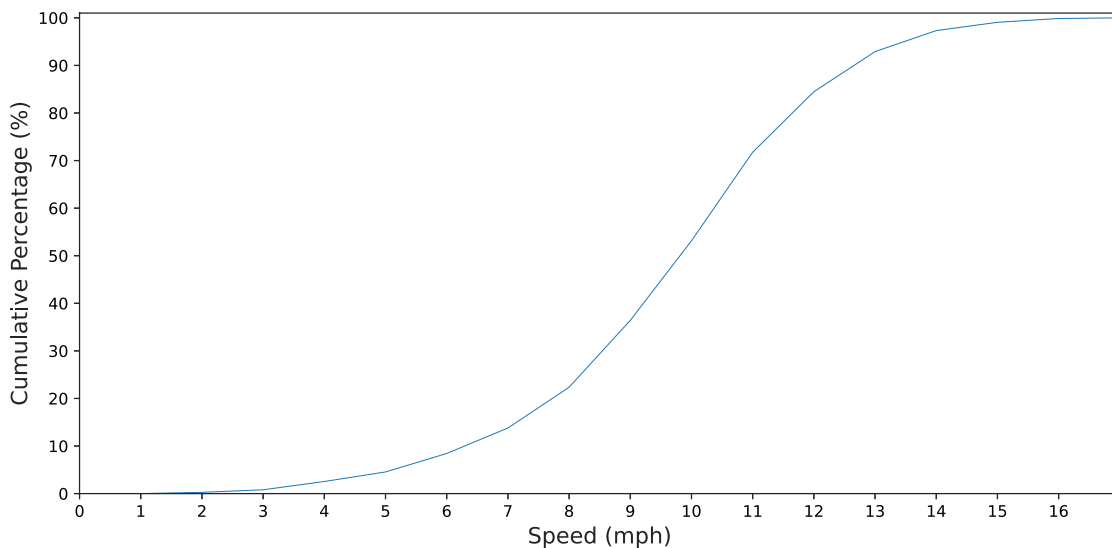




5th St. NW & K St. NW Westbound-Right Vehicle Speed



Vehicles < 9 mph	28.2%
Vehicles 9-22 mph	71.9%
Vehicles > 22 mph	0.0%
Average Speed (mph)	10
Standard Deviation	2
85th percentile (mph)	13





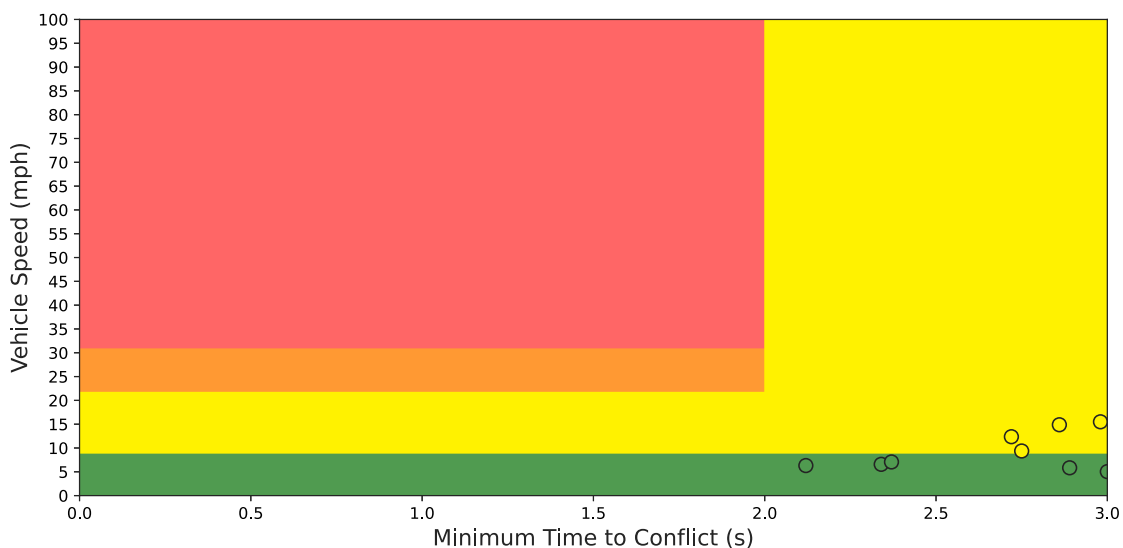
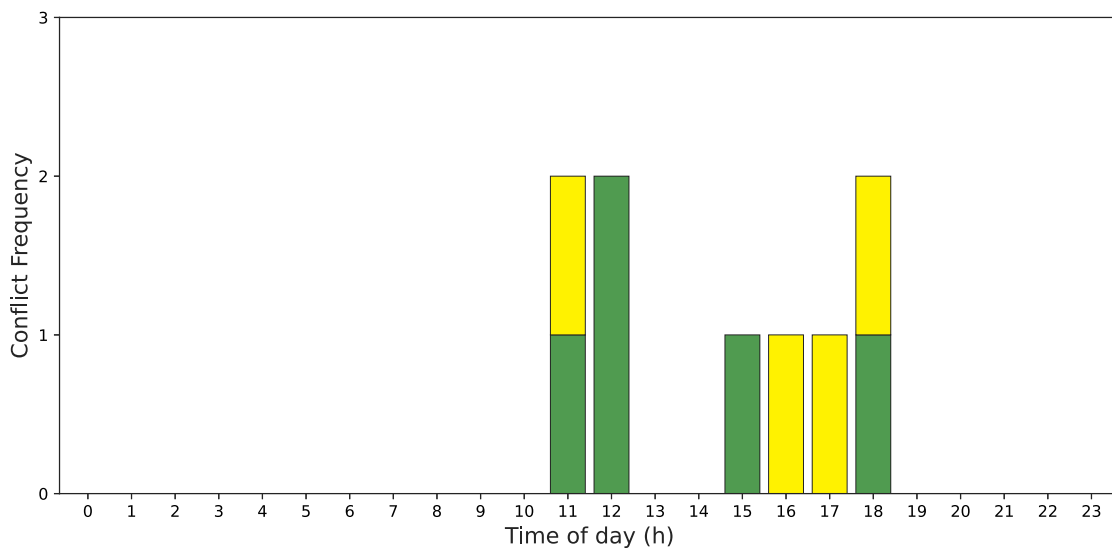
5th St. NW & K St. NW

West-Right Vehicle vs Eastbound Cyclist on North Side (West-Right Hook)



Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	4
Low	5
Total	9

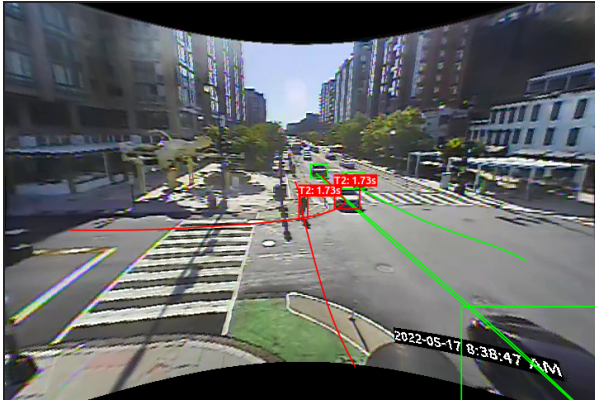
Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	3825
Cyclist in Bike Lane	100
Cyclist in Crosswalk	85
Cyclist in Vehicle Lane	0
Total Cyclist Volume	185





