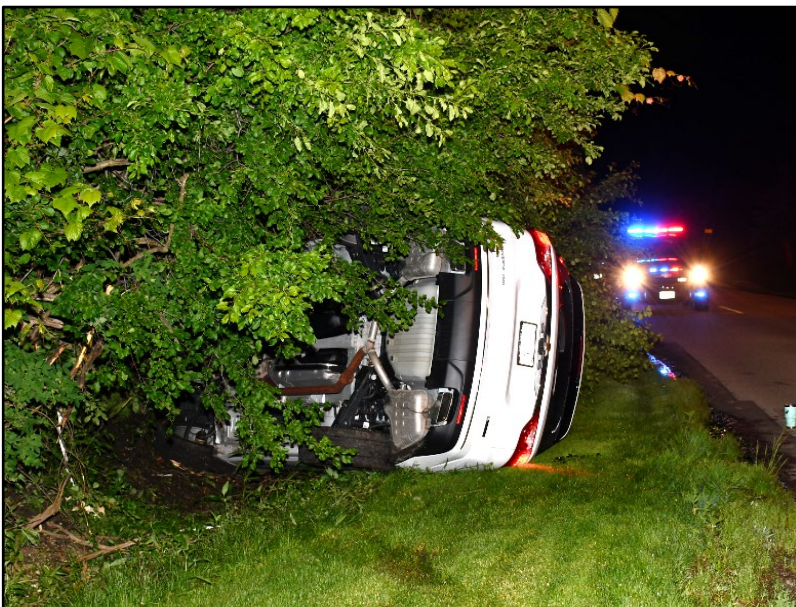




Annual Traffic Crash Analysis - 2019



The Lake Forest Police Department *Annual Traffic Crash Analysis-2019* provides yearly and comparative citywide crash statistics coupled with charts, maps and graphs. A separate section catalogues in-depth data on the top five crash intersections within the City.

Cover Photo's: 2019 Lake Forest injury crashes

Lake Forest Police Department

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I. INTRODUCTION AND OVERVIEW

Under the direction of Police Chief Karl Walldorf, a comprehensive analysis was conducted of all traffic crashes occurring in Lake Forest during 2019. An internal database for crash reports was created then statistically examined to extract informational and actionable data. This report seeks to inform and aid patrol operation strategies, as well as provide an overview of crash events for community stakeholders, police, city and elected officials. Comparisons between 2018 and 2019 crash data will be interspersed throughout the analysis.

A two-level analysis first examines all crash incidents citywide for overarching patterns and predominant events. This initial citywide review includes analyses by:

- Total crashes
- Month of occurrence
- Quarter of year
- Patrol Beat
- Day of week
- Hour of day
- Patrol shift
- Collision type and injury
- Contributory cause

A second more detailed analysis identifies our most active intersections, with a two-year comparative top ten-intersection ranking and a detailed 2019 *Top Five Crash Intersections* (TFCI) review. The TFCI analysis provides intersection photos, traffic volumes, injury types, crash rates and other pertinent data.

II. COMPARATIVE CITYWIDE CRASH DATA: 2018 & 2019

A. Total Crashes

Annual crash data, contained within Table 1 on the next page, produced 772 total crashes during 2019, revealing a 14.7% increase over 2018's 673 crashes. The table data provides insight into the higher totals, depicting 122 more roadway crashes for a 23.2% increase over 2018. The slight offset occurs due to a 15.5% decrease in private property crashes across the two years.

Table 1's legend provides a description of the five injury type codes mandated by the Illinois Department of Transportation (IDOT), for officer's use in completing crash reports. Modest definitions changes to the five categories were made by the State in 2019, however the category coding remained reasonably comparable across the two years.

There were two fatal crashes during 2019 with none in 2018. Serious injury crashes, those coded as Type A injuries, increased from 3 to 7 across the two years of data. Intoxicated driving crashes (DUI), increased by 12 events from 7 to 19. One of the 2019 DUI crashes resulted in a

fatality. The vehicle versus pedestrian, bicyclist or train crash segments revealed nine events for each year, with numerical variations within each segment. One of the pedestrian crashes resulted in a fatality during 2019. Anecdotal evidence suggests a low 2019 unemployment rate resulted in significantly more traffic and might be responsible for a portion of the uptick in crashes.

TABLE 1.

COMPARATIVE 2018–2019 CRASH TOTALS & SEGMENTS	2018	2019	±%
TOTAL CRASHES	673	772	+14.7%
Roadway	525	647	+23.2%
Private Property	148	125	-15.5%
FATALITY & INJURY SEGMENTS			
Fatality (K)	0	2	n/a
Serious injury crashes (A)	3	7	+133.3%
All Injury crashes (A, B, C)	75	94	+25.3%
Roadway injury crashes (A, B, C)	73	93	+27.3%
Private Property injury crashes (A, B, C)	2	1	-50.0%
Non-Injury/Property damage only crashes (O)	598	676	+13.0%
DUI / HIT & RUN SEGMENTS			
DUI Crashes	7	19	+171.4%
Roadway Hit & Run	27	26	-3.7%
Private Property Hit & Run	25	25	0.0%
PEDESTRIAN / BICYCLIST / TRAIN SEGMENTS			
Vehicle v. Pedestrian	5	1	-80.0%
Vehicle v. Bicyclist	4	7	+75.0%
Vehicle v. Train	0	1	n/a
/	K = Fatality (killed) A = Suspected Serious injury		
IDOT INJURY TYPE CODES (K, A, B, C, O)	B = Suspected Minor injury		
\	C = Possible injury O = No apparent injury		

B. Crashes by Month

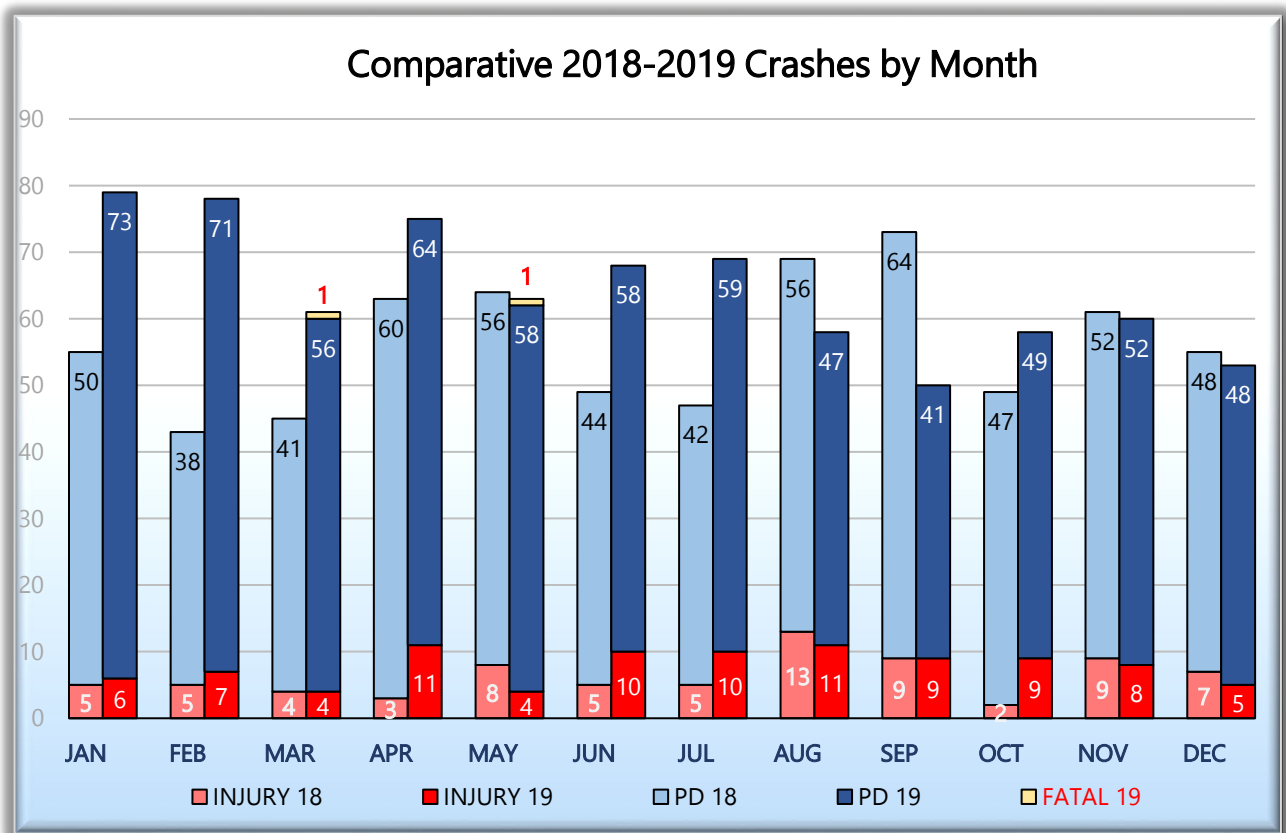
The data in Chart 1 provides comparative totals for both years showing the monthly incidence of injury crashes (Type A, B, C) to property damage crashes (Type O). The average number of monthly crashes for 2018 totaled 56.1, while 2019 demonstrated 64.3 events.

