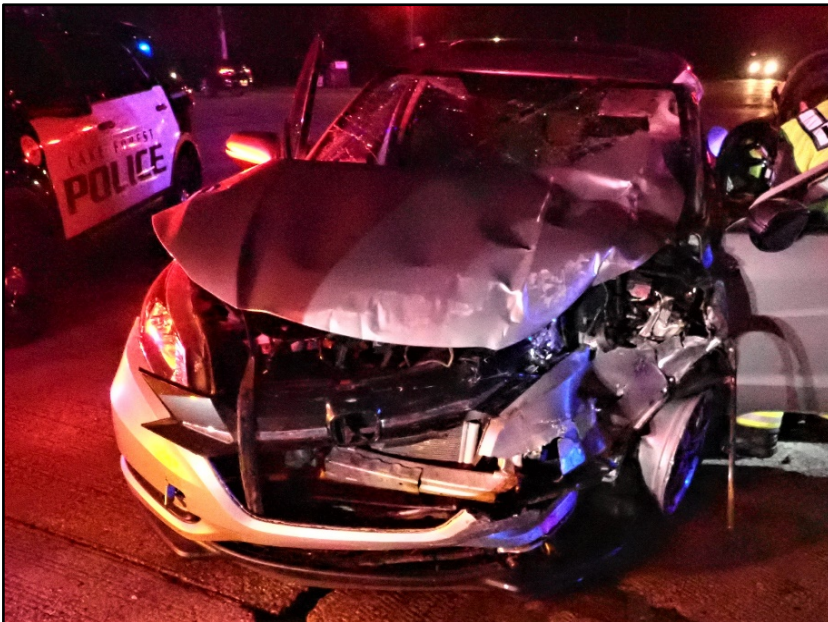# Annual Traffic Crash Analysis - 2020

The Lake Forest Police Department *Annual Traffic Crash Analysis-2020* provides yearly and comparative citywide crash statistics combined with charts, maps and graphs. A separate section catalogues in-depth data on the top ten crash intersections within the City.

Lake Forest Police Department

Deborah Chrobak, M.A.

April 2021

Contents

REPORT COVER PHOTO'S: (TOP) February 2020, two-car injury crash, northbound Route 41 at Westleigh. (BOTTOM) September 2020, two-car injury crash, westbound Route 60 at RT 43 (Waukegan).

I.   INTRODUCTION AND OVERVIEW

Annually, Police Chief Karl Walldorf requests a comprehensive analysis of all traffic crashes occurring in Lake Forest. A crash report database is created and examined to extract actionable and informational data. This report seeks to inform and aid patrol operation strategies and provide an overview of crash events for community stakeholders including residents, police, city, and elected officials. Comparisons between 2019 and 2020 crash data are interspersed throughout the analysis.

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

- Total crashes
- Month of occurrence
- Patrol Beat
- Patrol Shift

- Day of Week
- Hour of Day
- Collision type and injury
- Contributory cause

A second more in-depth analysis identifies our ten most active intersections, with a two-year summary, comparative rankings and a detailed 2020 *Top Ten Crash Intersections* (TTCI) review. The review provides intersection photos, traffic volumes, injury types, and crash rates.

II.   COMPARATIVE CITYWIDE CRASH DATA: 2019 & 2020

A.   Total Crashes

Annual crash data within Table 1 shows 410 crashes during 2020, disclosing a 46.8% decrease over 2019's 770 crashes. (Note: An audit revealed two instances of doubled report numbers for both prior 2019 data and preliminary 2020 data. This changed 2019 crash totals from 772 to 770 and 2020 from 412 to 410.) The COVID-19 pandemic and stay-at-home orders significantly reduced 2020 traffic volume, resulting in sharp declines in traffic crashes. Annual roadway crashes declined by 288 events, which resulted in an average of 24 fewer crashes per month, versus 2019 data.

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 (Type K) during 2019 and one in 2020. Serious injury crashes (Type A), increased from 7 to 17 across the two years of data. This parallels preliminary reporting from Illinois State Police (ISP) which reveals a significant increase in fatal and injury crashes across

the state during the first six months of 2020. ISP documents mention less trafficked wide-open roadways, excessive speeds and reckless driving as hypotheses for the increases.

Intoxicated driving crashes (DUI), decreased by two events from 19 to 17. However, the percentage of DUI crashes compared to the total number of crashes increased from 2.5% in 2019 to 4.1% in 2020. During 2019, one DUI crash was a fatal off-roadway crash into a tree, two were serious Type A injury and two were Type B injury crashes. During 2020, there were two serious Type A injury crashes and four Type B injury DUI crashes.