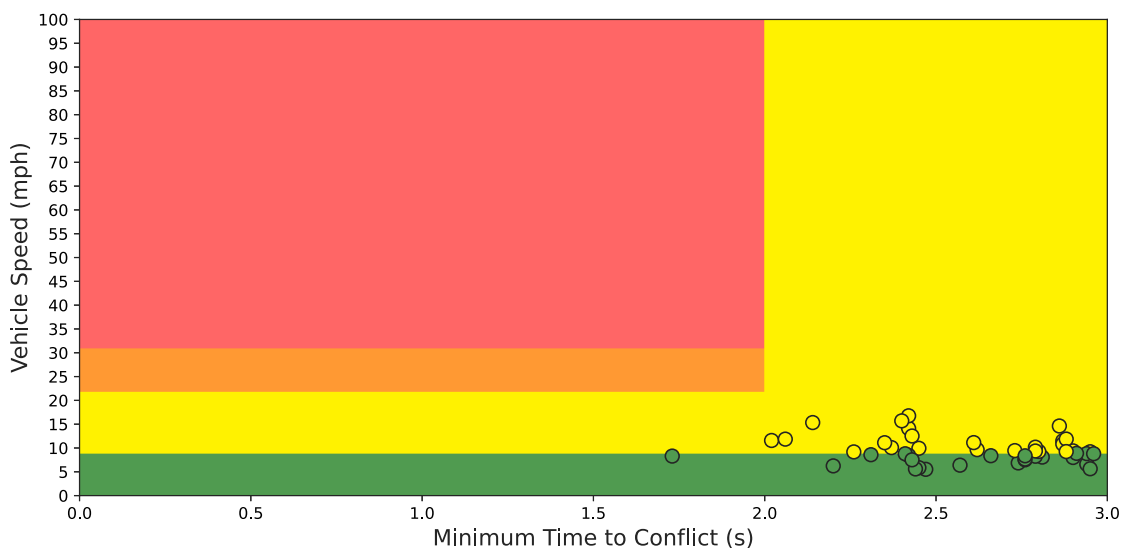
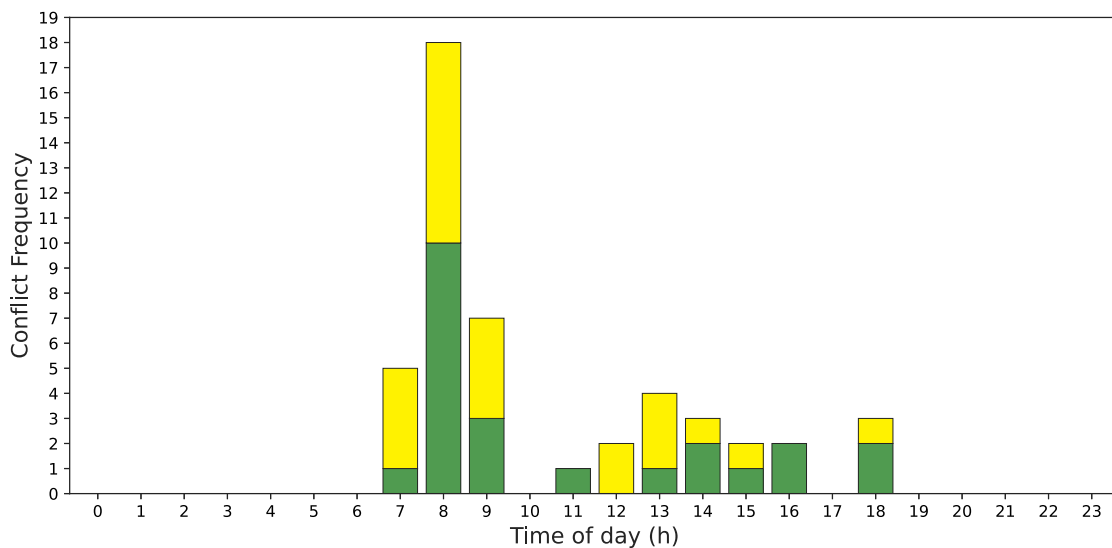
5th St. NW & K St. NW

West-Right Vehicle vs Westbound Cyclist on North Side (West-Right Hook)



Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	24
Low	23
Total	47

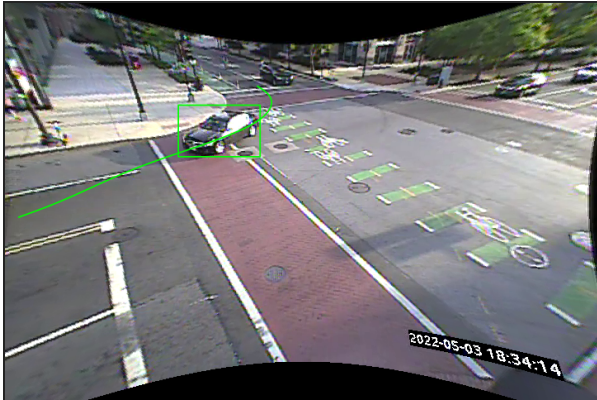
Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	3825
Cyclist in Bike Lane	1930
Cyclist in Crosswalk	90
Cyclist in Vehicle Lane	45
Total Cyclist Volume	2065



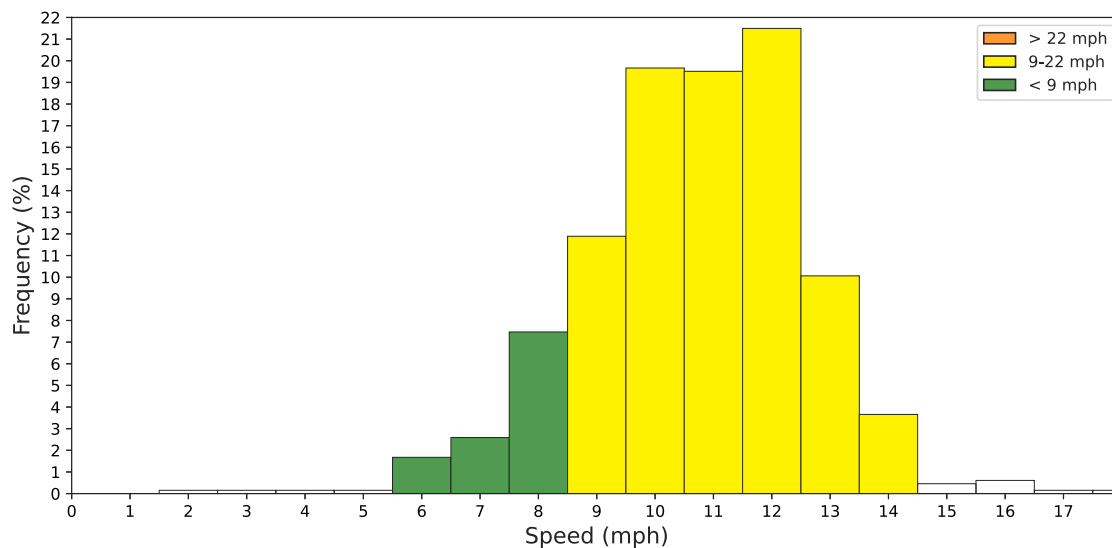
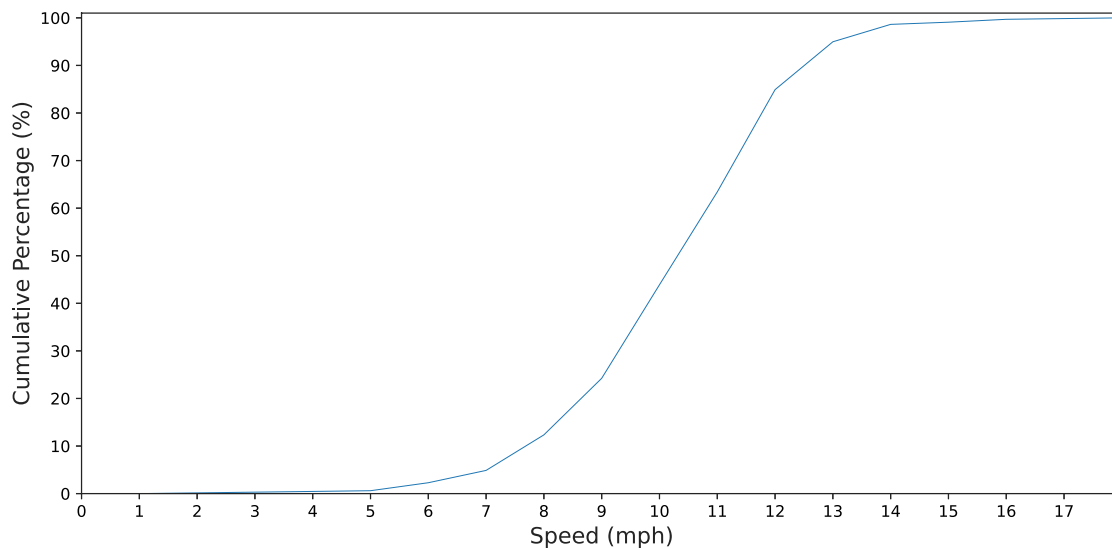


First St. NE & K St. NE

Northbound-Right Vehicle Speed



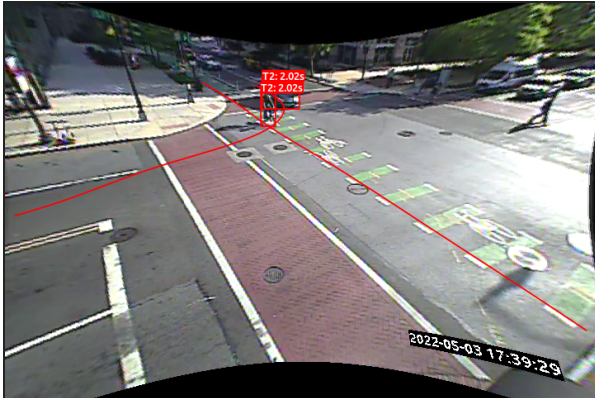
Vehicles < 9 mph	18.1%
Vehicles 9-22 mph	82.0%
Vehicles > 22 mph	0.0%
Average Speed (mph)	11
Standard Deviation	2
85th percentile (mph)	13