The greatest number of injury crashes within a month was 13, which occurred during August 2018. This was the only month in 2018 to reach double-digit injuries, while 2019 revealed four months with double-digit injury crash totals: April, June, July and August. Reviewing non-injury, property damage only (PD) crashes reveals January 2019 as the month with the greatest

number of crashes at 73, followed closely by February 2019 at 71. September 2018 provided the largest number of property damage crashes during 2018 with 64 events.

The largest variance in crashes by month over the two years was February which reported an 81.3% increase from 2018 to 2019 with a difference of 35 crashes, increasing from 38 to 71. Seven months in 2019 recorded more crashes than their 2018 counterparts: January, February, March, April, June, July and October.

CHART 1.

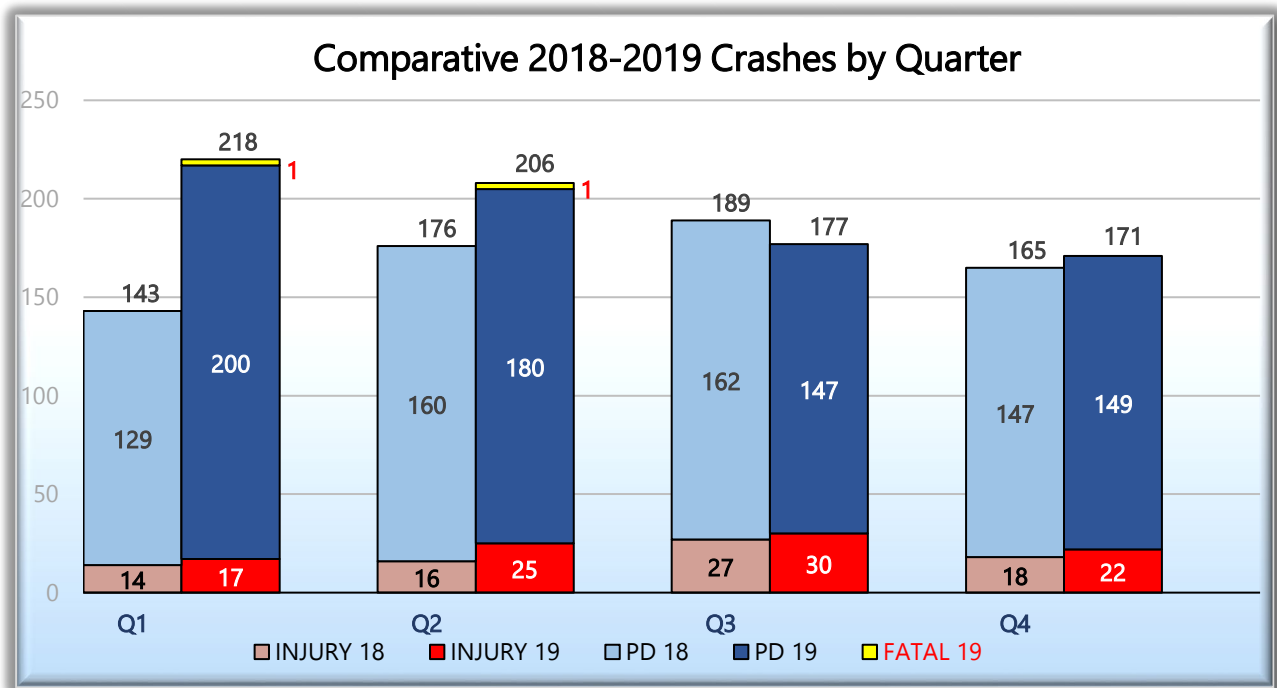


C. Crashes by Quarter

Crashes by quarter across the two years (Chart 2) indicate the highest number of crashes took place during Q1 of 2019 at 218, just ahead of Q2 2019 with 206. The largest comparative increase, at 52.4%, occurred during Q1 with 75 more crashes in 2019 than 2018. Three quarters in 2019 displayed an increase over 2018 quarterly totals, while only Q3 2019 showed a decrease of 12 crashes compared to 2018.

Q1 2019 displayed the most property damage crashes of the eight quarters, with 200 events, while Q1 2018 revealed the least at 129. Q1 2018 provided the fewest number of injury crashes at 14, with the high occurring during Q3 2019 at 30 events.

CHART 2.



D. Crashes by Patrol Beat

Data on the number and types of crashes per patrol beat informs officers working rotating patrol beats, of overall activity levels. The following map (Map 1) provides a comparative look at crash levels within the four designated patrol beats over the past two years. Table 2 provides a more in-depth look at the types of crashes occurring during 2019 within each patrol beat.

The comparative map overview reveals an increase of 99 crashes during 2019 over 2018, with two beats showing increases and two showing decreases. Beat 301 experienced 12 fewer crashes with a modest 7.8% decrease, while Beat 303 showed an even smaller decrease of 4 crashes and a 4.5% decline. The increases were more statistically significant, with Beat 304 showing an uptick of 37 crashes providing a 25% increase and Beat 305 increasing by 78 events with a 27.6% growth.

Beat 305 exhibited the highest crash volumes for both years, and historically does, due to Route 60, Route 41 and Route 43 (Waukegan Road), all traversing this beat.

MAP 1.

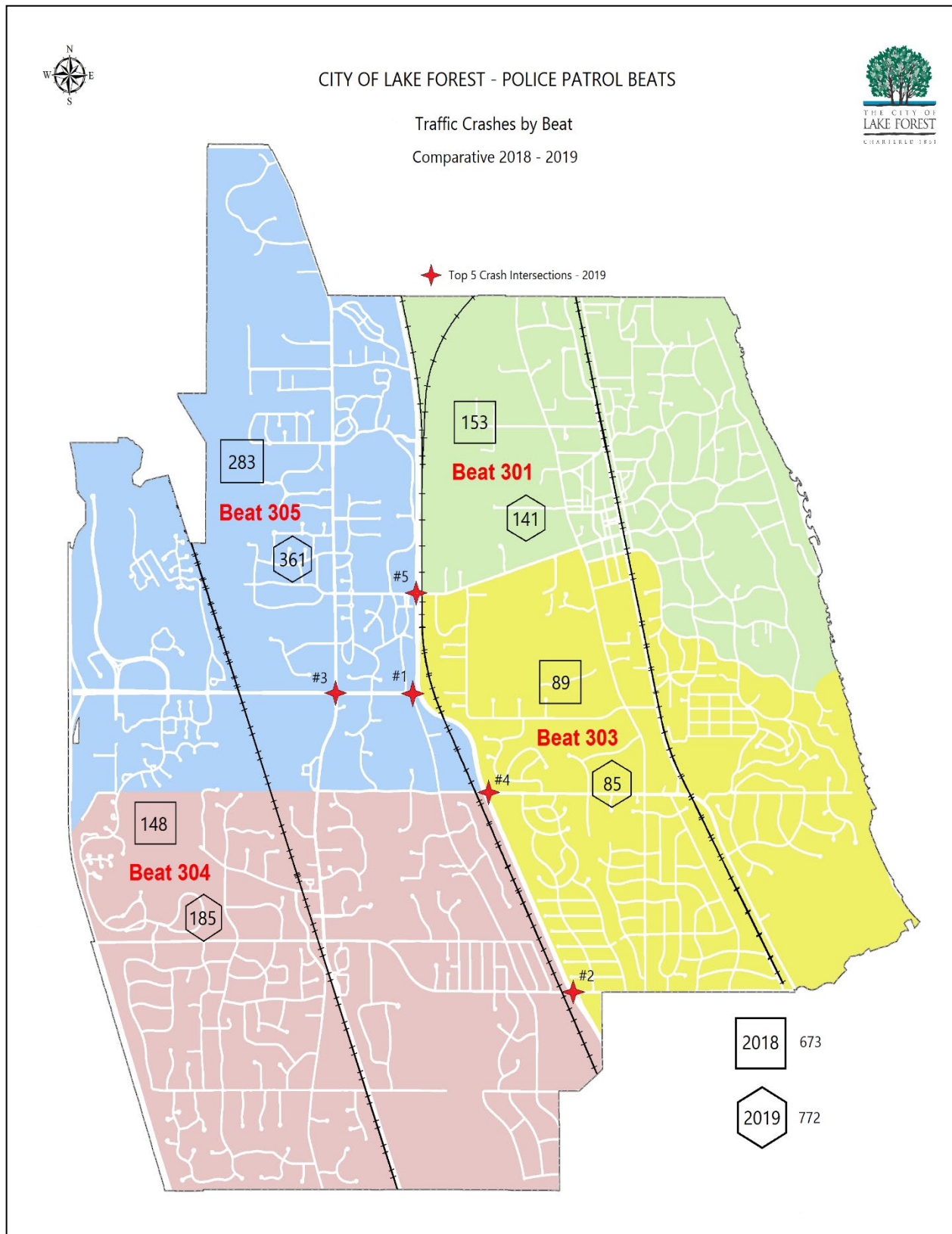


TABLE 2.

