

# SAFETY STUDY: DEEPER DIVE DATA ANALYSIS

---

Jon Schermann  
TPB Systems Performance Analysis Manager

TPB Citizen's Advisory Committee  
May 14, 2020



# Discussion Topics

---

- Quick Review – Study Overview and Phase 1 Analysis
- Results of the Phase 2 Analysis
  - Crashes with Pedestrians
  - Crashes at or Near Intersections
  - Crashes Along Major Arterials
- Approach and Current Status of Recommendations



# STUDY OVERVIEW & PHASE 1 ANALYSIS



# Study Overview

---

- Objectives

- to understand the factors contributing to fatal and serious injury crashes in the National Capital Region (NCR);
- to determine where crashes on the roadway transportation network are over-represented;
- to identify and recommend proven effective solutions (policy, programmatic, project);
- to provide the TPB and member jurisdictions specific suggestions to improve safety; and
- to inform future Transportation Safety Subcommittee and Street Smart efforts.

- Progress to Date

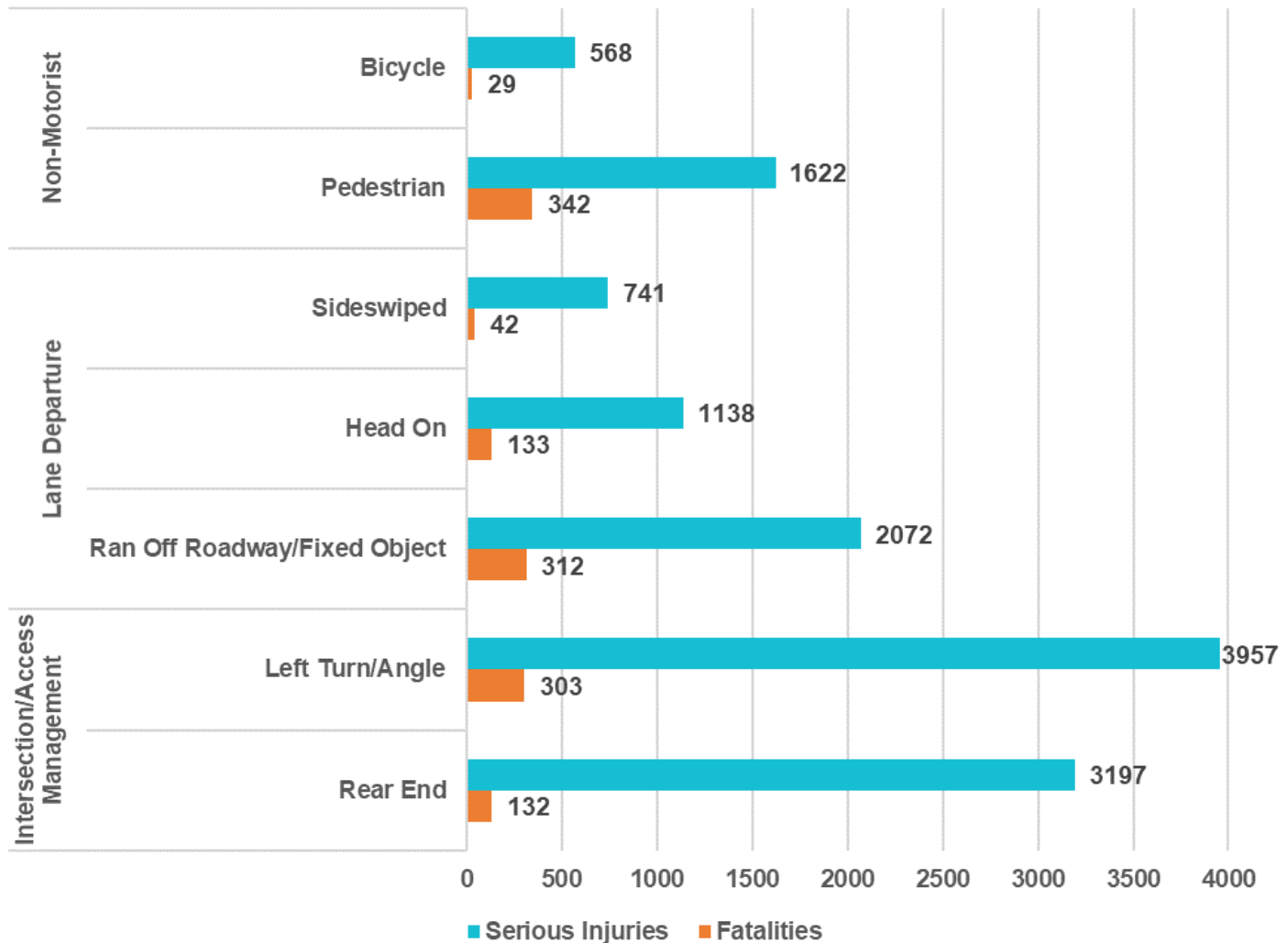
- Kickoff meeting – June 26, 2019
- Benchmark Peer Evaluation - complete
- Collection and Processing of Safety Data – complete
- Analysis of Safety Data – nearly complete
- Recommendations – in process