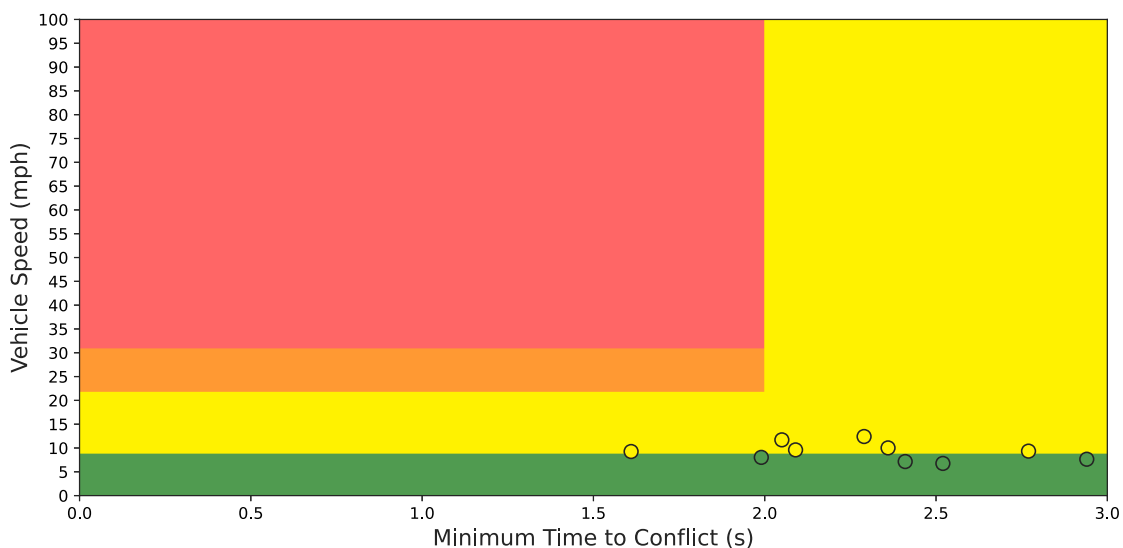
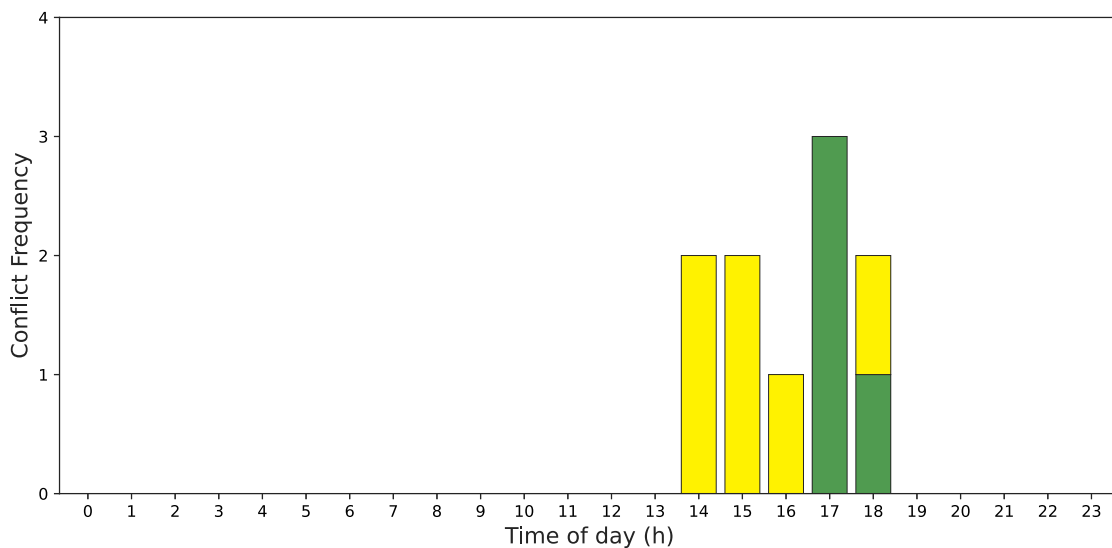
First St. NE & K St. NE

North-Right Vehicle vs Northbound Cyclist on East Side (North-Right Hook)



Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	6
Low	4
Total	10

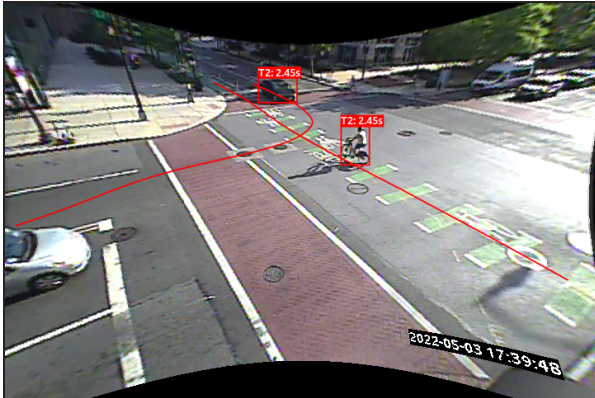
Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	3325
Cyclist in Bike Lane	1445
Cyclist in Crosswalk	400
Cyclist in Vehicle Lane	5
Total Cyclist Volume	1850





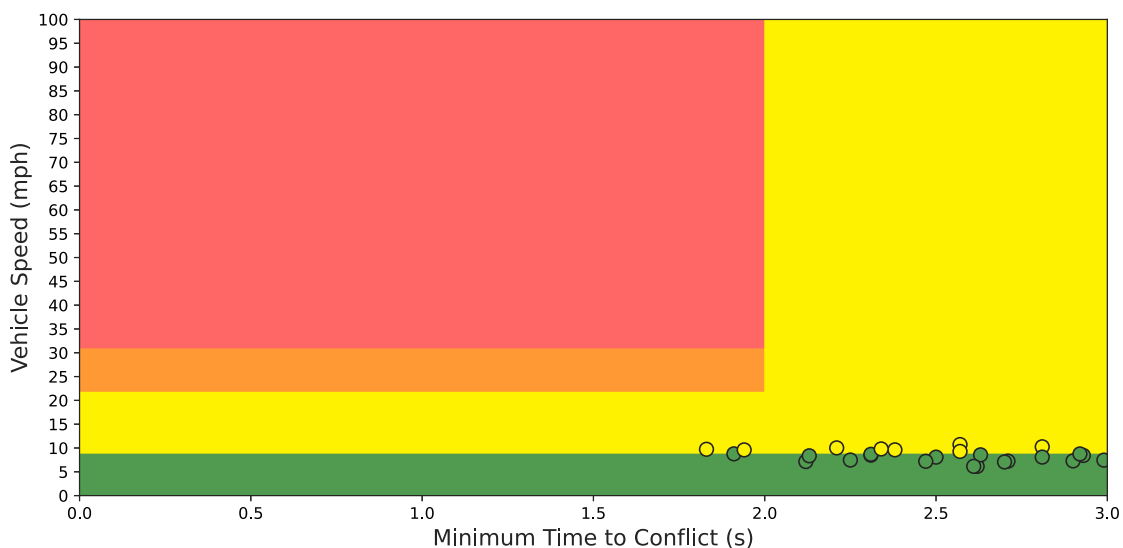
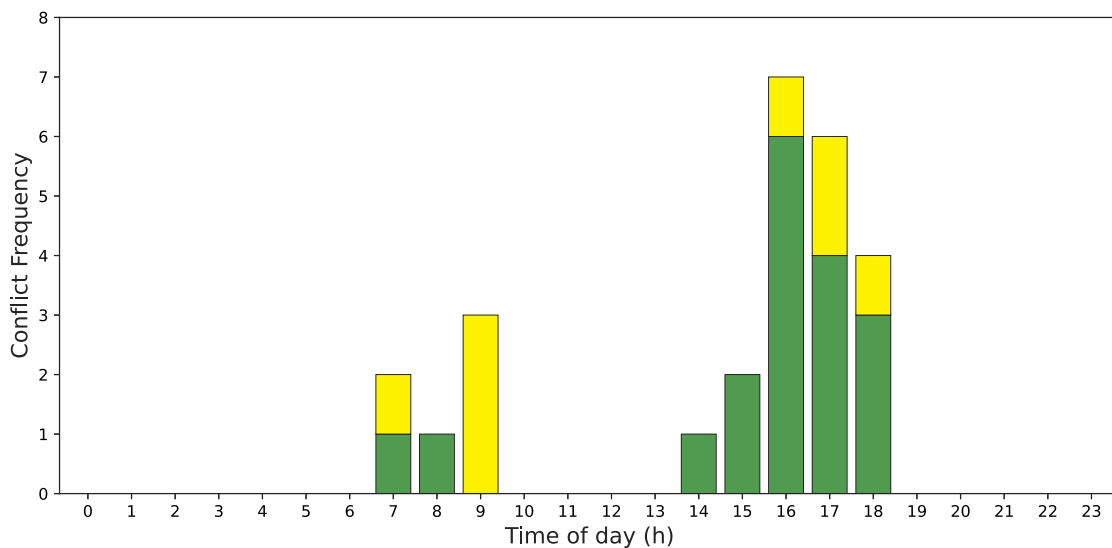
First St. NE & K St. NE

North-Right Vehicle vs Southbound Cyclist on East Side (North-Right Hook)



Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	8
Low	18
Total	26

Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	3325
Cyclist in Bike Lane	1875
Cyclist in Crosswalk	165
Cyclist in Vehicle Lane	10
Total Cyclist Volume	2050