Vehicle versus pedestrian, bicyclist or train crash segments revealed 9 events in 2019 and 10 in 2020. The lone 2019 vehicle versus pedestrian crash resulted in a fatality during a backing maneuver involving a construction road crew. The single 2020 fatality was a pickup truck versus pedestrian hit and run crash, which was subsequently cleared by the arrest of the offender.
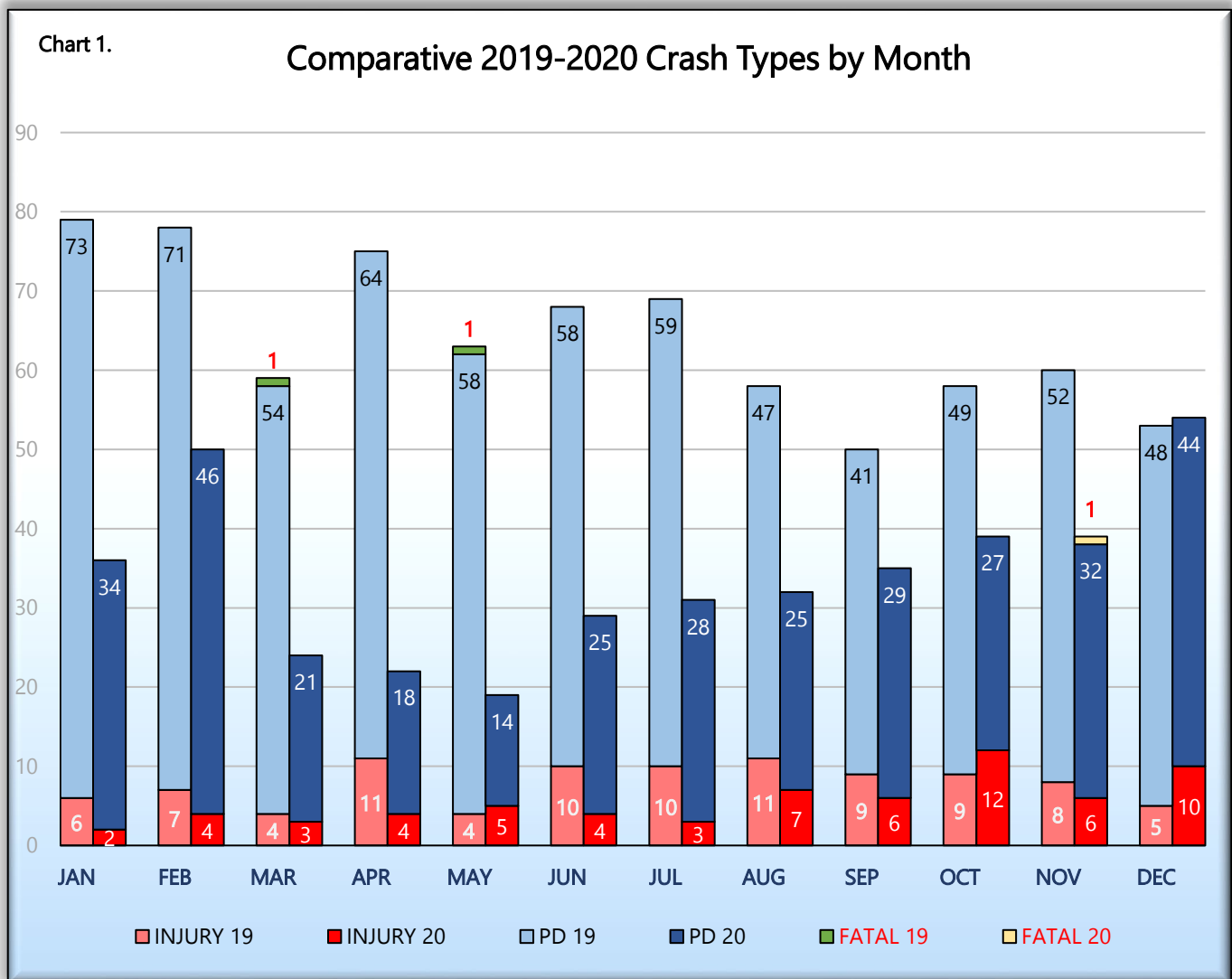
Table 1.

COMPARATIVE 2019–2020 CRASH TOTALS & SEGMENTS	2019	2020	±%
TOTAL CRASHES	770	410	-46.8%
Roadway	646	358	-44.6%
Private Property	124	52	-58.1%
FATALITY & INJURY SEGMENTS			
Fatality (K)	2	1	-50.0%
Serious injury crashes (A)	7	17	+142.9%
All Injury crashes (A, B, C)	94	66	-29.8%
Roadway injury crashes (A, B, C)	93	62	-33.3%
Private Property injury crashes (A, B, C)	1	4	+300.0%
Non-Injury/Property damage only crashes (O)	674	343	-49.1%
DUI / HIT & RUN SEGMENTS			
DUI Crashes	19	17	-10.5%
Roadway Hit & Run	40	20	-50.0%
Private Property Hit & Run	28	12	-57.1%
PEDESTRIAN / BICYCLIST / TRAIN SEGMENTS			
Vehicle v. Pedestrian	1	3	+200.0%
Vehicle v. Bicyclist	7	7	0.0%
Vehicle v. Train	1	0	-100.0%

/	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

Chart 1 data provides comparative totals for both years showing the monthly incidence of fatal crashes (Type K), injury crashes (Type A, B, C) and property damage crashes (Type O). The average number of monthly crashes for 2019 totaled 64.2, while 2020 revealed 34.2 events.