- Project Timeline

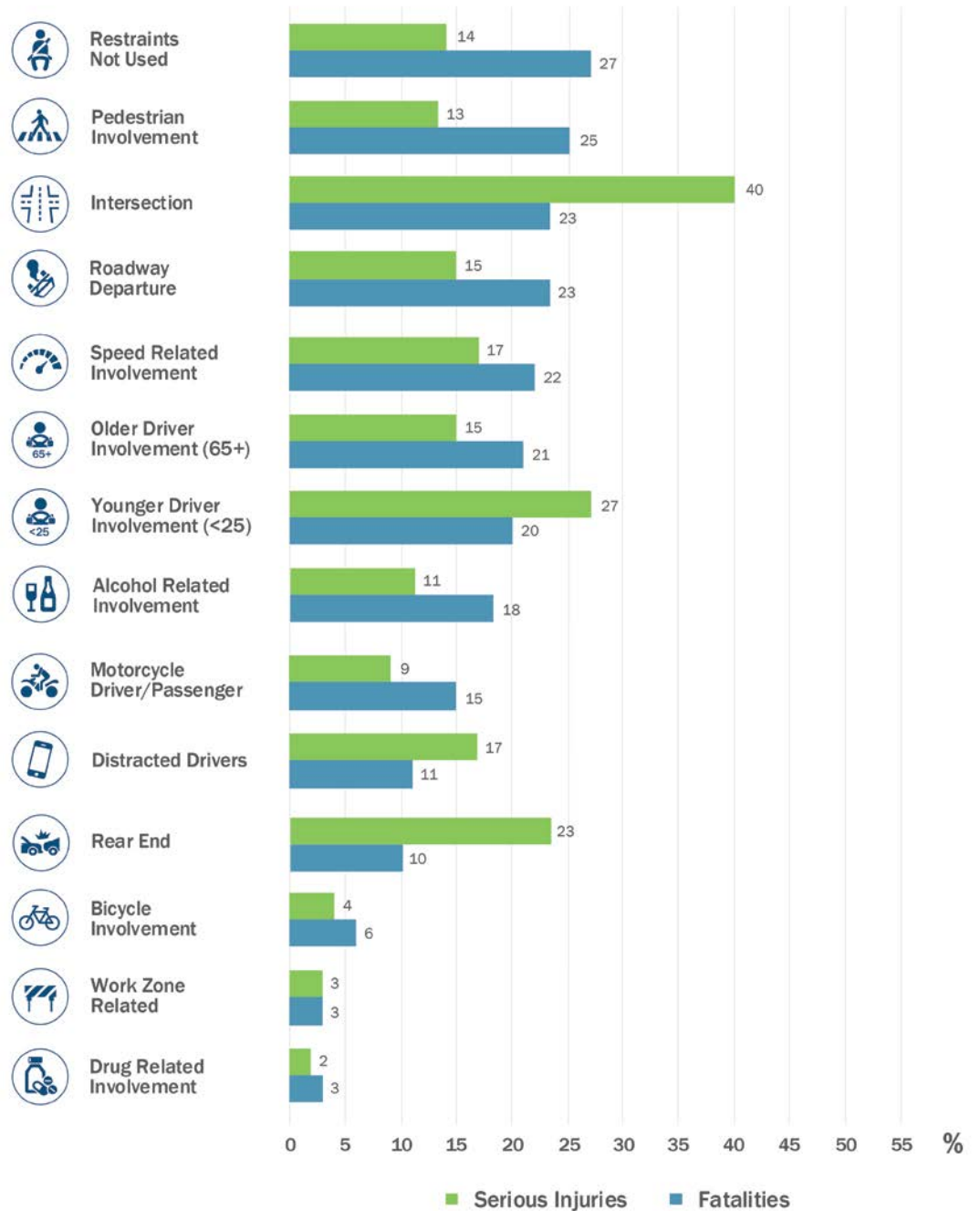
- Original contract through February 2020 – extended through November 2020