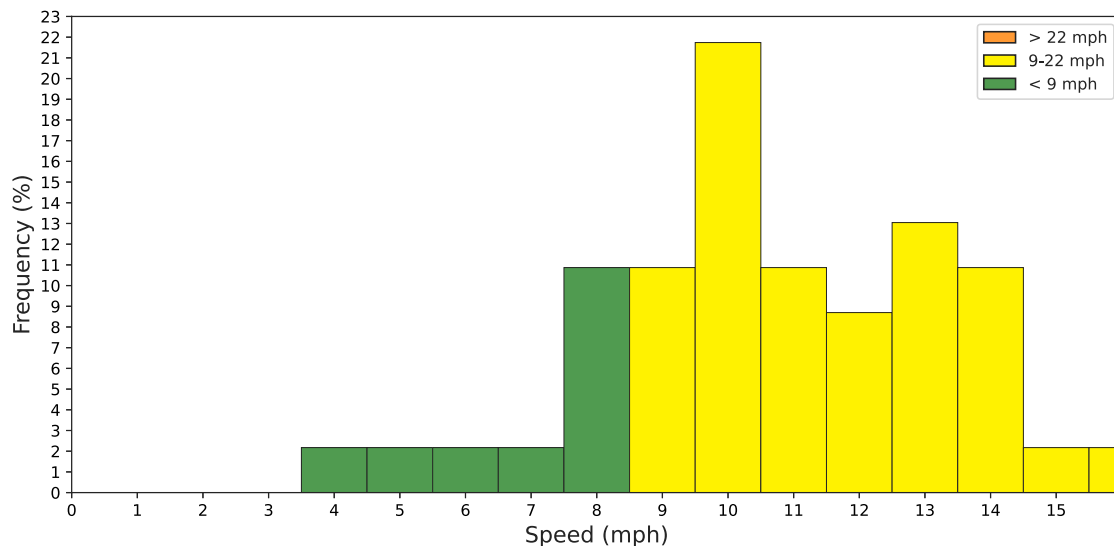
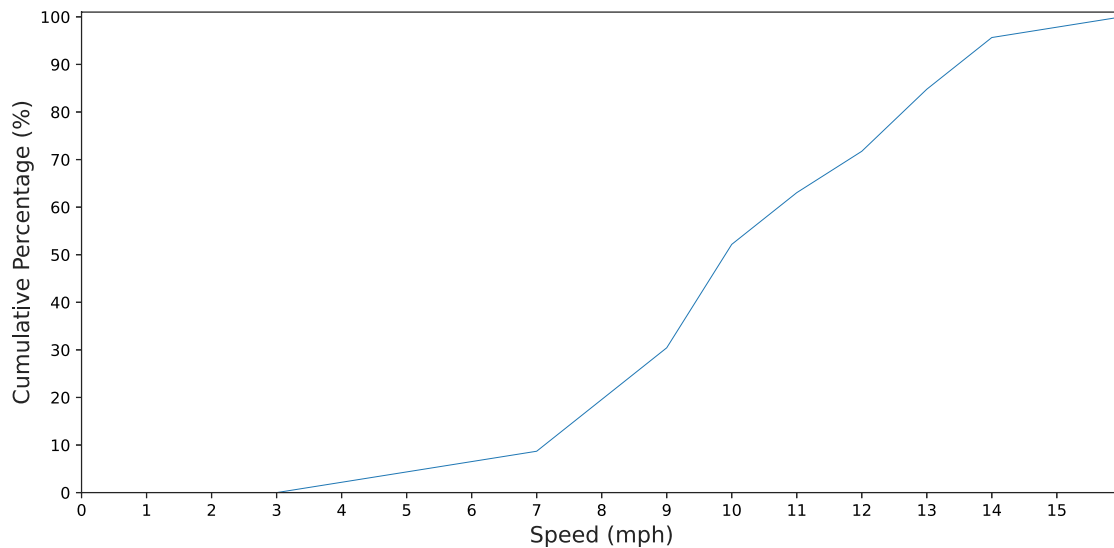


Florida Ave. NE & West Virginia Ave. NE

Northbound-Right Vehicle Speed



Vehicles < 9 mph	26.1%
Vehicles 9-22 mph	73.9%
Vehicles > 22 mph	0.0%
Average Speed (mph)	11
Standard Deviation	3
85th percentile (mph)	13





MicroTraffic Risk Diagnostic Report

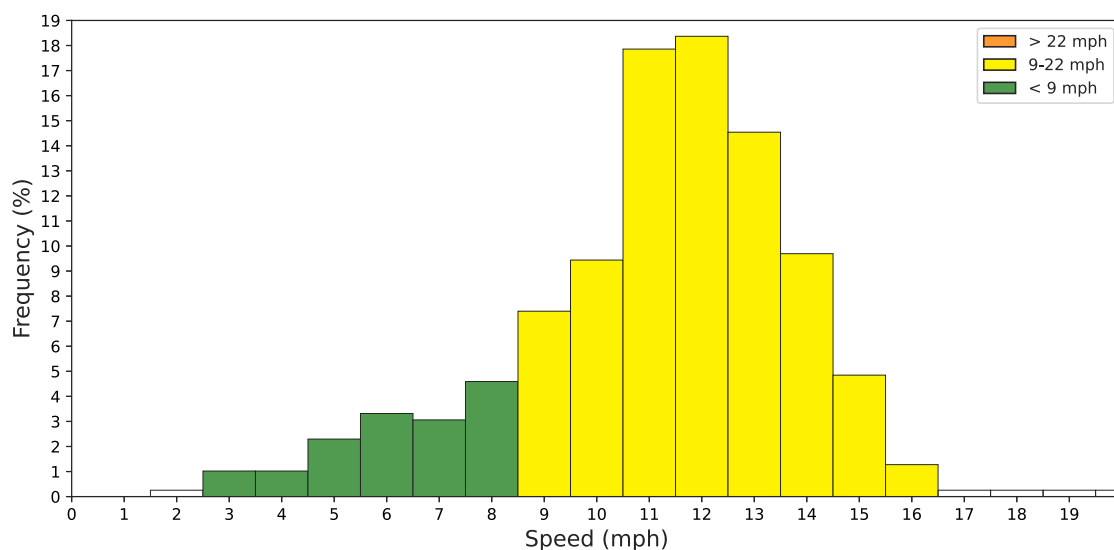
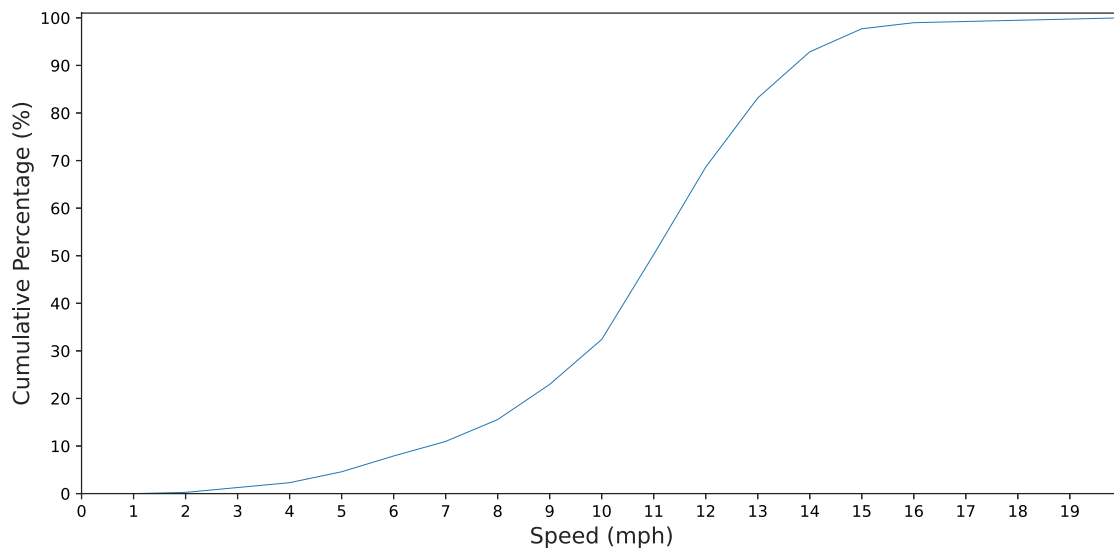
Near-Miss Data from Traffic Video for Life-Saving Decisions

K St. NW & New Jersey Ave. NW

Eastbound-Right Vehicle Speed



Vehicles < 9 mph	18.9%
Vehicles 9-22 mph	81.1%
Vehicles > 22 mph	0.0%
Average Speed (mph)	11
Standard Deviation	3
85th percentile (mph)	14



Conflict data is provided for May 11-13, and May 16-17 @7:00-19:00. Conflict analysis is not performed on May 11th @9:50 - 10:50 due to road closure on the southern vehicle lanes. Speed profile data is provided for May 17. Adverse lighting conditions during deep shadows, wet road conditions, and camera shakes may have affected conflict measurement performance.



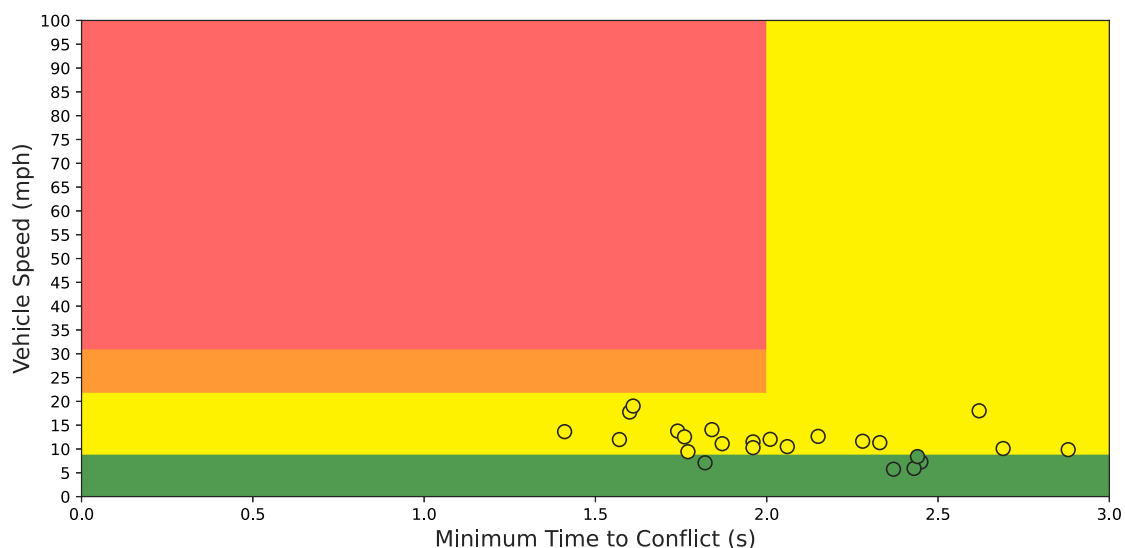
K St. NW & New Jersey Ave. NW

East-Right Vehicle vs Eastbound Cyclist on South Side (East-Right Hook)



Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	19
Low	5
Total	24

Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	1875
Cyclist in Bike Lane	1685
Cyclist in Crosswalk	115
Cyclist in Vehicle Lane	30
Total Cyclist Volume	1830

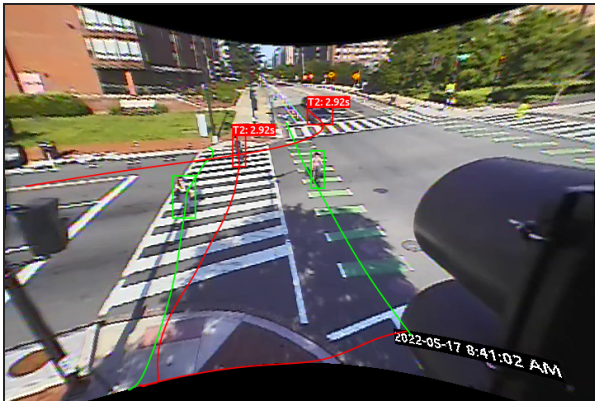


Conflict data is provided for May 11-13, and May 16-17 @7:00-19:00. Conflict analysis is not performed on May 11th @9:50 - 10:50 due to road closure on the southern vehicle lanes. Speed profile data is provided for May 17. Adverse lighting conditions during deep shadows, wet road conditions, and camera shakes may have affected conflict measurement performance.



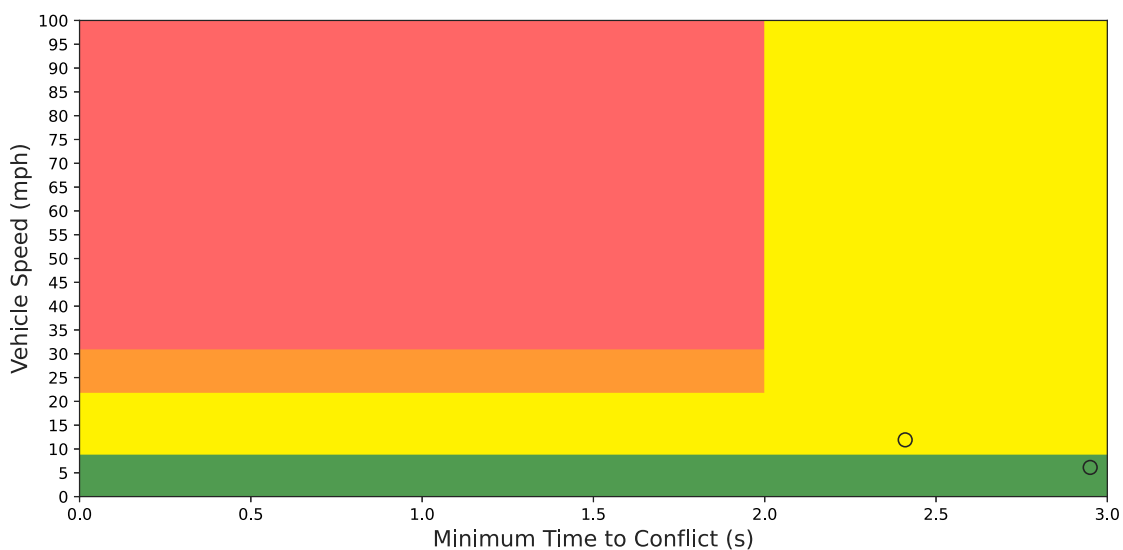
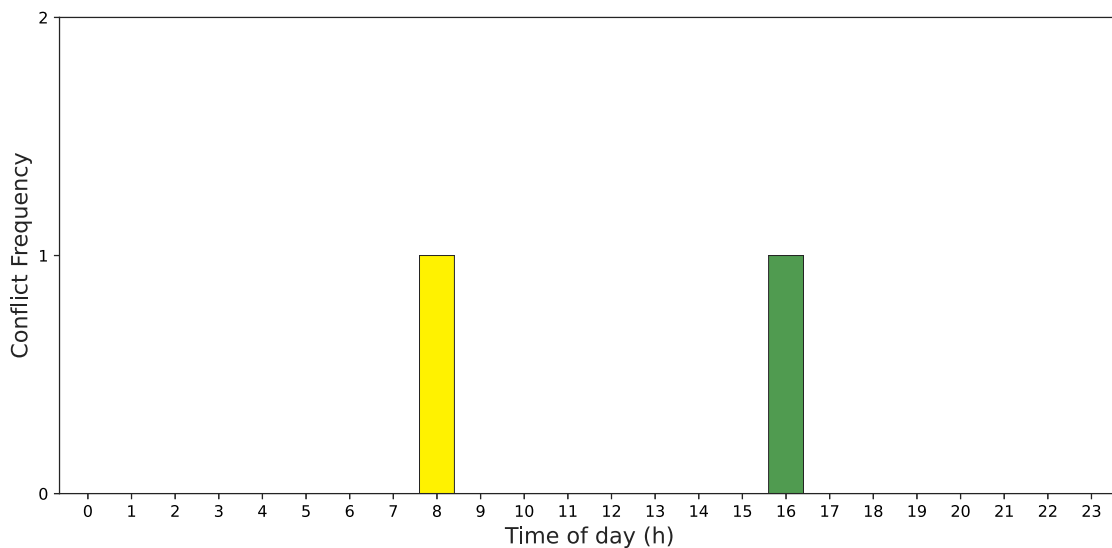
K St. NW & New Jersey Ave. NW

East-Right Vehicle vs Westbound Cyclist on South Side (East-Right Hook)



Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	1
Low	1
Total	2

Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	1875
Cyclist in Bike Lane	25
Cyclist in Crosswalk	80
Cyclist in Vehicle Lane	10
Total Cyclist Volume	115



Conflict data is provided for May 11-13, and May 16-17 @7:00-19:00. Conflict analysis is not performed on May 11th @9:50 - 10:50 due to road closure on the southern vehicle lanes. Speed profile data is provided for May 17. Adverse lighting conditions during deep shadows, wet road conditions, and camera shakes may have affected conflict measurement performance.

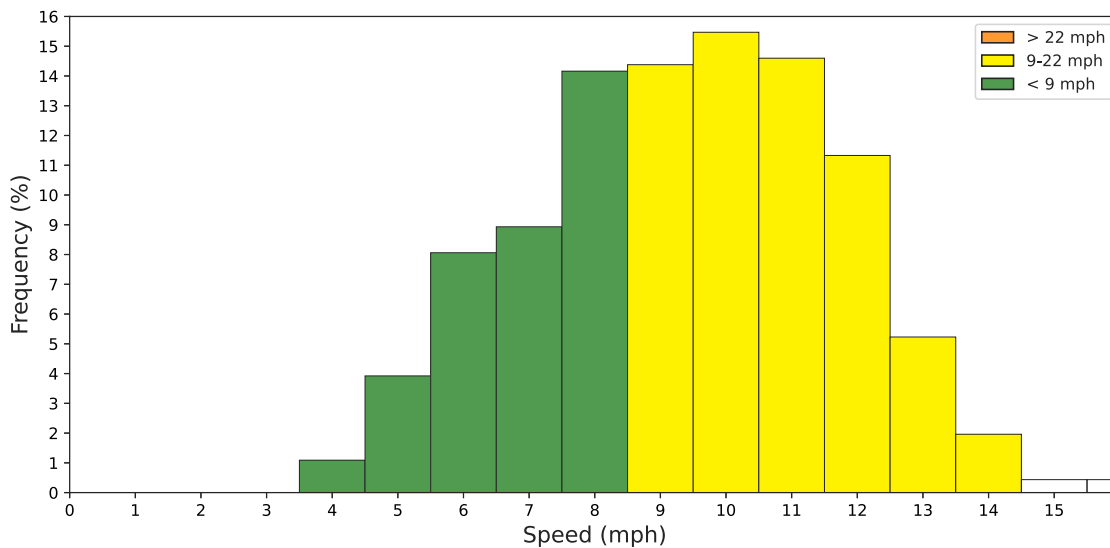
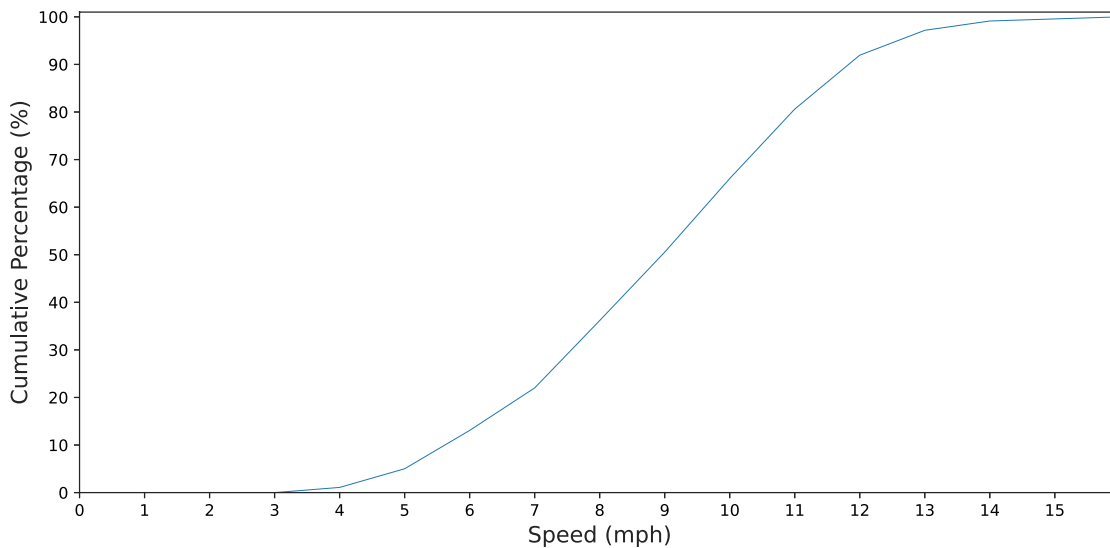