Data in Table 2 provides an in-depth review of the types of crashes occurring within each beat during 2019, with beat and citywide percentages.

The largest number of crashes occurred in Beat 305 which accounted for almost 47% of all 2019 crashes. This was higher than 2018 when it also came in first, but at 42%.

Characterizing injury (Types A, B, C) and fatal crashes on roadways within each beat show Beat 304 exhibited the highest percentage of injury crashes. With 157 roadway crashes in this beat, there were two fatalities and an overall injury/fatality percent of 16.6%. Beat 303 with the lowest number of roadway crashes (67), provided the second highest percentage of injury crashes at 16.4%. Beat 301 had the lowest percentage of injuries at 12.4%

TOTAL CRASHES: BEAT / INJURY / PERCENT - 2019				
BEAT/LOC	INJURY CLASS	CRASH TOTALS	BEAT %	TOTAL %
301		141	100.0%	18.3%
ROAD	A	1	0.7%	0.1%
	B	7	5.0%	0.9%
	C	5	3.5%	0.6%
	O	92	65.2%	11.9%
PRIV	B	1	0.7%	0.1%
	O	35	24.8%	4.5%
303		85	100.0%	11.0%
ROAD	A	2	2.4%	0.3%
	B	6	7.1%	0.8%
	C	3	3.5%	0.4%
	O	56	65.9%	7.3%
PRIV	O	18	21.2%	2.3%
304		185	100.0%	24.0%
ROAD	K	2	1.1%	0.3%
	B	11	5.9%	1.4%
	C	13	7.0%	1.7%
	O	131	70.8%	17.0%
PRIV	O	28	15.1%	3.6%
305		361	100.0%	46.8%
ROAD	A	4	1.1%	0.5%
	B	23	6.4%	3.0%
	C	18	5.0%	2.3%
	O	273	75.6%	35.4%
PRIV	O	43	11.9%	5.6%
Grand Total		772		100.0%

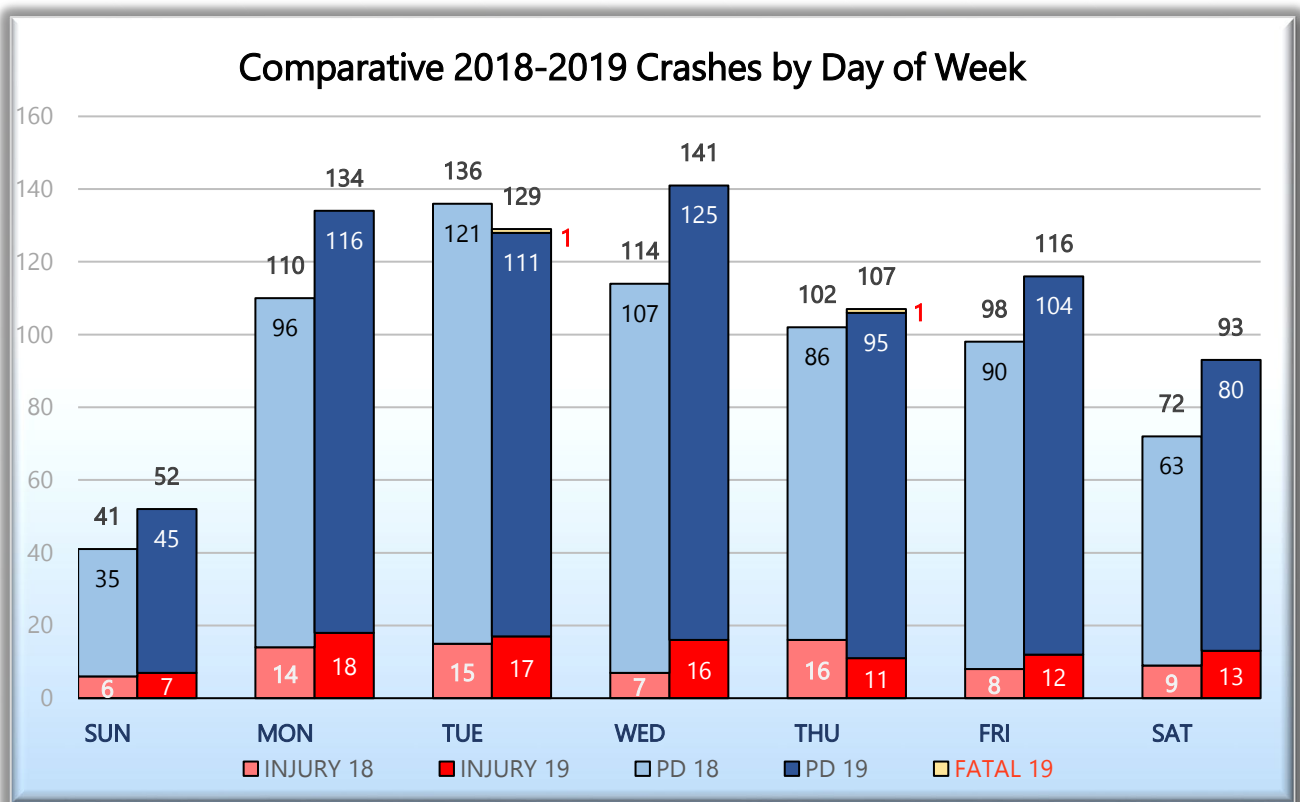
Reviewing serious injury Type A crashes, we see seven total across all beats; an increase of four over 2018. The two fatalities took place in Beat 304. One occurred northbound on Route 41 at Westleigh when a DUI driver lost control of his vehicle striking a tree, killing one of the passengers.

The second fatal crash took place on southbound Route 41 near Old Elm, when a construction truck struck and killed a worker while backing up in a work zone.

E. Crashes by Day of Week

It is no surprise that weekdays provide the highest number of total crashes, as revealed in Chart 3. Looking at annual totals by day of week during 2019, there were an average of 125.4 crashes per weekday and 72.5 per weekend day. The 2018 data showed lower numbers, averaging 112.0 weekday and 56.5 weekend crashes per day.

CHART 3.