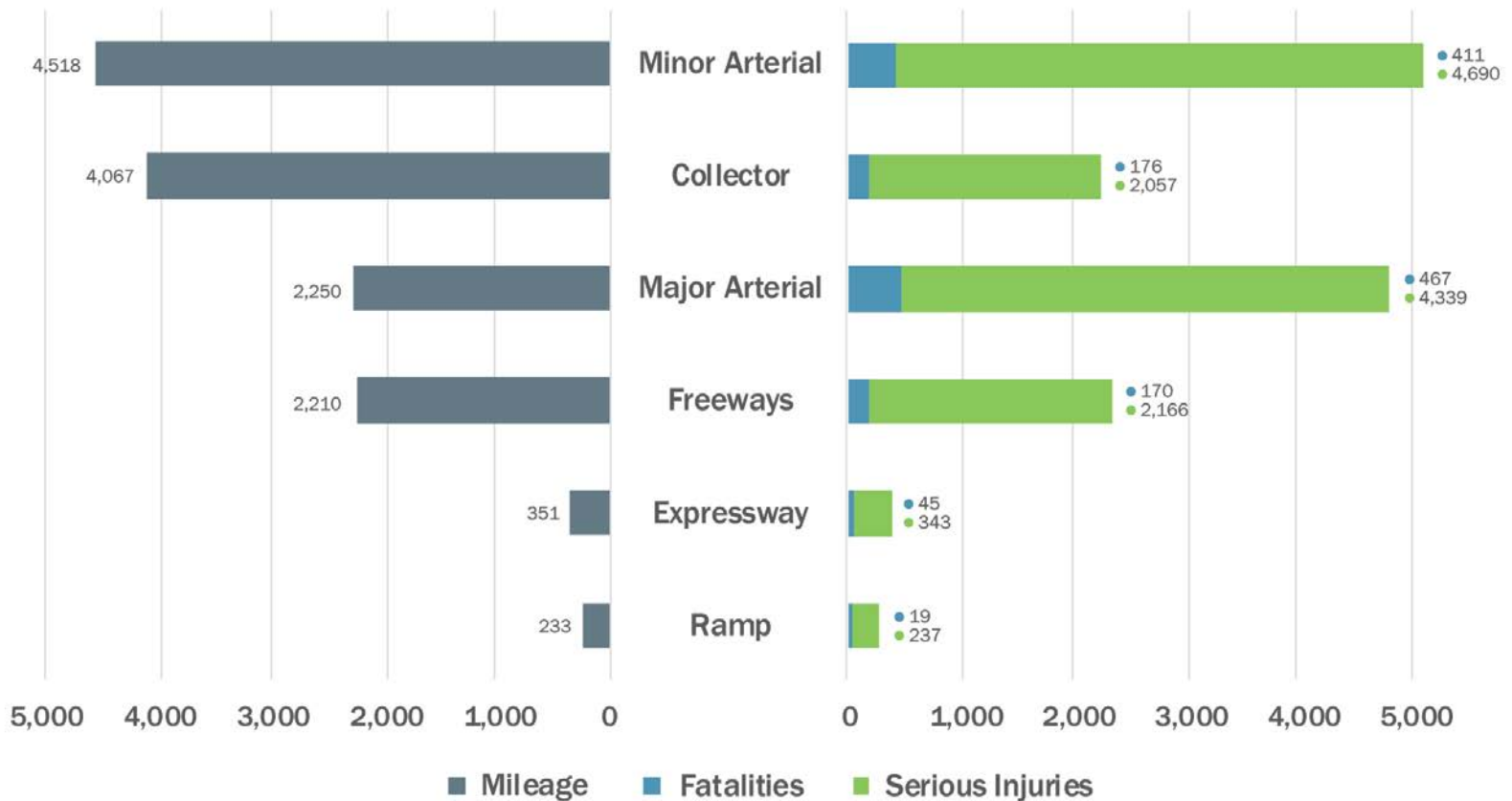
# Crash Types (2013-2017)



# Crash Contributing Factors (2013-2017)



# Functional Class (2013-2017)



# Priority Areas – Phase 2 Analysis

---

- Crashes with Pedestrians
- Crashes at or near Intersections
- Crashes Along Major Arterials