New Jersey Ave. SE & M St. SE

Southbound-Right Vehicle Speed



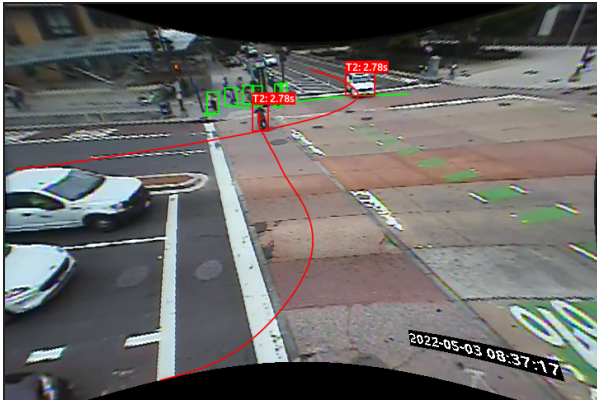
Vehicles < 9 mph	43.6%
Vehicles 9-22 mph	56.6%
Vehicles > 22 mph	0.0%
Average Speed (mph)	9
Standard Deviation	2
85th percentile (mph)	12





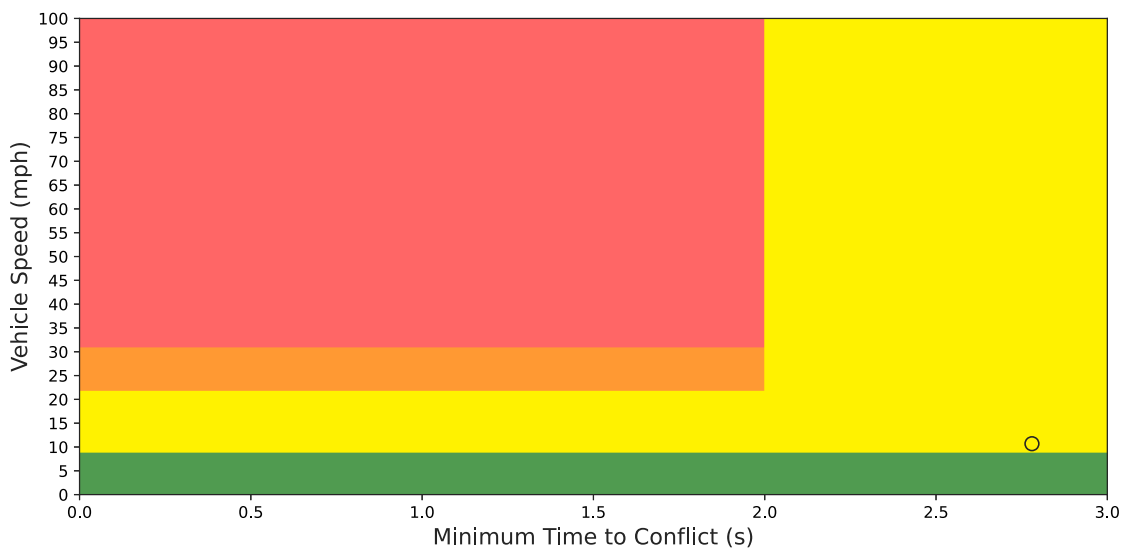
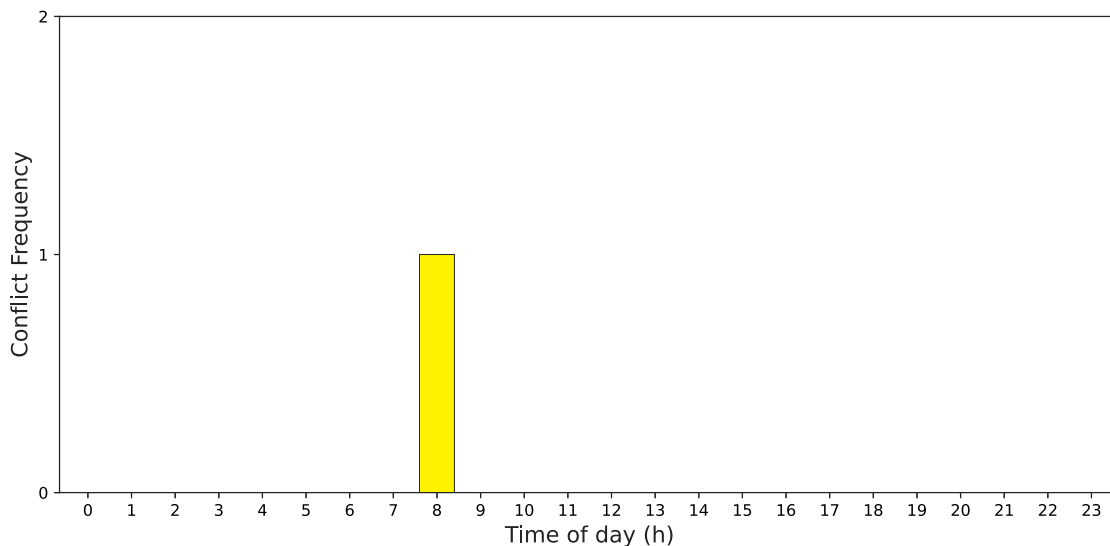
New Jersey Ave. SE & M St. SE

South-Right Vehicle vs Northbound Cyclist on West Side (South-Right Hook)



Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	1
Low	0
Total	1

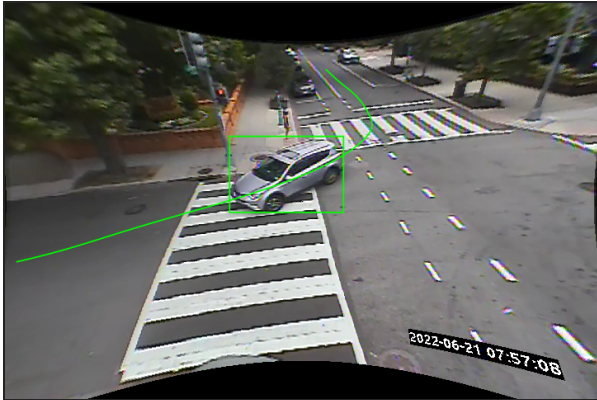
Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	2345
Cyclist in Bike Lane	0
Cyclist in Crosswalk	70
Cyclist in Vehicle Lane	0
Total Cyclist Volume	70



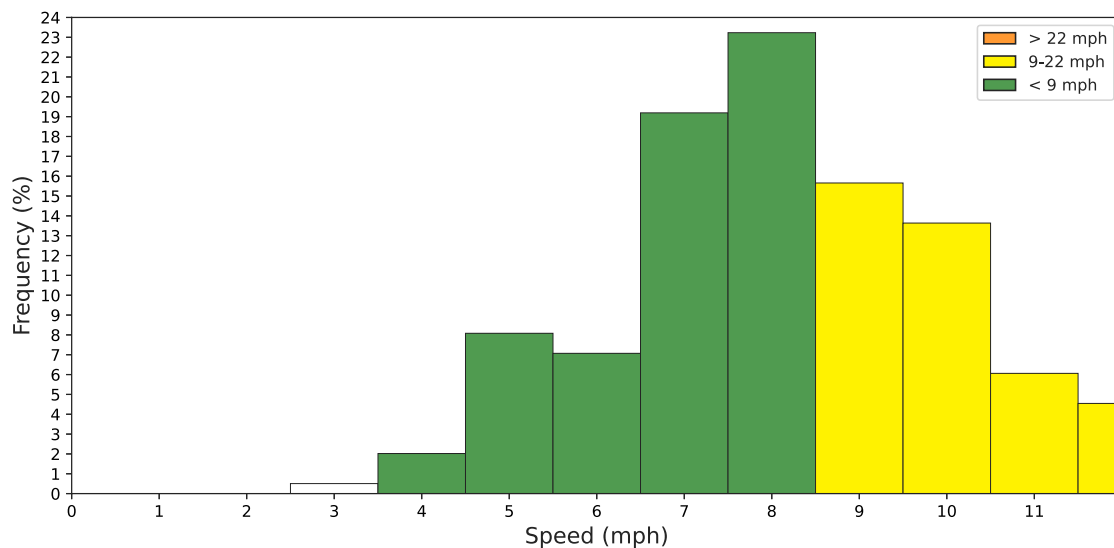
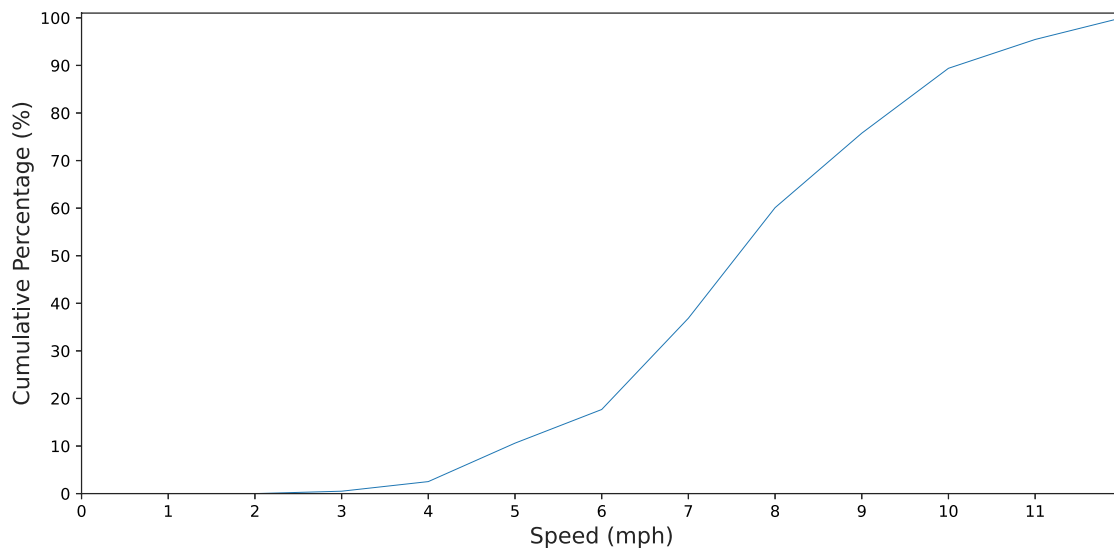