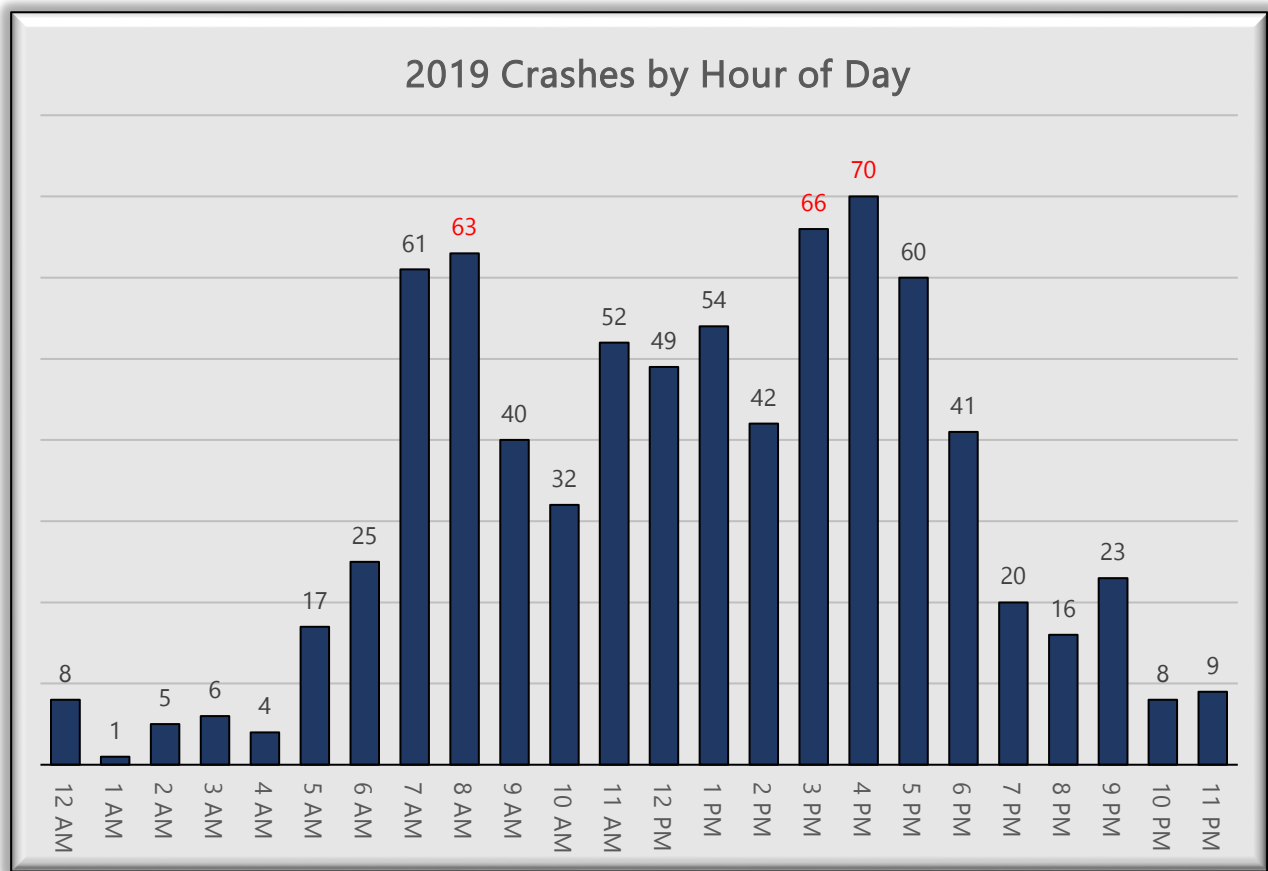


During 2019, Wednesdays with 18.2% of all crashes was the busiest day of the week, while Tuesdays came in first at 20.2% during 2018. Sundays at the low end for both years, provided 6.7% of the 2019 totals and 6.0% of all 2018 crashes. During 2019, Saturdays exhibited the highest percentage of injury crashes at 13.9% relative to total crashes (93), while Thursdays in 2018 provided 15.6% relative to total crashes (102).

F. Crashes by Hour of Day

It is not a surprise that morning and evening rush hour times exhibit the highest crash numbers; this was the case for both 2018 and 2019. Not coincidentally, both years displayed the same three hourly time slots as the busiest top three, but in differing order. For 2019 the three timeframes, in order of most busy to less busy, were 4pm, 3pm and 8am. The 2018 ranges, in order, were 3pm, 4pm and 8am.

CHART 4.



While each hour within a 24-hour period accounts for 4.16% of the entire day, the combined top three crash hours for 2019 provided 25.7% of the total 772 crashes with 199 events.

During 2019, the overnight timeframe of 10:00pm to 4:59am provides only single digit crash events each hour, for an annual total of 41.

G. Crashes by Patrol Shift of Occurrence

The patrol division is staffed 24 hours per day, every day of the year. Patrol shifts are 8.25 hours in length with three shifts each day. Dayshift runs 6:45am to 3pm, with afternoon shift covering 2:45pm to 11pm and midnight shift handling 10:45pm to 7am. The overlap between shifts allows roll call informational briefings to be conducted while street coverage is maintained.

Table 3 provides a quick comparison of crash event levels among the three shifts, across the last two years. The order of greatest number of crashes (dayshift) to least crash activity (midnight shift) remained the same across both years.

All three shifts in 2019 saw an uptick in crash levels. Day shift accounted for the highest percentage increase at 18.7% over 2018 totals.

TABLE 3.	<i>Patrol Shifts</i>	<i>Times</i>	<i>Number of Crashes</i>	<i>Percentage of Crashes</i>
2018 (673)	Midnight shift	22:45 – 07:00	70	10.4%
	Day shift	06:45 – 15:00	331	49.2%
	Afternoon shift	14:45 – 23:00	272	40.4%
2019 (772)	Midnight shift	22:45 – 07:00	75	9.7%
	Day shift	06:45 – 15:00	393	50.9%
	Afternoon shift	14:45 – 23:00	304	39.4%

Reviewing serious injury (A) and fatal (K) crashes during 2019 reveals four of the seven serious injury crashes occurred on day shift, two on midnights and one on afternoon shift. Both fatal crashes took place on midnight shift, with the DUI crash taking place at 3:56am and the construction work zone crash occurring at 12:01am.

H. Crashes by Collision Type and Injury Code

During 2019, 18 of the 18 Illinois Department of Transportation Collision Type codes were utilized to describe crash incidents in Lake Forest. The State list includes four different types of rear end collisions; however, this report places all four types under the general heading of rear end (all types) crashes. The purpose of the 18 IDOT collision type codes is to identify what type of event caused the initial damage or injury in a crash. This code is more easily understood as a factor involving contact by the vehicle or conveyance.

Table 4 reveals *rear end (all types)* crashes (352) as the most prolific collision type in the city, accounting for 45.6% of all crashes. This depicts an increase of 39.7% over 2018's total of 252 rear end crashes. Annual data from the National Highway Traffic Safety Administration (NHTSA) indicates approximately 29-32% of all collisions nationwide are rear end crashes.

TABLE 4. COLLISION TYPE & INJURY CODE 2019

COLLISION TYPE	INJURY TYPE CODE					TOTAL
	K	A	B	C	O	
Angle		1	5	2	63	71
Animal					4	4
Fixed Object	1	1	7	6	66	81
Head on		1	1		6	8
Other Non-Collision			2		4	6
Other Object				1	7	8
Overtaken			2		2	4
Parked Motor Veh				1	62	63
Pedalcyclist			5			5
Pedestrian	1					1
Rear End (all types)		3	13	23	296	352
Sideswipe opp. dir.		1	1	1	8	11
Sideswipe same dir.			2	2	80	84
Train				1		1
Turning			10	2	61	73
GRAND TOTAL	2	7	48	39	676	772

The two next highest 2019 collision types were produced by *sideswipe same direction* (84) and *fixed object* (81) crashes. The combined top three collision types accounted for 66.9% of all crashes during 2019. Looking at 2018 data, the top three were; *rear end* (252), *angle* (98) and *parked motor vehicle* (72) collisions, accounting for 62.7% of all crashes.

The two 2019 fatalities were coded *fixed object* due to a tree being struck in the DUI crash and *pedestrian* as a construction truck backed over a road worker. The seven Type A serious injury crashes were: *angle*, *fixed object*, *head on*, *rear end* and *sideswipe opposite direction* collisions. The top three collision types were responsible for 58 of the 94 injury crashes reported (61.7%).

I. Crashes by Contributory Cause

The Contributory Cause code table provided by IDOT identifies which element was most significant in causing the crash as determined by officer investigation, driver and witness statements and physical evidence. This code generally describes a factor involving driver actions or issues faced.

During 2019 the top three collisions types were; *failure to reduce speed to avoid a crash* (228), *improper backing* (91) and *failure to yield the right-of-way* (75). These three causes combined accounted for 51% of crashes citywide.

Looking at 2018 crashes, the top three collision types were the same three causes, in the same order. They accounted for 49.5% of crashes citywide.

Outside of the top three, none of the other contributory causes, for either year, reached double-digit percentages. *Improper lane use* came in fourth for both years, while the fifth place spot in 2019 was *weather* as opposed to 2018's *following too closely*, when the *unable to determine* code was removed from consideration.

TABLE 5. CONTRIBUTORY CAUSES 2019

Contributory Cause	Number	Percent
Animal	4	0.5%
Cellphone use-not texting	4	0.5%
Disregard other traf signs	5	0.6%
Disregard road markings	2	0.3%
Disregard stop sign	6	0.8%
Disregard traffic signals	23	3.0%
Distraction-inside vehicle	8	1.0%
Distraction-outside vehicle	4	0.5%
Driver skills/knowledge/ability	32	4.1%
Driving wrong side/way	1	0.1%
DUI-alcohol/drugs	17	2.2%
Equipment-veh condition	7	0.9%
Evasive act-due to animal, etc	4	0.5%
Fail reduce speed to avoid crash	228	29.5%
Fail yield right of way	75	9.7%
Follow too closely	36	4.7%
HBD (no DUI arrest)	1	0.1%
Improper backing	91	11.8%
Improper lane use	69	8.9%
Improper passing	12	1.6%
Improper turn-no signal	26	3.4%
Not applicable	10	1.3%
Operate veh-reckless,careless	7	0.9%
Physical condition of driver	2	0.3%
Related to bus stop	1	0.1%
Road construction/maintenance	3	0.4%
Road engineering/defects	11	1.4%
Unable to determine	35	4.5%
Vision obscured-signs,limbs,etc	5	0.6%
Weather	43	5.6%
Grand Total	772	100.0%

III. TOP CRASH LOCATIONS

A. Overview

Traffic data provides a plethora of detail for analysis and discussion, but actionable data is highly valuable to the four E's of traffic safety: education, engineering, enforcement and EMS. Knowledge of roadway intersection events provides law enforcement, the motoring public and roadway engineers the opportunity to positively affect outcomes.

Identifying the top ten crash hotspots and providing the ranking changes across two years of data allows officers to focus attention on areas in need of traffic calming and enforcement. Looking more in-depth at the data for the top five crash intersections (TFCI) provides more specific direction for interdiction efforts.

B. Comparative Top Ten Crash Intersections: 2018 & 2019

Table 6 provides a review and comparison of the top ten crash locations for both 2018 and 2019, ranked high-to-low by total number of crashes (Crash TOTAL column). The next column (All Injury Crash) provides the number of total crashes that are any type injury or fatal crashes (Types K, A, B, C). The number of serious injury crashes, those listed as Type K for fatal and Type A for serious, are listed in the last column. The specific count of fatal injury crashes is denoted in the column by a superscript ^(#) numeric and is already included in the total number.