# PEDESTRIANS



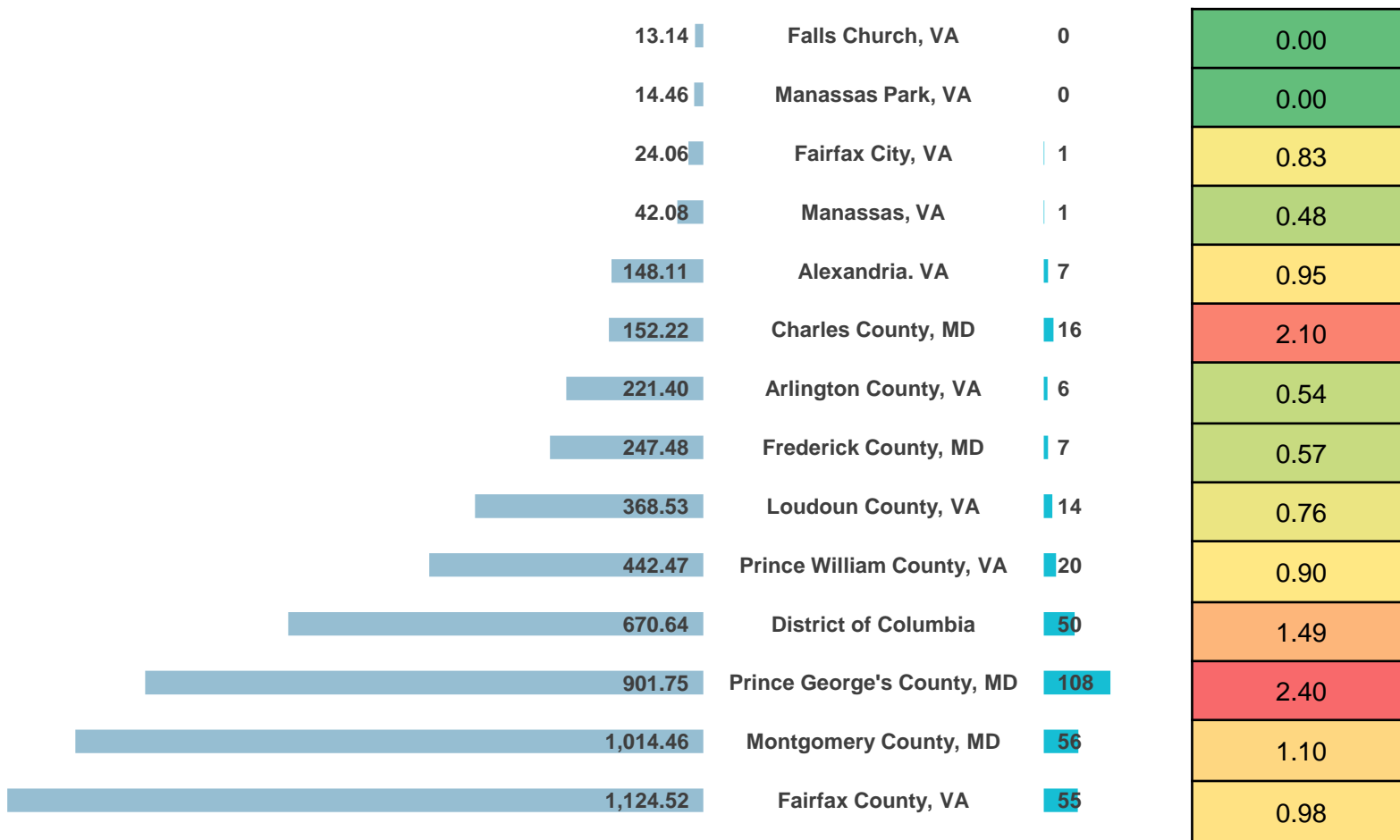
# Pedestrian Crash Severity By Jurisdiction

Pedestrian Crash Severity by Jurisdiction			
Jurisdiction	Fatalities	Serious Injuries	Total Crashes
District of Columbia	50	399	5,431
Charles County, MD	16	49	208
Frederick County, MD	7	36	284
Montgomery County, MD	56	318	2,297
Prince George's County, MD	108	269	2,156
Arlington County, VA	6	74	693
Fairfax County, VA	55	331	1,024
Fauquier County, VA (urbanized area)	1	7	24
Loudoun County, VA	14	57	235
Prince William County, VA	20	96	299
Alexandria, VA	7	58	338
Fairfax City, VA	1	21	54
Falls Church, VA	0	13	30
Manassas, VA	1	39	74
Manassas Park, VA	0	0	7
<b>Urban Core</b>	<b>63</b>	<b>531</b>	<b>6,462</b>
<b>Inner Suburbs</b>	<b>220</b>	<b>952</b>	<b>5,561</b>
<b>Outer Suburbs</b>	<b>59</b>	<b>284</b>	<b>1,131</b>
<b>National Capital Region Total</b>	<b>342</b>	<b>1,767</b>	<b>13,154</b>