The greatest number of injury crashes within a month was 12, occurring during October 2020. This was one of two months in 2020 to reach double-digit injuries, while 2019 revealed four months with double-digit injury crash totals. 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.

Chart 1.

Comparative 2019-2020 Crash Types by Month

Legend: INJURY 19, INJURY 20, PD 19, PD 20, FATAL 19, FATAL 20

Overall, crash totals in 2020 significantly declined in large part due to Covid-related lockdowns. However, there were slow, steady, minor, monthly increases from a low of 19 crashes in May to a high of 54 in December.

The largest variance in crashes by month over the two years was April which reported a 70.7% decrease, exhibited by a difference of 53 crashes, falling from 75 to 22 events. The only month in 2020 to show an increase over 2019 data was December, which recorded 54 crashes versus 53 the prior year.

C.   Crashes by Patrol Beat

Data on the number and types of crashes per patrol beat informs officers working rotating patrol beats, of the various 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 name specificity for the map locations identified as Top Ten Crash Intersections.

The comparative map overview reveals a substantial decrease of 360 crashes between 2019 and 2020 data. None of the individual beats experienced a year over year increase for 2020. The percentage decreases for each beat were; 52% for Beats 303 and 304, followed by a 44% reduction in Beat 305 and a 41% decline in Beat 301. The numerical values associated with the declines revealed; Beat 301 at -58, Beat 303 with -44, Beat 304 at -96 and Beat 305 with -162.

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. Looking at only the top ten crash intersection, and ties, for 2020, we discover that Beat 305 contains 6 of the 13 listed intersections. The 2020 intersections in order are:

Table 2.
2020 Top Ten Crash Intersections

1.	RT 41 / RT 60	6.	RT 41 / Gage
2.	RT 41 / Westleigh	7.	Green Bay / Westleigh
3.	RT 60 / RT 43 (Waukegan)	8.	RT 60 / I-94
4.	RT 41 / Old Elm	9.	Deerpath / Western
5.	RT 41 / Deerpath	10.	-Four intersections tied-

Detailed and comparative data on all top ten crash intersections is located in Section III of this report.

Map 1.

CITY OF LAKE FOREST - POLICE PATROL BEATS
TRAFFIC CRASHES BY BEAT
Comparative 2019 - 2020

Top Crash Intersections - 2020

⬥ 1 - 5   ⬥ 6 - 10

Beat 305
199
361

Beat 301
83   141

Beat 303
40
84

Beat 304
88
184

#6
#5
#3   #1
#8
#10.4
#10.2   #9
#2
#7   #10.3
#10.1
#4

2020   2019
410   770
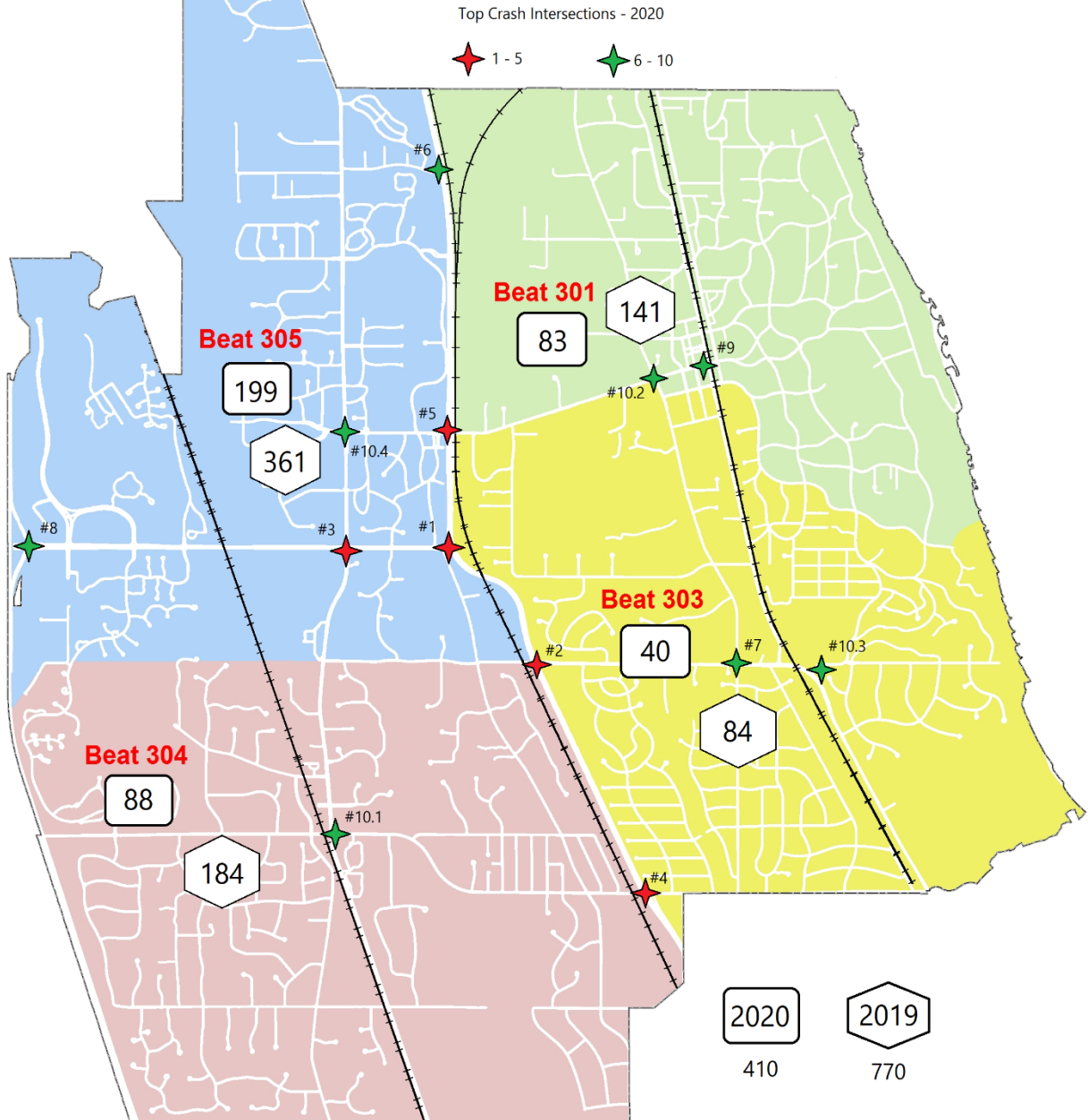
Data in Table 3 provides an in-depth review of the types of crashes occurring within each beat during 2020, with beat and citywide percentages.