R St. NW & 20th St. NW

Westbound-Right Vehicle Speed



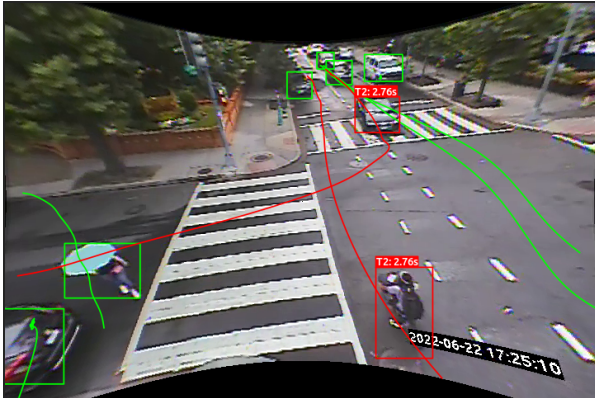
Vehicles < 9 mph	69.2%
Vehicles 9-22 mph	30.8%
Vehicles > 22 mph	0.0%
Average Speed (mph)	8
Standard Deviation	2
85th percentile (mph)	10





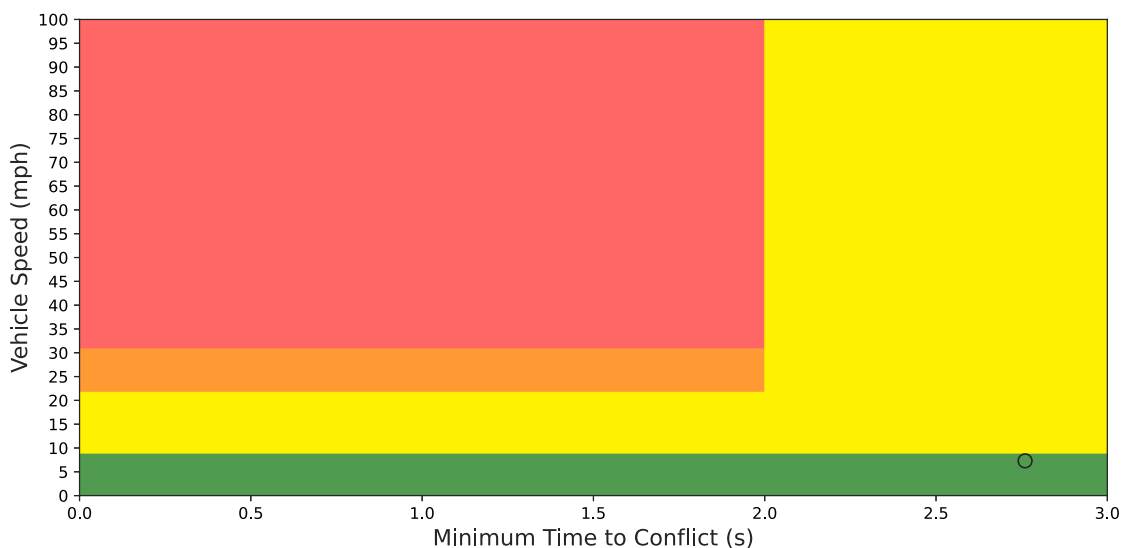
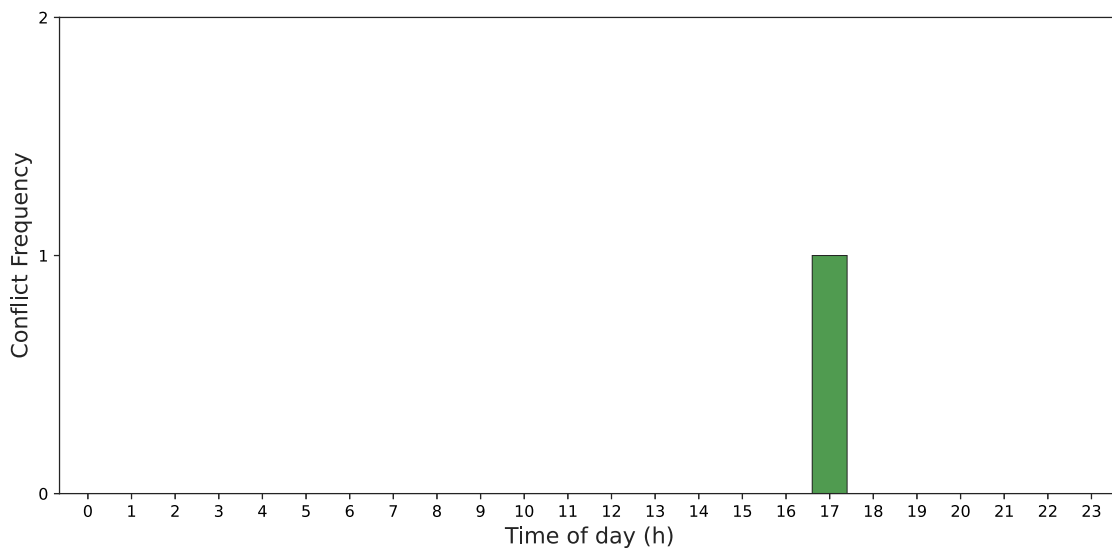
R St. NW & 20th St. NW

West-Right Vehicle vs Eastbound Cyclist on North Side (West-Right Hook)



Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	0
Low	1
Total	1

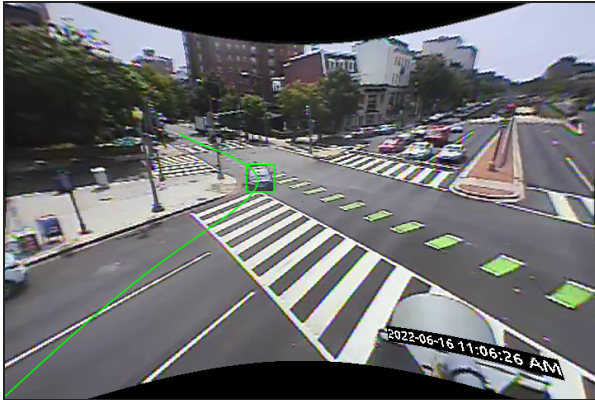
Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	1015
Cyclist in Bike Lane	35
Cyclist in Crosswalk	40
Cyclist in Vehicle Lane	5
Total Cyclist Volume	80