# Pedestrian Fatality Rate by Population

Fatalities per 100,000 people



■ Average Population 2013-2017 (1,000's) ■ Pedestrian Fatalities



# Pedestrian Crash Severity by Time of Day

Pedestrian Injury Severity by Time of Day			
Time of Day	Fatalities	Serious Injuries	Total Crashes
Midnight - 0:59 a.m.	11	37	206
1:00 a.m. - 1:59 a.m.	13	35	161
2:00 a.m. - 2:59 a.m.	13	35	163
3:00 a.m. - 3:59 a.m.	7	31	131
4:00 a.m. - 4:59 a.m.	10	4	67
5:00 a.m. - 5:59 a.m.	15	29	187
6:00 a.m. - 6:59 a.m.	24	65	390
7:00 a.m. - 7:59 a.m.	12	85	623
8:00 a.m. - 8:59 a.m.	3	88	673
9:00 a.m. - 9:59 a.m.	7	57	543
10:00 a.m. - 10:59 a.m.	11	59	498
11:00 a.m. - 11:59 a.m.	8	64	547
12:00 p.m. - 12:59 p.m.	6	64	531
1:00 p.m. - 1:59 p.m.	5	68	588
2:00 p.m. - 2:59 p.m.	9	84	726
3:00 p.m. - 3:59 p.m.	11	107	872
4:00 p.m. - 4:59 p.m.	12	104	862
5:00 p.m. - 5:59 p.m.	12	151	1,103
6:00 p.m. - 6:59 p.m.	25	166	1,151
7:00 p.m. - 7:59 p.m.	26	137	911
8:00 p.m. - 8:59 p.m.	34	103	757
9:00 p.m. - 9:59 p.m.	33	99	632
10:00 p.m. - 10:59 p.m.	28	92	518
11:00 p.m. - 11:59 p.m.	18	65	311



# Pedestrian Crash Severity by Month

Pedestrian Injury Severity by Month			
Month	Fatalities	Serious Injuries	Total Crashes
January	28	151	1,162
February	28	136	929
March	27	145	984
April	23	149	1,027
May	31	155	1,101
June	23	150	1,087
July	22	109	892
August	29	160	967
September	24	156	1,117
October	40	180	1,389
November	38	163	1,242
December	40	176	1,257



# Pedestrian Crash Severity by Location

Injury Severity by Pedestrian Location			
Pedestrian Location	Fatalities	Serious Injuries	Total Crashes
Unknown	65	414	4,270
Unmarked Crosswalk	6	54	386
Marked Crosswalk	61	536	3,927
Sidewalk	7	33	252
In Roadway/Unmarked Midblock/Not at Intersection	197	675	3,770
Median/Island	2	4	28
Outside Roadway	15	114	521



# Driver Age in Pedestrian Crashes

Driver Age in Pedestrian Crashes			
Driver Age	Fatal Pedestrian Crashes	Serious Injury Pedestrian Crashes	Total Drivers in Pedestrian Crashes
Younger than 5	0	0	0
5-9	0	0	0
10-14	0	0	0
15-19	12	52	280
20-24	32	159	960
25-29	34	174	1,213
30-34	37	180	1,190
35-39	32	164	1,012
40-44	36	144	947
45-49	30	173	998
50-54	36	142	1,033
55-59	34	133	952
60-64	20	101	759
65-69	16	97	588
70-74	5	49	395
75-79	8	44	259
80-84	6	20	165
Older than 84	42	158	1,079



# INTERSECTIONS





# Intersection Crash Severity by Jurisdiction

Intersection Crash Severity by Jurisdiction			
Jurisdiction	Fatalities	Serious Injuries	Total Crashes
District of Columbia	56	929	57,450
Charles County, MD	24	379	4,323
Frederick County, MD	16	139	4,244
Montgomery County, MD	79	954	23,860
Prince George's County, MD	118	733	22,101
Arlington County, VA	9	152	6,290
Fairfax County, VA	58	1,479	27,461
Fauquier County, VA (urbanized area)	1	37	690
Loudoun County, VA	19	439	10,983
Prince William County, VA	44	463	12,905
Alexandria, VA	4	119	4,004
Fairfax City, VA	4	60	1,339
Falls Church, VA	0	44	339
Manassas, VA	1	210	1,900
Manassas Park, VA	0	4	215
<b>Urban Core</b>	69	1,200	67,744
<b>Inner Suburbs</b>	259	3,270	75,100
<b>Outer Suburbs</b>	105	1,671	35,260
<b>National Capital Region Total</b>	<b>433</b>	<b>6,141</b>	<b>178,104</b>