The largest number of crashes occurred in Beat 305 which accounted for almost 49% of all 2020 crashes. This percentage was higher than 2019 when it also came in first, but at 47%.

Characterizing roadway fatal (K) and injury (Types A, B, C) crashes within each beat reveals Beat 305 exhibited the highest percentage (51%) of injury crashes, with 32 of the 63 roadway injury crashes. Overall, there were 358 roadway crashes, with 17.6% resulting in an injury or fatality. This was a higher percentage compared to 2019 when 14.7% or 95 of 646 roadway crashes resulted in an injury or fatality.

There was a single fatal crash during 2020. This occurred in Beat 301 when a pickup truck struck and killed a pedestrian in the roadway. During 2019,

Table 3.

ANNUAL TOTAL CRASHES: BEAT / INJURY / PERCENT - 2020				
BEAT / LOC.	INJURY CLASS	CRASH TOTALS	BEAT %	TOTAL %
301		83	100.0%	20.2%
ROAD	K	1	1.2%	0.2%
	A	1	1.2%	0.2%
	B	5	6.0%	1.2%
	C	1	1.2%	0.2%
	O	58	69.9%	14.1%
PRIV	A	1	1.2%	0.2%
	C	1	1.2%	0.2%
	O	15	18.1%	3.7%
303		40	100.0%	9.8%
ROAD	A	5	12.5%	1.2%
	B	2	5.0%	0.5%
	O	30	75.0%	7.3%
PRIV	O	3	7.5%	0.7%
304		88	100.0%	21.5%
ROAD	A	2	2.3%	0.5%
	B	12	13.6%	2.9%
	C	2	2.3%	0.5%
	O	64	72.7%	15.6%
PRIV	O	8	9.1%	2.0%
305		199	100.0%	48.5%
ROAD	A	7	3.5%	1.7%
	B	18	9.0%	4.4%
	C	7	3.5%	1.7%
	O	143	71.9%	34.9%
PRIV	A	1	0.5%	0.2%
	B	1	0.5%	0.2%
	O	22	11.1%	5.4%
Grand Total		410		100.0%

there were two fatal crashes, both in Beat 304; a construction vehicle versus roadway worker crash and a DUI crash into a tree.

D.   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. Looking at the shift times in Table 4 demonstrates that each shift overlaps the other by 15 minutes. This overlap allows roll call informational briefings to be conducted while street coverage is maintained.

Table 4 provides a quick comparison of crash 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 for both years.

Table 4.	Patrol Shifts	Times	Number of Crashes	Percentage of Crashes
2019 (770)	Midnight shift	22:45 – 07:00	75	9.7%
	Day shift	06:45 – 15:00	393	51.0%
	Afternoon shift	14:45 – 23:00	302	39.2%
2020 (410)	Midnight shift	22:45 – 07:00	33	8.0%
	Day shift	06:45 – 15:00	201	49.0%
	Afternoon shift	14:45 – 23:00	176	42.9%

All three shifts in 2020 saw a significant decrease in the number of crashes, but the percentage of crashes occurring during each shift across the two years was similar. During 2020, Afternoon shift saw the only comparative percentage increase in activity over 2019 data.