TABLE 6. COMPARATIVE TOP TEN INTERSECTIONS: 2018-2019

2018 INTERSECTION	Crash TOTAL	All Inj. Crash	Serious Inj. ^{K-A}	RANK	2019 INTERSECTION	Crash TOTAL	All Inj. Crash	Serious Inj. ^{K-A}
RT 41 / RT 60	57	4	0	1	RT 41 / RT 60	85	9	1
RT 41 / Westleigh	46	7	0	2	RT 41 / Old Elm	68	12	1 ¹
RT 41 / Old Elm	43	8	1	3	RT 60 / RT 43	46	9	1
RT 60 / RT 43	29	8	0	4	RT 41 / Westleigh	40	8	1 ¹
RT 41 / Deerpath	26	3	0	5	RT 41 / Deerpath	29	6	1
RT 43 / Everett	17	3	0	6	RT 43 / Westleigh	27	1	0
RT 60 / I-94	16	1	0	7	RT 60 / Field Dr.	22	2	0
Deerpath / Western	13	1	0	8	RT 43 / Deerpath	16	1	0
RT 43 / Deerpath	11	0	0	9	RT 43 / Everett	14	2	0
Deerpath / Green Bay	10	2	0	10	RT 41 / Gage	13	4	0
TOTAL	268	37	1		TOTAL	360	54	5
% of ALL LF crashes	39.8%	49.3%	33.3%		% of ALL LF crashes	46.6%	57.4%	55.5%

Comparing the top ten crash intersections over the last two years, 2018's top ten displayed 268 crashes accounting for 39.8% of the 673 annual crashes, while 2019 logged 360 crashes and 46.6% of the 772 events. The top five ranked locations remained the same for both years; however, positions changed for the second, third and fourth ranked locations, while one and five remained the same. Ranked locations six through ten added three new intersections in 2019.

Reviewing all injury crashes in the comparative top ten reveals 17 more events and a 45.9% increase in 2019. There were no fatal crashes during 2018, however two occurred in 2019 and both occurred at a top ten intersection. A fatal DUI crash occurred at Route 41 and Westleigh, and a pedestrian fatal happened at Route 41 and Old Elm within a construction zone.

C. Detailed Top Five Crash Intersections (TFCI): 2019

A useful intersection evaluation tool is to look at the volume of traffic traversing it on a daily basis. "Intersection counts are used for timing traffic signals, designing channelization, planning turn prohibitions, computing capacity, analyzing high crash intersections and evaluating congestion" (Homburger, et. al. 1996. Volume Studies and Characteristics: In Fundamentals of Traffic Engineering. Berkeley: Institute of Transportation Studies, University of California, Berkeley). Regionally, the Illinois Department of Transportation provides on-line *Average Daily Traffic Count* maps on their website for these purposes.

The *Detailed Top Five Crash Intersections* (TFCI) analysis reviews select data from all 2019 crash reports, compiling those five intersections with the highest number of crashes. The results are then aggregated with additional sources to produce the below listed data sets and rankings for each intersection. Each of the five intersections displays the following data sets:

- Google map intersection photo
- IDOT average daily traffic volume
- IDOT average annual traffic volume
- Crash rate per million vehicles*
- Serious injury crash rate per million vehicles*
- Property damage crashes (Type O)
- All injury crashes (Type K,A,B,C)
- Serious injury crashes (Type K,A)
- Lake Co. serious inj. crash percent (Type K,A)
- IL State serious inj. crash percent (Type K,A)
- Crash direction/quadrant
- Collision type

Data for Lake County and State of Illinois crashes was obtained from the *Illinois Department of Transportation, 2018 Illinois Crash Facts and Statistics*, which is the most current publication available. Data reported for the State indicated 319,146 crashes with 10,012 serious injury/fatal crashes, while Lake County data showed 14,057 crashes and 402 serious injury/fatal crashes.

[*Crash rate per million entering vehicles is a statistical tool utilized by the U.S. Department of Transportation, Federal Highway Administration. It provides a national numeric baseline comparison for crashes among various locations expressed as a common unit of exposure (i.e., crash rate per million vehicles)].

TOP CRASH INTERSECTION (#1)

ROUTE 41 / ROUTE 60



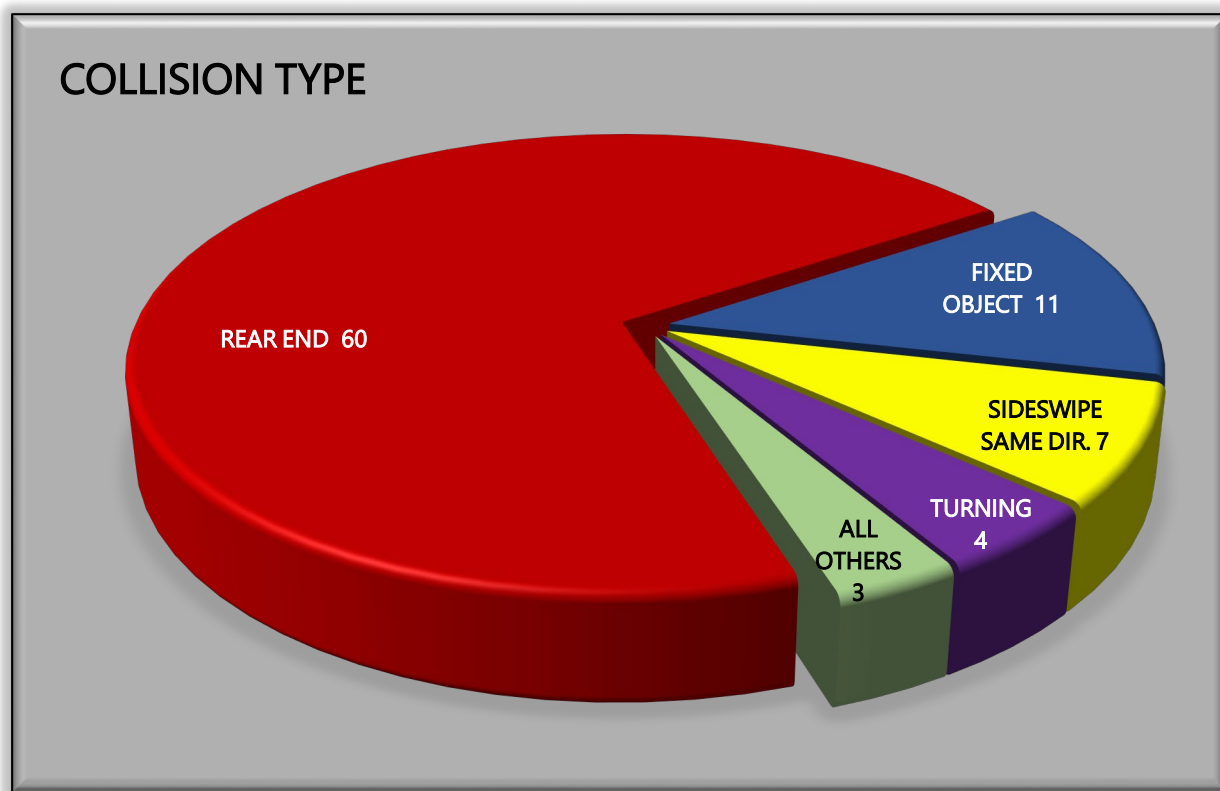
ACTIVITY	2019 DATA	TFCI RANK*
IDOT Average Daily Traffic Volume	52,500 vehicles	2
12 Month Traffic Volume	19,162,500 vehicles	2
2019 TOTAL CRASHES	85	1
Crash Rate per million vehicles	4.44	1
Serious Injury Crash Rate per million vehicles	0.052	3T
Property Damage Only Crashes (Type O)	76	
Property Damage Crash Percent	89.41%	
All Injury Crashes (Type K, A, B, C)	9	
All Injuries Crash Percent	10.58%	
Serious Injury Crashes (Type K, A)	1	
Serious Injury Crash Percent	1.17%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)	2.86%	
State of ILLINOIS Serious Inj. Crash Percent (Type K,A)	3.14%	

(*TFCI Rank: 1-5 ranking, with 1 being highest number or percentage of events and 5 being the lowest. T indicates ties.)

OBSERVATIONS: This is the only T-intersection in the TFCI grouping. This number one ranked intersection displayed a 49.1% increase in total crashes from 57 in 2018 to 85 in 2019. Based on traffic volumes compared to the crash rate per million vehicles (4.44) accounting for a number one ranking, the serious injury crash rate per million vehicles (0.052) tied for third. There were zero Type A injury crashes in 2018 and one in 2019.

CRASH DIRECTION	CRASHES	PERCENTAGE
EB RT 60	31	36%
SB RT 41	30	35%
NB RT 41	23	27%
WB RT 60	1	1%

Combining eastbound Route 60 with southbound Route 41 accounts for 71.7% of all crashes at this location. This is down slightly from 2018 when these two roadway quadrants accounted for 75.4% of crashes.



