

Road Services Division 2016 Collision Data Report



King County

Department of Transportation
Road Services Division
Engineering Services Section

Rick Brater, P.E.
County Road Engineer

Engineering Services Section
Ed Conyers, P.E.
Engineering Services Section Manager

Rose LeSmith, P.E.
County Traffic Engineer

Teresa Lee
Senior Database Specialist



Department of Transportation
Road Services Division
Engineering Services Section
King Street Center, KSC-TR-0317
201 South Jackson Street
Seattle, WA 98104

Table of Contents

Introduction	2
1.0 Executive Summary	3
1.1 Six Year Trends	4
1.2 Collision Rates and Road Miles	5
2.0 Collision Trends.....	7
2.1 Fatality Rates and Fatal Collision Rates	7
2.2 US, State, and Unincorporated King County Collision, Fatal Collision and Fatality Rates.....	9
2.3 Urban versus Rural Roads - Fatal Collision and Fatality Rates	11
2.4 Collisions by Road Classification	13
3.0 Collision Types	14
3.1 Collision Type and Severity	14
3.2 Fixed Object Collisions	18
3.3 Pedestrian Involved Collisions	20
3.4 Bicycle Involved Collisions.....	23
3.5 Motorcycle Involved Collisions.....	24
4.0 Other Collision Information	25
4.1 Estimated Economic Costs	25
4.2 Month, Day of Week, and Time of Day	26
4.3 Demographics.....	30
4.4 Contributing Circumstances	31
4.5 Impairment.....	32
4.6 Speed	36
4.7 Lighting Conditions	37
Appendixes	38
Appendix A – Data Sources.....	38
Appendix B – Formulas used in Report.....	39

INTRODUCTION

The King County Department of Transportation (KCDOT) is pleased to present the 2016 Collision Data Report. This report is prepared by the Road and Traffic Engineering unit of the Engineering Services section of the King County Road Services Division.

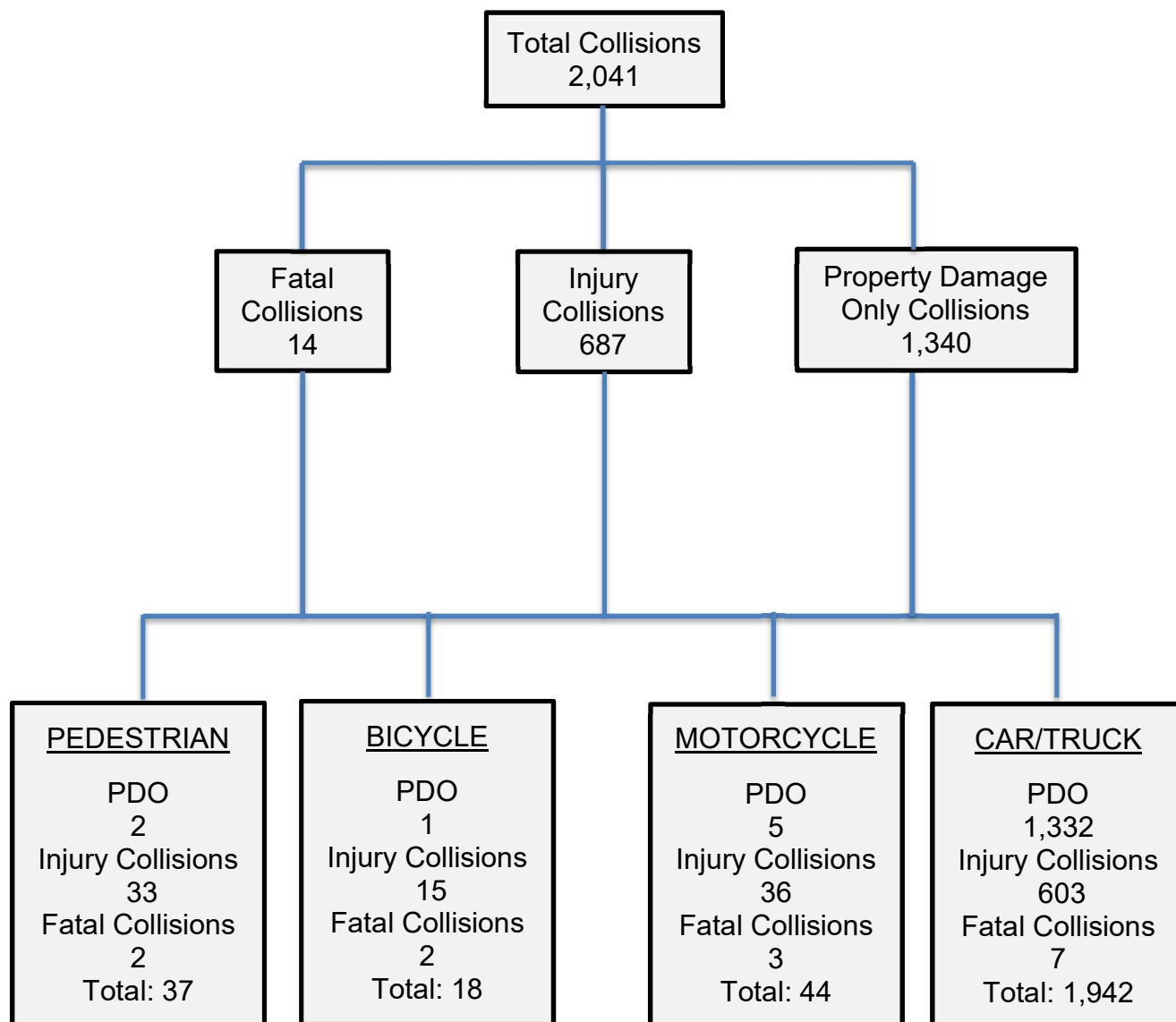
This report was prepared to provide collision and safety information to elected officials and King County staff.

The collision information provided in this report comes from the Washington State Department of Transportation (WSDOT) Collision Location Access Software (CLAS) database as of May 2017. This report covers only those collisions that occurred on a county-maintained roadway within unincorporated King County and meet the reporting threshold of \$1,000 in property damage or result in an injury or fatality.

Other information used in this report is courtesy of the State of Washington's Office of Financial Management, the County Road Administration Board (CRAB), the Washington State Department of Transportation, the King County Executive's Office, the Road Services Division's Engineering Services Section and Strategic Business and Operations Section.

1.0 EXECUTIVE SUMMARY

During 2016, a total of 2,041 collisions were reported on King County maintained roadways. This included 14 fatal, 687 injury, and 1,340 property damage only collisions. The total economic cost of these collisions is estimated at \$96.2 million.



1.1 Six Year Trends

Since 2011, population and maintained road miles continue to decline. King County's unincorporated population fell from 253,565 to 245,900 (3 percent), while the number of maintained roadway miles dropped by 4 percent (from 1,531 to 1,467). The number of collisions however, increased by 36 percent from 1,502 to 2,041. This crash activity increase correlates to the economic and population boom that is occurring within the Seattle Metropolitan region, which includes Snohomish, King, and Pierce counties. According to Washington State's Office of Financial Management, the Seattle Metropolitan area has added an estimated 260,700 new residents since 2011. This population growth is reflected in the larger number of crashes and the daily congestion which is experienced across the region.

While the number of total collisions has increased, the proportion of severity has stayed the same. In 2015 and 2016, fatal collisions made up less than one percent of the total, approximately one-third were injury collisions and the remaining two-thirds were property damage only collisions.

Seventy percent of the 2016 collisions were either fixed object (31%), rear-end (21%) or entering an intersection at an angle (18%). Over 57 percent of the fixed object crashes involved hitting a roadway ditch, utility pole, tree, or fence. There were a total of four fatalities involving fixed objects comprising 29 percent of all fatalities.

Pedestrian and bicycle collisions made up less than three percent of all collisions. There were 18 crashes involving bicyclists, down by three from 2015 and 37 total pedestrian involved crashes, up from 33 in 2015.

The percentage of crashes involving drivers driving under the influence (DUI) increased by one percent from 2015 to 2016. During 2016, there were a total of 165 DUI involved collisions (8.1%) compared to 139 (7.1%) during 2015. Of the 165 collisions, one was fatal, 67 incurred injuries, and 97 involved property damage only.