Reviewing fatal (Type K) and serious injury (Type A) crashes during 2020 reveals: Of the 18 total crashes, Midnights handled three Type A crashes, Day shift responded to six Type A and one fatal crash, while Afternoons reported eight Type A crashes.

E.   Crashes by Day of Week

It is no surprise that weekdays provide the highest number of total crashes, as revealed in Chart 2. Looking at comparative annual totals for each day of week shows a noticeable decline in 2020 numbers, averaging 64.8 per each weekday and 43 weekend crashes per each day. During 2019, there were an average of 125.2 crashes per each weekday and 72 per each weekend day.

**Chart 2.** Comparative 2019-2020 Crashes by Day of Week
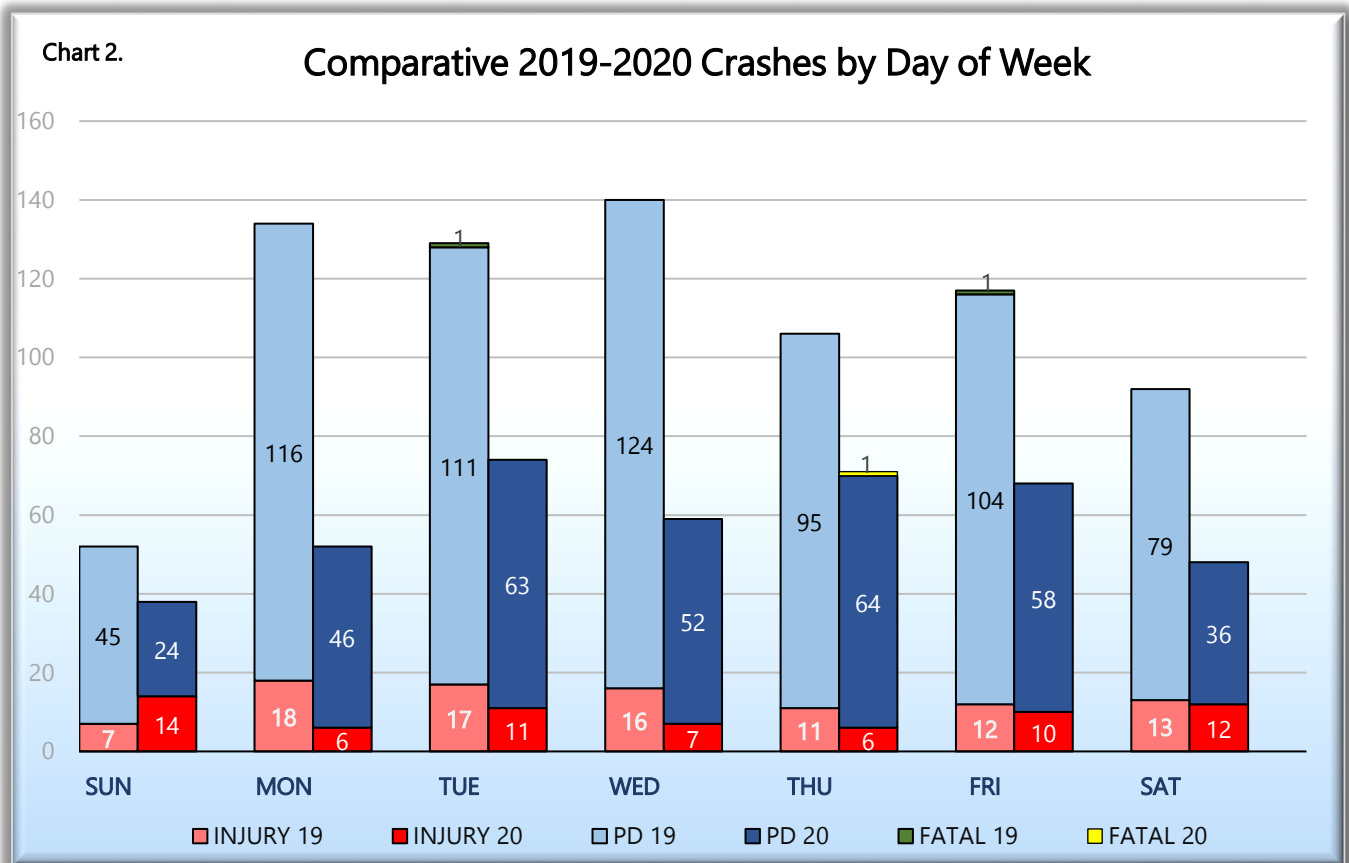
During 2020, Tuesdays with 18.0% of all crashes was the busiest day of the week, while Wednesdays came in first at 18.2% during 2019. Sundays, at the low end for both years, provided 8.6% of all 2020 crashes and 6.7% of the 2019 totals. During 2020, Sunday provided the highest percentage of injury (14) to total crashes (38) with 36.8%. Reviewing 2019, Saturdays exhibited the highest percentage of injury crashes at 14.1% relative to total crashes (92). The three fatal crashes, across the two years, were on separate weekdays; Tuesday, Thursday and Friday.