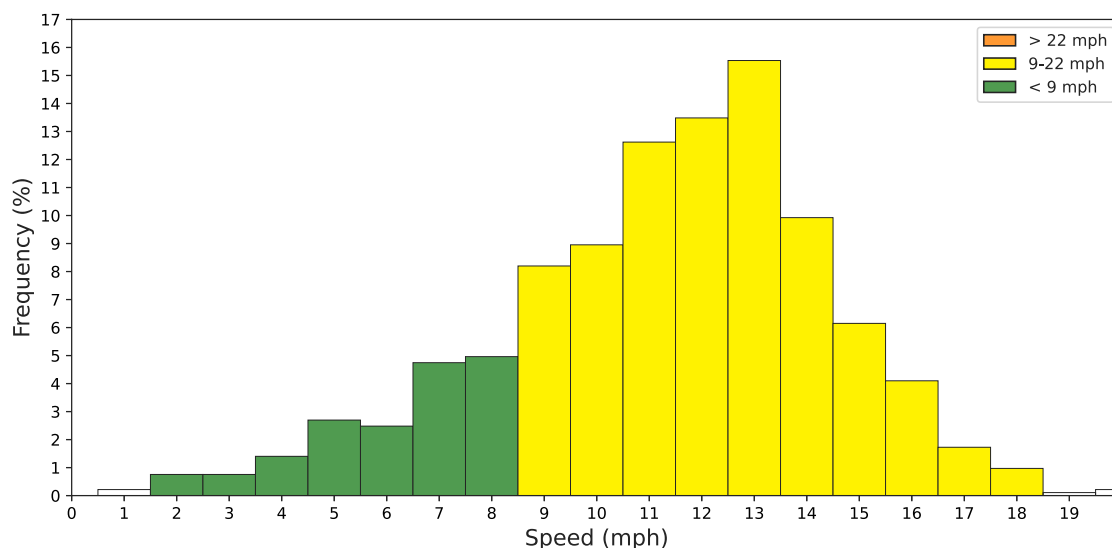
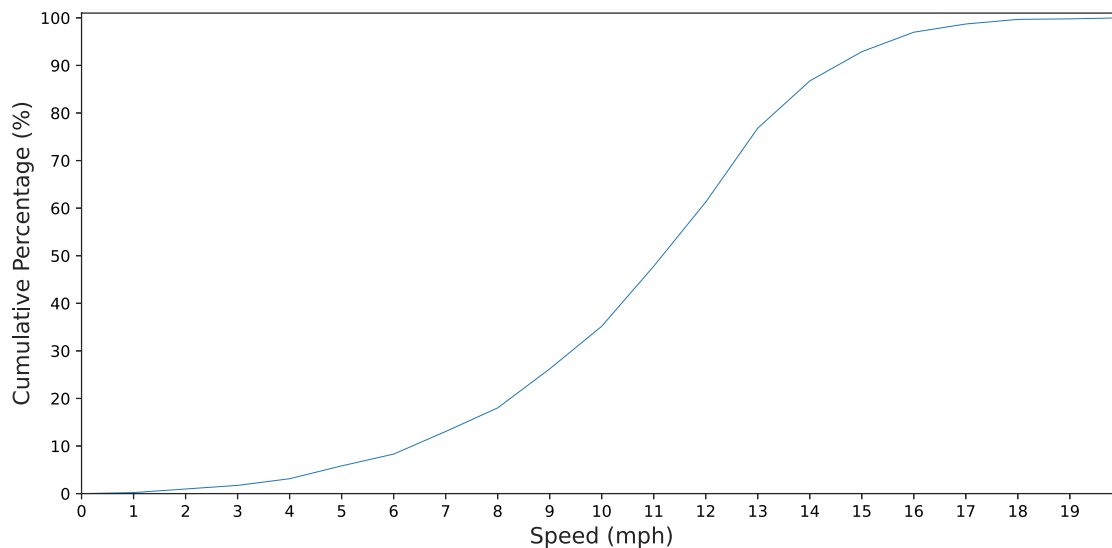


R St. NW & Connecticut Ave. NW

Westbound-Right Vehicle Speed



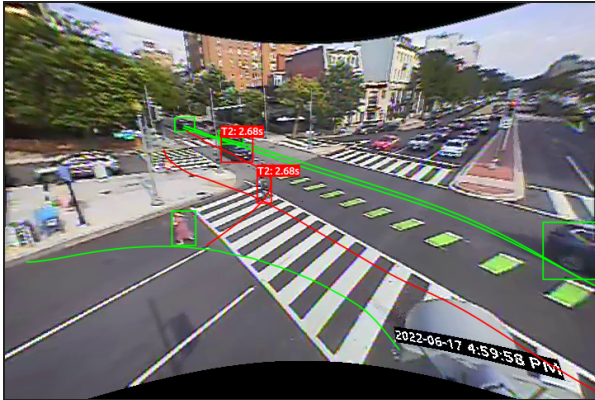
Vehicles < 9 mph	21.9%
Vehicles 9-22 mph	78.1%
Vehicles > 22 mph	0.0%
Average Speed (mph)	11
Standard Deviation	3
85th percentile (mph)	14





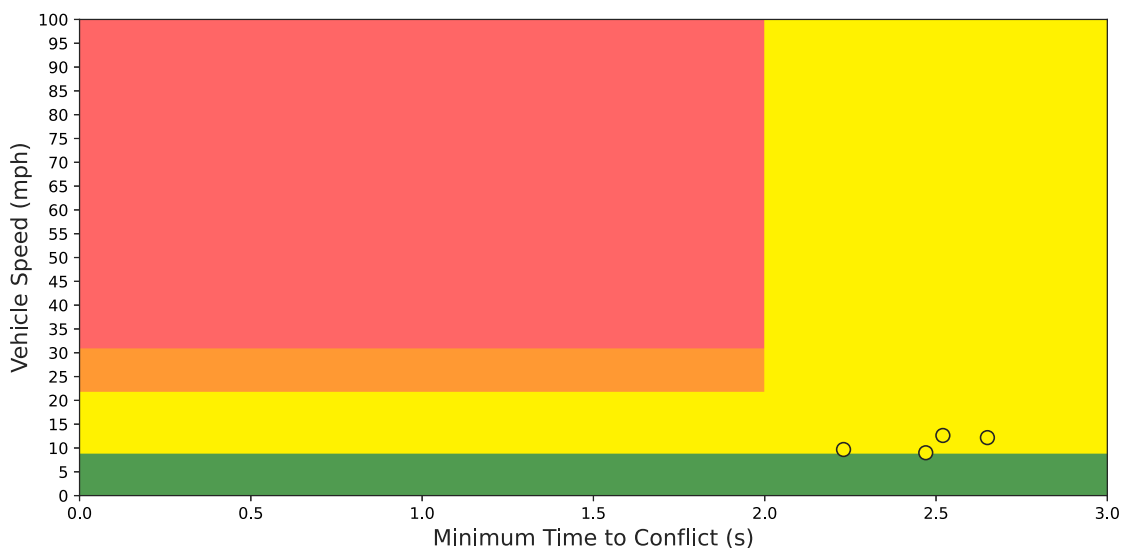
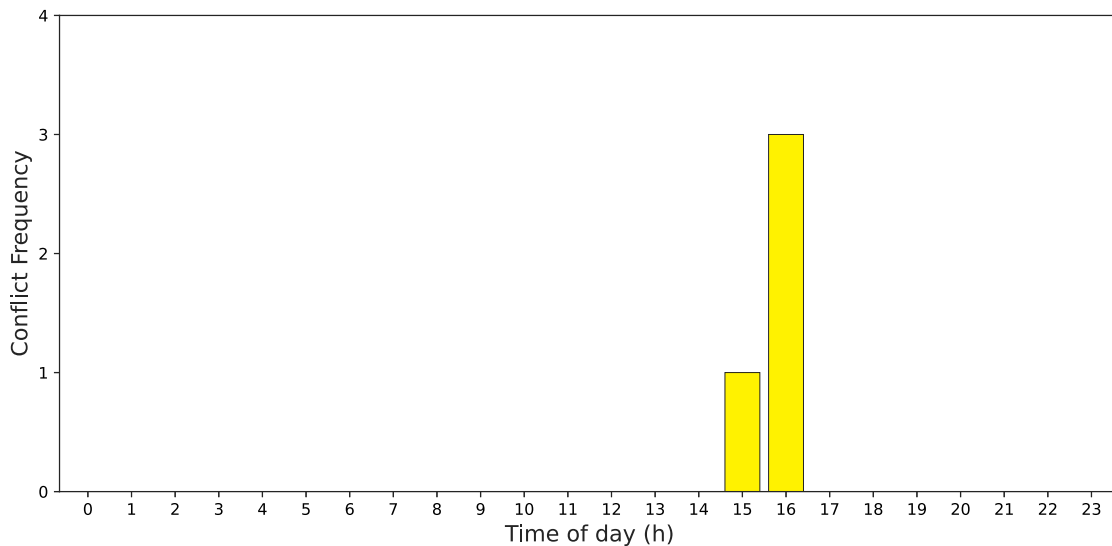
R St. NW & Connecticut Ave. NW

West-Right Vehicle vs Eastbound Cyclist on North Side (West-Right Hook)



Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	4
Low	0
Total	4

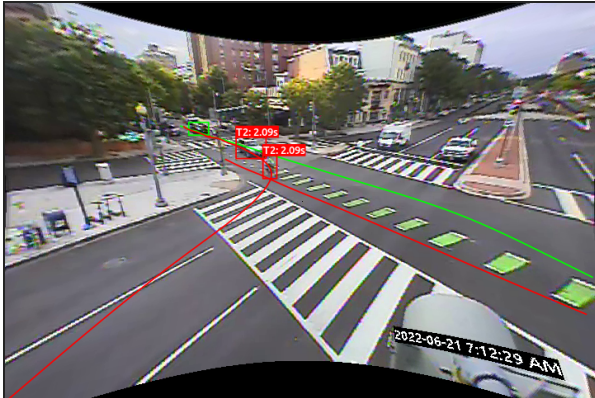
Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	4660
Cyclist in Bike Lane	10
Cyclist in Crosswalk	85
Cyclist in Vehicle Lane	0
Total Cyclist Volume	95





R St. NW & Connecticut Ave. NW

West-Right Vehicle vs Westbound Cyclist on North Side (West-Right Hook)



Conflict Frequency by Risk Level	
Critical	0
High	0
Medium	33
Low	15
Total	48

Estimated Volume by Zone (All Analyzed Days)	
Right-Turning Vehicle	4660
Cyclist in Bike Lane	645
Cyclist in Crosswalk	160
Cyclist in Vehicle Lane	40
Total Cyclist Volume	845

