Pedestrian Safety Initiative Update

DOT, MCPD, PIO

July 23, 2014

CountyStat

CountyStat Principles

- **Require Data-Driven Performance**
- **Promote Strategic Governance**
- **Increase Government Transparency**
- **Foster a Culture of Accountability**

Meeting Goals

- Monitor the performance of the Pedestrian Safety Initiative
- Identify trends in pedestrian collisions to drive targeted resource allocation
- Identify and discuss specific strategies for mitigating pedestrian collisions

Desired Outcomes

- Improve safety for pedestrians, bicyclists, and motorists in Montgomery County

Agenda

1. **2013 in Review: Background and Context**
2. **Issue Areas:**
    1. High Incidence Areas
    2. The Evening Commute (5pm to 8pm) and Visibility
    3. At-Fault Drivers and Pedestrians
    4. Safe Routes to School
    5. Traffic Calming
    6. Bicycle Safety
3. **Data Acquisition**
4. **Wrap-Up and Follow-Ups**

2013 in Review: Background and Context

CountyStat

Overview of the Pedestrian Safety Initiative

Pedestrian Safety has been a cross-cutting issue of focus for CountyStat since 2008. Through the years, DOT, MCPD, and PIO in collaboration with CountyStat have engaged in targeted resource allocation and efforts that have reduced the average number of per capita collisions per year, and dramatically reduced the number of severe collisions across the County. Data analysis has enabled the County to continually monitor and assess progress, identify specific areas where more effort has been needed, and direct our focus on where to go next to continue making our sidewalks and crosswalks safer for our residents.

Since 2008, there have been four broad areas of success:

- *Identification of and focus on High Incidence Areas*
- *Safe Routes to School*
- *Traffic calming*
- *Parking lots and parking garages*

Pedestrian Safety Follow-Up Items

Responsible Department	Meeting Date	Follow-Up Item	Status
CountyStat	5/8/2013	When displaying regional comparison data, rank or sort jurisdictions by population density and/or rank by fatalities per 100k people (See slide 57, Appendix A).	Complete
DOT	5/8/2013	Engage parking lot and garage owners to address issue through education, signage, or re-design and/or partner with a university to conduct targeted study.	Complete
DOT	5/8/2013	DOT will conduct photometric studies to improve lighting in specific areas in an effort to reduce collisions during night-time hours.	Complete
DOT	5/8/2013	Safe Routes to Schools (SRTS) will study areas around private schools in the County and will address safety during drop-off and pick-up at all schools. SRTS will also address teen pedestrians around high schools.	Complete (on-going)
DOT	5/8/2013	Over the next five years, DOT will re-time all crossing signals to increase crossing time for pedestrians.	Complete (on-going)
MCPD	5/8/2013	MCPD will increase their focus on diver violations (Group 2) specifically at district-identified hot spots through means such as education, enforcement and pedestrian stings.	Complete

Montgomery County Pedestrian Collisions and Fatalities

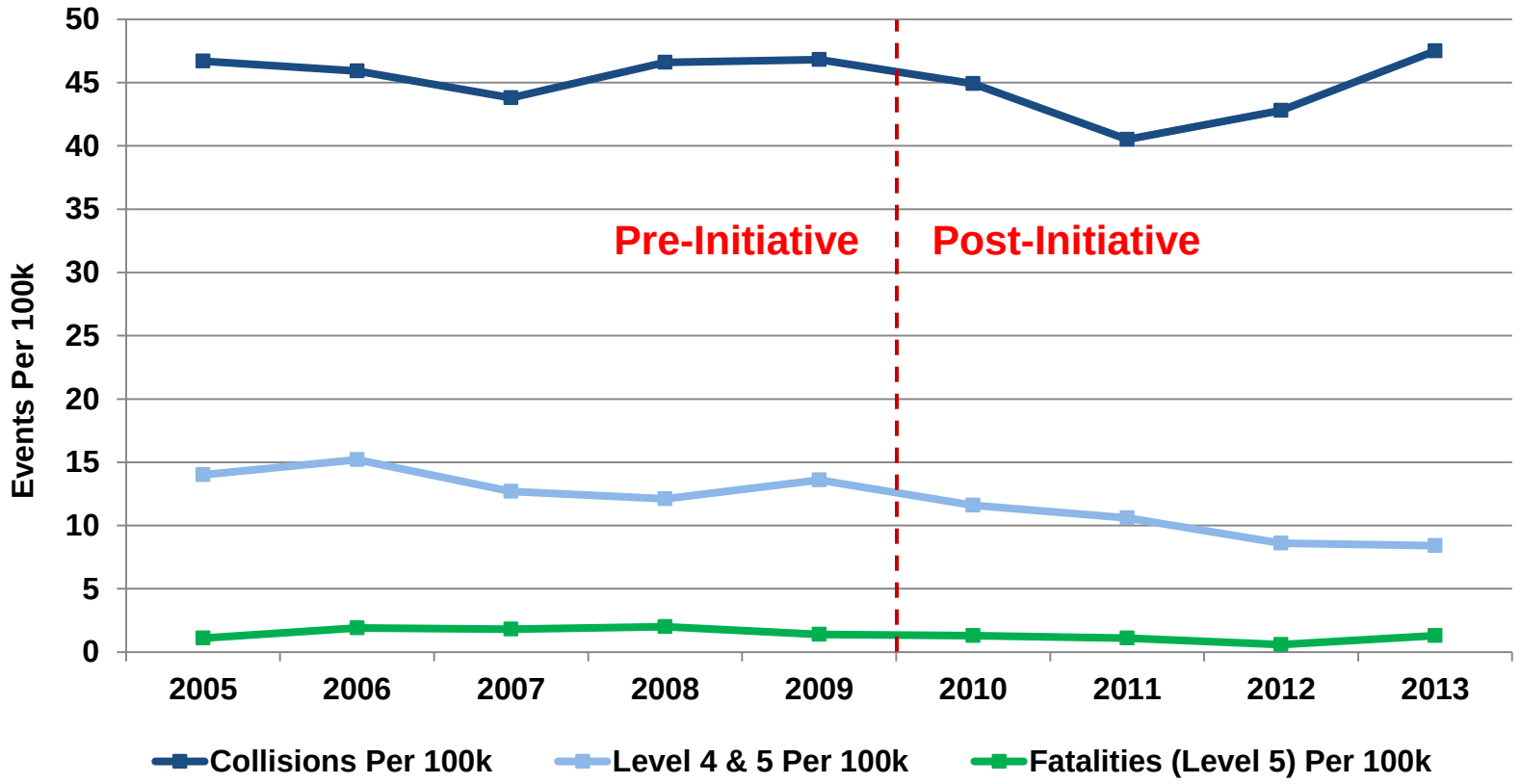
With four years of data since the launch of the Pedestrian Safety Initiative in July 2009, DOT and MCPD looked at the change in the average number of collisions pre- and post-launch.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	Pre-Initiative Average (2005-2009)	Post-Initiative Average (2010-2013)	Change
January	36	31	32	48	34	34	28	40	50	36	38	+6%
February	28	28	33	30	37	39	27	36	38	31	35	+13%
March	37	28	34	37	31	33	38	27	36	33	34	+3%
April	26	25	35	34	28	33	36	27	43	30	35	+17%
May	27	36	34	47	46	33	28	36	40	38	35	-8%
June	41	33	29	24	41	33	17	35	35	34	30	-12%
July	24	29	20	37	36	33	24	23	30	29	28	-3%
August	28	37	26	36	32	26	33	31	36	32	32	0%
September	39	39	38	35	30	41	32	35	41	36	37	+3%
October	48	42	37	31	41	44	43	44	56	40	47	+10%
November	48	49	60	38	46	43	42	48	40	48	43	-18%
December	52	52	34	47	52	44	51	41	38	47	44	-6%
Total Collisions	434	429	412	444	454	436	399	423	483	435	435	0%
Per 100,000	46.7	45.9	43.8	46.6	46.8	44.9	40.5	42.8	47.5	46.0	43.9	-5%
Level 4 & 5 Collisions (% of total)	130 (30%)	142 (33%)	119 (29%)	115 (26%)	132 (29%)	113 (26%)	104 (26%)	82 (19%)	85 (18%)	128	96	-25%
Per 100,000	14.0	15.2	12.7	12.1	13.6	11.6	10.6	8.6	8.4	13.5	9.8	-27%
Total Fatalities*	10	18	17	19	14	13	11	6	13	16	11	-31%
Per 100,000	1.1	1.9	1.8	2	1.4	1.3	1.1	0.6	1.3	1.6	1.1	-31%

*Does not include bicycle fatalities

Source: MCPD. Data reporting prior to 2008 may not have been consistent with present practices.

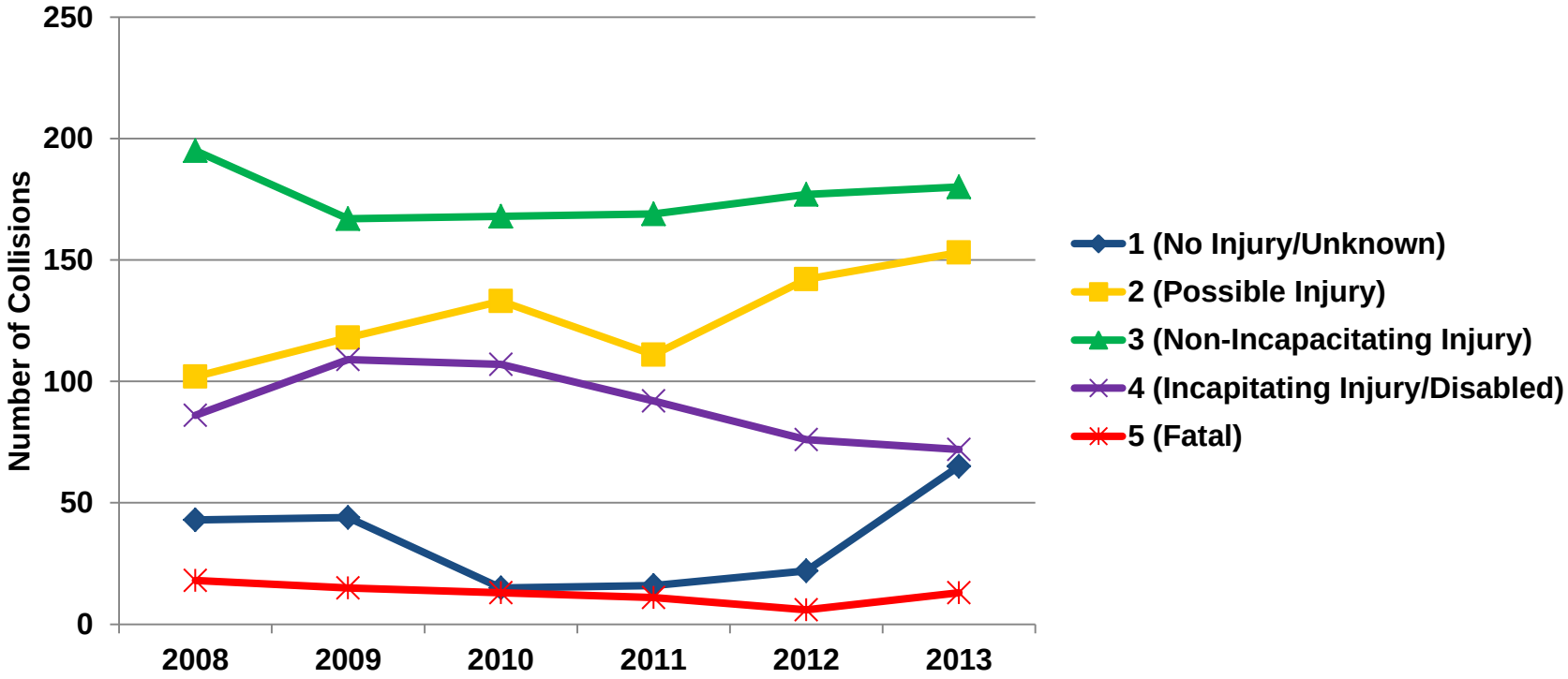
Pedestrian Safety Trends Per 100k Population



The data suggest that the Pedestrian Safety Initiative has been successful in reducing severe collisions (Level 4 & 5). In 2013, total collisions per 100k were at their highest since 2005.

Level 4 = Injury – Incapacitated or disabled
Level 5 = Fatal
Source: MCPD

Annual Total of Pedestrian Collisions by Highest Injury Level*

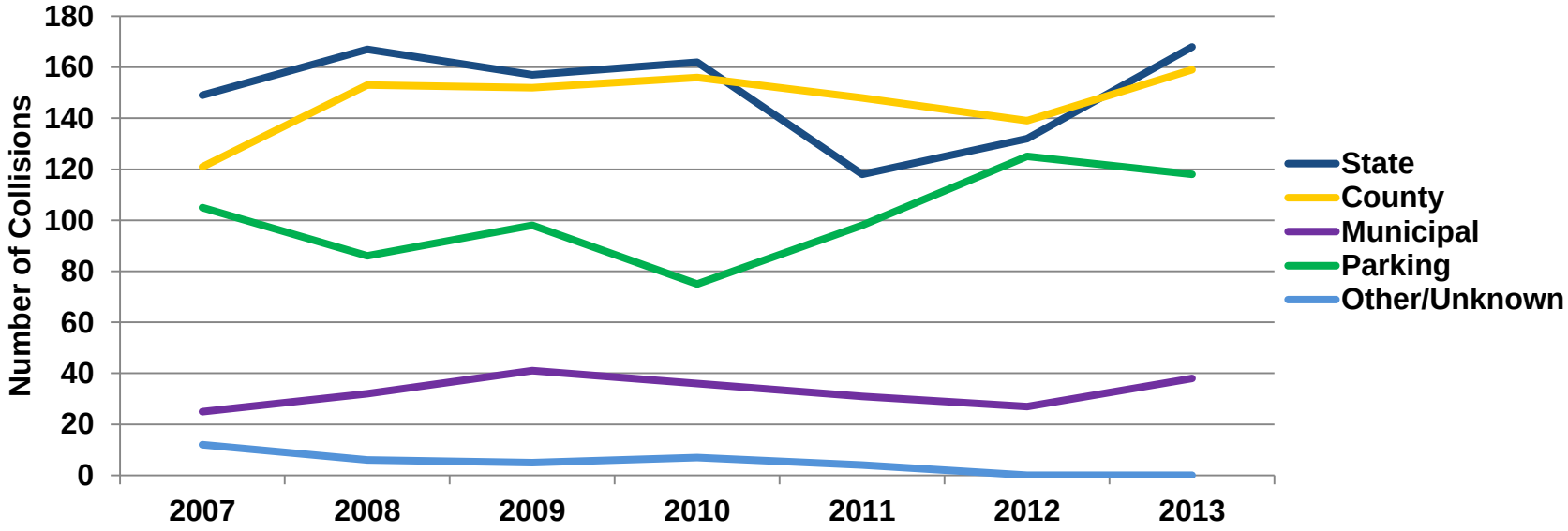


In 2013, there was a sharp increase in collisions in which the most severe pedestrian injury level recorded was a 1. The overall trend in collisions involving level 4 and 5 injuries is in decline. Non-incapacitating injuries are most common.

***Due to reporting practices, only the highest level injury is recorded. Highest injury level refers to the highest recorded pedestrian injury for a given collision (e.g. if two pedestrians are struck, and one has a level 3 injury and one has a level 1 injury, the collision is recorded as a level 3 collision).**

Source: MCPD

Collisions by Roadway Type

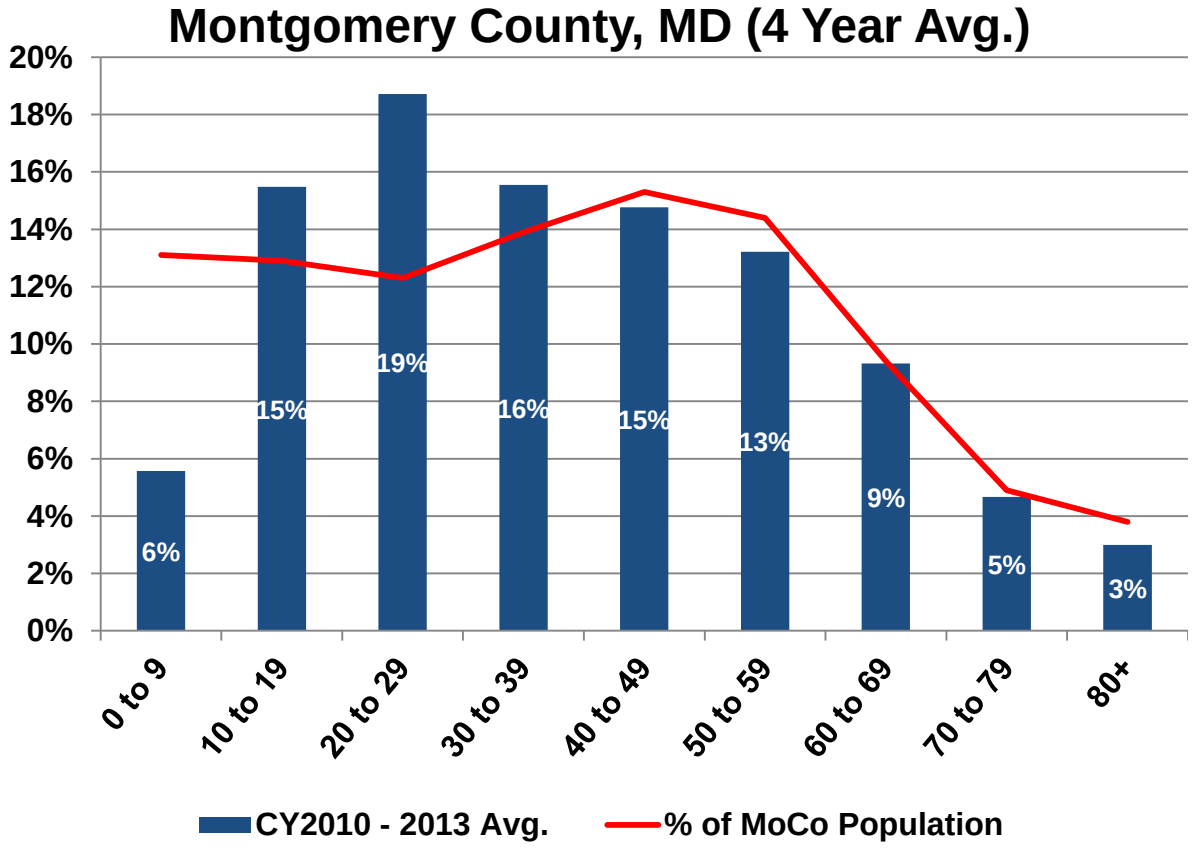


Highway Lane Miles				
State	County	Toll	Municipal	Total
1,395.14	4,846.58	88.01	761.36	7,091.09
20%	68%	1%	11%	100%

In 2013, a plurality of collisions occurred on state maintained roadways which also represented the greatest increase in pedestrian collisions. Parking lot collisions rose sharply from 2010 to 2012 before dropping slightly in 2013. This may be an indication that the recently implemented parking lot initiative is working.

Source: MCPD

Age of Pedestrians Involved in Collisions



United States (2012)

Age Group	Percentage of Total
0-9	8%
10-20	21%
21-29	18%
30-39	16%
40-49	15%
50-59	13%
60-69	8%
70-79	3%
80+	1%

Source: National Highway Traffic Safety Administration (NHTSA)
Note: Percentages add up to greater than 100% due to the methodology of NHTSA which rounds the total and its age delineated components separately.

Pedestrians in the 20 to 29 age group are especially over-represented in pedestrian collisions compared to their respective share of the County population. Montgomery County's distribution of collisions among age groups closely follows the national trend.