Table 1.1.1
Number of Collisions
By Severity

Year	PDO*	Percentage	Injury	Percentage	Fatal	Percentage	Total
2011	954	63.5%	540	36.0%	8	0.5%	1,502
2012	1,016	64.6%	544	34.6%	12	0.8%	1,572
2013	1,118	66.0%	564	33.3%	11	0.6%	1,693
2014	1,182	67.1%	566	32.1%	11	0.6%	1,759
2015	1,309	67.5%	612	31.6%	17	0.9%	1,938
2016	1,340	65.7%	687	33.7%	14	0.7%	2,041

*Property Damage Only

1.2 Collision Rates and Road Miles

Table 1.2.1
Road Miles By
Federal Functional Classification (FFC)

Federal Functional Class (FFC) Description	FFC	Road Miles	Annual Average Daily Traffic Volume (AADT)	Annual Million Vehicle Miles Traveled (VMT)
Rural Minor Arterial	6	41	4,800	72
Rural Major Collector	7	96	2,200	77
Rural Minor Collector	8	106	1,200	46
Rural Local Access	9	388	600	85
Urban Principal Arterial	14	37	15,600	211
Urban Minor Arterial	16	72	9,300	244
Urban Collector	17	78	3,500	100
Urban Minor Collector	18	20	2,100	15
Urban Local Access	19	629	800	184
Total		1,467		1,034
Overall Weighted Average			1,931	

Note: Average Annual Daily Traffic Volumes were derived using a three year sampling of traffic count data (2014-2016) and averaging the daily totals.

Table 1.2.2
Collision Rate per Million Vehicle Miles Traveled

Year	Total Collision Reports	Annual Average Daily Traffic Volumes (AADT)	Maintained Road Miles	Annual Million Miles Driven	Collision Rate
2011	1,502	1,798	1,531	1,005	1.49
2012	1,572	2,022	1,504	1,110	1.42
2013	1,693	1,764	1,492	961	1.76
2014	1,759	1,792	1,493	977	1.80
2015	1,938	1,842	1,468	987	1.96
2016	2,041	1,931	1,467	1,034	1.97

Table 1.2.3
Collision Rate per 100,000 Population

		All Collision Types		Pedestrian		Bicycle	
Year	Population	# of Collisions	Collisions per 100,000 Population	# of Collisions	Collisions per 100,000 Population	# of Collisions	Collisions per 100,000 Population
2011	253,565	1,502	592.35	27	10.65	29	11.44
2012	255,700	1,572	614.78	30	11.73	21	8.21
2013	253,100	1,693	668.91	23	9.09	23	9.09
2014	252,050	1,759	697.87	37	14.68	16	6.35
2015	253,280	1,938	765.16	33	13.02	21	8.29
2016	245,900	2,041	830.01	37	15.05	18	7.32

2.0 COLLISION TRENDS

2.1 Fatality Rates and Fatal Collision Rates

Table 2.1.1
Fatality Rate per 100,000 Population

Year	Population	All Collision Types		Pedestrian		Bicycle	
		# of Fatalities	Fatalities per 100,000 population	# of Fatalities	Fatalities per 100,000 population	# of Fatalities	Fatalities per 100,000 population
2011	253,565	8	3.16	1	0.39	0	0.00
2012	255,700	12	4.69	1	0.39	1	0.39
2013	253,100	12	4.74	1	0.40	1	0.40
2014	252,050	12	4.76	3	1.19	0	0.00
2015	253,280	19	7.50	3	1.18	0	0.00
2016	245,900	15	6.10	2	0.81	2	0.81

Table 2.1.2
Fatal Collision Rate per 100,000 Population

Year	Population	All Collision Types		Pedestrian		Bicycle	
		# of Fatal Collisions	Fatal Collisions per 100,000 Population	# of Fatal Collisions	Fatal Collisions per 100,000 Population	# of Fatal Collisions	Fatal Collisions per 100,000 Population
2011	253,565	8	3.16	1	0.39	0	0.00
2012	255,700	12	4.69	1	0.39	1	0.39
2013	253,100	11	4.35	1	0.40	1	0.40
2014	252,050	11	4.36	3	1.19	0	0.00
2015	253,280	17	6.71	3	1.18	0	0.00
2016	245,900	14	5.69	2	0.81	2	0.81

Table 2.1.3
Fatality Rate per
100 Million Vehicle Miles Traveled

Year	Number of Fatalities	Maintained Road Miles	Annual 100 Million Miles Traveled	Fatality Rate per 100 Million Miles Traveled
2011	8	1,531	10.05	0.80
2012	12	1,504	11.10	1.08
2013	12	1,492	9.61	1.25
2014	12	1,493	9.77	1.23
2015	19	1,468	9.87	1.93
2016	15	1,467	10.34	1.45

Table 2.1.4
Fatal Collision Rate per
100 Million Vehicle Miles Traveled

Year	Number of Fatal Collisions	Maintained Road Miles	Annual 100 Million Miles Traveled	Fatal Collision Rate per 100 Million Miles Traveled
2011	8	1,531	10.05	0.80
2012	12	1,504	11.10	1.08
2013	11	1,492	9.61	1.14
2014	11	1,493	9.77	1.13
2015	17	1,468	9.87	1.72
2016	14	1,467	10.34	1.35

2.2 US, State, and Unincorporated King County Collision, Fatal Collision and Fatality Rates

Table 2.2.1
US, State, and Unincorporated King County Collision Rates
per 100,000 Population

	Unincorporated King County			Washington State			United States		
Year	Population	Collisions	Collisions per 100,000 Population	Population	Collisions	Collisions per 100,000 Population	Population	Collisions	Collisions per 100,000 Population
2011	253,565	1,502	592	6,801,100	98,820	1,453	311,592,000	5,338,000	1,713
2012	255,700	1,572	617	6,895,300	99,560	1,444	313,874,000	5,615,000	1,789
2013	253,100	1,693	669	6,971,400	99,689	1,430	316,219,000	5,687,000	1,798
2014	252,050	1,759	698	6,968,200	107,634	1,545	318,857,000	6,064,000	1,901
2015	253,280	1,938	765	7,170,400	117,114	1,633	321,419,000	6,296,000	1,959
2016	245,900	2,041	830	7,183,700	122,374	1,703	323,128,000	Data Not Available	Data Not Available

Table 2.2.2
US, State, and Unincorporated King County Fatal Collision and
Fatality Rates per 100,000 Population

	Unincorporated King County			Washington State			United States		
Year	Population	Fatal Collisions per 100,000 Population	Fatalities per 100,000 Population	Population	Fatal Collisions per 100,000 Population	Fatalities per 100,000 Population	Population	Fatal Collisions per 100,000 population	Fatalities per 100,000 population
2011	253,565	3.16	3.16	6,801,100	6.19	6.68	311,592,000	9.55	10.39
2012	255,700	4.69	5.48	6,895,300	5.84	6.35	313,874,000	9.81	10.69
2013	253,100	4.35	4.74	6,971,400	5.81	6.31	316,219,000	9.51	10.35
2014	252,050	4.36	4.76	6,968,200	6.16	6.63	318,857,000	9.41	10.25
2015	253,280	6.71	7.50	7,170,400	6.95	7.92	321,419,000	10.07	10.92
2016	245,900	5.69	6.10	7,183,700	7.13	Data Not Available	323,128,000	Data Not Available	Data Not Available

Source: Washington State Department of Transportation and the National Highway Traffic Safety Administration

Table 2.2.3
US, State, and Unincorporated King County
Collision Rates per Million Vehicle Miles Traveled (VMT)

	Unincorporated King County			Washington State			United States		
Year	Million VMT	Collisions	Collisions per Million VMT	Million VMT	Collisions	Collisions per Million VMT	100 Million VMT	Collisions	Collisions per Million VMT
2011	1,005	1,502	1.49	56,750	98,820	1.74	29,460	5,338,000	1.81
2012	1,110	1,572	1.42	56,600	99,560	1.76	29,540	5,615,000	1.90
2013	961	1,693	1.76	57,200	99,709	1.74	29,880	5,687,000	1.90
2014	977	1,759	1.80	58,060	107,634	1.85	30,260	6,064,000	2.00
2015	987	1,938	1.96	59,650	117,114	1.96	31,310	6,296,000	2.01
2016	1,034	2,041	1.97	60,851	122,374	2.01	32,180	Data Not Available	Data Not Available

Table 2.2.4
US, State, and Unincorporated King County Fatal Collision
and Fatality Rates per 100 Million Vehicle Miles Traveled (VMT)

	Unincorporated King County			Washington State			United States		
Year	100 Million VMT	Fatal Collision Rate per 100 Million VMT	Fatality Rate per 100 Million VMT	100 Million VMT	Fatal Collision Rate per 100 Million VMT	Fatality Rate per 100 Million VMT	100 Million VMT	Fatal Collision Rate per 100 Million VMT	Fatality Rate per 100 Million VMT
2011	10.05	0.80	0.80	568	0.74	0.80	29,460	1.01	1.10
2012	11.10	1.08	1.08	566	0.71	0.77	29,540	1.04	1.14
2013	9.61	1.14	1.25	572	0.70	0.76	29,880	1.01	1.10
2014	9.77	1.13	1.23	580	0.74	0.80	30,260	0.99	1.08
2015	9.87	1.72	1.93	597	0.83	0.95	31,310	1.03	1.12
2016	10.34	1.35	1.45	609	0.84	Data Not Available	32,180	Data Not Available	Data Not Available