# Intersection Crash Severity by Time of Day

Intersection Injury Severity by Time of Day			
Time of Day	Fatalities	Serious Injuries	Total Crashes
Midnight - 0:59 a.m.	12	154	3,365
1:00 a.m. - 1:59 a.m.	18	98	2,425
2:00 a.m. - 2:59 a.m.	15	131	2,329
3:00 a.m. - 3:59 a.m.	9	78	2,161
4:00 a.m. - 4:59 a.m.	5	45	1,455
5:00 a.m. - 5:59 a.m.	12	91	2,337
6:00 a.m. - 6:59 a.m.	10	216	4,708
7:00 a.m. - 7:59 a.m.	21	284	8,420
8:00 a.m. - 8:59 a.m.	12	329	10,665
9:00 a.m. - 9:59 a.m.	17	273	9,337
10:00 a.m. - 10:59 a.m.	16	255	7,987
11:00 a.m. - 11:59 a.m.	15	272	8,386
12:00 p.m. - 12:59 p.m.	16	299	9,528
1:00 p.m. - 1:59 p.m.	16	321	9,573
2:00 p.m. - 2:59 p.m.	22	319	10,381
3:00 p.m. - 3:59 p.m.	19	415	12,595
4:00 p.m. - 4:59 p.m.	12	409	13,072
5:00 p.m. - 5:59 p.m.	22	431	14,354
6:00 p.m. - 6:59 p.m.	37	427	12,640
7:00 p.m. - 7:59 p.m.	22	315	8,883
8:00 p.m. - 8:59 p.m.	27	311	6,960
9:00 p.m. - 9:59 p.m.	32	271	6,454
10:00 p.m. - 10:59 p.m.	22	219	5,543
11:00 p.m. - 11:59 p.m.	24	177	4,539



# Crash Severity by Intersection Control Type

Injury Severity by Intersection Control Type			
Intersection Control Type	Fatalities	Serious Injuries	Total Crashes
Flashing	13	89	4,222
Officer or Flagger	0	15	441
Other	27	308	11,653
Signal	225	3,311	100,074
Stop Sign	68	837	25,240
Turn Restricted	0	2	63
Yield	9	39	2,383