*Age/DOB was not recorded for the following shares of pedestrians involved in collisions (2010) 14.9%; (2011) 13.9%; (2012) 28.4%; (2013) 2.6%
**Age groups are rolled up differently by the NHTSA and thus do not match the Montgomery County age groups.
Source: MCPD; US Census ACS 2012 5 Year Population Estimate

Pedestrian Safety Initiative: High Incidence Areas

CountyStat

High Incidence Areas: Expenditures & Obligated Funds

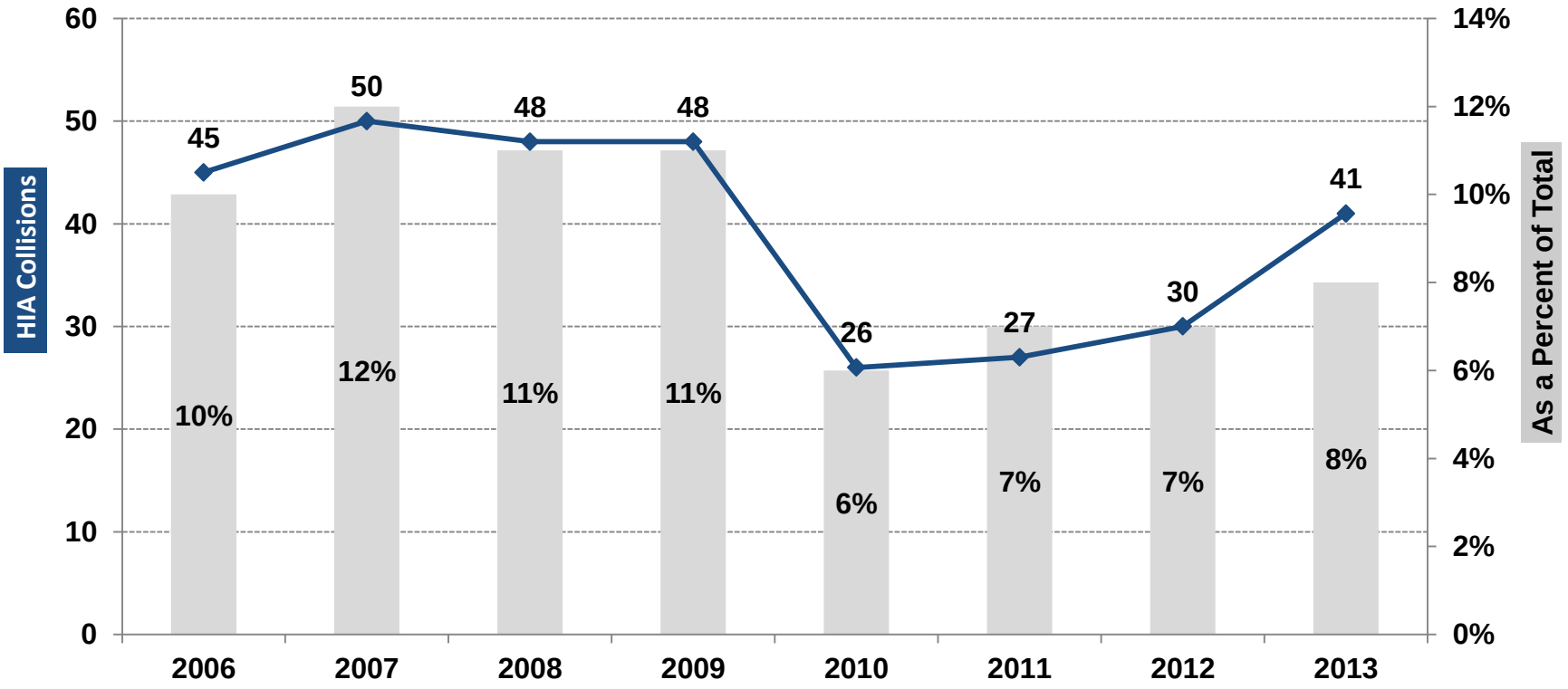
	FY12 Budget	FY12 Actual	FY13 Budget	FY13 Actual	FY14 Budget	Actual (To Date)
Engineering & Construction	$1,050,000	$ 713,000	$1,354,000	$1,416,000	$1,465,000	$1,095,000
Education	$150,000	$255,000*	$150,000	$198,000*	$150,000	$276,000*
Enforcement**	$0	$50,000	$0	$99,200	$0	$60,494
Performance Monitoring	$50,000	$25,000	$50,000	$10,000	$50,000	$40,000
Total	$1,250,000	$1,043,000	$1,554,000	$1,723,200	$1,665,000	$1,471,494

*Expenditures includes carry-over from previous fiscal years
** Enforcement currently unfunded

Fiscal year spending in the HIAs is increasing with several major long-term projects beginning in the last quarter of FY12 and in FY13. Money allocated for HIA enforcement has been discontinued since FY2012.

Source: Pedestrian Safety Implementation Team

Collisions in High Incidence Areas: Annual Trend



In 2013, HIA collisions are up as a share of the total collisions, and collisions at HIAs overall have increased. Eleven of the collisions in 2013 occurred in the Georgia Ave HIA during periods of construction.

Source: MCPD

Collisions in High Incidence Areas

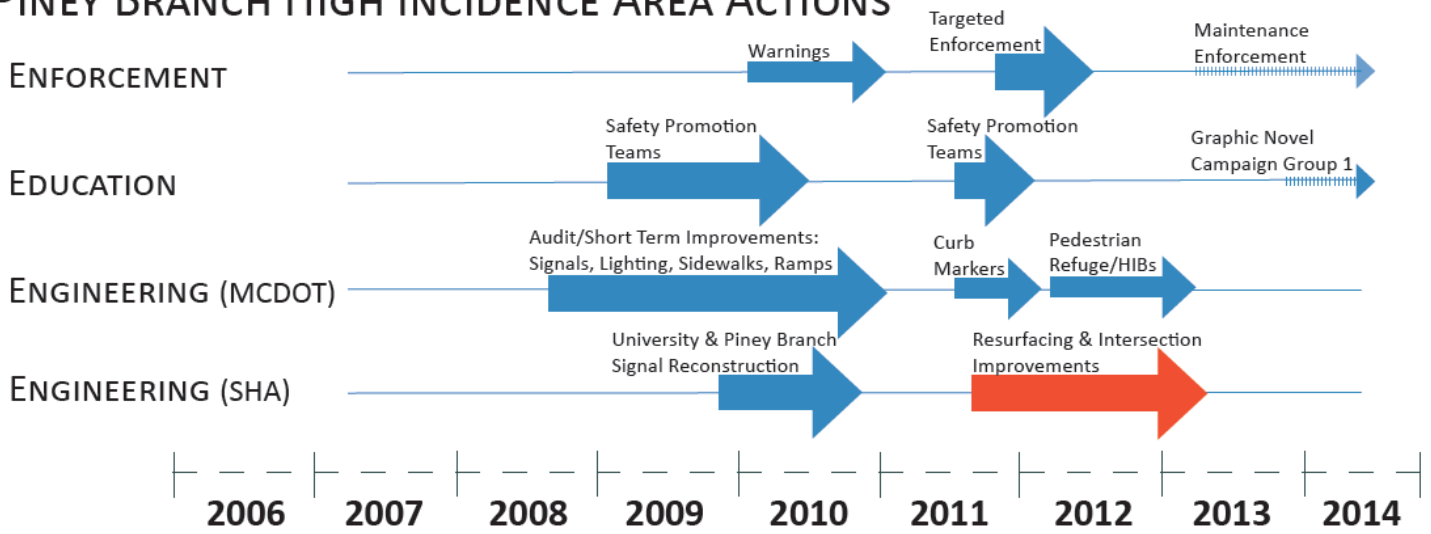
Year of PRSA Audit

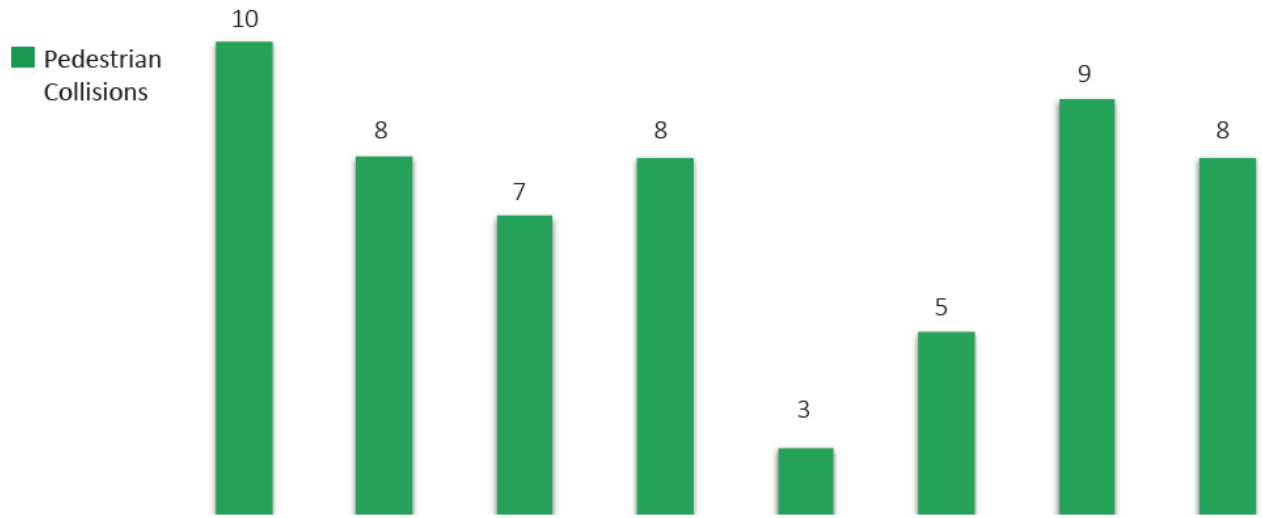
HIA	Number of Pedestrian Collisions											
	2006	2007	2008	2009	2010	2011	2012	2013	Total	Pre-Audit Average	Post-Audit Average	% Change
Piney Branch	10	8	7	8	3	5	9	8	58	9.0	6.6	-26.7%
Wisconsin	6	10	3	4	3	3	3	6	38	8.0	3.8	-52.5%
Georgia	7	5	7	10	4	4	2	11	50	6.3	5.3	-15.9%
Rockville Pike	4	3	9	8	2	3	2	4	35	5.3	2.8	-47.2%
Four Corners	4	7	5	0	1	3	0	3	23	4.0	2.0	-50%
Reedie	0	3	3	7	2	1	2	2	20	3.3	1.7	-48.5%
Randolph	2	1	4	4	1	2	3	1	18	2.8	2.0	-28.6%
Connecticut	4	5	6	2	2	3	3	3	28	3.8	3.0	-21.1%
Colesville	4	4	2	3	5	2	4	3	27	3.6	3.5	-2.8%
Old Georgetown	4	4	2	2	3	1	2	0	18	2.7	0.0*	-100%
Total	45	50	48	48	26	27	30	41	315			

While a number of HIA sites saw increases in collisions in 2013, post-audit averages remain lower than pre-audit averages in all ten locations. Notably, it appears that there may be diminishing returns on the PRSA Audits. That is, as the time increases from post-audit, the data show that crashes may begin to rise again (see red boxes). Maintaining education and enforcement efforts at these locations may be required for continued effectiveness.

*Value is not an average as only one year of post-initiative data is available.
Year of PRSA Audit is excluded from both pre-audit and post-audit averages. See Appendix G for additional analyses.
Source: MCPD

Piney Branch High Incidence Area Actions

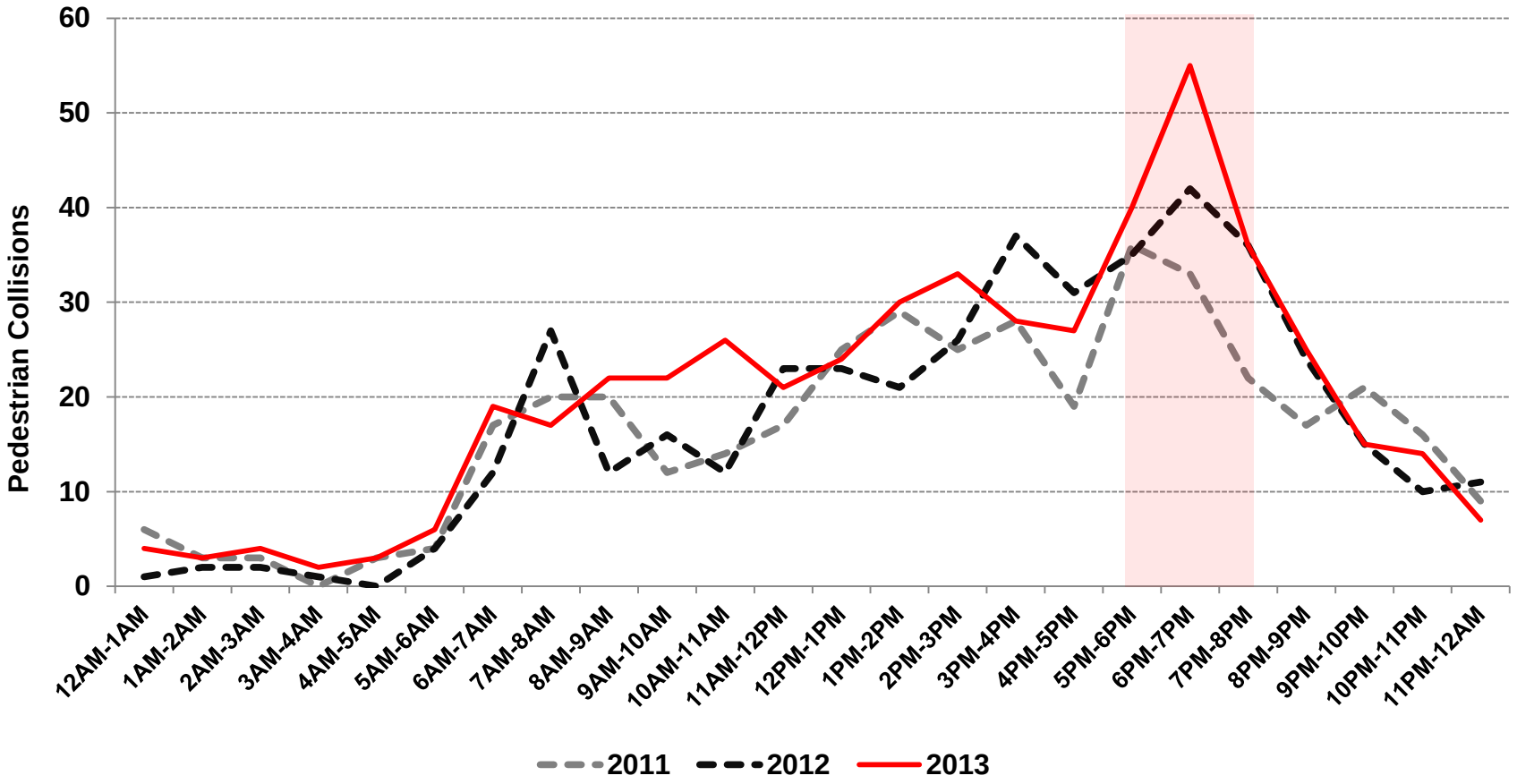




Pedestrian Safety Initiative: The Evening Commute (5pm to 8pm) and Visibility

CountyStat

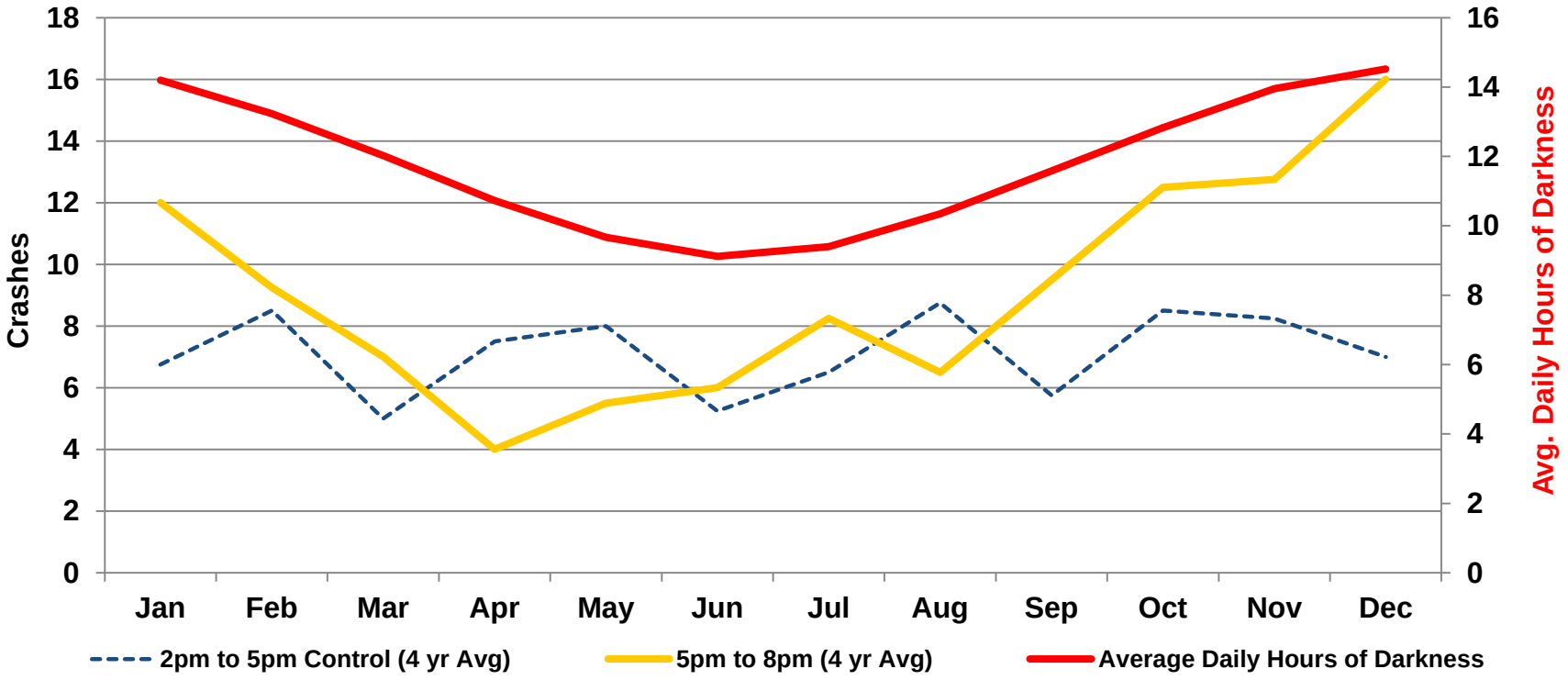
Pedestrian Collisions: Evening Commute



In 2012 and 2013, 27% of all collisions occurred between the hours of 5-8pm, up from 23% in 2011. The overall number of collisions in this time frame continues to rise.

Source: MCPD

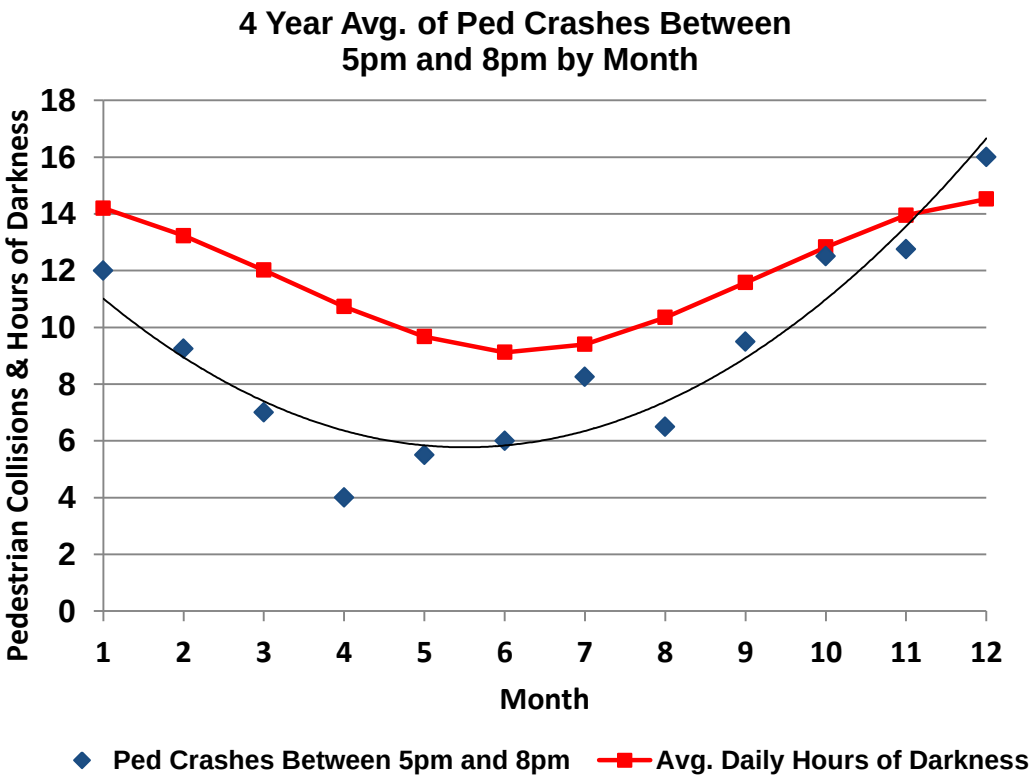
Pedestrian Collisions: Evening Commute and Visibility



Data suggest that pedestrian collisions increase during months of extended darkness. As the average daily hours of darkness per month rises, so do collisions between the hours of 5pm and 8pm. Similarly, as the average daily hours of darkness decreases, so do collisions from 5pm to 8pm. This does not hold true for collisions in the 2pm to 5pm time frame in which it is always daylight.