Source: Washington State Department of Transportation and the National Highway Traffic Safety Administration

2.3 Urban versus Rural Roads - Fatal Collision and Fatality Rates

Table 2.3.1
Urban versus Rural Roads in Unincorporated King County
Fatal Collision and Fatality Rates per 100,000 Population

Urban Roads in Unincorporated King County						Rural Roads in Unincorporated King County				
Year	Population	# of Fatal Collisions	# of Fatalities	Fatal Collisions per 100,000 Population	Fatalities per 100,000 Population	Population	# of Fatal Collisions	# of Fatalities	Fatal Collisions per 100,000 Population	Fatalities per 100,000 Population
2011	129,500	4	4	3.09	3.09	124,065	4	4	3.22	3.22
2012	131,400	6	6	4.57	4.57	124,300	6	8	4.83	6.44
2013	129,840	7	8	5.39	6.16	123,260	4	4	3.25	3.25
2014	126,500	7	8	5.53	6.32	125,500	4	4	3.19	3.19
2015	127,500	9	10	7.06	7.84	125,780	8	9	6.36	7.16
2016	119,900	10	11	8.34	9.17	126,000	4	4	3.17	3.17

Table 2.3.2
Urban versus Rural Roads in Unincorporated King County
Fatal Collision Rates per 100 Million Vehicle Miles Traveled (VMT)

Year	Fatal Collisions			Maintained Road Miles			Annual 100 Million VMT			Fatal Collision Rate per 100 Million VMT		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
2011	4	4	8	864	667	1,531	6.86	3.19	10.05	0.58	1.25	0.80
2012	6	6	12	840	664	1,504	7.41	3.69	11.10	0.81	1.63	1.08
2013	7	4	11	861	631	1,492	6.96	2.65	9.61	1.01	1.51	1.14
2014	7	4	11	862	631	1,493	7.18	2.59	9.77	1.00	1.51	1.13
2015	9	8	17	836	632	1,468	7.18	2.69	9.87	1.25	2.97	1.72
2016	10	4	14	837	630	1,467	7.54	2.80	10.34	1.33	1.42	1.35

Table 2.3.3
Urban versus Rural Roads in Unincorporated King County
Fatality Rates per 100 Million Vehicle Miles Traveled (VMT)

	Fatalities			Maintained Road Miles			Annual 100 Million VMT			Fatalities per 100 Million VMT		
Year	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
2011	4	4	8	864	667	1,531	6.86	3.19	10.05	0.58	1.25	0.80
2012	6	8	14	840	644	1,504	7.41	3.69	11.10	0.81	2.17	1.08
2013	8	4	12	861	631	1,492	6.96	2.65	9.61	1.15	1.50	1.25
2014	8	4	12	862	631	1,493	7.18	2.59	9.77	1.14	1.51	1.14
2015	10	9	19	836	632	1,468	7.18	2.69	9.87	1.39	3.35	1.93
2016	11	4	15	837	630	1,467	7.54	2.80	10.34	1.46	1.42	1.45

Table 2.3.4
Urban versus Rural Collision Rates
Per Million Vehicle Miles Traveled (VMT)

	Number of Collisions			Maintained Road Miles			Annual Million VMT			Collisions per Million VMT		
Year	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
2011	1,136	366	1,502	864	667	1,531	686	319	1,005	1.66	1.15	1.49
2012	1,195	377	1,572	840	644	1,504	741	369	1,110	1.61	1.02	1.42
2013	1,337	356	1,693	861	631	1,492	696	265	961	1.92	1.34	1.76
2014	1,418	341	1,759	862	631	1,493	718	259	977	1.97	1.32	1.80
2015	1,548	390	1,938	836	632	1,468	718	269	987	2.16	1.45	1.96
2016	1,616	425	2,041	837	630	1,467	754	280	1034	2.14	1.52	1.97

2.4 Collisions by Road Classification

Table 2.4.1
Collisions by King County Road Classification

Year	Principal Arterial	Minor Arterial	Collector	Local Access	Total
2011	335	443	350	374	1,502
2012	343	459	407	363	1,572
2013	395	504	415	379	1,693
2014	445	505	401	408	1,759
2015	462	626	456	394	1,938
2016	487	602	504	448	2,041

Table 2.4.2
Collisions by Federal Functional Classification

	Federal Functional Classification									
	Rural				Urban					
	Minor Arterial	Major Collector	Minor Collector	Local Access	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Access	
Year	6	7	8	9	14	16	17	18	19	Total
2011	84	116	92	74	335	359	142	0	300	1,502
2012	74	129	94	80	343	385	184	0	283	1,572
2013	82	120	103	51	395	422	186	6	328	1,693
2014	65	112	86	78	445	440	186	17	330	1,759
2015	106	124	93	67	461	520	216	23	328	1,938
2016	88	159	104	74	487	514	226	15	374	2,041

Note: Prior to 2013, no King County roadways had been classified as Federal Functional Classification 18.

3.0 COLLISION TYPES

3.1 Collision Type and Severity

Table 3.1.1
Collisions by Collision Type

Collision Type	2011	2012	2013	2014	2015	2016
Fixed Object	453	528	540	514	576	626
Rear - End	321	288	353	362	441	426
Entering at Angle	239	254	235	273	334	358
Hit Parked Car	112	117	138	146	136	151
Left Turn	95	112	118	139	116	131
Sideswipe	53	52	89	95	99	86
Other	38	30	56	59	67	79
Vehicle Overturned	54	41	49	39	31	43
Pedestrian	27	30	23	37	33	37
Animal	14	12	18	12	21	22
Head On	21	27	21	21	20	22
Right Turn	19	18	19	20	17	22
Bicycle	29	21	23	16	21	18
Other Object	6	6	8	3	13	10
Leaving Parked Position	6	5	0	14	11	9
Non Collision	0	1	3	8	2	1
Backing	5	10	0	1	0	0
Entering Driveway	1	1	0	0	0	0
U-Turn	9	19	0	0	0	0
Totals	1,502	1,572	1,693	1,759	1,938	2,041

Table 3.1.2
Fatal Collisions by Collision Type

Collision Type	2011	2012	2013	2014	2015	2016
Fixed object	4	4	8	0	7	4
Pedestrian	1	1	1	3	3	2
Other	0	0	0	2	2	0
Entering at angle	0	4	0	1	2	2
Head on	1	2	0	2	1	1
Rear - end	0	0	0	1	1	1
Sideswipe	0	0	1	0	1	2
Vehicle overturned	2	0	0	2	0	0
Animal	0	0	0	0	0	0
Bicycle	0	1	1	0	0	2
Left turn	0	0	0	0	0	0
Totals	8	12	11	11	17	14

Table 3.1.3
2016 Collisions by Collision Type and Severity

Collision Type	PDO	Injury	Fatal	Total	Percentage
Fixed object	456	166	4	626	30.7%
Rear - end	258	167	1	426	20.9%
Entering at angle	234	122	2	358	17.5%
Hit Parked Car	129	22	0	151	7.4%
Left turn	68	68	0	131	6.4%
Sideswipe	69	15	2	86	4.2%
Other	53	26	0	79	3.9%
Vehicle overturned	18	25	0	43	2.1%
Pedestrian	2	33	2	37	1.8%
Head on	4	17	1	22	1.1%
Right Turn	19	3	0	22	1.1%
Animal	15	7	0	22	1.1%
Bicycle	1	15	2	18	0.9%
Other Object	10	0	0	10	0.5%
Leaving Parked Position	8	1	0	9	0.4%
Non-Collision	1	0	0	1	0.0%
Backing	0	0	0	0	0.0%
Total	1,340	687	14	2,041	100.0%