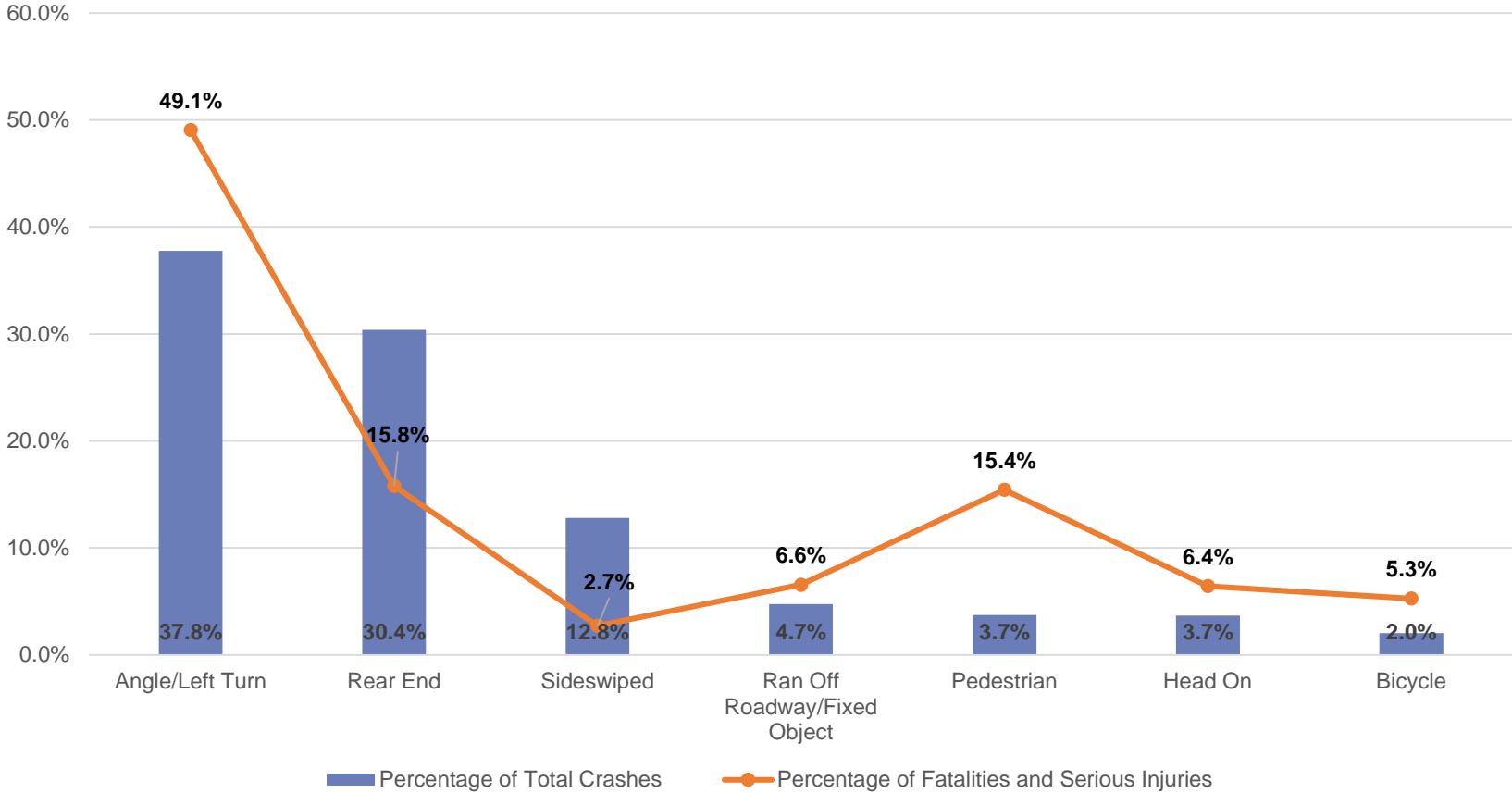


# Intersection Crash Severity by Functional Class

Intersection Injury Severity by Functional Class			
Functional Class	Fatalities	Serious Injuries	Total Crashes
Collector	53	1,045	28,744
Expressway	17	132	3,584
Freeway	10	165	5,586
Major Arterial	185	2,226	68,598
Minor Arterial	147	2,475	68,505
Ramp	3	66	1,878



# Intersection Collision Types by Contribution



# MAJOR ARTERIALS



# Major Arterial Crash Severity by Jurisdiction

Major Arterial Crash Severity by Jurisdiction			
Jurisdiction	Fatalities	Serious Injuries	Total Crashes
District of Columbia	44	618	45,775
Charles County, MD	37	443	5,422
Frederick County, MD	26	89	3,665
Montgomery County, MD	98	851	25,836
Prince George's County, MD	165	727	23,564
Arlington County, VA	9	98	4,231
Fairfax County, VA	42	803	17,307
Fauquier County, VA (urbanized area)	2	55	1,160
Loudoun County, VA	12	142	4,585
Prince William County, VA	24	195	5,301
Alexandria, VA	2	69	2,624
Fairfax City, VA	5	82	2,357
Falls Church, VA	0	66	492
Manassas, VA	1	100	823
Manassas Park, VA	0	1	109
<b>Urban Core</b>	55	785	52,630
<b>Inner Suburbs</b>	310	2,529	69,556
<b>Outer Suburbs</b>	102	1,025	21,065
<b>National Capital Region Total</b>	<b>467</b>	<b>4,339</b>	<b>143,251</b>



# Major Arterial Crash Severity by Time of Day

Major Arterial Injury Severity by Time of Day			
Time of Day	Fatalities	Serious Injuries	Total Crashes
Midnight - 0:59 a.m.	20	115	2,935
1:00 a.m. - 1:59 a.m.	23	93	2,298
2:00 a.m. - 2:59 a.m.	22	94	2,336
3:00 a.m. - 3:59 a.m.	21	74	2,182
4:00 a.m. - 4:59 a.m.	19	42	1,471
5:00 a.m. - 5:59 a.m.	14	83	2,150
6:00 a.m. - 6:59 a.m.	19	154	3,949
7:00 a.m. - 7:59 a.m.	12	182	6,374
8:00 a.m. - 8:59 a.m.	8	221	7,984
9:00 a.m. - 9:59 a.m.	11	209	7,331
10:00 a.m. - 10:59 a.m.	15	187	6,607
11:00 a.m. - 11:59 a.m.	14	193	6,687
12:00 p.m. - 12:59 p.m.	13	222	7,697
1:00 p.m. - 1:59 p.m.	17	225	7,959
2:00 p.m. - 2:59 p.m.	13	227	8,617
3:00 p.m. - 3:59 p.m.	14	297	10,198
4:00 p.m. - 4:59 p.m.	22	274	10,385
5:00 p.m. - 5:59 p.m.	23	309	11,193
6:00 p.m. - 6:59 p.m.	30	281	9,855
7:00 p.m. - 7:59 p.m.	29	199	6,929
8:00 p.m. - 8:59 p.m.	28	167	5,267
9:00 p.m. - 9:59 p.m.	29	189	4,859
10:00 p.m. - 10:59 p.m.	22	153	4,379
11:00 p.m. - 11:59 p.m.	29	149	3,601