Source: MCPD

Pedestrian Collisions: Evening Commute



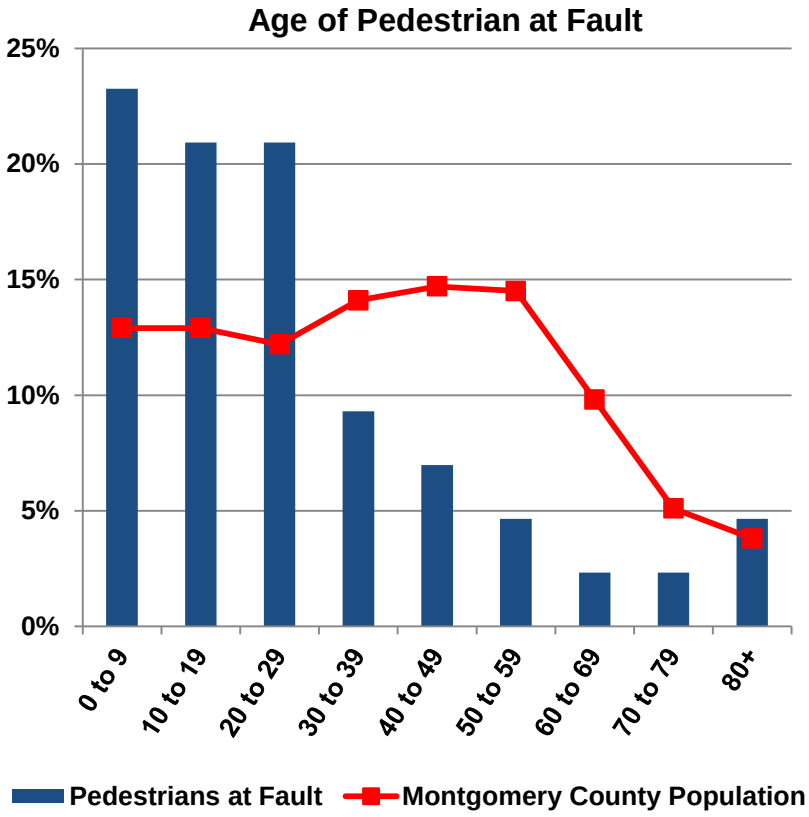
Lighting Conditions for Collisions Occurring Between 5pm and 8pm (4 Year Average)

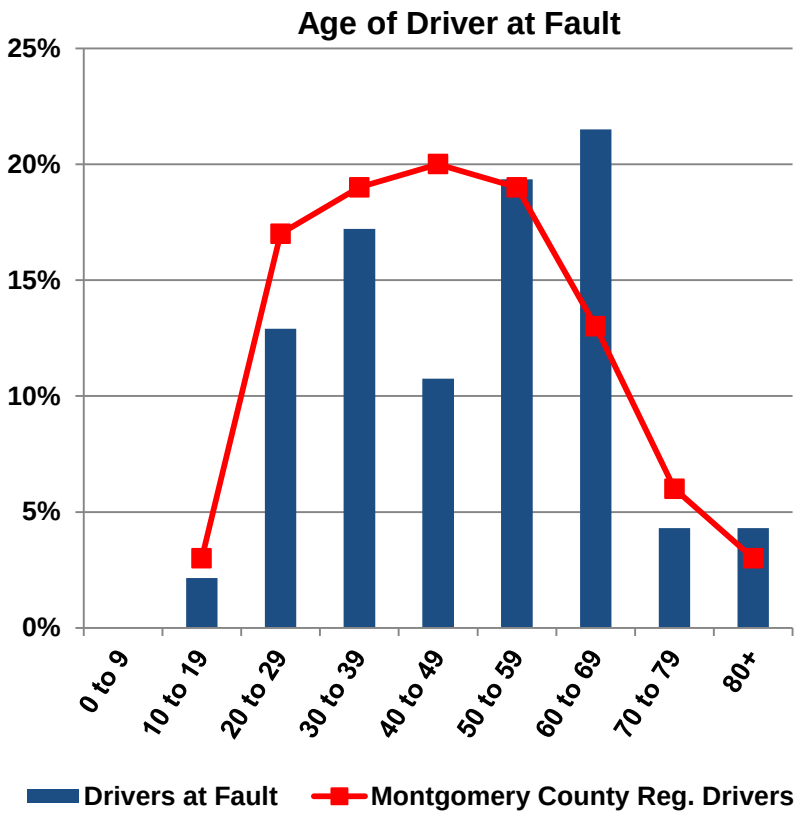
Lighting Conditions	Number of Collisions	% of Total
Dark: No Street Lights	31	7%
Dark: Street Lights On	196	45%
Dusk	38	9%
Daylight	171	39%
Total	436	100%

The above scatterplot with a line of best fit approximates the shape of the line for average daily hours of darkness per month. Additionally, over the past four years, 61% of collisions during these hours occurred in conditions other than daylight.

Source: MCPD

Pedestrian Collisions: At-Fault During the Evening Commute





Pedestrians age 0 to 29 at fault are heavily over-represented in collisions occurring between 5pm and 8pm. Drivers at fault between 60 and 69 years of age are also over-represented.

Source: MCPD; ACS 2012 5 Year Population Estimate; Maryland Highway Safety Office

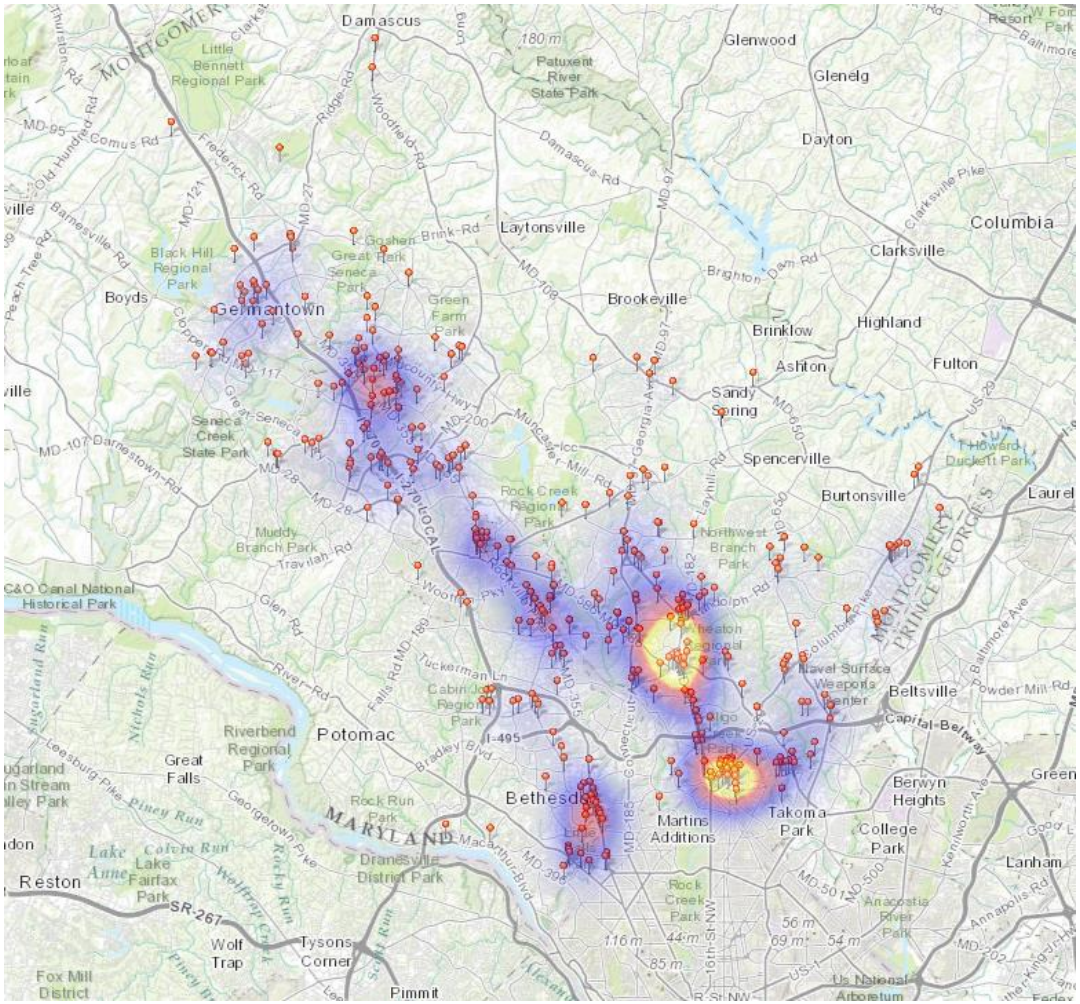
Pedestrian Collisions: Evening Commute and Visibility

Summary of Findings:

- The 5pm to 8pm line approximates the shape of the average daily hours of darkness line, suggesting a positive correlation.
- The correlation coefficient between average daily hours of darkness and number of pedestrian collisions per month is exceptionally high at 0.79.
- 61% of collisions during the 5pm to 8pm commute occurred in conditions other than daylight (darkness, dawn or dusk).
- During the 5pm to 8pm timeframe, 65% of at-fault pedestrians are under age 30. 44% are under age 20. At-fault drivers between 60 and 69 are over-represented compared to their share of registered drivers in the County.

Conclusion: The data suggest that visibility impacts the likelihood of a pedestrian collision, though other seasonal factors may be influencing the relationship. The available data do **not** address the adequacy of lighting; they address only the presence of lighting. Adequate lighting plays a major role in determining visibility.

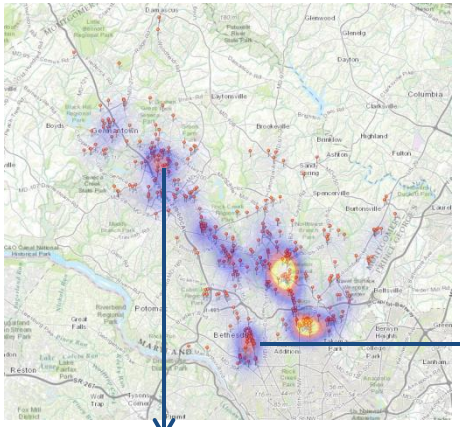
Pedestrian Collisions Between 5pm and 8pm (2010 – 2013)

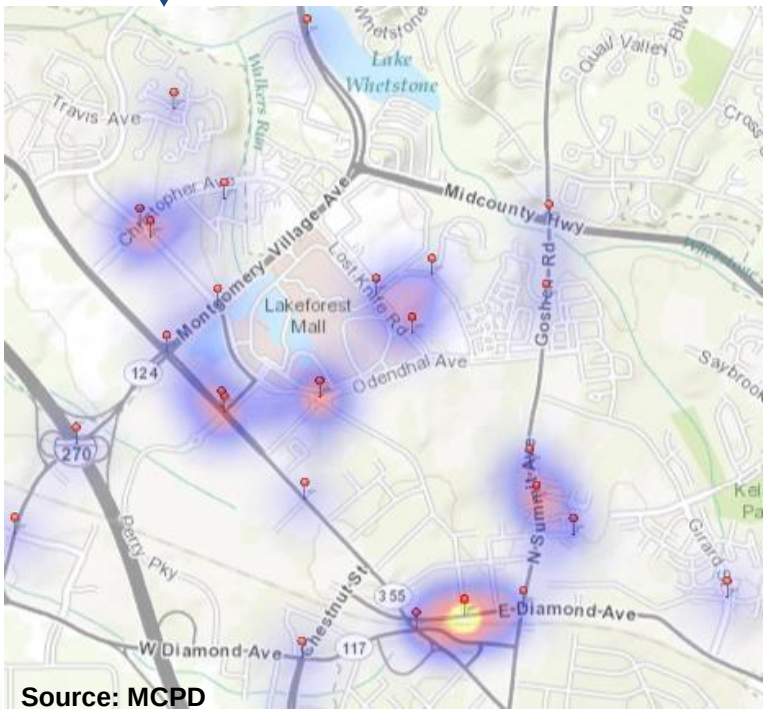


CountyStat has identified several locations that have had a relatively high number of pedestrian collisions over the past 4 years between the hours of 5pm and 8pm.

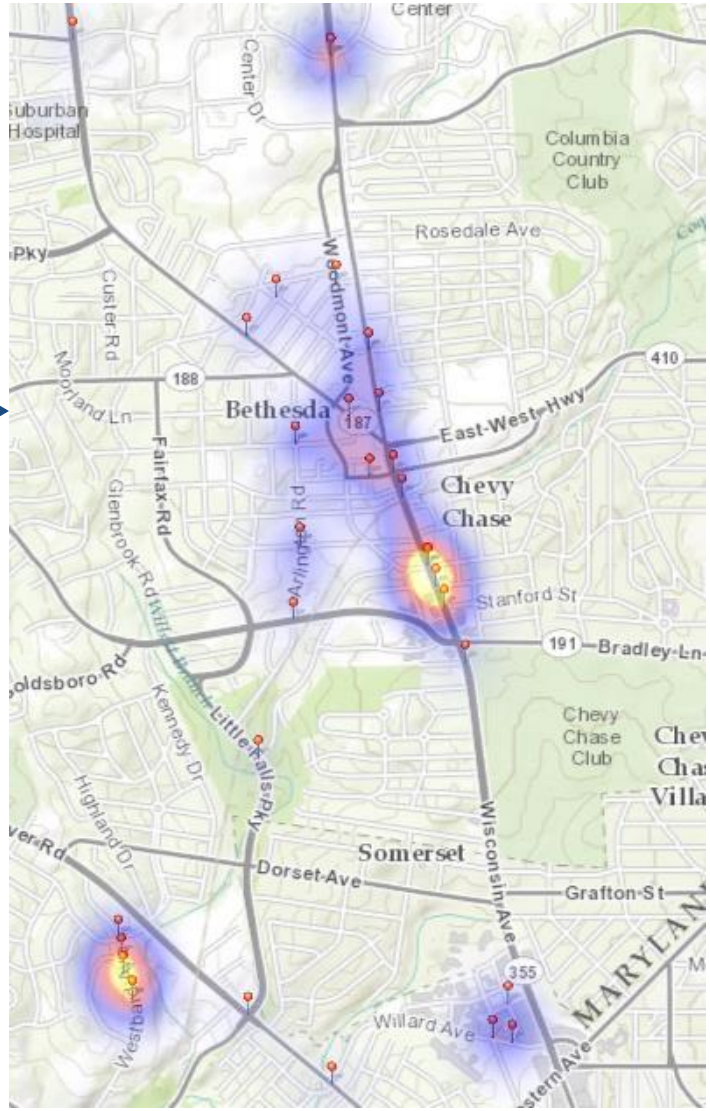
Source: MCPD

Pedestrian Collisions Between 5pm and 8pm (2010 – 2013)





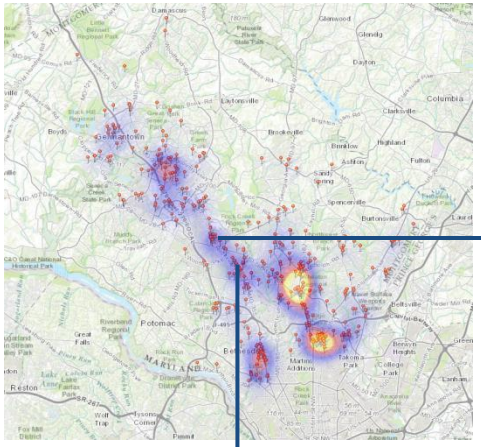
Montgomery Village

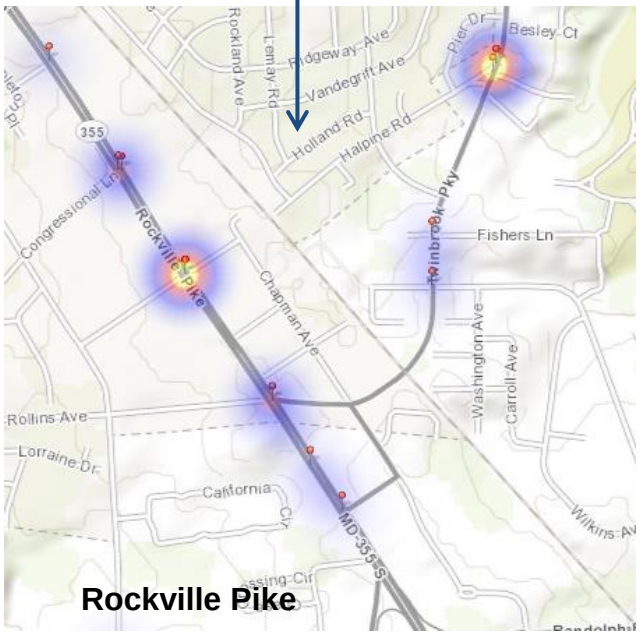


Bethesda & Chevy Chase

Source: MCPD

Pedestrian Collisions Between 5pm and 8pm (2010 – 2013)

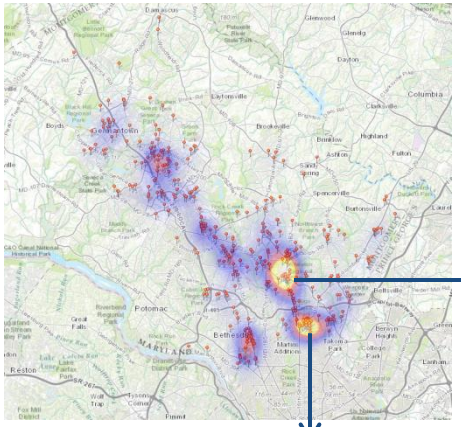




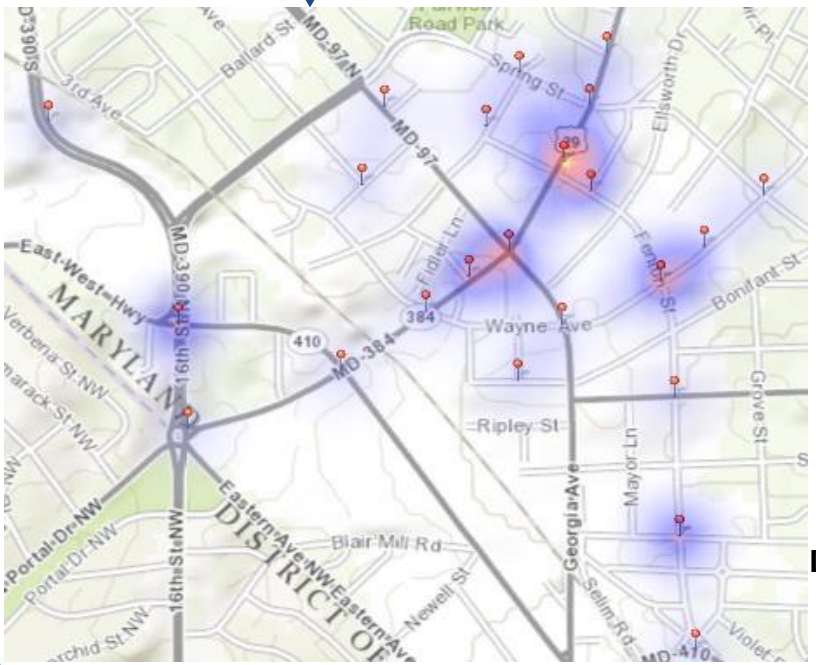
Rockville Town Center

Source: MCPD

Pedestrian Collisions Between 5pm and 8pm (2010 – 2013)



Wheaton



Downtown Silver Spring

Source: MCPD

Pedestrian Collisions Between 5pm and 8pm (2010 – 2013)

	Daylight : Non-Daylight	Ped Crossing (Legally in Roadway; Illegally in Roadway; Other)	Type of Collision (Right Turn; Left Turn; Straight)
Montgomery Village & Lake Forest Mall Area	Daylight: 6 Non-Daylight: 7*	Legally: 2 **Illegally: 8** Other/Unknown: 3	Right: 0 Left: 3 **Straight: 8** Other/Unknown: 2
Wisconsin	Daylight: 5 Non-Daylight: 4	**Legally: 6** Illegally: 2 Other/Unknown: 1	Right: 1 **Left: 4** **Straight: 4**
Bethesda & Chevy Chase (Excluding Wisconsin)	Daylight: 1 **Non-Daylight: 7**	Legally: 5 Illegally: 3	Right: 2 **Left: 5** Straight: 1
Rockville Town Center	Daylight: 1 **Non-Daylight: 8**	**Legally: 8** Illegally: 1	Right: 3 **Left: 5** Straight: 1
Rockville Pike & Twinbrook*	Daylight: 3 **Non-Daylight: 9**	**Legally: 9** Illegally: 1 Other/Unknown: 2	Right: 4 Left: 3 **Straight: 5**

In areas where a large share of the collisions occurring involve pedestrians illegally in the roadway, enforcement and education should be targeted at pedestrians. In areas with a large share collisions involving pedestrians legally in the roadway, education and enforcement may be better aimed at drivers.