Table 3.1.4
2016 Fixed Object Collisions
By First Object Struck and Severity

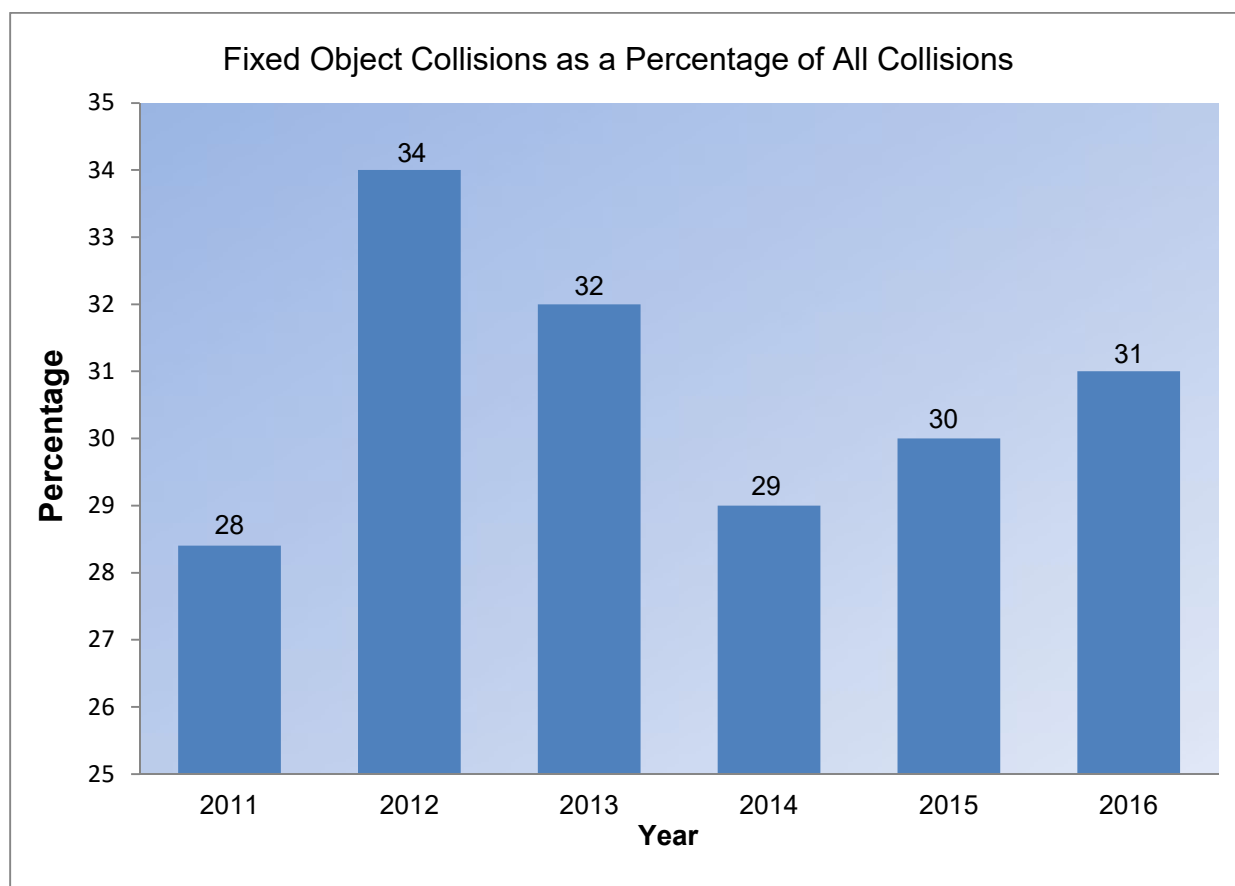
OBJECT STRUCK	PDO	Injury	Fatality	Total	% of Total
Boulder (stationary)	7	3	0	10	1.6%
Bridge Abutment	1	1	0	2	0.3%
Bridge Rail - Face	3	1	0	4	0.6%
Building	7	2	0	9	1.4%
Concrete Barrier/Jersey Barrier - Face	3	1	0	4	0.6%
Crash Cushions - Impact Attenuators	0	1	0	1	0.2%
Culvert and/or other Appurtenance in Ditch	4	2	0	6	1.0%
Earth Bank or Ledge	17	7	0	24	3.8%
Fence	68	11	1	80	12.8%
Fire Hydrant	6	0	0	6	1.0%
Guardrail - Face	33	8	1	42	6.7%
Guardrail - Leading End	4	2	0	6	1.0%
Guardrail - Through, Over or Under	5	2	0	7	1.1%
Into River, Lake, Swamp, etc.	4	0	0	4	0.6%
Linear Curb	9	2	0	11	1.8%
Mailbox	34	5	0	39	6.2%
Metal Sign Post	5	3	0	8	1.3%
Other Objects	6	1	0	7	1.1%
Over Embankment - No Guardrail Present	12	8	1	21	3.4%
Retaining Wall (concrete, rock, brick, etc.)	5	2	0	7	1.1%
Roadway Ditch	89	41	0	130	20.8%
Rock Bank or Ledge	1	0	0	1	0.2%
Signal Pole	2	1	0	3	0.5%
Street Light Pole or Base	4	0	0	4	0.6%
Temporary Traffic Sign, Barricade or Construction Materials	1	0	0	1	0.2%
Traffic Island	3	0	0	3	0.5%
Tree or Stump (stationary)	44	29	1	74	11.8%
Underside of Bridge	2	0	0	2	0.3%
Utility Pole or Box	49	25	0	74	11.8%
Wood Sign Post	28	8	0	36	5.8%
Total	456	166	4	626	100.0%

3.2 Fixed Object Collisions

Table 3.2.1
Collision Rate per Million Vehicle Miles Traveled (VMT) for
Collisions Involving Fixed Objects

Year	Total Number of Fixed Object Collisions			Maintained Road Miles			Annual Million VMT			Collision Rate for Fixed Object Collisions per Million VMT		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
2011	273	194	467	864	667	1,531	686	319	1,005	0.40	0.61	0.47
2012	345	197	542	840	664	1,504	741	369	1,110	0.47	0.53	0.49
2013	356	184	540	861	631	1,492	696	265	961	0.51	0.69	0.56
2014	331	183	514	862	631	1,493	718	259	977	0.47	0.70	0.53
2015	366	210	576	836	632	1,468	718	269	987	0.51	0.78	0.58
2016	399	227	626	837	630	1,467	754	280	1,034	0.53	0.81	0.61

Figure 3.2.1
Collisions Involving Fixed Objects as a
Percentage of All Collisions



3.3 Pedestrian Involved Collisions

Table 3.3.1
Pedestrian Involved Collisions by Severity

Year	Property Damage Only	Injury	Fatality	Total
2011	0	26	1	27
2012	1	28	1	30
2013	0	22	1	23
2014	4	30	3	37
2015	1	29	3	33
2016	2	33	2	37

Table 3.3.2
2016 Pedestrian Involved Collisions by
Facility Used and Severity

Facility	Property Damage Only	Injury	Fatality	Total
Marked X walk	0	15	1	16
In Roadway	2	11	1	14
Shoulder	0	3	0	3
Unmarked X walk	0	3	0	3
Sidewalk	0	1	0	1
Total	2	33	2	37

Table 3.3.3
Pedestrian Involved Collisions
By First Contributing Circumstance

Contributing Circumstance	2011	2012	2013	2014	2015	2016
Disregard Flagger - Officer	0	0	0	1	1	0
Did Not Grant ROW to Vehicle	0	0	0	0	0	1
Disregard Yield Sign – Flashing Yellow	0	0	0	0	0	1
Apparently Asleep	0	0	0	0	0	1
Fail to Yield Row to Pedestrian	13	10	3	9	8	8
None	9	13	7	11	5	12
Other	1	2	8	5	6	4
Over Centerline	0	0	0	1	0	0
Exceeding Reasonable Safe Speed	1	0	1	0	2	0
Inattention	1	1	3	4	4	4
Operating Defective Equipment	1	1	0	1	0	0
Disregard Stop and Go Light	1	0	0	0	0	0
Driver Distractions Outside Vehicle	0	0	0	0	0	1
Driver Not Distracted	0	0	0	2	1	1
Driver Operating Handheld Telecommunication	0	1	0	0	0	0
Under Influence of Drugs	0	0	0	0	0	0
Exceeding Stated Speed Limit	0	0	0	0	1	0
Improper Turn	0	2	1	1	1	0
On Wrong Side of Road	0	0	0	0	0	1
Unknown Driver Distraction	0	0	0	1	3	2
Under Influence of Alcohol	0	0	0	1	1	1
Total	27	30	23	37	33	37

Table 3.3.4
Age of Pedestrians Involved in Collisions

Age Range	2011	2012	2013	2014	2015	2016
Unknown	0	2	0	2	1	0
0-5	1	3	2	0	1	2
6-10	2	2	2	0	1	1
11-15	6	0	2	5	5	6
16-20	3	7	3	4	7	2
21-25	2	2	2	6	1	6
26-30	1	1	3	2	4	3
31-35	1	2	0	2	1	1
36-40	2	1	1	2	1	2
41-45	2	3	1	2	0	0
46-50	0	2	1	2	1	2
51-55	1	2	1	2	3	2
56-60	4	1	4	1	2	2
61-65	0	1	1	2	3	2
66-70	0	0	0	0	0	4
71-75	0	0	0	0	0	2
76-80	2	0	0	1	1	0
81-85	0	0	0	1	1	0
86+	0	1	0	2	0	0
Total	27	30	23	37	33	37

Table 3.3.5
Gender of Pedestrians Involved in Collisions

Year	Unknown	Female	Male	Total
2011	0	14	13	27
2012	0	16	14	30
2013	0	8	15	23
2014	1	14	22	37
2015	1	14	18	33
2016	0	18	19	37