Rear end collisions accounted for 70.6% of all crashes, with *fixed object* a distant second at 15.8% of crashes. The top two events in 2018 were *rear end* and *sideswipe same direction* crashes with similar percentages to 2019's top two.

TOP CRASH INTERSECTION (#2)

ROUTE 41 / OLD ELM



ACTIVITY	2019 DATA	TFCI RANK*
IDOT Average Daily Traffic Volume	51,300 vehicles	4
12 Month Traffic Volume	18,724,500 vehicles	4
2019 TOTAL CRASHES	68	2
Crash Rate per million vehicles	3.63	2
Serious Injury Crash Rate per million vehicles	0.053	2
Property Damage Only Crashes (Type O)	56	
Property Damage Crash Percent	82.35%	
All Injury Crashes (Type K, A, B, C)	12	
All Injuries Crash Percent	17.64%	
Serious Injury Crashes (Type K, A)	1	
Serious Injury Crash Percent	1.47%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)	2.86%	
State of ILLINOIS Serious Inj. Crash Percent (Type K,A)	3.14%	

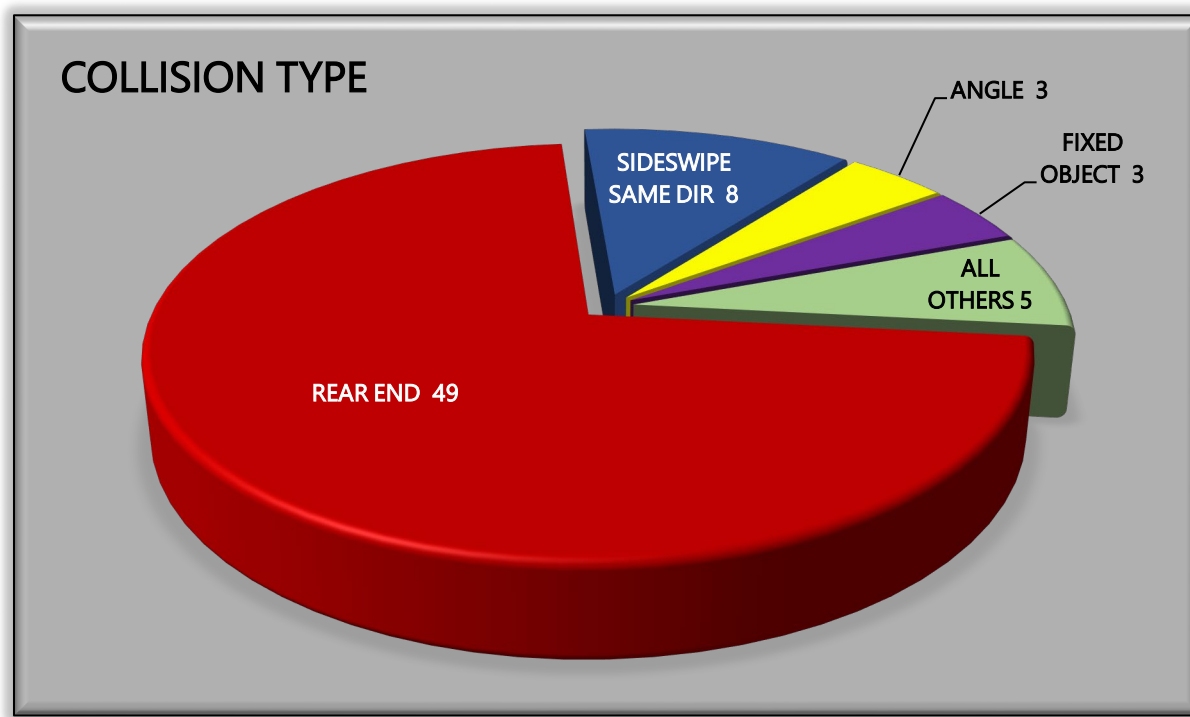
(*TFCI Rank: 1-5 ranking, with 1 being highest number or percentage of events and 5 being the lowest. T indicates ties.)

OBSERVATIONS: This location is a more complex four-way intersection with a bicycle path and railroad grade crossing at the west quadrant, and a northbound off-ramp at the east quadrant. This location ranked third during 2018 with 43 crashes, moving up one spot in 2019 with 25 additional crashes, revealing a 58.1% increase.

One of two fatal crashes during 2019 occurred here in June within an active roadway construction zone. A truck, backing up within the job site, struck a roadway crewmember killing her. There were eleven additional injury crashes in 2019, with three Type B and eight minor Type C crashes. This compares to the eight total injury crashes in 2018, with one serious Type A crash.

CRASH DIRECTION	CRASHES	PERCENTAGE
NB RT 41	41	60%
SB RT 41	21	31%
EB OLD ELM	5	7%
WB OLD ELM	1	1%

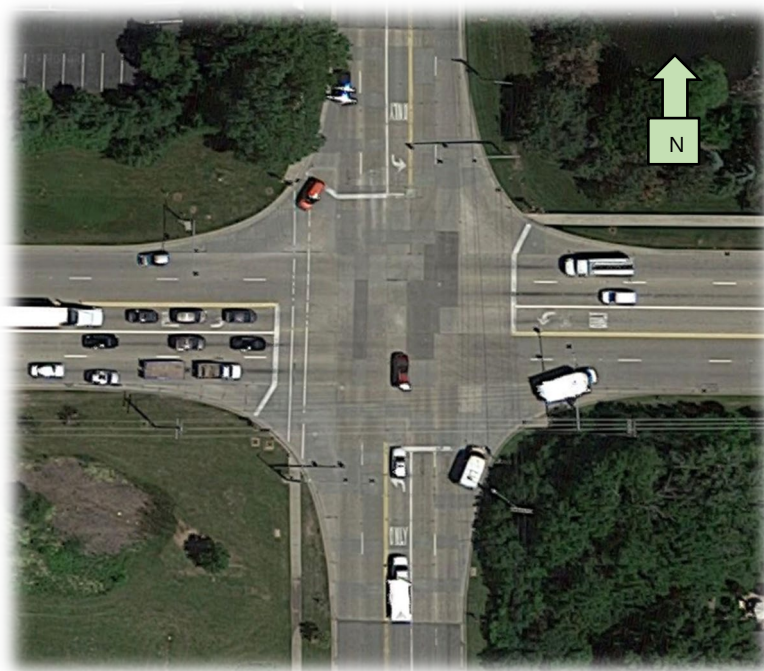
Northbound Route 41 surpassed the other three quadrants combined in crash volume, with Route 41 accounting for 91.1% of all crash activity.



As with all of the TFCI locations, *rear end* crashes were the prevalent event accounting for 72.1% of collisions. *Sideswipe same direction* was the second most prolific action, with 11.8% of activity. These top two collision types mirrored the data from 2018 for this intersection.

TOP CRASH INTERSECTION (#3)

ROUTE 60 / ROUTE 43 (Waukegan)



ACTIVITY	2019 DATA	TFCI RANK*
IDOT Average Daily Traffic Volume	33,150 vehicles	5
12 Month Traffic Volume	12,099,750 vehicles	5
2019 TOTAL CRASHES	46	3
Crash Rate per million vehicles	3.80	3
Serious Injury Crash Rate per million vehicles	0.082	1
Property Damage Only Crashes (Type O)	37	
Property Damage Crash Percentage	80.43%	
All Injury Crashes (Type K, A, B, C)	9	
All Injuries Crash Percentage	19.56%	
Serious Injury Crashes (Type K, A)	1	
Serious Injury Crash Percentage	2.17%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)	2.86%	
State of ILLINOIS Serious Inj. Crash Percent (Type K,A)	3.14%	