Excludes collisions that occurred in parking lots
***Two reports specifically cited inadequate lighting on Contour Rd.**

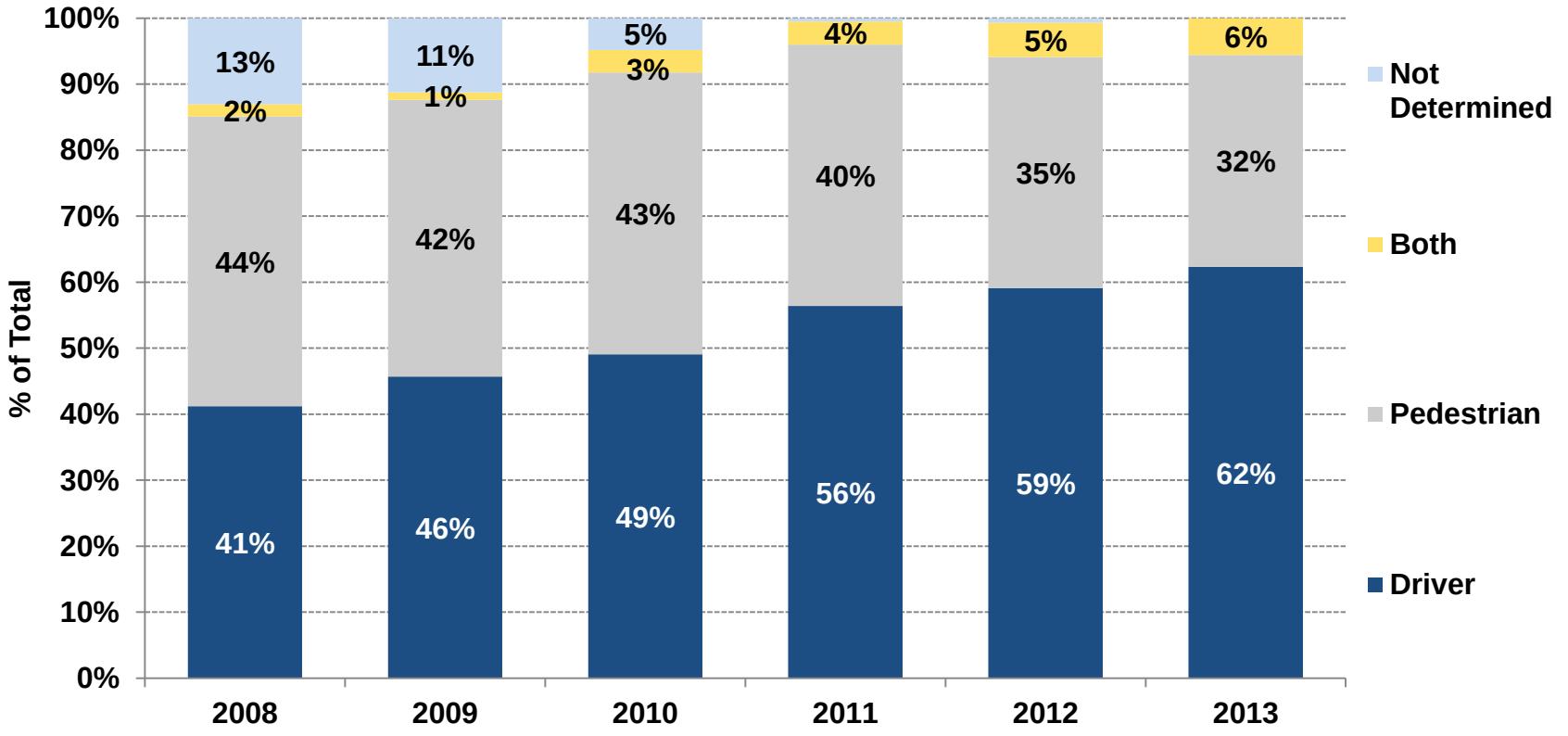
Pedestrian Collisions Between 5pm and 8pm (2010 – 2013)

	Daylight : Non-Daylight	Ped Crossing (Legally in Roadway; Illegally in Roadway; Other)	Type of Collision (Right Turn; Left Turn; Straight)
Wheaton	Daylight: 3 Non-Daylight: 4	Legally: 1 Illegally: 3 Other/Unknown: 3	Right 1 Left: 1 Straight: 3 Other/Unknown: 2
Georgia and Shorefield Intersection (At or Near)	Daylight: 2 Non-Daylight: 3	**Legally: 4** Illegally: 1	Right: 0 **Left: 4** Straight: 1
Colesville Rd.	Daylight: 2 **Non-Daylight: 4**	Legally: 2 Illegally: 3 Other/Unknown: 1	Right: 1 Left: 1 Straight: 3 Other/Unknown: 1
Fenton St.	Daylight: 3 Non-Daylight: 4	Legally: 3 Illegally: 4	Right: 0 Left: 2 **Straight: 4** Other/Unknown: 1
Other Silver Spring Urban District Locations	Daylight: 2 **Non-Daylight: 5**	Legally: 3 Illegally: 3 Other/Unknown: 1	Right: 2 Left: 3 Straight: 1 Other/Unknown: 1

Excludes collisions that occurred in parking lots
***Collisions occurred either on Rockville Pike, Twinbrook Pkwy, or at the intersection of the two streets**

Pedestrian Safety Initiative: Fault

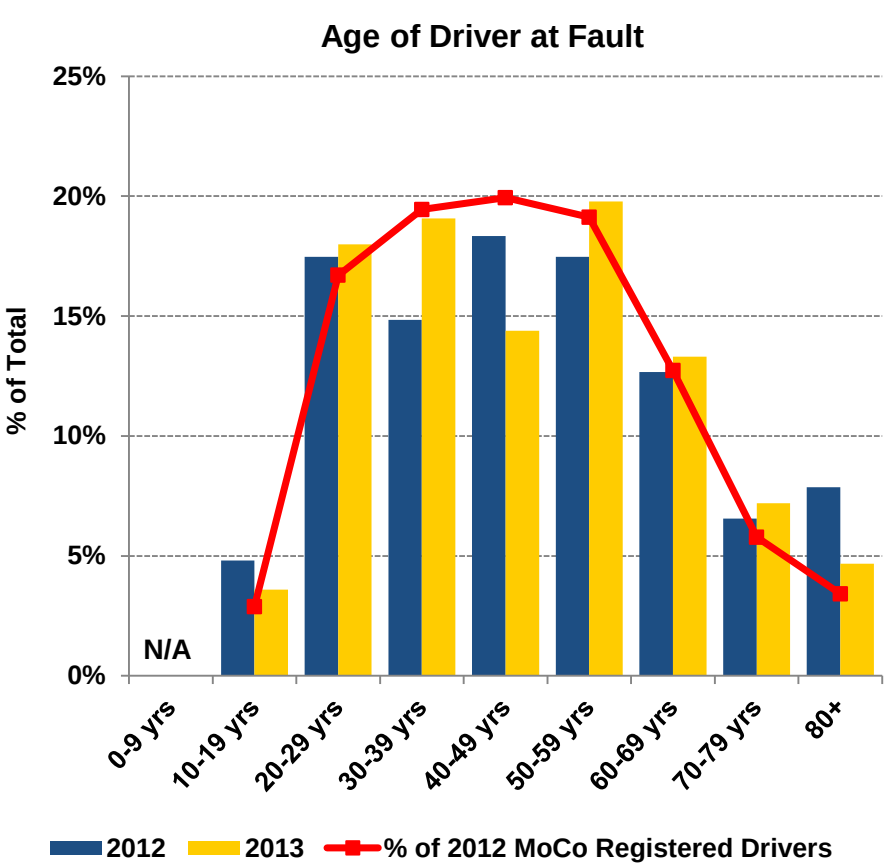
Pedestrian Collision Variables: Fault

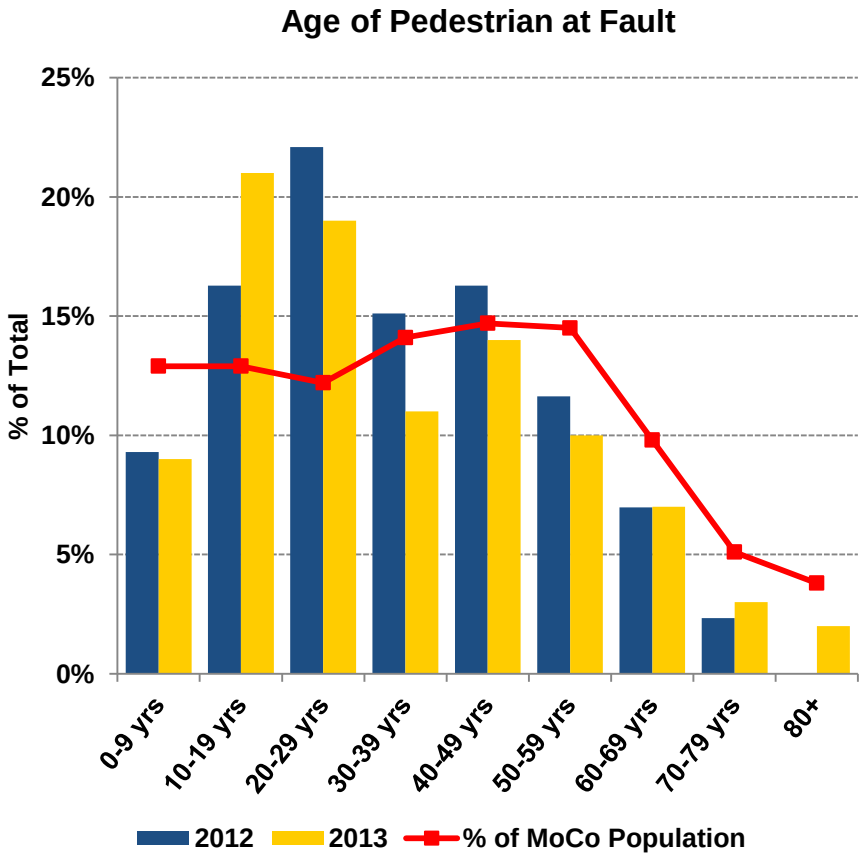


In 2013, the percentage of collisions where the driver was at fault continued to rise. Early education and enforcement efforts focused on pedestrians, but in 2013 these efforts began targeting drivers.

Source: MCPD

Pedestrian Collision Variables: Fault

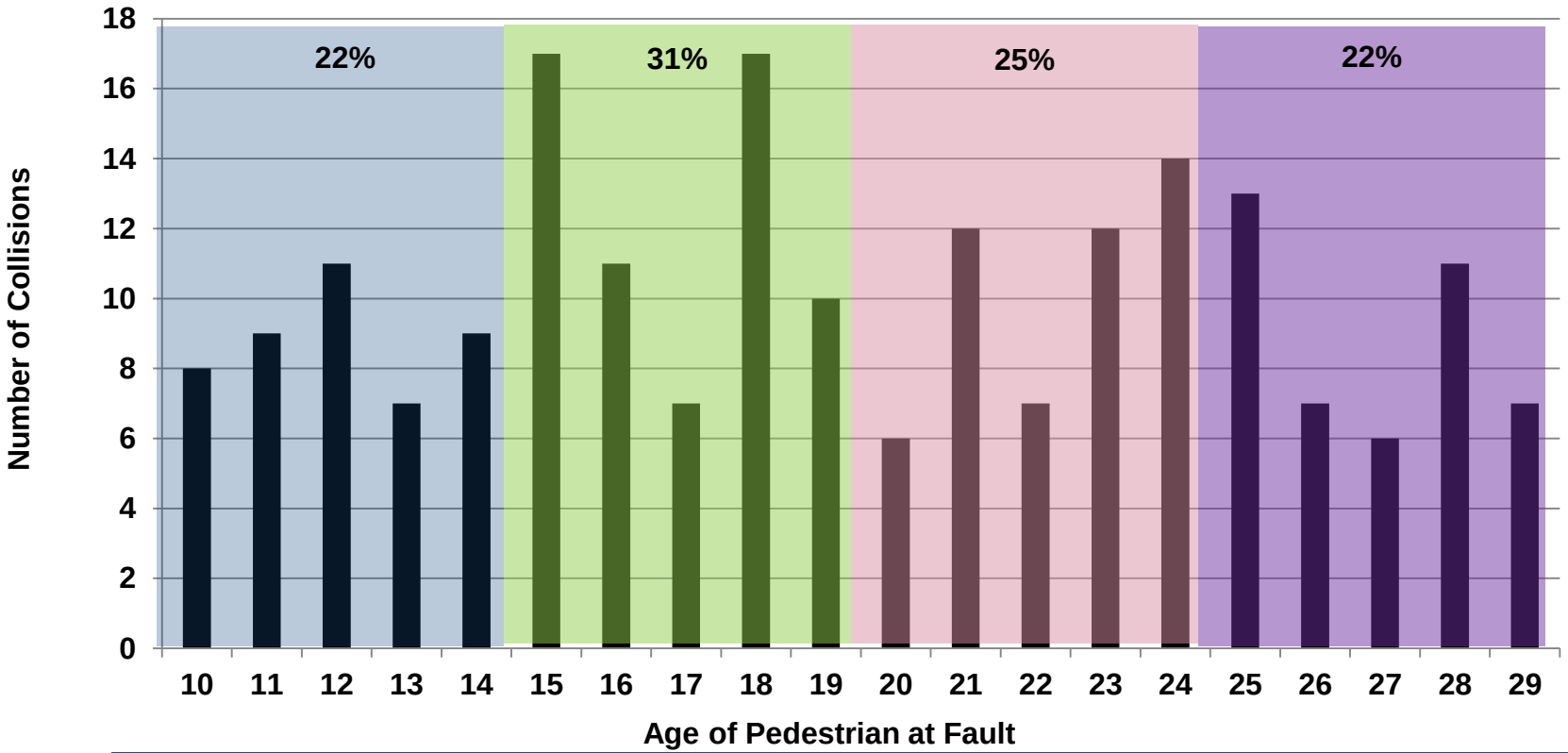




There was a 5 percentage point increase in at fault pedestrians between the ages of 10 and 19 (school age children and young adults). Pedestrians at fault between the ages of 10 and 29 are over-represented compared to their share of the population as a whole. At fault drivers over age 80 appear to be slightly over-represented.

Source: MCPD; ACS 2012 5 Year Population Estimate; Maryland Highway Safety Office

Age Distribution of Pedestrians at Fault Between 10 and 29 Years of Age (2010 – 2013)



The data support outreach and enforcement aimed especially at high school aged youth. Other age groups in the 10 to 29 year old range should be targeted as well.

Variables: Pedestrians Age 10 to 29 At-Fault (2010 – 2013)

Pedestrian Location	Number of Collisions
On Roadway Not at Crosswalk	155
On Roadway at Crosswalk	39
Outside Right of Way	15
Other/Unknown	29

Primary Cause	Number of Collisions
Illegally in Roadway	120
Failed to Give Full Time and Attention	40
Fail: Yield Right of Way	34
Other/Unknown	42

Pedestrian Movement	Number of Collisions
Cross/Enter Not At Intersection	108
Cross/Enter at Intersection	54
Not Applicable/Other/Unknown	76

Gender	Number of Collisions
Male	146 (61%)
Female	92 (39%)

Substance Detected	Number of Collisions
None	180
Alcohol	11
Alcohol Contributed	6
Other/Unknown	41

A preponderance of pedestrian collisions in which the pedestrian was at fault occur outside of a crosswalk. Data do not suggest that alcohol is a significant causal factor.

Variables: Drivers At-Fault (2010 – 2013)

Driver Movement	Number of Collisions
Making Left Turn	211
Moving Constant Speed	190
Backing	142
Making Right Turn	109
Accelerating	108
<blank>	96
Slowing or Stopping	46
Starting from Traffic Lane	42
Starting from Parked	32
Other/Unknown/Not Applicable	275

Primary Cause	Number of Collisions
Fail: Yield Right of Way	333
Failed to Give Full Time and Attention	300
Improper Backing	99
Too Fast for Conditions	21
Under the Influence of Alcohol	19
Other/Not Applicable/Unknown	275

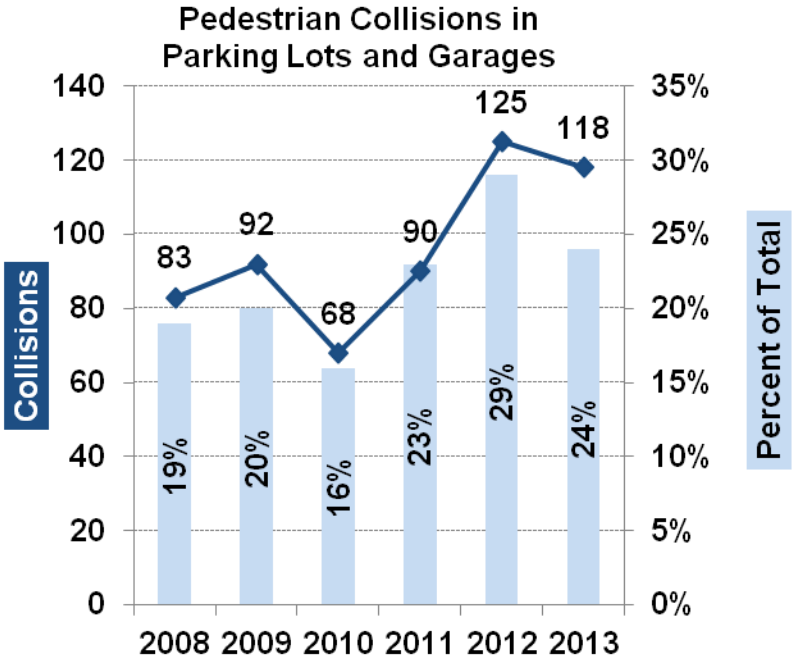
Substance Detected	Number of Collisions
None	758
<blank>	149
Alcohol	18
Alcohol Contributed	7
Other/Unknown/Not Applicable	115

Gender*	Number of Collisions
Male	563 (53%)
Female	373 (36%)
<blank>	94 (9%)
Unknown/NA	17 (2%)

A high number of collisions in which the driver was at fault occurred when the driver was making a left hand turn, moving at constant speed, or backing.