3.4 Bicycle Involved Collisions

Table 3.4.1
Bicycle Involved Collisions by Severity

Year	Property Damage Only	Injury	Fatality	Total
2011	0	29	0	29
2012	2	18	1	21
2013	3	19	1	23
2014	1	15	0	16
2015	3	18	0	21
2016	1	15	2	18

Table 3.4.2
2016 Bicycle Involved Collisions by First Contributing Circumstance and Severity

First Contributing Circumstance	Property Damage Only	Injury	Fatality	Total
None	0	7	0	7
Inattention/Unknown Driver Distraction	0	3	2	5
Other	1	3	0	4
Fail to Yield ROW to Pedestrian	0	1	0	1
Exceeding Reasonable Safe Speed	0	1	0	1
Total	1	15	2	18

3.5 Motorcycle Involved Collisions

Table 3.5.1
Motorcycle Involved Collisions
By Severity

Year	Property Damage Only	Injury	Fatality	Total
2011	4	32	2	38
2012	7	37	6	50
2013	5	38	2	45
2014	5	37	2	44
2015	13	40	4	57
2016	5	36	3	44

Table 3.5.2
2016 Motorcycle Involved Collisions
By First Contributing Circumstance

First Contributing Circumstance	PDO	Injury	Fatality	Total
Inattention / Driver Distraction	1	11	1	13
Exceeding Stated Speed Limit Exceeding Reasonable Safe Speed	0	8	2	10
Follow Too Closely Improper Passing / Improper U-Turn	2	4	0	6
Other	1	4	0	5
None	0	3	0	3
Under the Influence of Drugs or Alcohol	0	2	0	2
Did Not Grant R/W to Vehicle (motorcycle <i>not</i> at fault)	0	2	0	2
Operating Defective Equipment	0	1	0	1
Disregard Stop Sign – Flashing Red	0	1	0	1
Improper Backing	1	0	0	1
Total	5	36	3	44

4.0 OTHER COLLISION INFORMATION

4.1 Estimated Economic Costs

Table 4.1.1
Estimated Economic Costs of Collision Activity

Severity	2016 Collisions	Estimated Economic Costs
Property Damage Only	1,340	\$14,922,600
Injury	687	\$55,080,000
Fatal	14	\$26,214,000
Total	2,041	\$96,216,600

The following estimated costs per collision are used in this calculation:

Property Damage Only (no injury observed)-\$11,400; Injury-\$90,000; Fatality-\$1,542,000 (National Safety Council, 2017)