F.   Crashes by Hour of Day

The time points in Chart 3 identify the hour range during which the crashes occurred. For example, 6AM depicts all the crashes occurring between 06:00 and 06:59 am. It is not a surprise that time groupings around morning and evening rush hours exhibit some of the highest crash totals.

Interestingly, data for 2020 revealed an early afternoon spike in addition to the morning and evening rushes. For 2020, the three top time frames revealed a single high point of 44 crashes during the 5pm range, followed by second place ties of 30 crashes for 9am and 4pm, and a third place tie between 1pm and 2pm with 29 crashes each. The top three timeframes for 2019, in order, were 4pm with 70 crashes, 3pm at 66 crashes and 8am with 63.

Chart 3.

2020 Crashes by Hour of Day
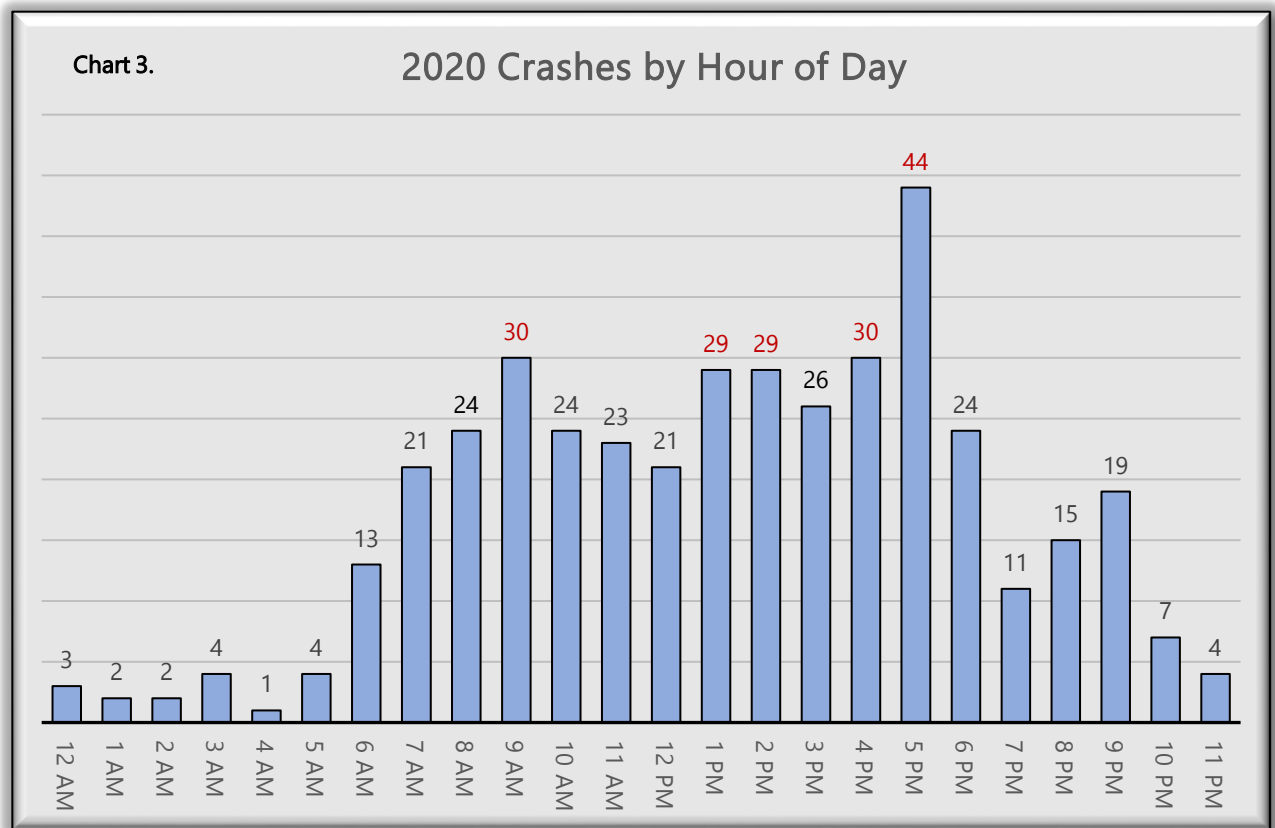
Each hour within a 24-hour period accounts for 4.17% of the entire day. The 2020 combined top three crash levels by hour, included five separate hourly ranges accounting for 20.9% of a day. These combined five ranges provided 162 crashes, comprising 36.8% of the 410 total crashes.

G.   Crashes by Collision Type and Injury Code

The Illinois Department of Transportation provides Collision Type codes to describe crash incidents across the State. The purpose of the 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. The State list describes four different types of rear end collisions; however, this report places all four under the general heading of rear end (all types) crashes.