Detailed Analysis of Collisions in Parking Lots/Garages

In 2013, there was a 6% decrease in the number of pedestrian collisions occurring in parking lots/garages; these incidents represented 24% of all pedestrian collisions.



MCPD reviewed and analyzed the accident reports for all pedestrian collisions occurring in parking areas in CY2013.

- 69% of the pedestrian related parking area collisions were recorded as the driver being at fault in causing the collision. 17% of the collisions was recorded as the pedestrian being at fault and the remaining 14% were recorded as both driver and pedestrian being at fault.

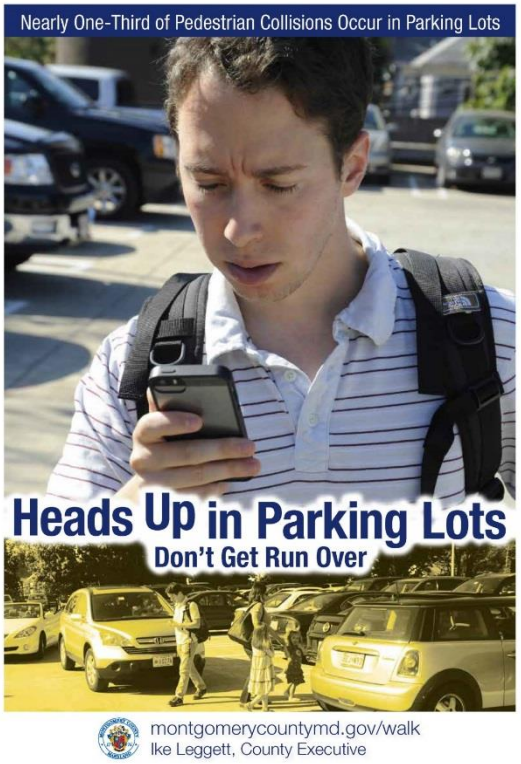
- 83% were recorded as Level 1, 2, or 3 collisions; 17% were Level 4 and Level 5

Reducing the volume of collisions occurring in parking lots/garages is challenging because MCPD and DOT do not have jurisdiction to implement enforcement and engineering methods normally used on public-owned roadways. They are restricted to education efforts and rely significantly on business owners and developers to address engineering and enforcement.

Source: MCPD

PIO - Parking Lot Education Campaign: Heads Up In Parking Lots

- Close and ongoing partnership with parking lot owners / managers
- Transit shelter / bus advertisements
- Public Service Announcements (PSAs)
- Fliers / Posters
- Resource Website
- Curb markers
- Shop with a Cop…or Firefighter
- Social media toolkit



Pedestrian Safety Initiative: Safe Routes to School Campaign

CountyStat

Safe Routes to School: Collision Update (Grant B Schools)

School Name (Grant B)	3 Years Before Treatment			After treatment		
	Time period	# of ped collisions	Collisions Per Month	Time period (up to Dec 2013)	# of ped collisions	Collisions Per Month
Stone Mill ES	3/2006 – 3/2009	2	0.056	4 yrs 9 mos.	0	0
Olney ES	2/2006 – 2/2009	1	0.028	4 yrs 10 mos.	4	0.069
Georgian Forest ES	3/2006 – 3/2009	6	0.167	4 yrs 9 mos.	0	0
Kingsview MS	3/2006 – 3/2009	12	0.333	4 yrs 9 mos.	1	0.018
Thurgood Marshall ES	3/2006 – 3/2009	1	0.028	4 yrs 9 mos.	0	0
Martin Luther King MS	7/2006 – 7/2009	11	0.306	4 yrs 5 mos	1	0.019
Flower Hill ES	6/2006 – 6/2009	7	0.194	4 yrs 6 mos	0	0
Greenwood ES	4/2006 – 4/2009	2	0.056	4 yrs 8 mos	1	0.018
Rosa Parks MS	4/2006 – 4/2009	2	0.056	4 yrs 8 mos	0	0
Cannon Road ES	6/2006 – 6/2009	3	0.083	4 yrs 6 mos	0	0
Clearspring ES	4/2006 – 4/2009	1	0.028	4 yrs 8 mos	1	0.018
Total		48	0.121		8	0.013

Overall, the data suggest that the Safe Routes to School campaign is having a positive impact. For Grant B schools , the data indicate that reductions in pedestrian collisions have occurred from 1.45 per year on average prior to treatment to 0.16 per year on average post-treatment.

Source: MCPD

Safe Routes to School: Collision Update (Grant C Schools)

School Name (Grant C)	3 Years Before Treatment			After treatment		
	Time period	# of ped collisions	Collisions Per Month	Time period (up to Dec 2013)	# of ped collisions	Collisions Per Month
Earle B. Wood MS	8/2009 – 8/2012	2	0.056	1 yr - 4 mos.	0	0
Jackson Road ES	3/2008 – 3/2011	1	0.028	2 yrs - 9 mos.	0	0
Woodlin ES	4/2007 – 4/2010	0	0.000	3 yrs - 8 mos.	3	0.068
Westbrook ES	5/2006 – 5/2009	0	0.000	4 yrs - 7 mos.	2	0.036
Argyle MS	8/2009 – 8/2012	1	0.028	1 yrs - 4 mos.	2	0.125
Rock View ES	10/2007 – 10/2010	1	0.028	3 yrs - 2 mos.	2	0.053
Total		5	0.023		9	0.047

SRTS has had less success at Grant C schools, but this may be due in part to a vacant SRTS Coordinator position during a portion of the cycle in which there was no education or enforcement activities. Prior to treatment, there was an average of 0.28 collisions per year. Post-treatment, that number is up to 0.56 collisions per year, on average.

Source: MCPD

Safe Routes to School: Collision Update (Grant D Schools)

School Name (Grant D)	3 Years Before Treatment			After treatment		
	Time period	# of ped collisions	Collisions Per Month	Time period (up to Dec 2013)	# of ped collisions	Collisions Per Month
William B. Gibbs ES	9/2006 – 9/2009	0	0	4 yrs - 3 mos.	0	0
Judith A. Resnik ES	9/2007 – 9/2010	1	0.028	3 yrs - 3 mos.	0	0
Montgomery Village MS	9/2007 – 9/2010	6	0.167	3 yrs - 3 mos.	1	0.026
Capt. James Daly ES	10/2007 – 10/2010	2	0.056	3 yrs - 2 mos.	0	0.000
Glenallan ES	10/2008 – 10/2011	0	0	2 yrs - 2 mos.	2	0.077
Total		9	0.25		3	0.021

For Grant D schools , the data indicate that reductions in pedestrian collisions have occurred from an average of 3 per year prior to treatment to an average of 0.25 per year post-treatment.

Source: MCPD

Traffic Calming Measures and Associated Reductions in Pedestrian Collisions

CountyStat

Traffic Calming: Collisions Update

Project Name	Completion Date	Speeds (MPH)			Time Period Before Treatment	Collisions 3 Years Before Treatment	Time Period (Months) Since Treatment	Collisions Since Treatment	Collisions Per Month
		Posted	Avg. Before	Avg. After					
Connecticut Ave	7-Jul	40	48	40	3 Years	10	77	5	0.065
Arcola Ave	8-Aug	30	42	32	3 Years	3	64	5	0.078
Fairland Rd	9-Jul	40	53	42	3 Years	2	53	0	0.000
Calverton Blvd	9-Jul	30	41	35	3 Years	1	53	1	0.019
Lockwood Dr	9-Jul	30	40	30	3 Years	0	53	1	0.019
Sligo Ave	9-Sep	30	34	31	3 Years	1	51	4	0.078
Carroll Ave	9-Nov	25	33	27	3 Years	2	49	1	0.020
Spartan Rd	9-Nov	30	40	33	3 Years	0	49	0	0.000
Dale Dr	10-Aug	30	39	34	3 Years	0	40	0	0.000
Prince Phillip Dr	11-Jun	30	36	31	3 Years	0	30	0	0.000
Waring Station Rd	12-Apr	30	38	34	3 Years	4	20	2	0.100
Cedar Ln	12-May	30	36	30	3 Years	0	19	0	0.000
Jones Bridge Rd	12-May	30	36	30	3 Years	0	19	0	0.000
Rainbow Dr	12-May	25	31	26	3 Years	0	19	0	0.000
Franklin Ave	12-Aug	30	34	33	3 Years	0	16	0	0.000
Galway Dr	13-Aug	25	N/A	N/A	3 Years	0	4	0	0.000
Homcrest Rd	13-Jul	25	36	33	3 Years	0	5	0	0.000
				Collisions Per Month		0.113	Collisions Per Month (Weighted)		0.022

Speed decline >/= 5mph

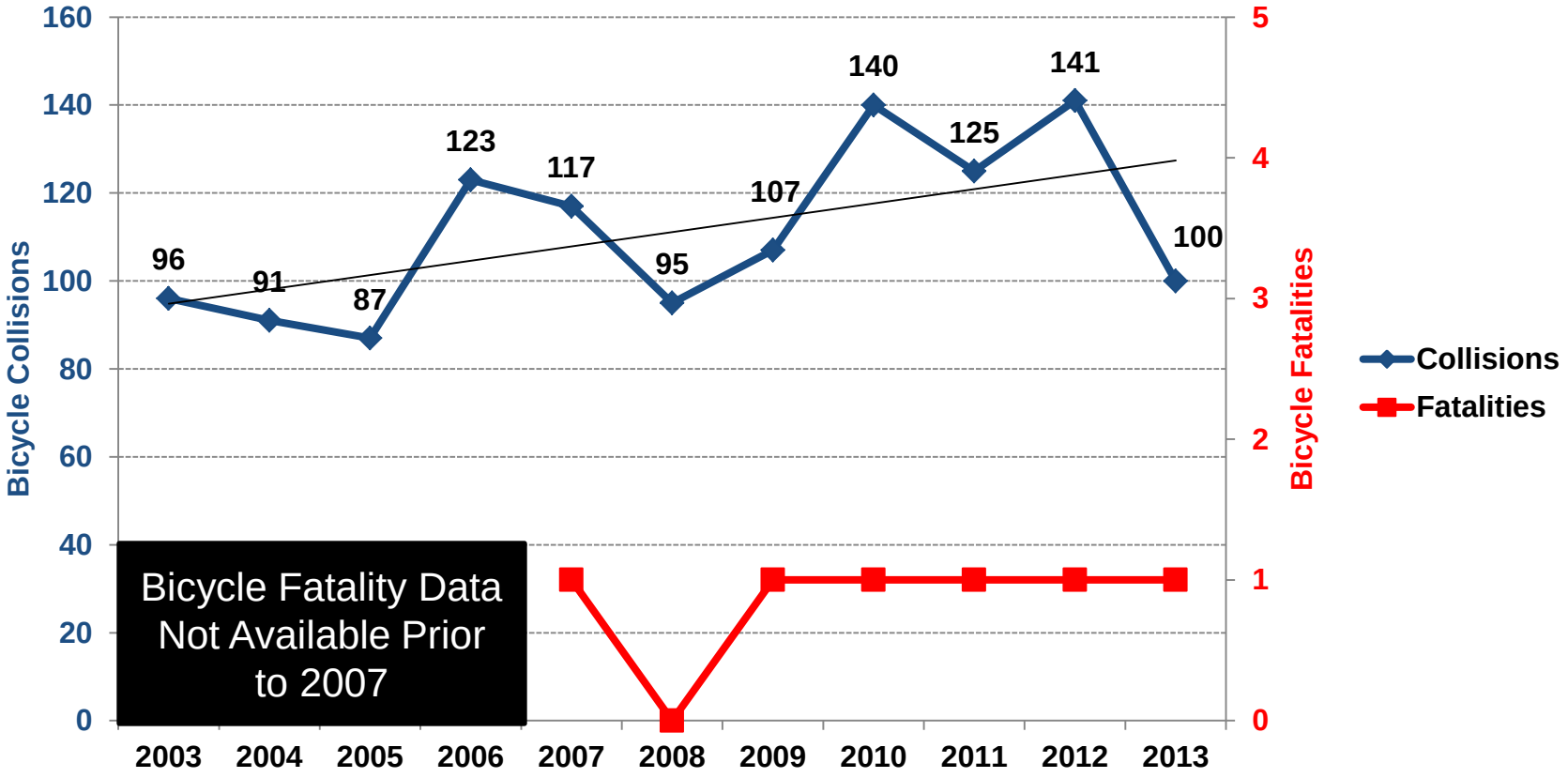
The data show that reductions in collisions have occurred in areas where traffic calming measures are deployed. Prior to treatment, there were an average of 1.36 pedestrian collisions per year. Post treatment, that number is down to 0.26 per year.

Source: MCPD

Bicycle Safety

CountyStat

Montgomery County Bicycle Collisions and Fatalities



Over the past decade, the trend in bicycle related collisions has been rising despite a significant drop in 2013. There has been one bicycle related fatality annually since 2009. DOT expects bicycle ridership to continue to grow, increasing exposure. CountyStat recommends conducting a formal follow-up meeting to explore this issue further in the future.

Source: MCPD

Data Acquisition Challenges

CountyStat

Elimination of Accident Report Data

- For six years, CountyStat has used written accident reports prepared by MCPD to analyze the program and assess the progress - - prepared and entered under the Maryland Automated Accident Reporting System (MAARS)

- The MAARS reporting has been replaced in 2014 by the Automated Collision Reporting System (ACRS)

- There is currently no ability to retrieve information that is electronically entered into ACRS.

- Without accident data, there is currently no ability to target the Pedestrian Safety Initiative, or to evaluate its progress.

- The State indicates access to the ACRS system will not occur until 2015 at the earliest.

Wrap-up

Appendix A: Regional Comparisons

CountyStat

Regional Comparison – Pedestrian & Bicyclist Fatalities

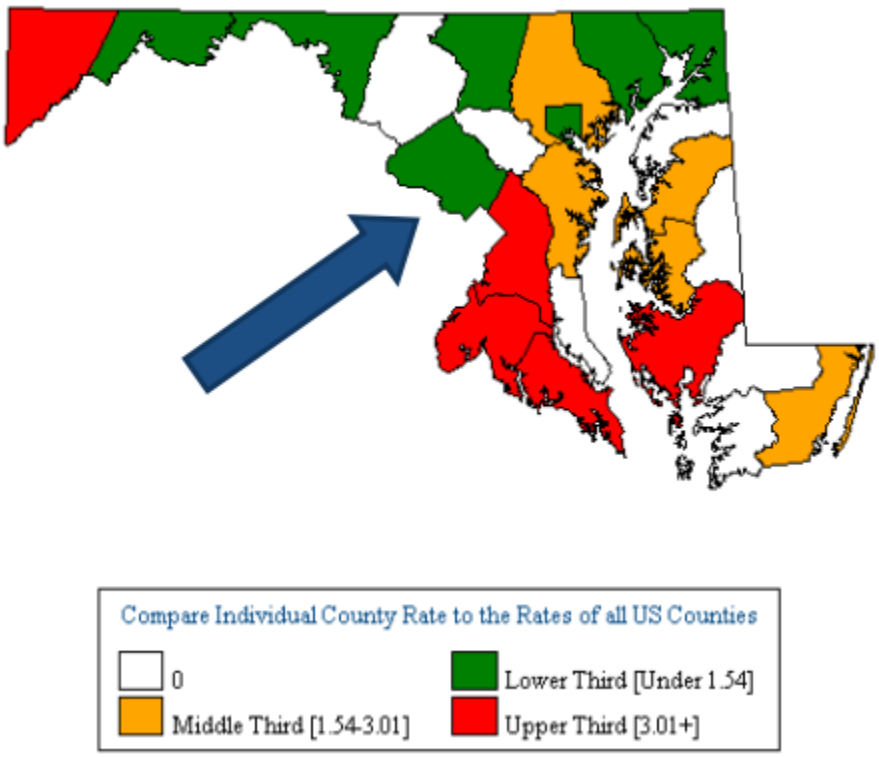
STREET SMART

Jurisdiction	2006	2007	2008	2009	2010	2011	2012	2013*	Total
Arlington County	1	1	1	4	1	5	4	1	18
Charles County	2	6	1	3	3	9	4	3	31
City of Alexandria	1	2	0	0	2	2	2	2	11
City of Fairfax	0	1	0	2	0	1	1	0	5
City of Falls Church	0	0	0	0	2	0	0	1	3
City of Manassas	0	1	0	0	0	0	0	0	1
City of Manassas Park	0	0	0	0	0	0	0	0	0
District of Columbia	17	27	15	16	16	13	8	14	126
Fairfax County (unincorporated)	20	17	4	11	13	10	7	8	90
Frederick County	4	1	0	1	4	0	4	4	18
Loudoun County	1	3	0	1	2	3	3	1	14
Montgomery County	18	18	19	15	14	11	8	14	117
Prince George's County	20	29	41	23	23	30	23	18	207
Prince William County	7	5	6	6	6	1	7	7	45
Total	**91**	**111**	**87**	**82**	**86**	**85**	**71**	**73**	**686**

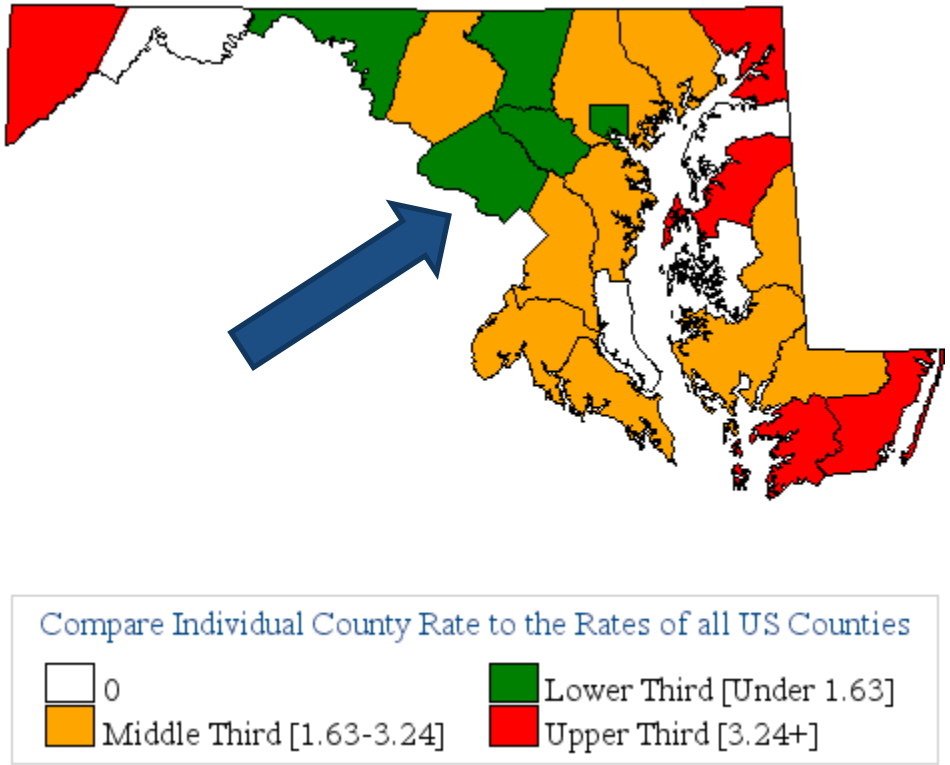
*Preliminary data
Source: Metropolitan Washington Council of Governments

Pedestrian Fatalities – National Rate Comparison

2011 Pedestrian Fatalities per 100,000 (National Comparison)



2012 Pedestrian Fatalities per 100,000 (National Comparison)

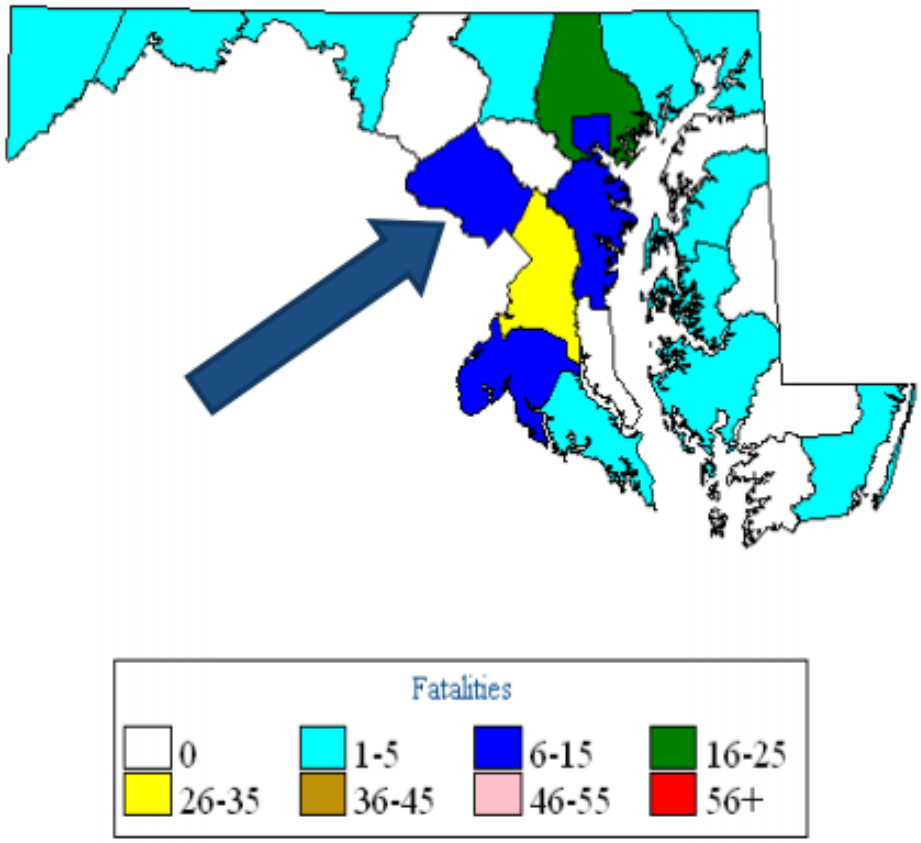


Montgomery County remains in the lower third of national pedestrian fatality rates.