4.2 Month, Day of Week, and Time of Day

Figure 4.2.1
2016 Collisions by Month

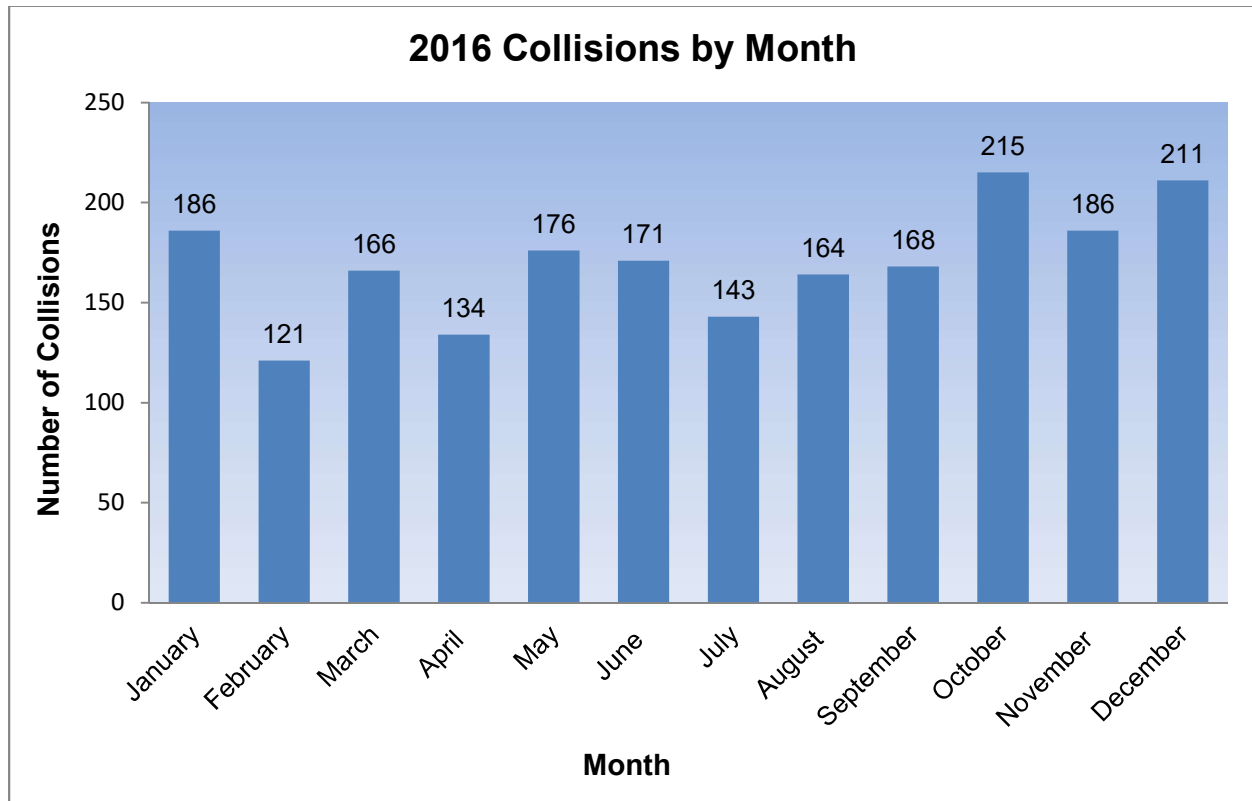


Figure 4.2.2
2016 Collisions by Day of Week

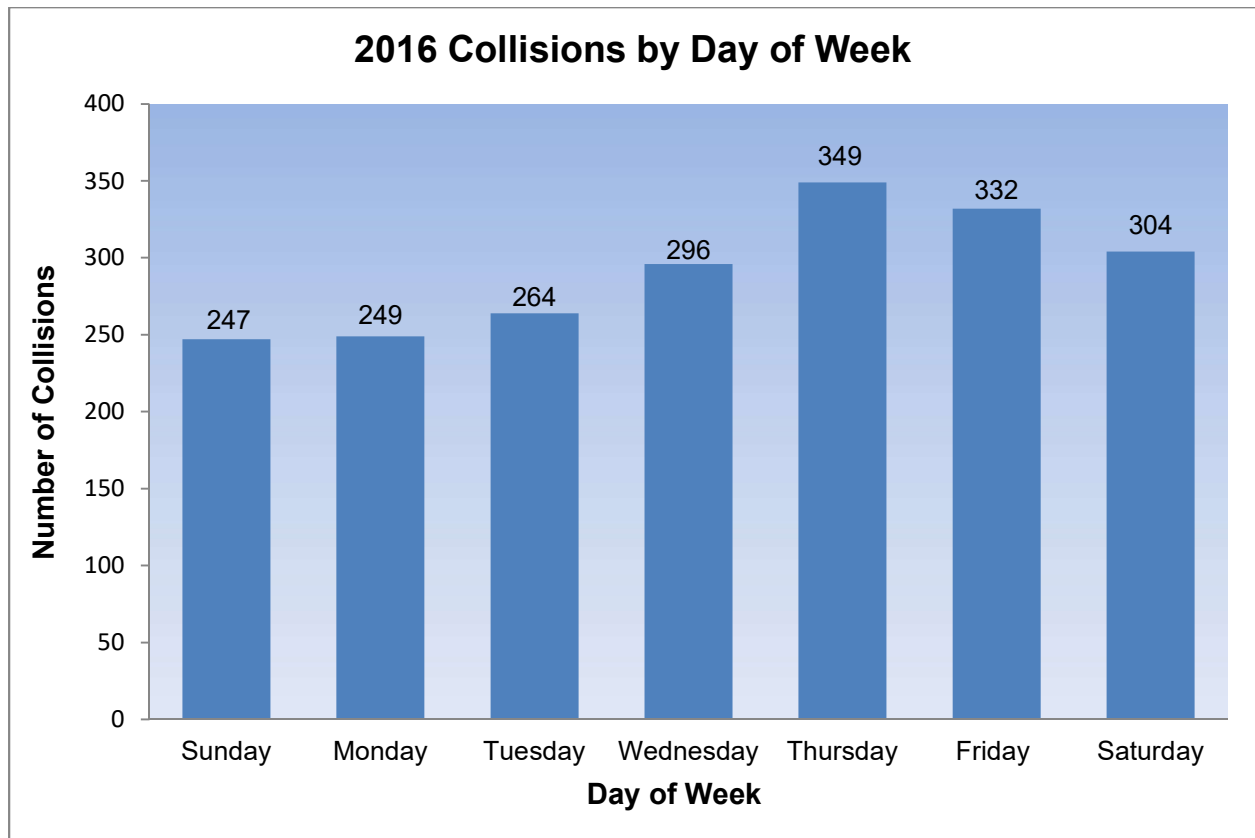


Figure 4.2.3
2016 Weekday Collisions
By Time of Day

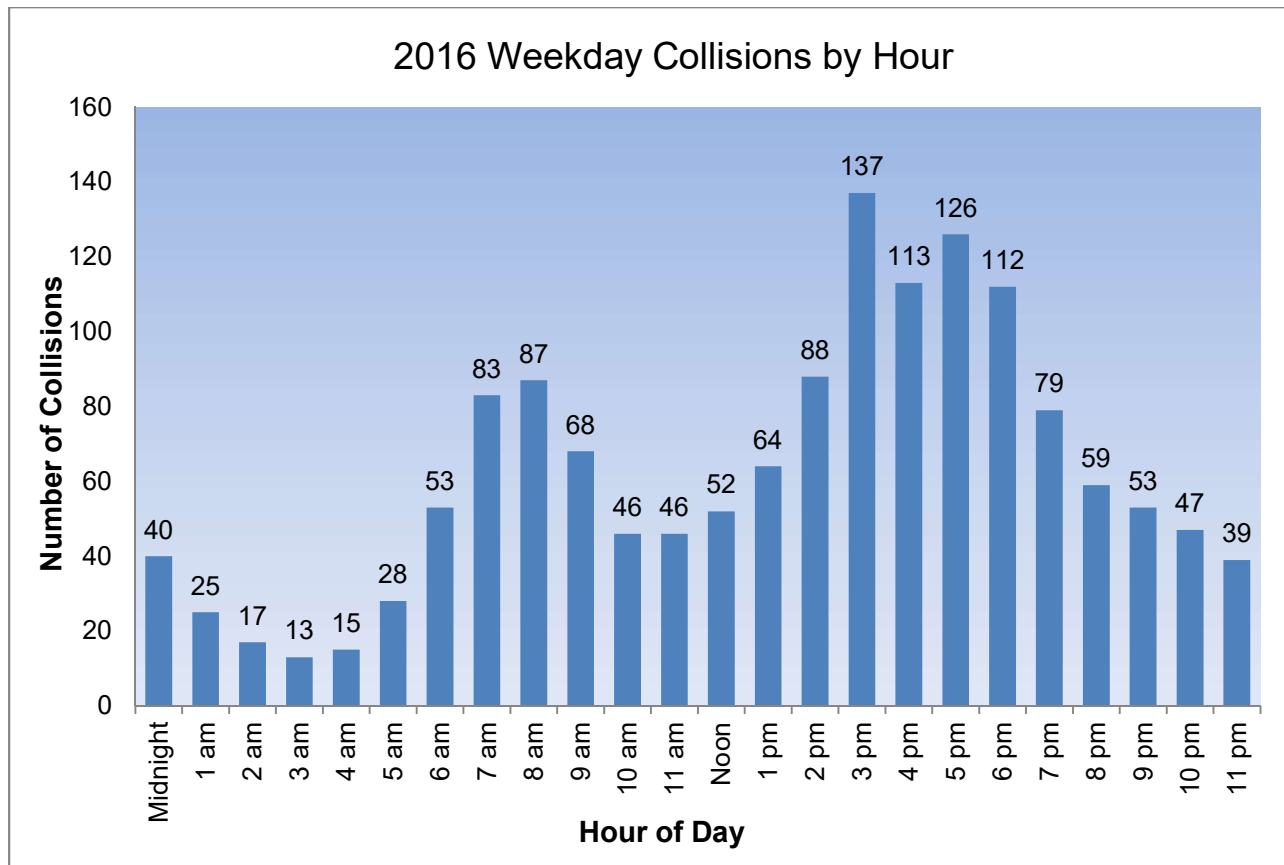
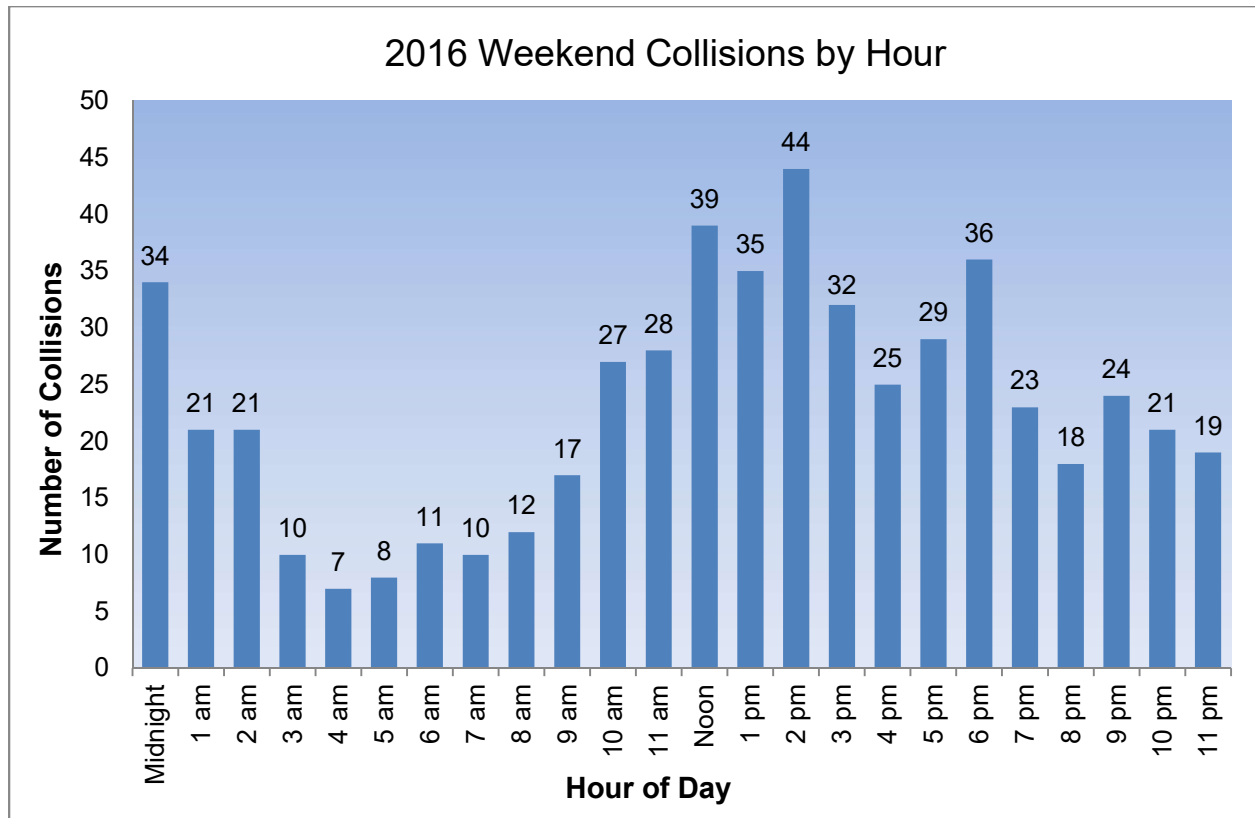
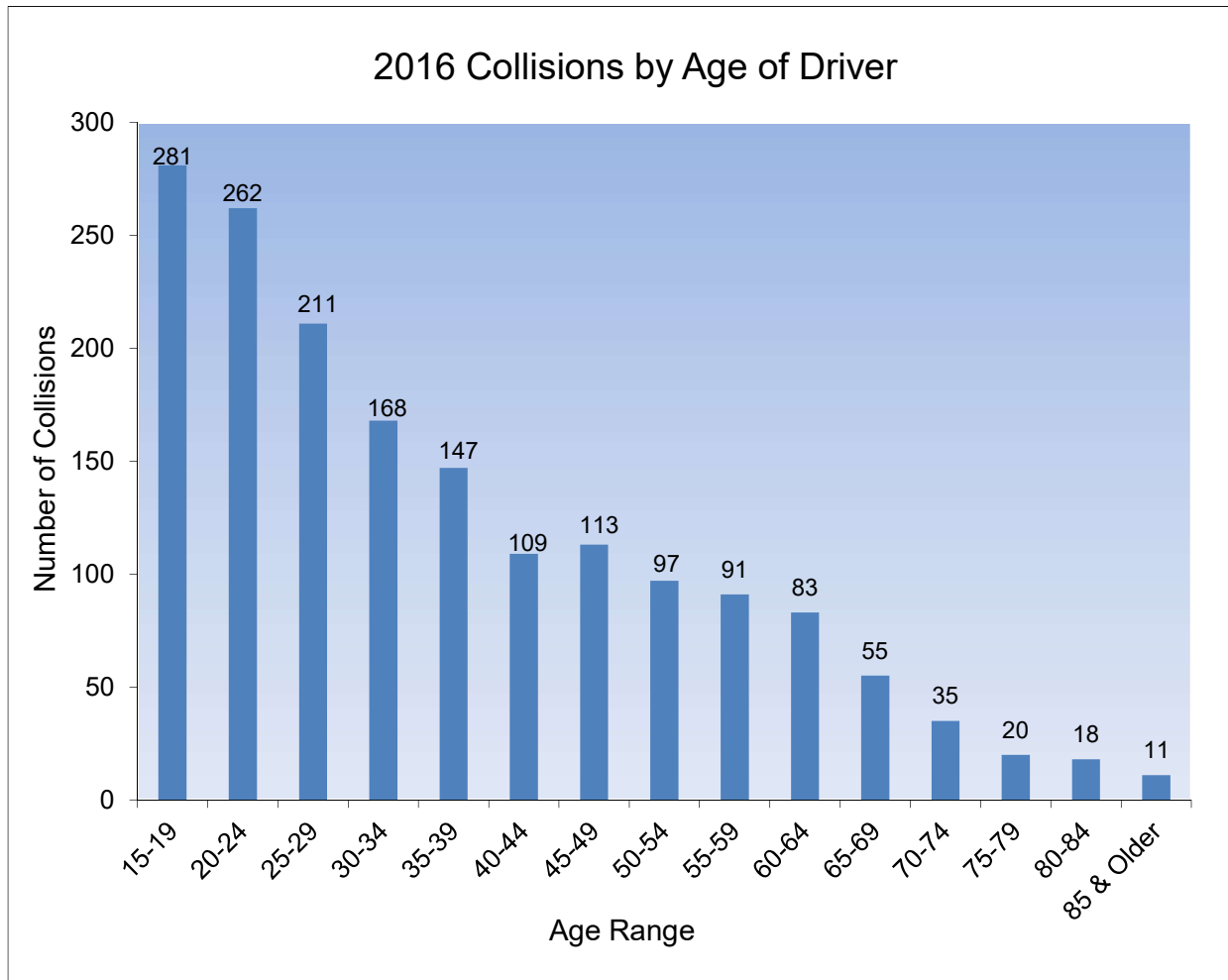