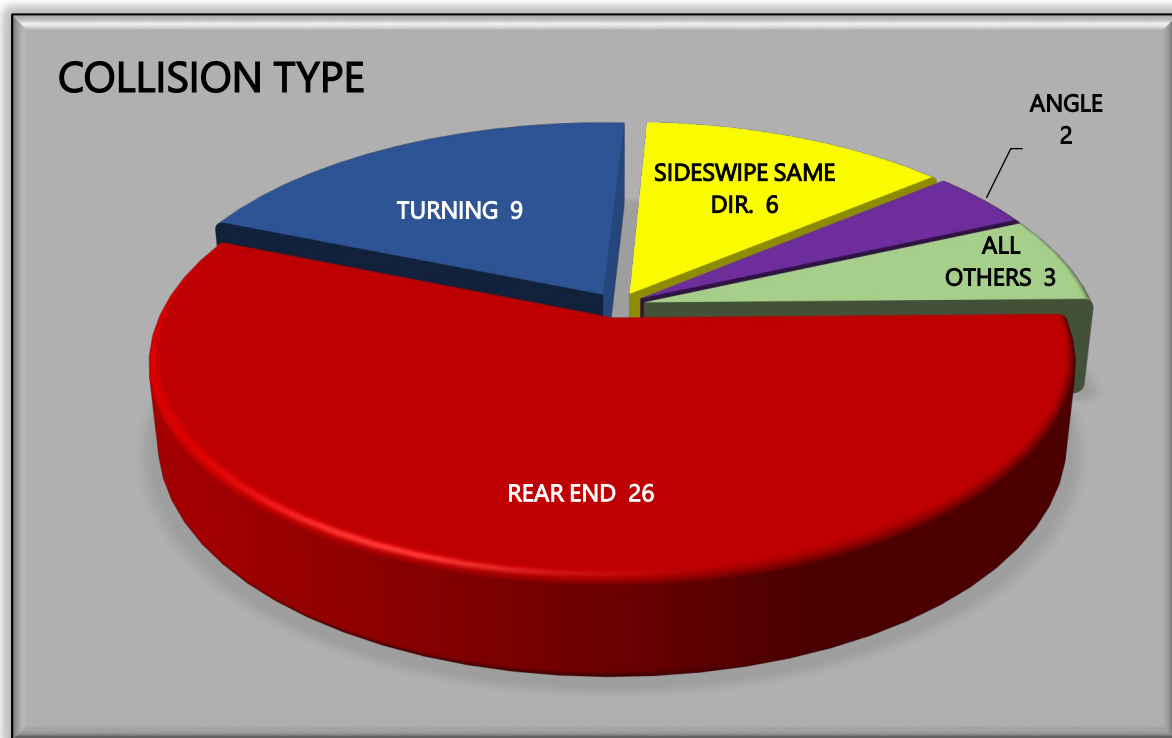
(*TFCI Rank: 1-5 ranking, with 1 being highest number or percentage of events and 5 being the lowest. T indicates ties.)

OBSERVATIONS: Ranking last in traffic volume, this is the only TFCI with a standard four-way intersection configuration and no Route 41 component. This location moved up one slot in 2019 with 17 more crashes than in 2018, a 58.6% increase.

Only one additional injury crash overall was reported in 2019 versus 2018. There was one reported serious injury Type A crash, six Type B and two minor Type C.

CRASH DIRECTION	CRASHES	PERCENTAGE
EB RT 60	21	46%
WB RT 60	9	20%
NB RT 43	8	17%
SB RT 43	8	17%

Route 60 traffic accounted for approximately two out of every three crashes at this intersection. In 2018 WB Route 60 and SB Route 43 tied for first with nine crashes each.



Rear end collisions accounted for 56.5% of crashes, with second place *turning* providing 19.6%. During 2018 *rear end* was first at 55.1%, with *sideswipe same direction* coming in second at 17.2%

TOP CRASH INTERSECTION (#4)

ROUTE 41 / WESTLEIGH



ACTIVITY	2019 DATA	TFCI RANK*
IDOT Average Daily Traffic Volume	52,250 vehicles	3
12 Month Traffic Volume	19,071,250 vehicles	3
2019 TOTAL CRASHES	40	4
Crash Rate per million vehicles	2.09	4
Serious Injury Crash Rate per million vehicles	0.052	3T
Property Damage Only Crashes (Type O)	32	
Property Damage Crash Percent	80.00%	
All Injury Crashes (Type K, A, B, C)	8	
All Injuries Crash Percent	20.00%	
Serious Injury Crashes (Type K, A)	1	
Serious Injury Crash Percent	2.50%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)	2.86%	
State of ILLINOIS Serious Inj. Crash Percent (Type K,A)	3.14%	

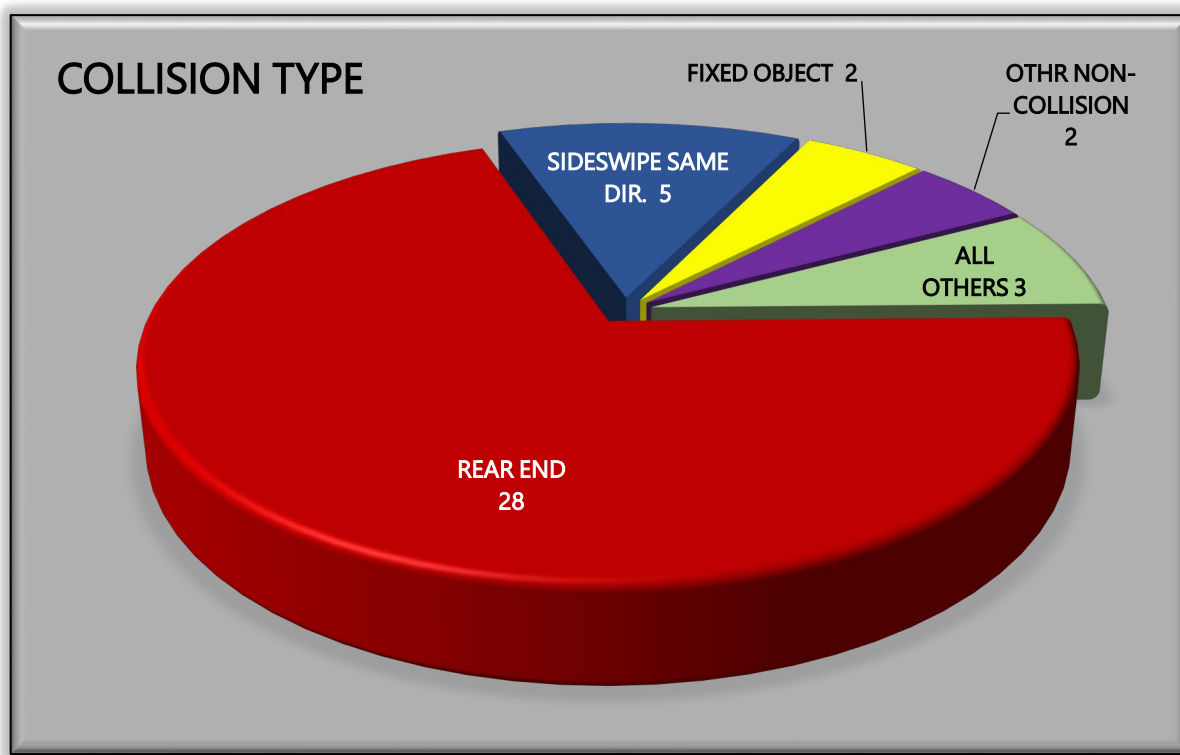
(*TFCI Rank: 1-5 ranking, with 1 being highest number or percentage of events and 5 being the lowest. T indicates ties.)

OBSERVATIONS: This location is a modestly complex four-way intersection which adds a bicycle path and railroad grade crossing at the west quadrant. This location ranked second during 2018 with 46 crashes and 7 total injuries.

The second fatal roadway crash of 2019 occurred just north of this intersection. In late March, a DUI motorist northbound on Route 41 left the roadway at a high rate of speed, striking a tree resulting in the death of one of his passengers. The other seven injury crashes revealed four Type B and three minor Type C events.

CRASH DIRECTION	CRASHES	PERCENTAGE
NB RT 41	22	55%
SB RT 41	14	35%
WB WESTLEIGH	4	10%

Route 41 accounted for 90% of all crashes at this location. This was up from 2018 data showing 78% of crashes were on Route 41.



The main collision type of *rear end* exhibited a 70.0% occurrence. The next most prolific event, *sideswipe same direction* was a remote second at 12.5%. The same two collision types were in the same positions in 2018.

TOP CRASH INTERSECTION (#5)

ROUTE 41 / DEERPATH



ACTIVITY	2019 DATA	TFCI RANK*
IDOT Average Daily Traffic Volume	59,125 vehicles	1
12 Month Traffic Volume	21,580,625 vehicles	1
2019 TOTAL CRASHES	29	5
Crash Rate per million vehicles	1.34	5
Serious Injury Crash Rate per million vehicles	0.046	5
Property Damage Only Crashes (Type O)	23	
Property Damage Crash Percent	79.31%	
All Injury Crashes (Type K, A, B, C)	6	
All Injuries Crash Percent	20.69%	
Serious Injury Crashes (Type K, A)	1	
Serious Injury Crash Percent	3.44%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)	2.86%	
ILLINOIS Serious Inj. Crash Percent (Type K,A)	3.14%	