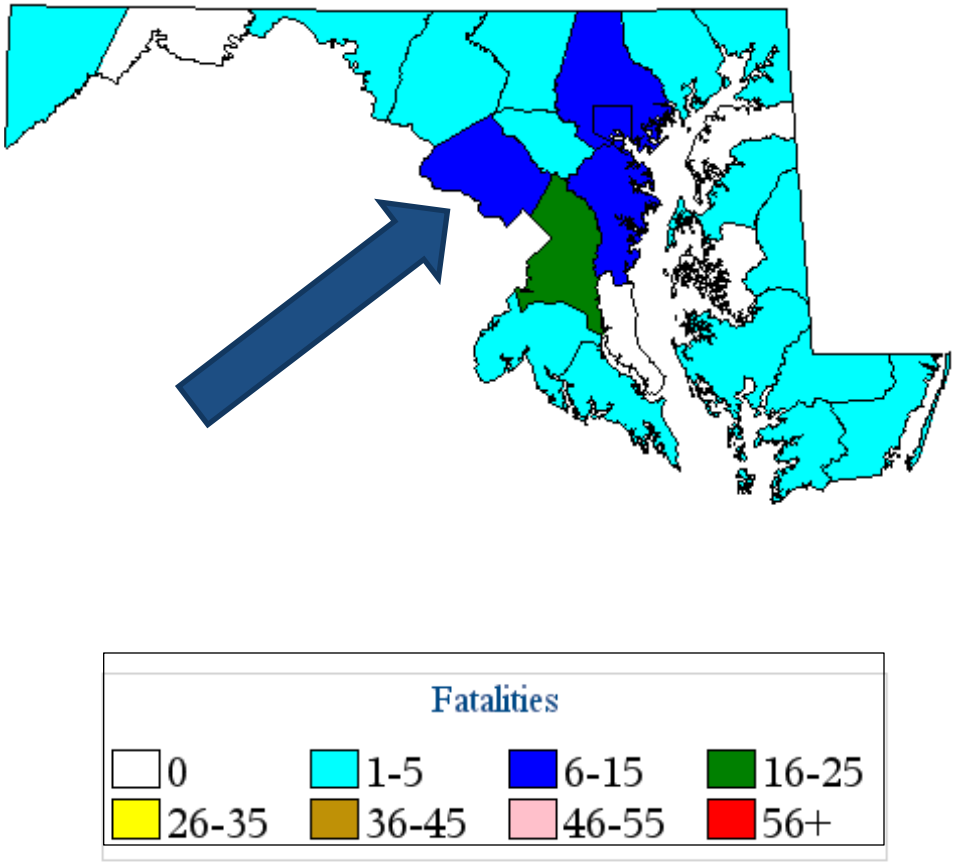
Source: National Highway Traffic Safety Administration: Fatality Analysis Reporting System
Data may vary from local jurisdiction's reported figures

Pedestrian Fatalities - Maryland Comparison

2011 Pedestrian Fatalities



2012 Pedestrian Fatalities



Montgomery County went from 11 pedestrian fatalities in 2011 to 6 fatalities in 2012.

Source: National Highway Traffic Safety Administration: Fatality Analysis Reporting System
Data may vary from local jurisdiction's reported figures

Regional Comparison – Pedestrian Collisions and Fatalities

The following data comes from the Metropolitan Washington Council of Governments and does not match MCPD data due to variation in the types and locations of crashes included. This data is used for benchmarking purposes only.

Jurisdiction	2012			
	Collisions Per 100k	Collisions Per Walking Commuter*	Fatal Per 100k	Fatalities Per Walking Commuter*
Anne Arundel County	43.3	0.042	2.4	0.0023
Arlington County	67.8	0.020	1.8	0.0005
Baltimore City	152.0	0.026	1.1	0.0002
Baltimore County	49.8	0.053	1.7	0.0018
Charles County	22.6	0.052	2.7	0.0061
City of Alexandria	47.8	0.021	1.4	0.0006
City of Fairfax	72.5	0.045	4.3	0.0027
District of Columbia	133.1	0.023	1.3	0.0002
Fairfax County (unincorporated)	18.1	0.019	0.5	0.0006
Frederick County	20.0	0.018	1.7	0.0015
Loudoun County	16.3	0.021	0.9	0.0011
Montgomery County	39.0	0.036	0.7	0.0006
Prince George's County	42.0	0.039	2.5	0.0023
Prince William County	14.9	0.018	1.6	0.0019

1st quartile

2nd quartile

3rd quartile

4th quartile

In 2012, the latest year for which there is comparative data, Montgomery County was in the lowest two quartiles among the jurisdictions above for fatalities adjusted for population and number of walking commuters. For collisions adjusted for population and walking commuters, Montgomery County was in the 2nd and 3rd quartiles, respectively.

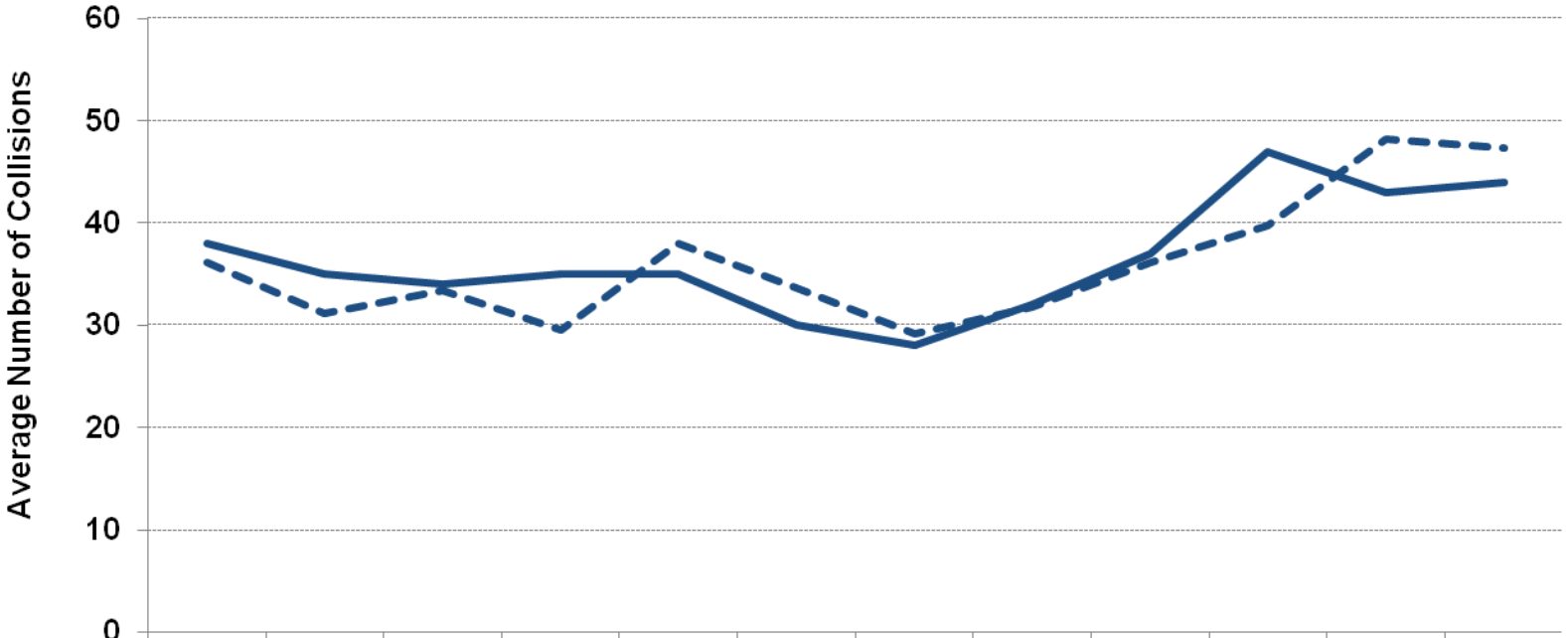
Note: Recording differences exist between states which may substantially affect the comparisons. For example, Virginia does not record collisions in parking lots, and thus numbers in VA jurisdictions are under-reported compared to Maryland counties. Additionally, MD counties do not delineate crashes out to the municipal level, while VA counties do. This may cause additional under-reporting for VA counties.

***Source of walking commuters is 2012 American Community Survey (ACS) Census. Methodology is based on (though slightly modified from) a report from the National Complete Streets Coalition. Source of population estimates: Crash data source: Metropolitan Council of Governments**

Appendix B: Supplemental Data Slides

CountyStat

Pedestrian Collision Monthly Trends



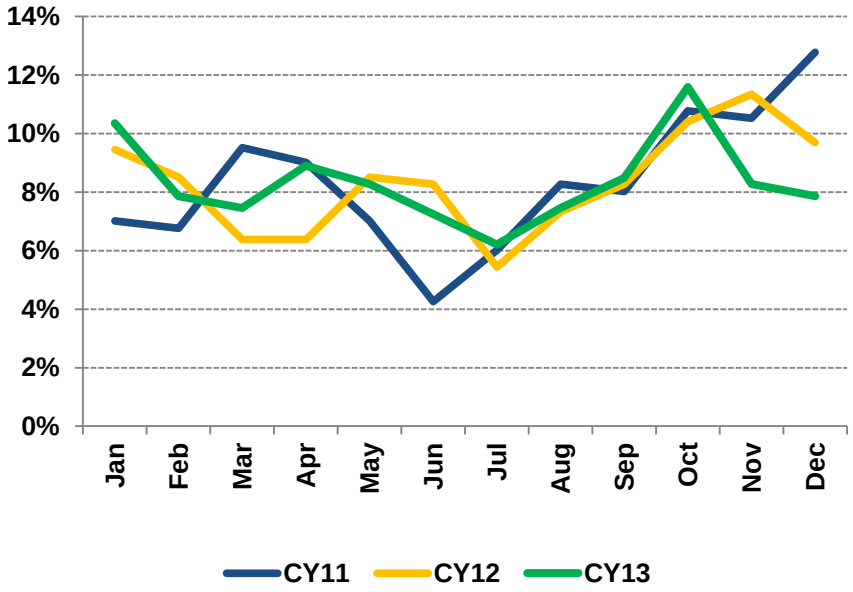
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2005-09 Avg	36	31	33	30	38	34	29	32	36	40	48	47
2010-13 Avg	38	35	34	35	35	30	28	32	37	47	43	44

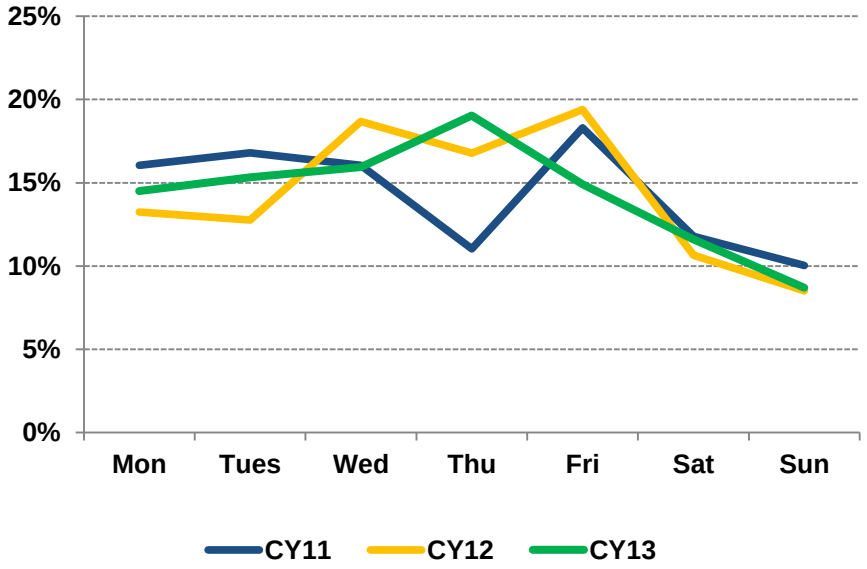
The post-implementation monthly average (2010-2013) is high in September through December, peaking in October. It is lowest during the month of July.

Source: MCPD

Pedestrian Collision Variables: Month and Day

Year Over Year Pedestrian Collisions by Month and Day as a Percentage of Total Calendar Year Pedestrian Collisions

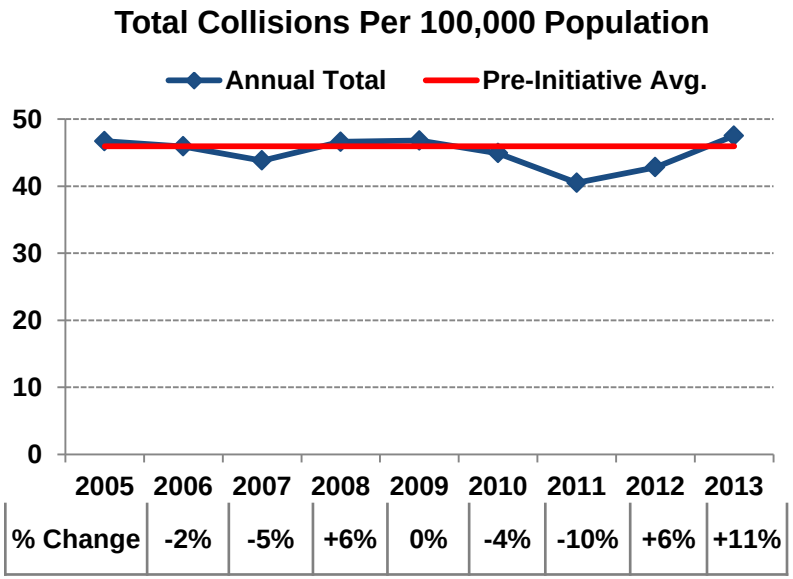


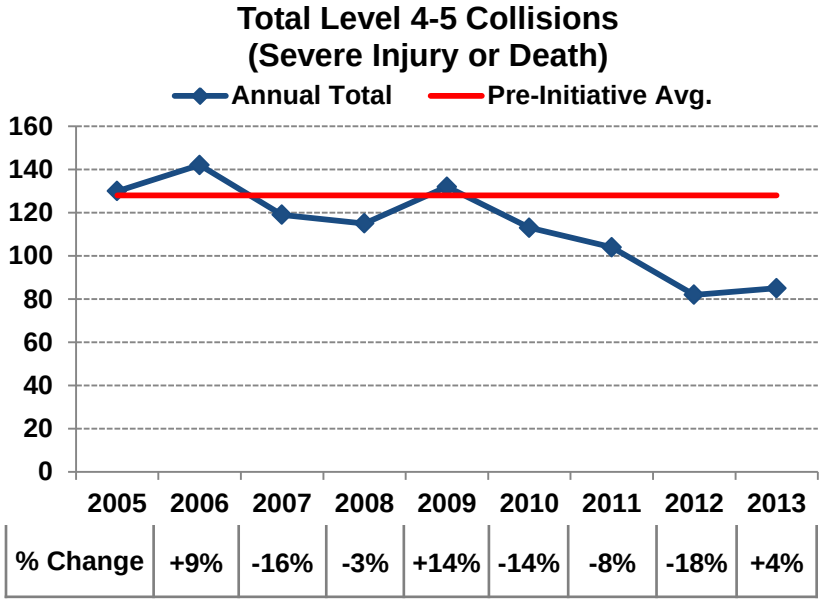


CY13 saw a decline in the percentage of total collisions occurring in November and December. Expanded education and enforcement occurred during this time. Thursdays had the highest percentage of total collisions for CY13. This is in contrast to the past two years in which Fridays had the highest share of collisions.

Source: MCPD

Pedestrian Collision Annual Trends

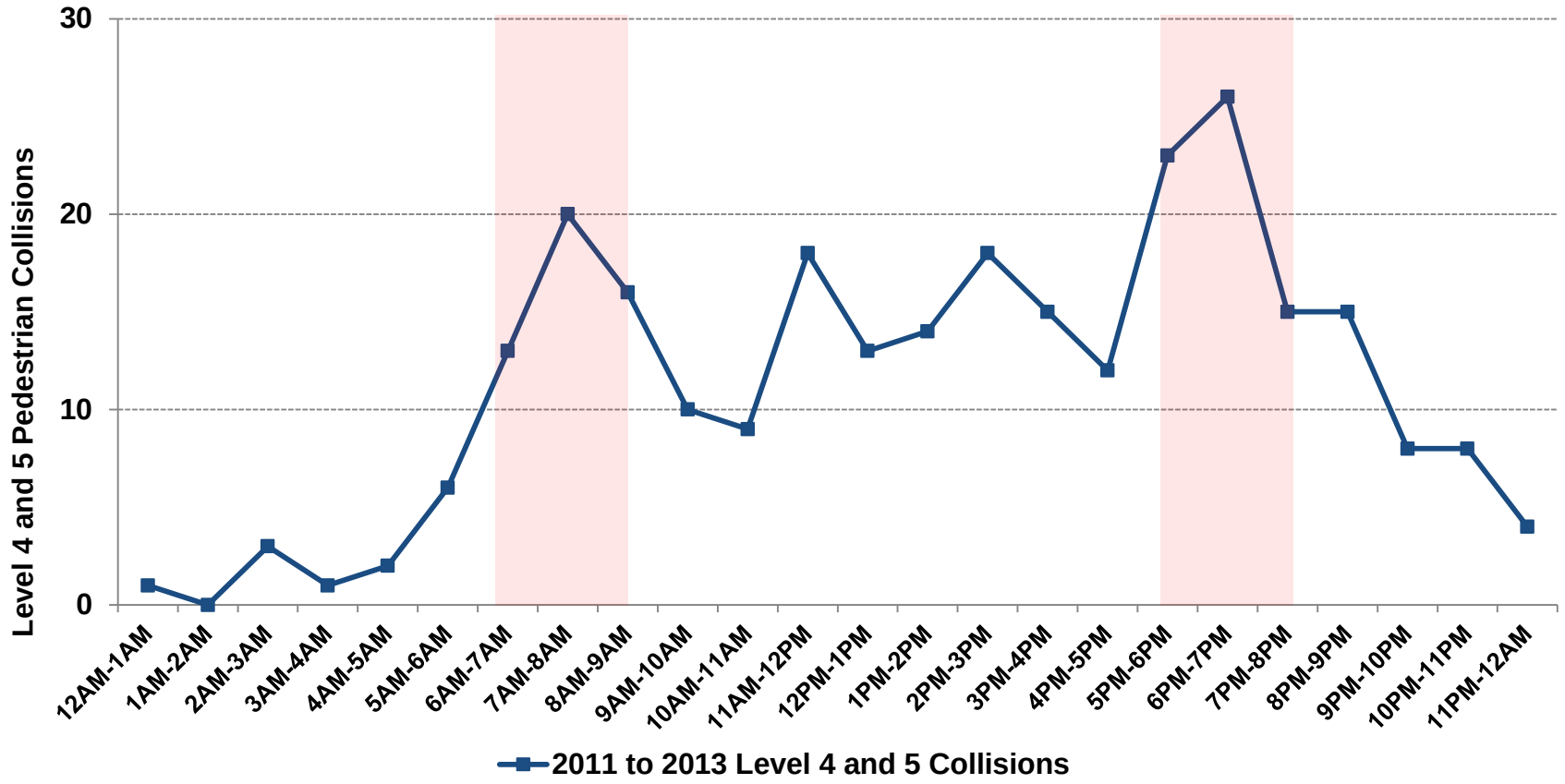




For the first time since implementation of the pedestrian safety initiative, total pedestrian collisions per 100,000 residents was above the pre-initiative average. Severe collisions (Level 4 and 5) rose 4% from 2012, but remained well below the pre-initiative average in 2013.