Figure 4.2.4
2016 Weekend Collisions
By Time of Day



4.3 Demographics

Figure 4.3.1
2016 Collisions by Age of Driver



Note: 340 collision reports did not disclose driver age information

4.4 Contributing Circumstances

Table 4.4.1
First Contributing Circumstance
For Drivers between ages 15 to 25 for 2016

1st Contributing Circumstance	Age 15	Age 16	Age 17	Age 18	Age 19	Age 20	Age 21	Age 22	Age 23	Age 24	Age 25	Total
Inattention/Driver Distraction	2	13	32	14	19	21	12	12	12	16	7	160
Excessive Speed	0	15	13	12	18	11	12	5	7	10	4	107
Did Not Grant ROW to Vehicle	1	7	11	6	5	5	2	4	4	3	6	54
Other	0	4	6	6	10	3	5	3	1	6	0	44
Under Influence of Alcohol/Drugs	0	0	1	4	4	0	5	9	9	6	4	42
None	0	2	4	3	2	4	6	1	2	2	6	32
Follow Too Closely	0	3	5	4	1	1	2	4	2	1	4	27
Driver Not Distracted	2	3	0	2	3	2	1	0	1	1	2	17
Operating Defective Equipment	0	0	3	3	3	0	3	2	1	1	0	16
Disregard Stop/Go Light/Flashing Red/Flashing Yellow/Yield Sign	0	1	0	2	1	2	2	1	3	0	3	15
Improper Turn	0	1	3	1	5	1	1	1	0	2	0	15
Apparently Asleep/Fatigued	0	0	3	1	2	1	0	1	2	2	2	14
Improper Passing	0	0	1	1	0	1	2	0	0	0	1	6
Over Center Line	0	1	0	1	0	0	0	0	0	2	0	4
Operating Handheld Telecommunications Device	0	0	1	0	0	1	0	0	0	0	1	3
Improper Backing	0	0	0	1	1	0	0	0	0	0	1	3
On Wrong Side of Road	0	1	0	0	0	1	0	0	1	0	0	3
Fail to Yield Row to Pedestrian	0	0	0	0	0	0	0	1	0	0	1	2
Improper U-Turn	0	0	0	1	0	0	0	0	0	1	0	2
Failing to Signal / Improper Signal	0	1	0	0	0	0	0	0	0	1	0	2
Totals	5	52	83	62	74	54	53	44	45	54	42	568

Table 4.4.2
2016 Collisions by First Contributing Circumstance

First Contributing Circumstance	Fatality	Injury	PDO	Total
Inattention / Driver Distraction	1	166	340	507
Other	1	60	264	325
Excessive Speed	3	87	140	230
None	1	58	130	189
Did Not Grant ROW to Vehicle	1	64	108	173
Under Influence of Alcohol/Drugs	1	51	74	126
Follow Too Closely	0	41	66	107
Apparently Asleep/Fatigued/Ill	0	32	31	63
Disregard Stop/Go Light/Stop Sign - Flashing Red/Yield Sign - Flashing Yellow	1	25	22	48
Driver Not Distracted	0	12	36	48
Improper Turn	0	18	27	45
Operating Defective Equipment	0	16	27	43
Over Center Line	2	8	12	22
Not Stated	2	7	12	21
Improper Backing	0	6	14	20
Improper U-Turn	0	7	13	20
Improper Passing	1	6	10	17
Driver Interacting with Passengers, Animals	0	7	5	12
On Wrong Side Of Road	0	5	6	11
Fail to Yield Row to Pedestrian	0	9	0	9
Operating Handheld Telecommunications Device / Other Electronic Device	0	2	3	5
Improper Signal / Failing to Signal	0	0	2	2
Total	14	687	1,340	2,041

4.5 Impairment

Table 4.5.1
Collisions Involving
Drivers Under the Influence (DUI)

Year	Fatal	% of all Fatalities	Injury	% of All Injury	Property Damage Only	% of all PDO	Total DUI Collisions	% of all Collisions
2011	3	37.5%	76	14.1%	68	7.1%	147	9.8%
2012	8	66.7%	71	13.1%	77	7.6%	156	9.9%
2013	2	16.7%	65	11.5%	81	7.2%	148	8.7%
2014	3	27.3%	62	11.0%	82	6.9%	148	8.4%
2015	4	23.5%	63	10.0%	72	5.5%	139	7.1%
2016	1	7.1%	67	9.8%	97	7.2%	165	8.1%

Figure 4.5.1
2016 Weekend Collisions for
Drivers under the Influence
By Time of Day