Table 5 reveals *rear end (all types)* crashes (163) as the most prolific collision type in the City, accounting for 39.7% of all crashes. Rolling annual data from the National Highway Traffic Safety Administration (NHTSA) indicates approximately 29%-32% of all collisions nationwide are rear end crashes. As indicated above, Lake Forest consistently reports crash data above 32% for rear end collisions, with 2019 showing 45.6%.

Table 5.	COLLISION TYPE & INJURY CODE 2020					
	INJURY TYPE CODE					
COLLISION TYPE	**K**	**A**	**B**	**C**	**O**	**TOTAL**
Angle		4	4	2	33	43
Animal				1	7	8
Fixed Object		1	6	2	38	47
Head on					1	1
Other Non-Collision					5	5
Other Object					10	10
Overturned		3			2	5
Parked Motor Veh					34	34
Pedalcyclist		2	2	2	1	7
Pedestrian	1	1			1	3
Rear End (all types)			17	3	143	163
Sideswipe opp. dir.					5	5
Sideswipe same dir.		1	1	1	27	30
Turning		5	8		36	49
GRAND TOTAL	**1**	**17**	**38**	**11**	**343**	**410**

The two next highest 2020 collision types were produced by *turning* (49) and *fixed object (47)* crashes. The combined top three collision types accounted for 63.2% of all crashes during 2020. Reviewing 2019 data, the top three types were; *rear end* (352), *sideswipe same direction (84)* and *fixed object (81)* collisions, accounting for 67.1% of all crashes.

The single 2020 fatality was a *pedestrian* struck in the roadway by a pick-up truck. The two 2019 fatalities were coded *fixed object* due to a tree being struck during a DUI crash and *pedestrian* as a construction truck backed over an on-site roadway worker.

In 2020 the 17 (Type A) serious injury crashes were scattered across seven collision types, but were most highly represented by *turning* (5), *angle* (4) and *overturned* (3) crashes. Reviewing all 67 crashes involving all injury types (K, A, B, C) reveals they accounted for 16.3% of all crashes. The top three collision types were responsible for 42 of the 67 injury crashes reported (62.7%).

H.   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 2020 the top three collisions types were; *failure to reduce speed to avoid a crash* (89), *failure to yield the right-of-way* (55) and *improper backing* (52). These three causes combined, accounted for 47.8% of crashes citywide.

Looking at 2019's top three reveals the same three contributory causes, but the second and third positions switched. They 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 accounted for 51.2% of crashes citywide.

Outside of the top three, none of the other contributory causes, for either year, reached double-digit percentages.

During 2020, *following too closely* came in fourth while *improper lane use* came in fourth in 2019.

Table 6.	CONTRIBUTORY CAUSES 2020	
Contributory Cause	Number	Percent
Animal	7	1.7%
Cellphone use-not texting	1	0.2%
Disregard road markings	2	0.5%
Disregard stop sign	2	0.5%
Disregard traffic signals	15	3.7%
Distraction-inside vehicle	5	1.2%
Distraction-outside vehicle	1	0.2%
Driver skills/knowledge/ability	18	4.4%
Driving wrong side/way	1	0.2%
DUI-alcohol/drugs	17	4.1%
Equipment-veh condition	10	2.4%
Evasive act-due to animal, etc	1	0.2%
Fail reduce speed to avoid crash	89	21.7%
Fail yield right of way	55	13.4%
Follow too closely	27	6.6%
Improper backing	52	12.7%
Improper lane use	22	5.4%
Improper passing	6	1.5%
Improper turn-no signal	15	3.7%
Not applicable	8	2.0%
Operate veh-reckless,careless	1	0.2%
Physical condition of driver	9	2.2%
Right turn on red	1	0.2%
Road engineering/defects	4	1.0%
Texting	1	0.2%
Unable to determine	20	4.9%
Vision obscured-signs,limbs,etc	2	0.5%
Weather	18	4.4%
Grand Total	410	100.0%

III. TOP TEN CRASH INTERSECTIONS (TTCI)

A. Overview

Traffic data provides an abundance 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 and intersection events provides law enforcement, the motoring public and roadway engineers the opportunity to positively affect outcomes. Identifying our top ten crash hotspots across two years of data allows officers to focus attention on areas in need of traffic calming, enforcement and interdiction efforts.

B. Top Ten Crash Intersections Methodology

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. University of California, Berkeley). Regionally, the Illinois Department of Transportation provides on-line *Average Daily Traffic Count* maps on their website for these purposes. Few new traffic counts were conducted by the State during the pandemic, therefore the older counts used are skewed high for all intersections; however this is consistent across the board.

The *Detailed Top Ten Crash Intersections* (TTCI) analysis section reviews select data from all 2020 crash reports, compiling those ten 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. The ten intersections display the following data sets:

- Google map intersection photo
- IDOT average daily traffic volume
- IDOT average annual traffic volume
- Crash rate per million vehicles*
- Serious inj. 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 14,054 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 through a location)].