Source: MCPD

Pedestrian Collision Variables: Level 4 and 5 (Severe Injury) by Hour of Day



From 2011 to 2013, 24% of all collisions involving a level 4 or level 5 injuries occurred between the hours of 5pm and 8pm, and 18% occurred between the hours of 6am and 9am. The data suggest severe collisions occur during periods of high transportation activity.

Source: MCPD

Appendix C: Supplemental HIA Slides

CountyStat

High Incidence Areas:
Targeted Engineering, Education, and Enforcement

Engineering → Education → Enforcement → Changing Pedestrian and Driver Behavior

High Incident Areas: Engineering Improvement

- Improve and Widen Sidewalks
- Reconstruct Intersections and Signals
- Install Enhanced Pedestrian Crossings with Pedestrian Refuge Islands and Beacons
- Upgrade Street Lighting
- Construct Median Fencing and Landscaping to Channelize Pedestrians to Crosswalks
- Upgrade Pedestrian Signals with Countdown Ped Heads and Accessible Pedestrian Signals
- Improve Signage and Pavement Markings

Randolph Road Median Treatment (West)

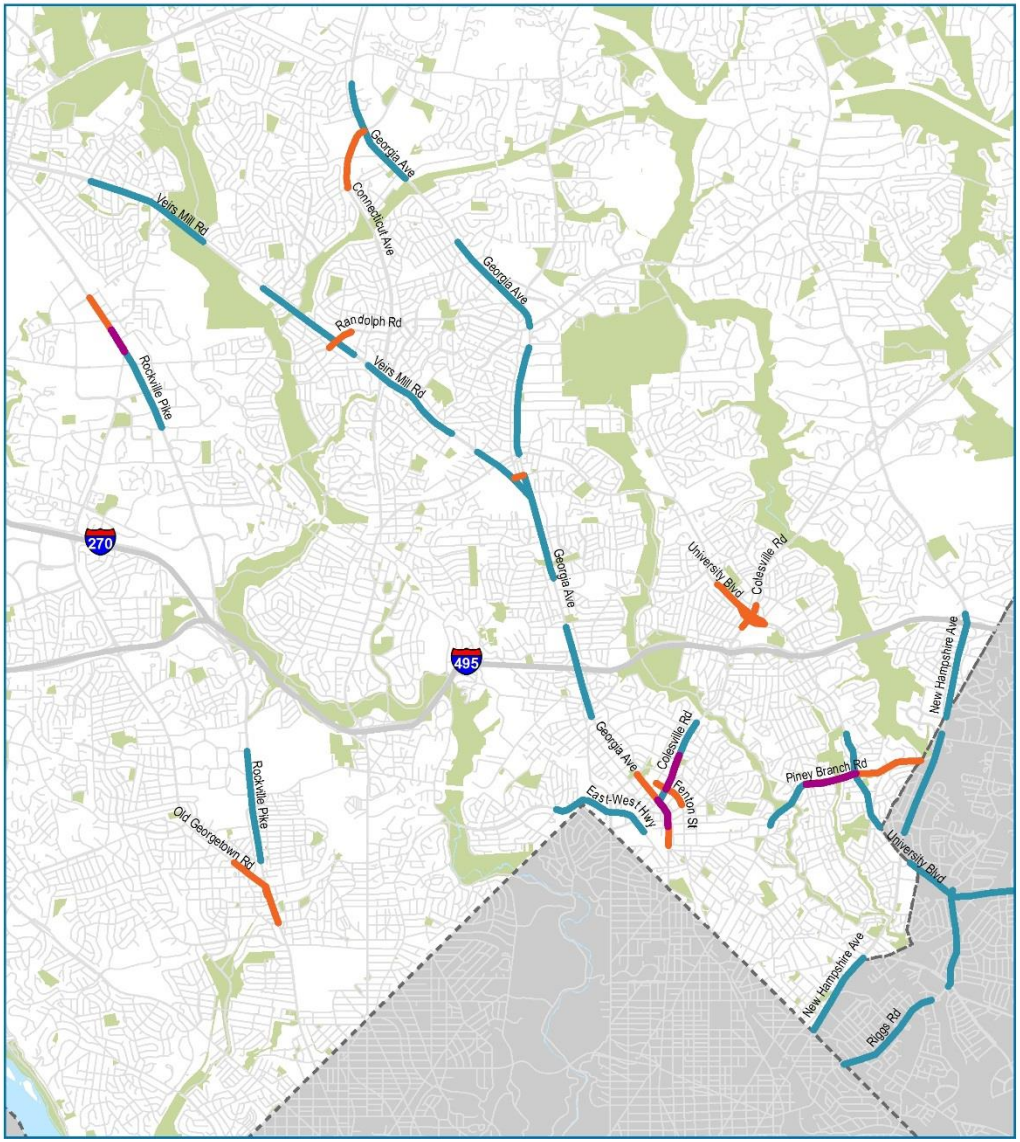
Reedie Drive Streetscape Project

High Incidence Areas:
Close Coordination of Education and Enforcement

- Bi-weekly meetings
- Coordinated scheduling
- Joint planning – data driven
- Reporting on enforcement actions
- Sharing lessons learned

Education → Enforcement → Changing Pedestrian and Driver Behavior

State and County Pedestrian Safety Emphasis Areas



County High Incidence Area

State High Crash Location

County/State Overlap

High Incidence Areas: Enforcement Efforts

(March 2013 – December 2013)

- 197 warnings
- 792 citations
  - 212 driver citations
  - 580 pedestrian citations

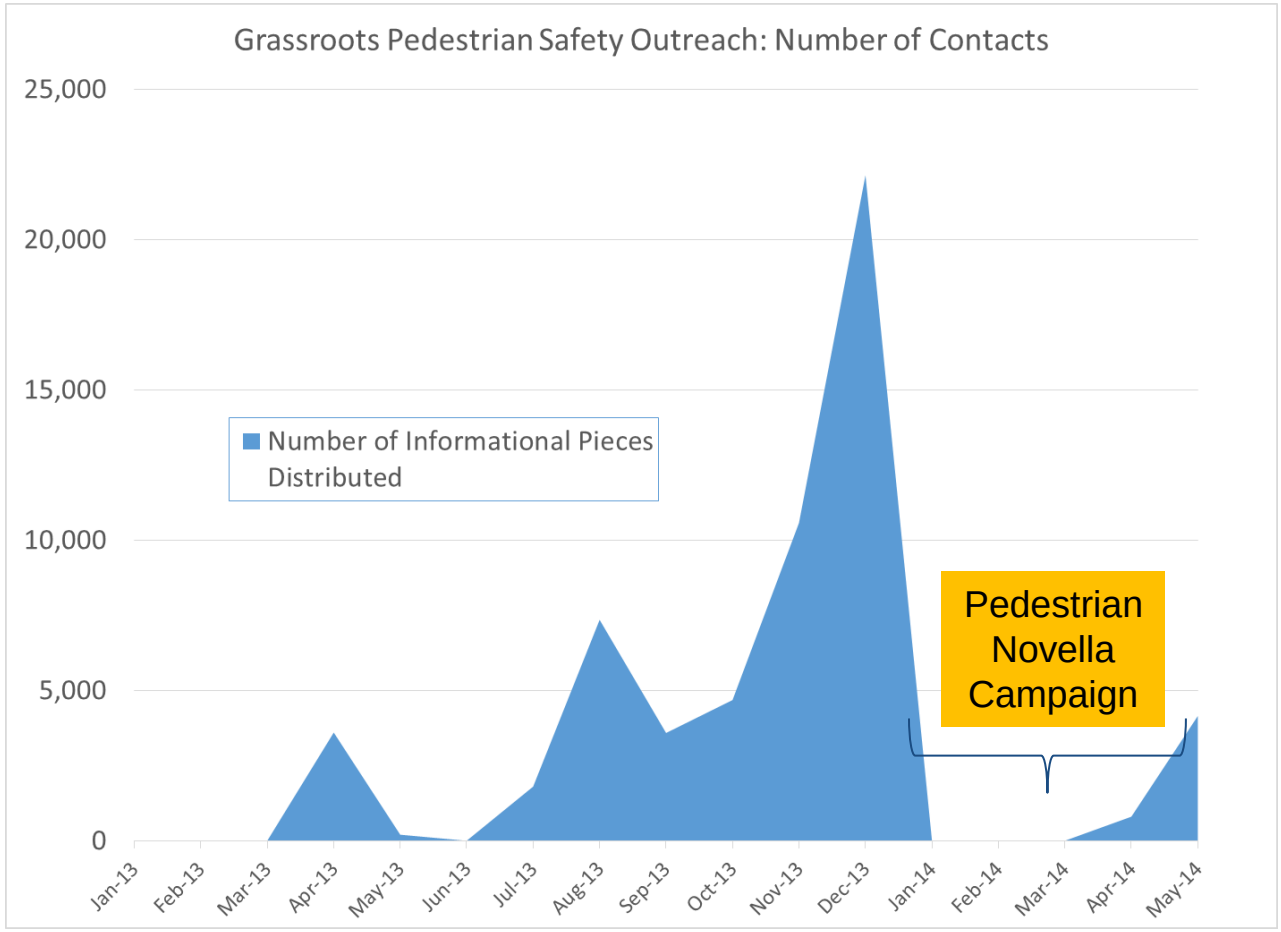
Enforcement Activity by HIA		
Location	**Citations**	**Warnings**
Colesville Road	80	2
Connecticut Avenue	202	54
Fenton Street	11	7
Four Corners	72	45
Georgia Avenue	69	0
Old Georgetown Avenue	48	18
Piney Branch Road	149	34
Randolph Road	120	16
Reedie Drive	14	1
Rockville Pike	27	20

Source: MCPD

Appendix D: Supplemental Education Slides

CountyStat

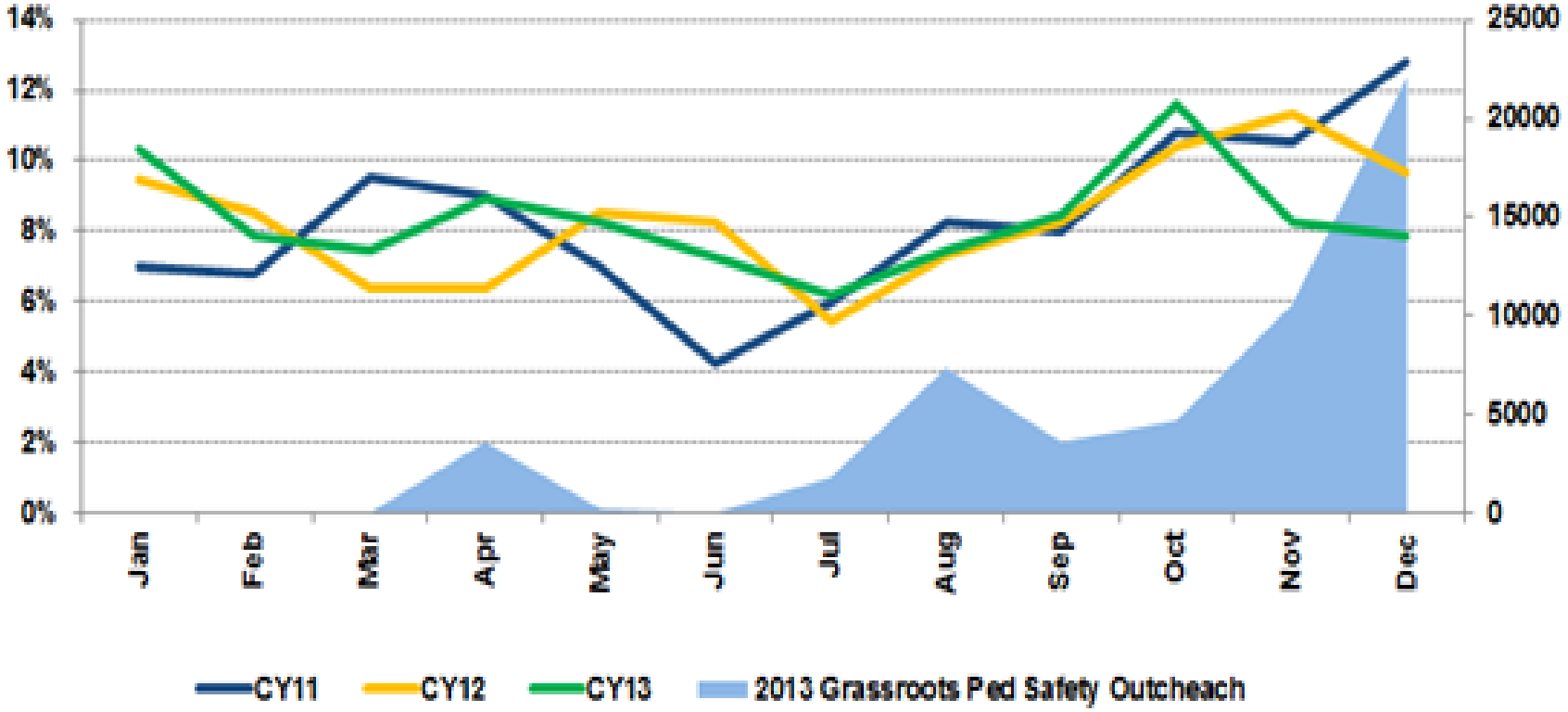
Pedestrian Safety Education Efforts



Street-level education efforts have been more active in the Spring, Summer, and Fall months. Advertising campaigns bridge the gap in grassroots efforts.

Source: MCDOT

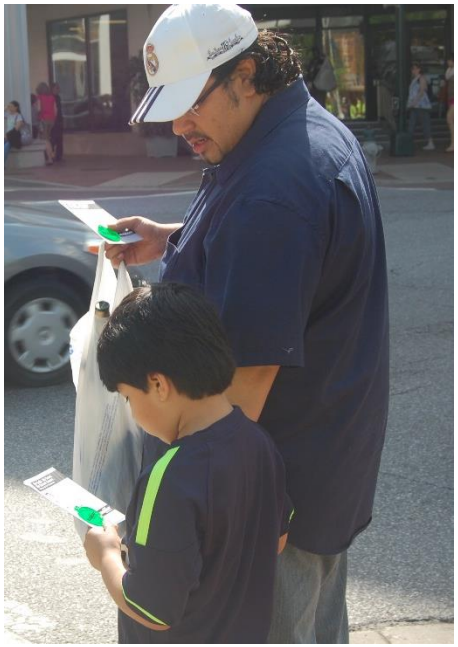
Year Over Year Pedestrian Collisions by Month as a Percentage of Total Calendar Year Pedestrian Collisions



CountyStat

MCDOT Pedestrian Safety Education

- **Street-level outreach in Wheaton/Aspen Hill** ***(April – May 2013)***
- **Regional Street Smart campaign** ***(Spring and Fall)***
- **Pedestrian Novella Campaign** ***(Dec. 2013 – May 2014)***
- **Street-level outreach in Bethesda/Silver Spring** ***(Aug.–Nov. 2013 and May–June 2014)***
- **Volunteer Corps continues to grow** ***(> 100 volunteers)***



MDOT Pedestrian Safety Education in High Schools

- **FY14: Council Authorizes $100,000 for High School Pedestrian Safety Education; FY15: Reauthorized $100,000**

- **Walk Your Way Project launched in late October – awarded grants to 4 high schools and 1 youth serving nonprofit agency**
  - **B-CC, Wheaton, Northwood, and Richard Montgomery High Schools**
  - **Leadership Institute**

Upcoming "Tired Faces" Photoshoot using Montgomery County Teens

- **Web-based Resources – "Tool Kit" Made Available to All Schools in Fall 2014**

- **Partnership with MCPS Office of Communications, School Principals, PTSAs**

Safe Routes to School: Engineering Output Metrics

School Zone Pedestrian Treatments Activities

	FY08	FY09	FY10	FY11	FY12	FY13	FY14	Total
Targeted Assessments	25	21	16	24	13	9	17	125
Comprehensive Assessments	10	13	11	23	18	24	21	120
Total Assessments	35	34	27	47	31	33	38	245
Improvements Implemented	35	34	19	30	16	33	26	193

School Zone Pedestrian Treatments

Budget and Expenditures

	FY09	FY10	FY11	FY12	FY13	FY14
Budgeted	$80,000	$330,000	$156,240	$156,240	$156,240	$156,240
Expended	$80,000	$159,000 *	$125,361 *	$ 156,240	$156,240	$156,240

*Reduced due to savings plan and spending freeze

Safe Routes to School: Education and Enforcement Output

Education & Enforcement Activities						
Activities	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14***
Outreach - Meetings held (School Admin. & Parent)	28	19	26	23	28	12
Schools Observed (Arrival and Dismissal)	34	7	24	5	8	7
Incentives Distributed	220	12,880	2,252	11,200	1,500	4,075
Citations Given	N/A	163	312	0	1,030	337

Education & Enforcement Budget and Expenditures												
Activities	**FY09**		**FY10**		**FY11**		**FY12**		**FY13**		**FY14***	
	Budget	**Actual**	**Budget**	**Actual**	**Budget**	**Actual**	**Budget**	**Actual**	**Budget**	**Actual**	**Budget**	**Actual**
Education	$56,852	$78,955	$40,376	$28,948	$33,952	$46,658	$53,090	$33,575	$31,240	$30,383	$36,109	$22,193
Enforcement	$10,900	$4,506	$12,800	$2,112	$12,200	$12,278	$25,200	$0	$15,200	$23,705	$22,000	$8,730

In FY13 SRTS outreach and citations increased significantly, while incentives distributed declined along with the FY13 budget. In FY14 (YTD), outreach and citations have declined due to late awarding of grant funds this year.