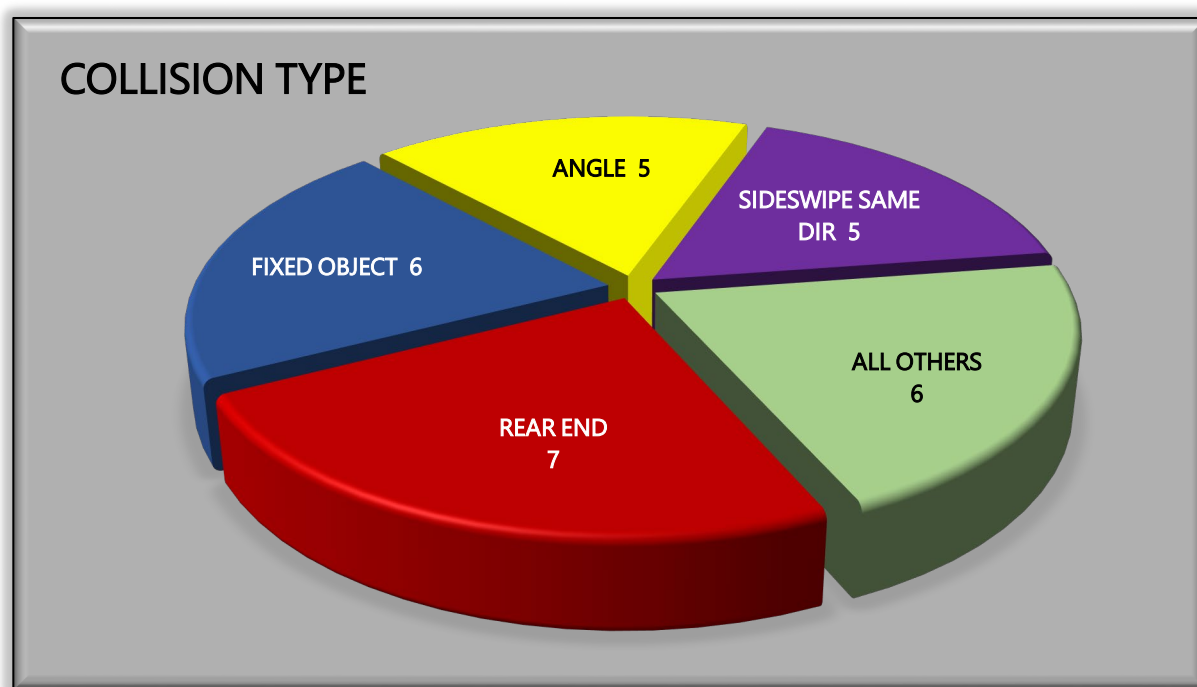
(*TFCI Rank: 1-5 ranking, with 1 being highest number or percentage of events and 5 being the lowest. T indicates ties.)

OBSERVATIONS: Ranking first in traffic volume, this is the only TFCI with multiple surface and elevated intersection segments, a parallel-elevated railroad section and multiple on and off ramps. It maintained its ranking at fifth for both years, while exhibiting an additional three events from 2018 totals, a modest 11.5% uptick.

This location ranked last in TFCI serious injury crash rate per million vehicles, however overall injuries increased from three in 2018 to six in 2019. There were one Type A, two Type B and three minor Type C injury crashes for the year.

CRASH DIRECTION	CRASHES	PERCENTAGE
NB RT 41	12	41%
SB RT 41	8	28%
EB DEERPATH	6	21%
WB DEERPATH	3	10%

Just over two-thirds (68.9%) of all crashes took place on Route 41 at this location. This closely resembles quadrant data from 2018 in terms of percentages.



Based on the diversity of the roadway structure and intersecting streets, this is the only TFCI providing an almost equally occurring grouping of differing collision types. *Rear end* collisions accounted for 24.1% of crashes, the lowest percentage of a primary collision type code of any of the TFCI locations. This was followed closely by *fixed object* at 20.7%. This was slightly different from 2018 data showing *rear end* and *fixed object* collisions were first and second respectively, but were statistically higher against the remainder of events.

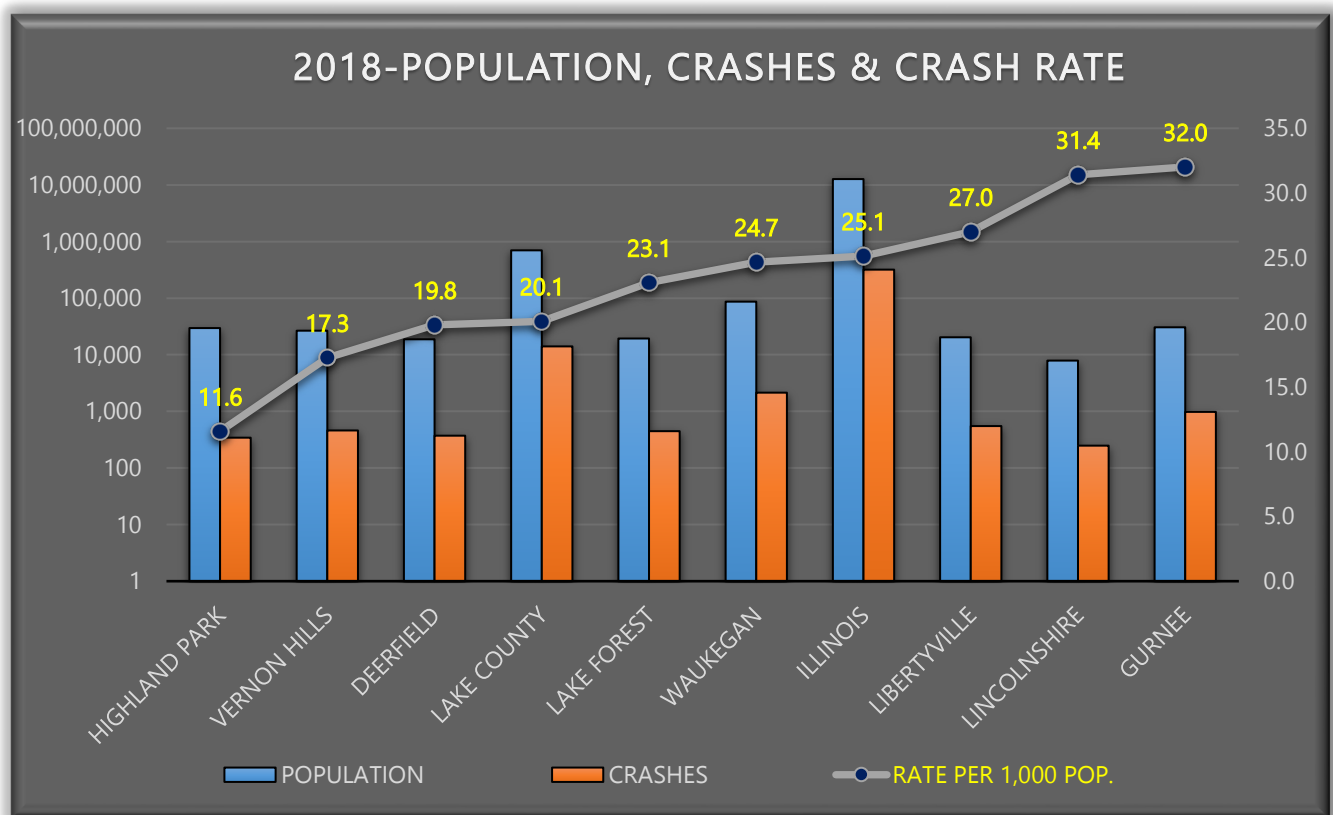
IV. COMPARATIVE STATE AND LAKE COUNTY AREA CRASH RATES

A. Population, Roadway Crashes and Crash Rates

The multi-scale chart below compares 2018 roadway crash rates per 1,000 population among Lake Forest, seven proximate municipalities, Lake County and the State of Illinois.

The left vertical axis uses a logarithmic scale to show a range of population totals and the number of crashes in each jurisdiction. The blue points along the gray line marker use the right vertical axis to portray the crash rate per 1,000 residents. All data utilized is from the most current version of the *Illinois Department of Transportation, State-County-City Summary Crash Report(s) (2018)*. The 2018 raw data utilized for comparison is displayed in alphabetic order within Table 7 on the next page.

CHART 5.



Lake Forest ranked fifth in crash rate at 23.1 crashes per one-thousand population, of the ten jurisdictions analyzed. Highland Park exhibited the lowest rate at 11.6 crashes and Gurnee the highest at 32.0 crashes per thousand.

TABLE 7.

2018-JURISDICTION	POPULATION	CRASHES	CRASH RATE PER 1,000 POP.
DEERFIELD	18,779	372	19.81
GURNEE	30,576	979	32.02
HIGHLAND PARK	29,622	343	11.6
ILLINOIS	12,700,000	319,146	25.01
LAKE COUNTY	699,587	14,057	20.09
LAKE FOREST	19,375	447	23.07
LIBERTYVILLE	20,359	550	27.02
LINCOLNSHIRE	7,893	248	31.42
VERNON HILLS	26,641	460	17.27
WAUKEGAN	86,792	2,141	24.67

Due to a State mandated definition change in 2009 involving an increase in the damage dollar amount utilized for mandatory State reporting, the State only requires crash reports be completed based on the following parameters. "When all drivers involved in a crash are insured, the amount of damage to any one person's property that must be reported increased from \$500 to \$1,500. If any driver does not have insurance, the threshold remains at \$500. The change does not affect the reporting of injury crashes or fatal crashes." (*Illinois Department of Transportation, 2018 Illinois Crash Facts & Statistics*).