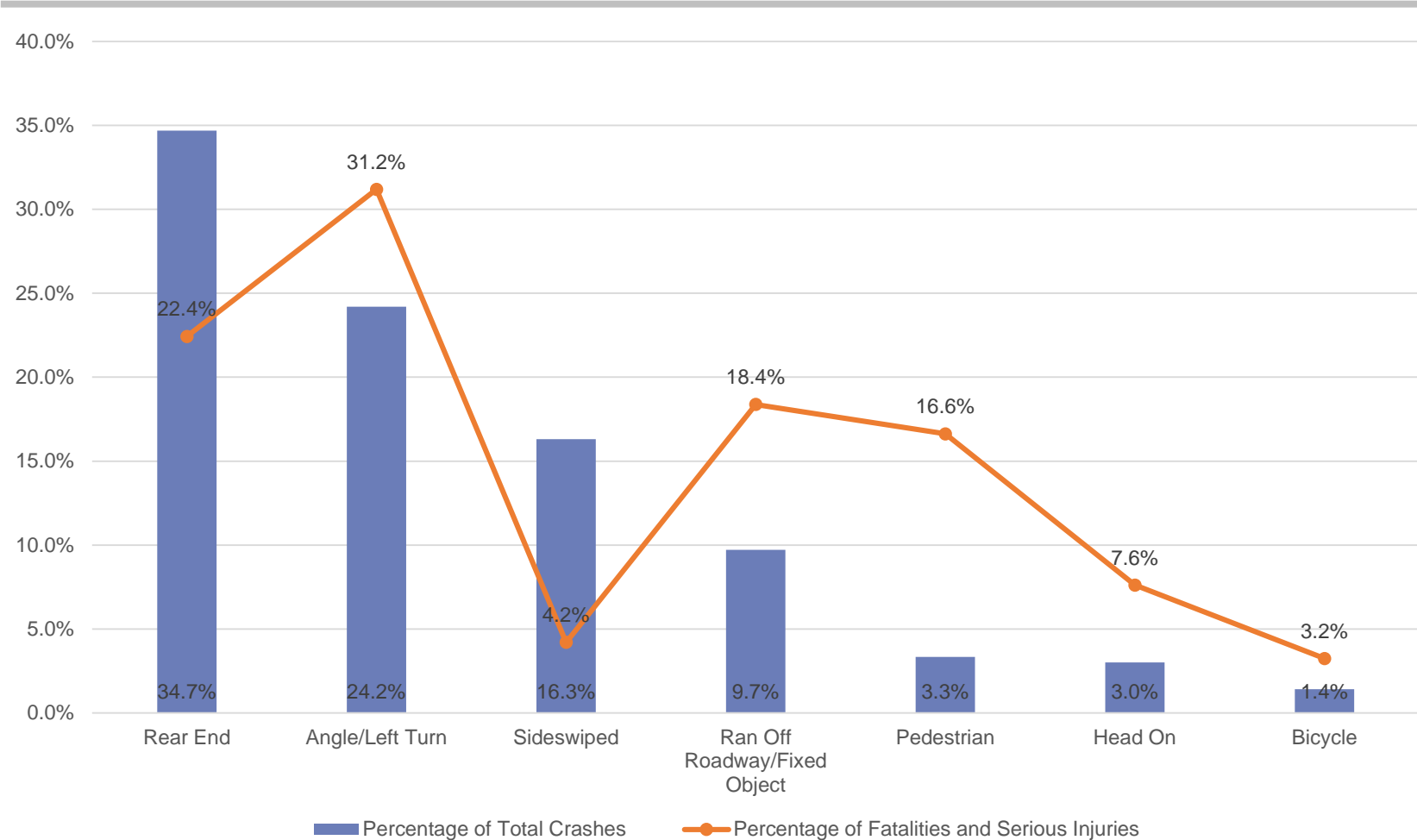


# Major Arterial Crash Severity by Day of Week

Major Arterial Injury Severity by Day of the Week			
Day of Week	Fatalities	Serious Injuries	Total Crashes
Sunday	82	595	15,369
Monday	60	583	19,502
Tuesday	48	615	21,577
Wednesday	59	603	21,487
Thursday	66	623	21,882
Friday	69	671	23,826
Saturday	83	649	19,609



# Major Arterial Collision Types by Contribution



# Recommendations

---

- Start with three questions:
  1. What are those countermeasures that, if we did more of them, would result in fewer people dying or getting injured on our roadways?
    - based on the data analysis;
    - not limited to what typically falls under the purview of an MPO; and
    - are either proven effective, have evidence that they are very likely to be effective, or are good to do based on the expert opinion of the consultant team
  2. What level of government or type of agency is typically responsible for implementing each countermeasure?
  3. What is the potential MPO role for each countermeasure?



# Recommendations (continued)

---

- Develop a set of recommendations for the TPB to consider based on...
  - The answers to the three questions
  - Input from our committees and stakeholders
  - Staff expertise



## Jon Schermann

TPB Systems Performance Analysis  
Manager

(202) 962-3317

[jschermann@mwcog.org](mailto:jschermann@mwcog.org)

[mwcog.org/tpb](http://mwcog.org/tpb)

---

Metropolitan Washington Council of Governments  
777 North Capitol Street NE, Suite 300  
Washington, DC 20002



National Capital Region  
Transportation Planning Board