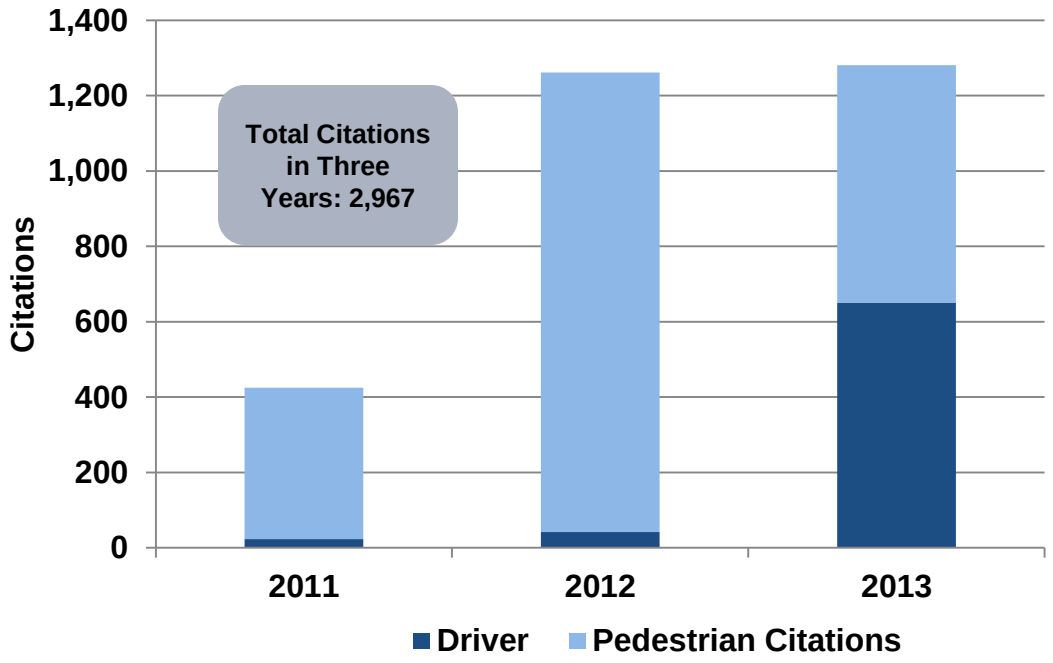
Appendix E: Supplemental Enforcement Slides

CountyStat

Countywide Police Enforcement Efforts

- **Crosswalk Enforcement (Stings)**
  - Police decoy in visible clothing crosses at a crosswalk
  - Drivers who do not stop for the pedestrian are ticketed
  - Pedestrians that are illegally in the roadway are ticketed

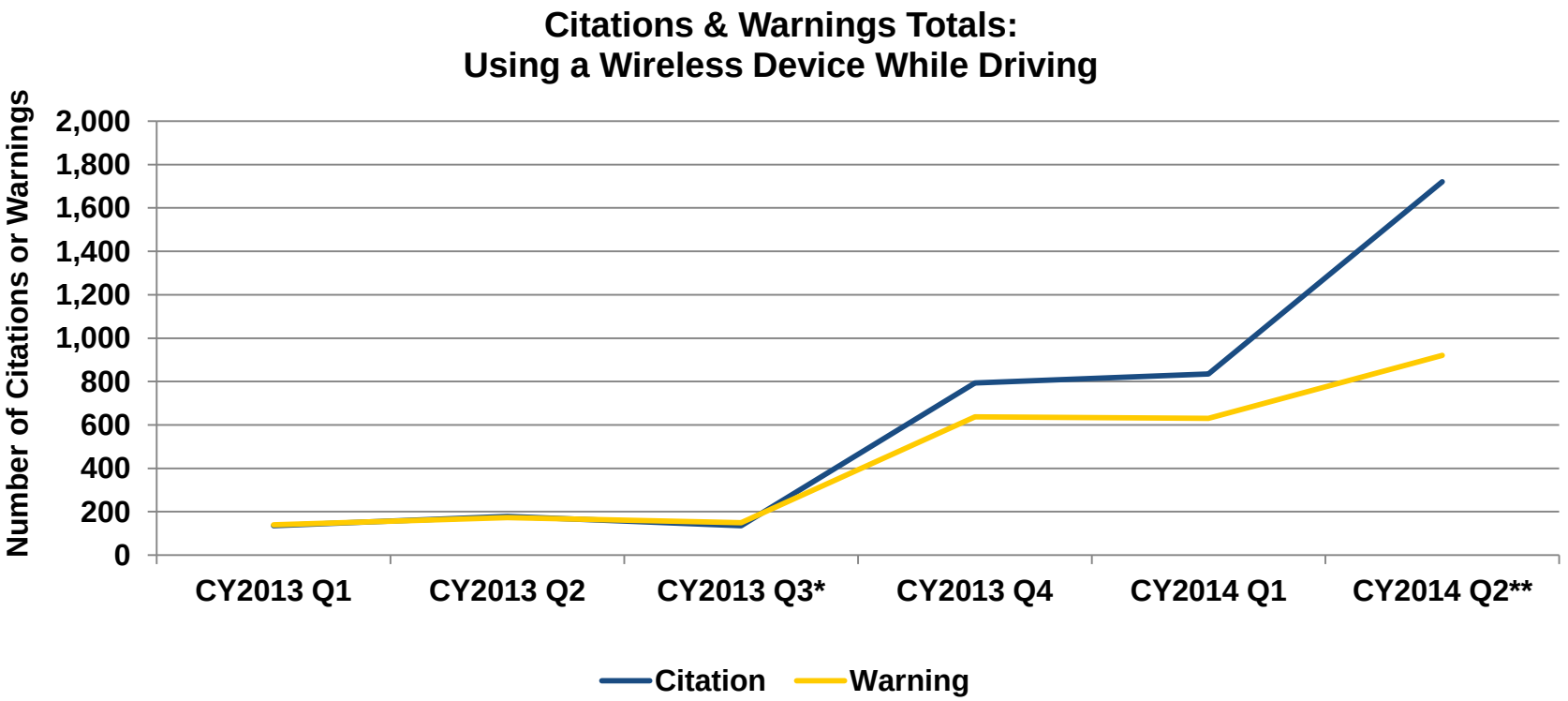
- **17 locations across the County, including crosswalks in:**
  - Aspen Hill
  - Bethesda
  - Gaithersburg
  - Germantown
  - Rockville
  - Silver Spring
  - Wheaton



Source: MCPD

Distracted Driving

It is commonly understood that distracted driving is a contributing cause of traffic collisions. However, due to the nature of these violations, they are dramatically under-reported. To address distracted driving, MCPD has increased their enforcement efforts on wireless device usage while driving.



*Law change occurred making distracted driving a primary offense.

** The second quarter of CY2014 is incomplete and only covers data from April 1, 2014 thru May 31, 2014. This was also *Distracted Driver Month.*

Source: MCPD

Appendix F: Supplemental Evening Commute and Visibility Slides

CountyStat

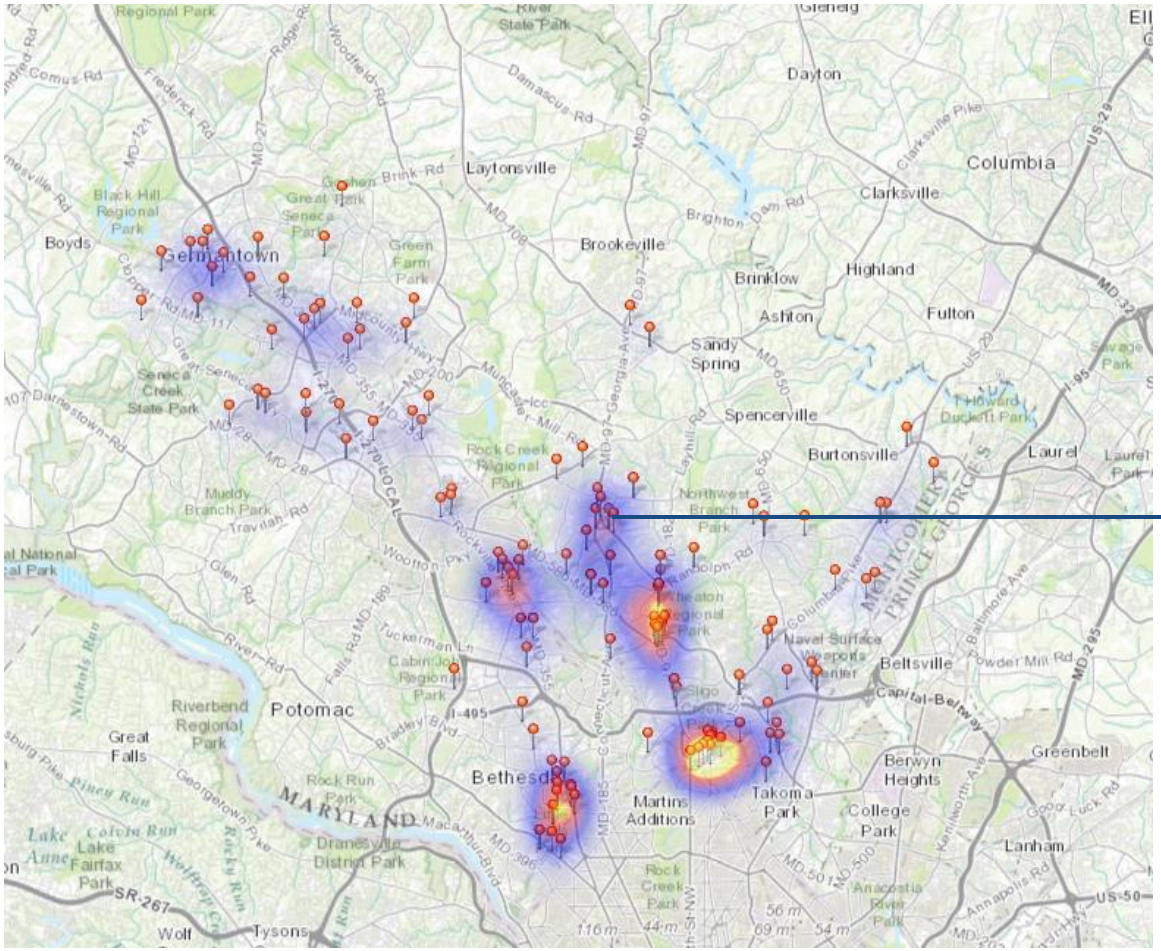
Evening Commute: Injury Level Comparison

Injury Level	5pm to 8pm	All Other Hours
Level 1	9%	6%
Level 2	30%	31%
Level 3	39%	40%
Level 4	20%	20%
Level 5	2%	3%
Total	100%	100%

The distribution of injury level in collisions occurring during the 5pm to 8pm evening commute closely approximate collisions occurring during other hours of the day.

Source: MCPD

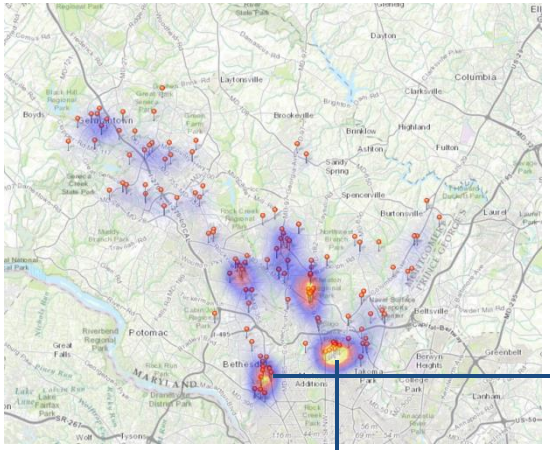
Pedestrian Collisions Between 5pm and 8pm (2013 Only)

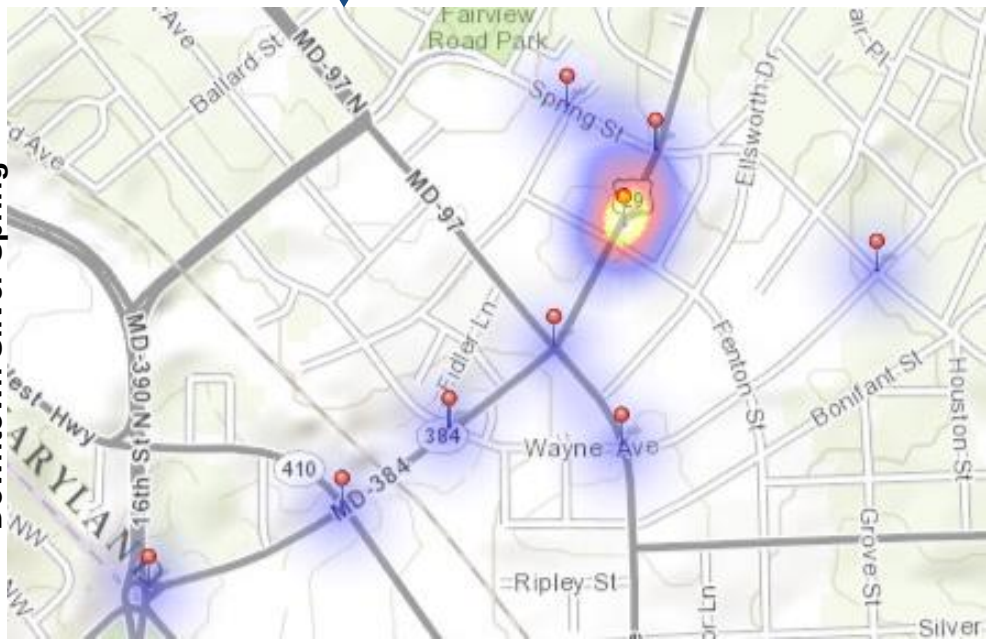


Georgia Ave. and Connecticut Ave.

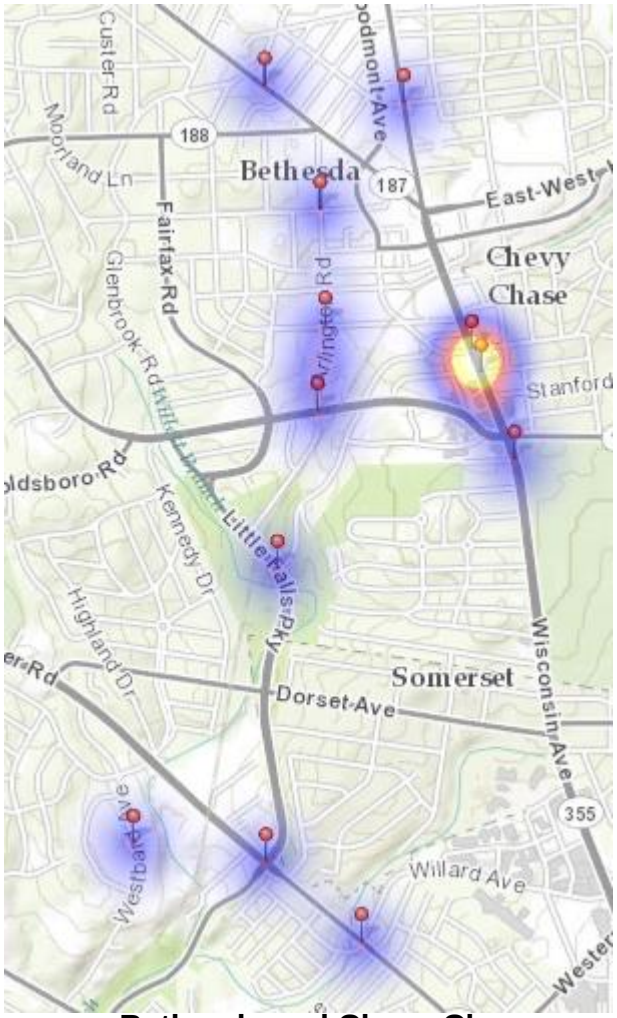
Source: MCPD

Pedestrian Collisions Between 5pm and 8pm (2013 Only)



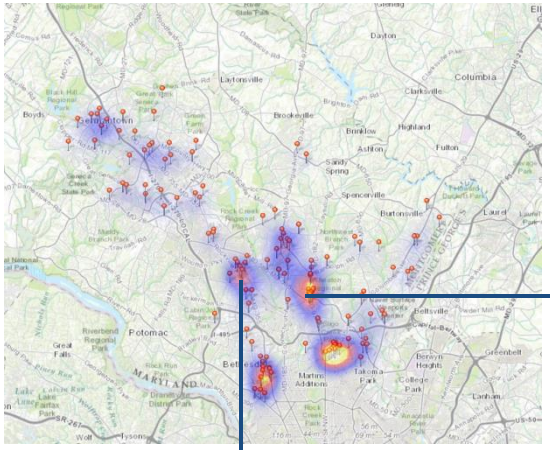


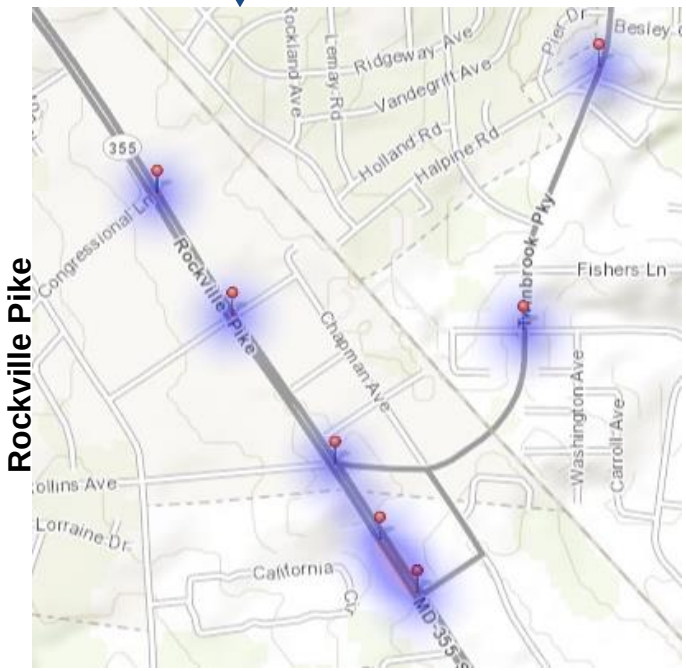
Downtown Silver Spring



Bethesda and Chevy Chase

Pedestrian Collisions Between 5pm and 8pm (2013 Only)





Wheaton

Source: MCPD

Appendix G: HIA Data Analysis – Key Takeaways

CountyStat

Piney Branch HIA Data Analysis: Key Takeaways (Includes 2012 and 2013)

8 of 17 collisions (47%) between 2012 and 2013 occurred when the pedestrian was crossing outside of a crosswalk or crossing in a crosswalk against the crossing signal.

6 of the 17 (35%) collisions between 2012 and 2013 occurred at or near the intersection of Piney Branch and University Blvd.

- 4 of the 6 collisions occurred during dark/dawn conditions.
- 4 of the 6 pedestrians were struck while crossing outside of a crosswalk.

11 of 17 (65%) collisions between 2012 and 2013 occurred during dark or dusk/dawn conditions.

- 4 of the 11 occurred at or near Piney Branch and University
- Each of the following Piney Branch cross-streets had 2 collisions at or near the location: Barron St.; Carroll Ave.; Greenwood Ave.

Source: MCPD

Wisconsin Ave. HIA Data Analysis: Key Takeaways (2013)

5 of the 6 collisions (83%) occurred while the pedestrian was crossing <u>legally</u> inside of a crosswalk.

- 4 Left Turn, Pedestrian in Crosswalk Legally
- 1 Right Turn, Pedestrian in Crosswalk Legally
- 1 Left Turn, Pedestrian Illegally in Roadway Outside of Crosswalk

2 of the 6 collisions (33%) occurred at or near the intersection of Wisconsin Ave. and Elm St in daylight conditions.

- 1 Right Turn, Pedestrian in Crosswalk Legally
- Pedestrian in Crosswalk Legally

4 out of 6 collisions (67%) occurred during daylight conditions.

- 2 collisions occurred during dark conditions (street lights on)
  - Wisconsin Ave. and Montgomery Ave.
  - Wisconsin Ave. and Willow Ln.

Source: MCPD

Rockville Pike HIA Analysis: Key Takeaways (2013)

3 out of 4 (75%) collisions occurred during daylight hours.

3 out of 4 collisions (75%) occurred while pedestrian was <u>legally</u> crossing in a crosswalk.

- 2 Left Turn, Pedestrian in Crosswalk Legally
- 1 Straight Movement, Pedestrian in Crosswalk Legally (one vision obstruction)

Source: MCPD

Georgia Ave. HIA Data Analysis: Key Takeaways (2013)

8 of the 11 collisions (73%) occurred when the pedestrian was legally crossing at a crosswalk.

- Left Turn, Pedestrian Crossing Legally: 4
- Right Turn, Pedestrian Crossing Legally: 4

8 of the 11 collisions (73%) occurred during daylight conditions.

6 of the 11 (55%) collisions occurred at or near the intersection of Georgia and Colesville.*

- Right Turn, Pedestrian in Crosswalk Legally: 3
- Left Turn, Pedestrian in Crosswalk Legally: 2
- Pedestrian Crossing Not in Crosswalk or Walking Against Crossing Signal: 1
- Dark Conditions: 1

Source: MCPD
*Other five collisions all occurred in different locations