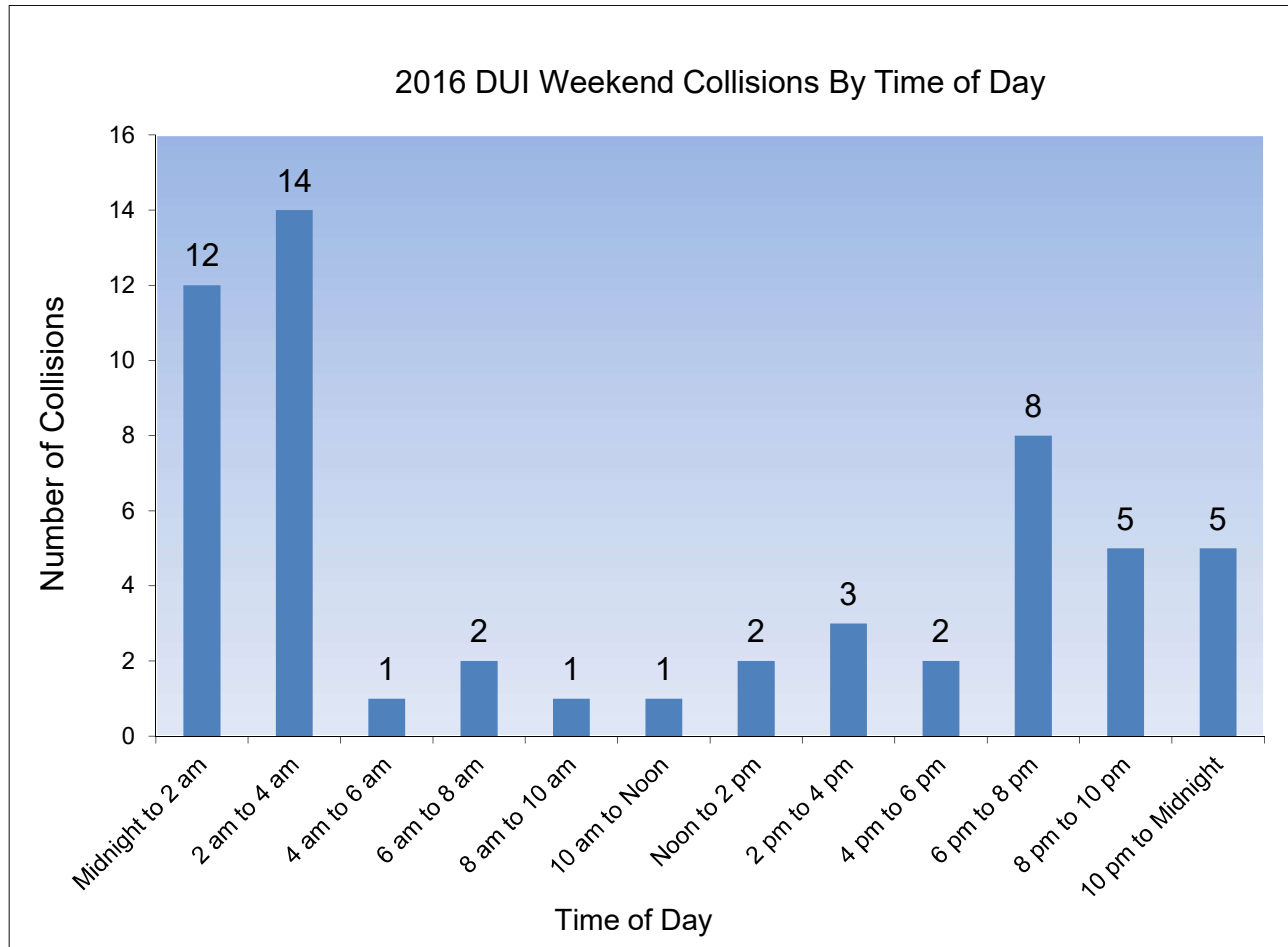
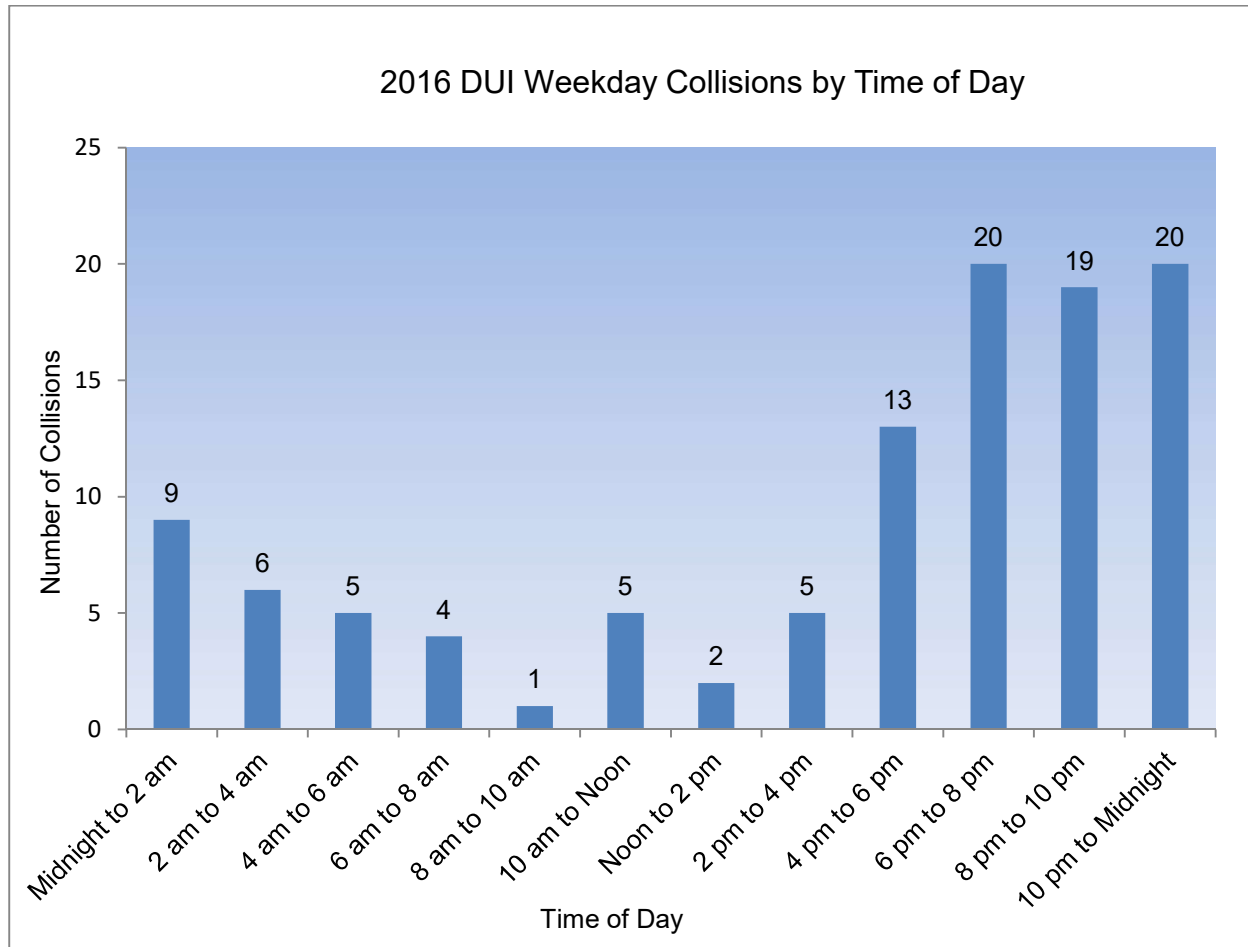


Figure 4.5.2
2016 Weekday Collisions for
Drivers under the Influence
By Time of Day



4.6 Speed

Table 4.6.1
Collisions involving Speeding as First Contributing Circumstance

Year	Fatal	% of all Fatal Collisions	Injury	% of all Injury Collisions	PDO	% of all Property Damage Only Collisions	Total	% of all Collisions
2011	5	62%	127	24%	221	23%	353	24%
2012	4	33%	120	22%	201	20%	325	20%
2013	4	36%	86	15%	152	14%	242	14%
2014	2	18%	85	15%	130	11%	217	12%
2015	4	24%	84	14%	160	12%	248	13%
2016	3	21%	87	13%	140	10%	230	11%

4.7 Lighting Conditions

Table 4.7.1
2016 Collisions By
Lighting Condition

Lighting Condition	Property Damage Only	Injury	Fatal	Total
Dark-No Street Lights	216	95	2	313
Dark-Street Lights Off	20	1	0	21
Dark-Street Lights On	229	111	2	342
Dawn	35	14	0	49
Daylight	767	438	10	1,215
Dusk	44	27	0	71
Not Stated	29	1	0	30
Totals	1,340	687	14	2,041

APPENDIXES

Appendix A – Data Sources

Collision Data

Collision information is from the Washington State Department of Transportation's (WSDOT) Crash Data and Reporting Branch of the Transportation Data, GIS & Modeling Office (TDGMO). The Crash Data and Reporting Branch is responsible for updating and maintaining all electronic collision records in Washington State. Vehicular collisions which sustain more than \$1,000 in property damage, or involve an injury or a death, are required to be reported to the Washington State Patrol by a Police Traffic Collision Report. The Washington State Patrol provides hard copies of the Police Traffic Collision Report to WSDOT, where they are converted into an electronic format.

Injuries are classified based on conditions present at the time of the collision except in the case of fatalities. An injury resulting in a death, within 30 days of the collision, is classified as a fatal injury.

Population Data and King County Land Area

King County's population figure is from the Washington State Office of Financial Management. King County's land area figure is from King County's Office of Policy and Regional Planning.

King County Maintained Roadway Figures

King County's maintained roadway mile figures are from King County Road Services Strategic Business and Operations Section (SBOS).

Traffic Count Data

The traffic count information used in this report was provided by King County's Road and Traffic Engineering Unit.

Estimated Cost of Collisions

The economic costs of collisions values used in this report are from the National Safety Council.

Appendix B - Formulas used in Report

Collision Rate per Million Vehicle Miles Traveled

$R = (\text{Collisions} * 10^6) / (\text{AADT} * 365 * L)$, where

Rate = Accident rate for collisions per million vehicle mile (acc/mvm)

Collisions= Total number of collisions in one year period

AADT = Annual Average Daily Traffic volume, and

L = Length of study section in miles

Collision Rate per 100,000 Population

Rate = Collisions*100,000/Unincorporated Population

Collisions = Total number of collisions in a one year period

Economic Cost of Collisions

The economic cost of collisions was calculated as follows:

Cost = \$9,300*PDO + \$80,700*I + \$1,500,000*F, where

PDO – Total Number of Property Damage Collisions (\$9, 300/collision)

I – Total Number of Injury Collisions (\$80,700/collision)

F – Total Number of Fatal Collisions (\$1,500,000/collision)