C.   Comparative Top Ten Crash Intersections: 2019 & 2020

Table 7 provides a review and comparison of the top ten crash locations for both 2019 and 2020, ranked high-to-low by total number of crashes (Crash TOTAL column). The next column (All Inj. Crash) provides the number of fatal and injury crashes (Types K, A, B, C). The third numeric column, (Serious Inj. ^{AK}) counts crashes listed as fatal (Type^K) and serious (Type^A) injury, with the numeric denoting the specific count for the injury type.

Table 7.   COMPARATIVE TOP TEN INTERSECTIONS: 2019-2020

2019 INTERSECTION	Crash TOTAL	All Inj. Crash	Serious Inj. ^{AK}	RANK	2020 INTERSECTION	Crash TOTAL	All Inj. Crash	Serious Inj. ^{AK}
RT 41 / RT 60	85	9	1^A	1	RT 41 / RT 60	50	9	2^A
RT 41 / Old Elm	68	12	1^K	2	RT 41 / Westleigh	43	10	2^A
RT 60 / RT 43	46	9	1^A	3	RT 60 / RT 43	27	5	2^A
RT 41 / Westleigh	40	8	1^K	4	RT 41 / Old Elm	27	5	0
RT 41 / Deerpath	29	6	1^A	5	RT 41 / Deerpath	20	5	1^A
RT 43 / Westleigh	27	1	0	6	RT 41 / Gage	8	1	0
RT 60 / Field Dr.	22	2	0	7	Green Bay / Westleigh	7	3	3^A
RT 43 / Deerpath	16	1	0	8	RT 60 / I-94	7	3	0
RT 43 / Everett	14	2	0	9	Deerpath / Western	6	0	0
RT 41 / Gage	13	4	0	10	(Tie: 4 @ 5 each, total→)	20	5	1^A
TOTAL	360	54	5		TOTAL	215	46	11
% of ALL crashes	46.6%	57.4%	55.5%		% of ALL crashes	52.4%	69.7%	61.1%

Comparing the top ten crash intersections over the last two years, 2019's top ten accounted for 360 events and 46.6% of the 770 annual crashes, while 2020 logged 215 crashes and 52.4% of the 410 collisions. The top five ranked locations remained the same for both years; however, positions flipped for the second and fourth ranked locations. Ranked locations six through ten added five new intersections in 2020, including ties. The 10th position ranking for 2020 includes four intersections tied with five crashes each: Route 43/Everett, Route 43/Deerpath, Deerpath/Green Bay and Westleigh/Sheridan.

Reviewing fatal and serious injury crashes in the comparative top ten reveals an increase from 5 to 11 crashes for a 120% upturn. The two fatal crashes in 2019 occurred at top ten intersections. A fatal DUI crash occurred near Route 41 and Westleigh, and a pedestrian fatal happened at Route 41 and Old Elm within a construction zone. The single, fatal crash in 2020 did not involve a top ten intersection, as it was in the middle of the 500 block of Mayflower.

D. Detailed Top Ten Crash Intersection Data: 2020

TOP CRASH INTERSECTION (#1)	ROUTE 41 / ROUTE 60

ACTIVITY	2020 DATA	TTCI RANK*
IDOT Average Daily Traffic Volume	52,500 vehicles	2
12 Month Traffic Volume	19,162,500 vehicles	2
2020 TOTAL CRASHES	50	1
Crash Rate per million vehicles	2.61	1
Serious Injury (K, A) Crash Rate per million vehicles	0.10	3T
Property Damage Only Crashes (Type O)	41	
Property Damage Crash Percent	82.00%	
All Injury Crashes (Type K, A, B, C)	9	
All Injuries Crash Percent	18.00%	
Serious Injury Crashes (Type K, A)	2 (A)	
Serious Injury Crash Percent	4.00%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)*	2.86%	
State of ILLINOIS Serious Inj. Crash Percent (Type K,A)*	3.14%	

*(*TTCI Rank: 1-10 ranking, with 1 being highest number or percentage of events and 10 being the lowest. T indicates ties.)*

OBSERVATIONS: This is one of two T-intersection's in the TTCI grouping. This location ranked first in crashes for 2019 and 2020, although it displayed a 41.2% decrease in total crashes from 85 in 2019 to 50 in 2020. There was one Type A crash in 2019 and two during 2020.

CRASH DIRECTION	CRASHES	PERCENTAGE
SB RT 41	22	44.0%
EB RT 60	16	32.0%
NB RT 41	11	22.0%
WB RT 60	1	2.0%

Combining the top two directions, southbound Route 41 with eastbound Route 60, accounts for 76.0% of all crashes at this location. Overall, Route 41 traffic was involved in 66.0% of the crashes.

COLLISION TYPES

Rear end collisions accounted for 58.0% of the 50 crashes, with *fixed object* a distant second at 16.0%. The top collision event in 2019 was *rear end* crashes with 70.6% of the 85 crashes.

The 2020 collision types for this intersection's two Type A serious injury crashes were *fixed object* and *sideswipe same direction*.

COLLISION TYPE

ALL OTHERS 6

SIDESWIPE SAME DIR. 7

FIXED OBJECT 8

REAR END 29
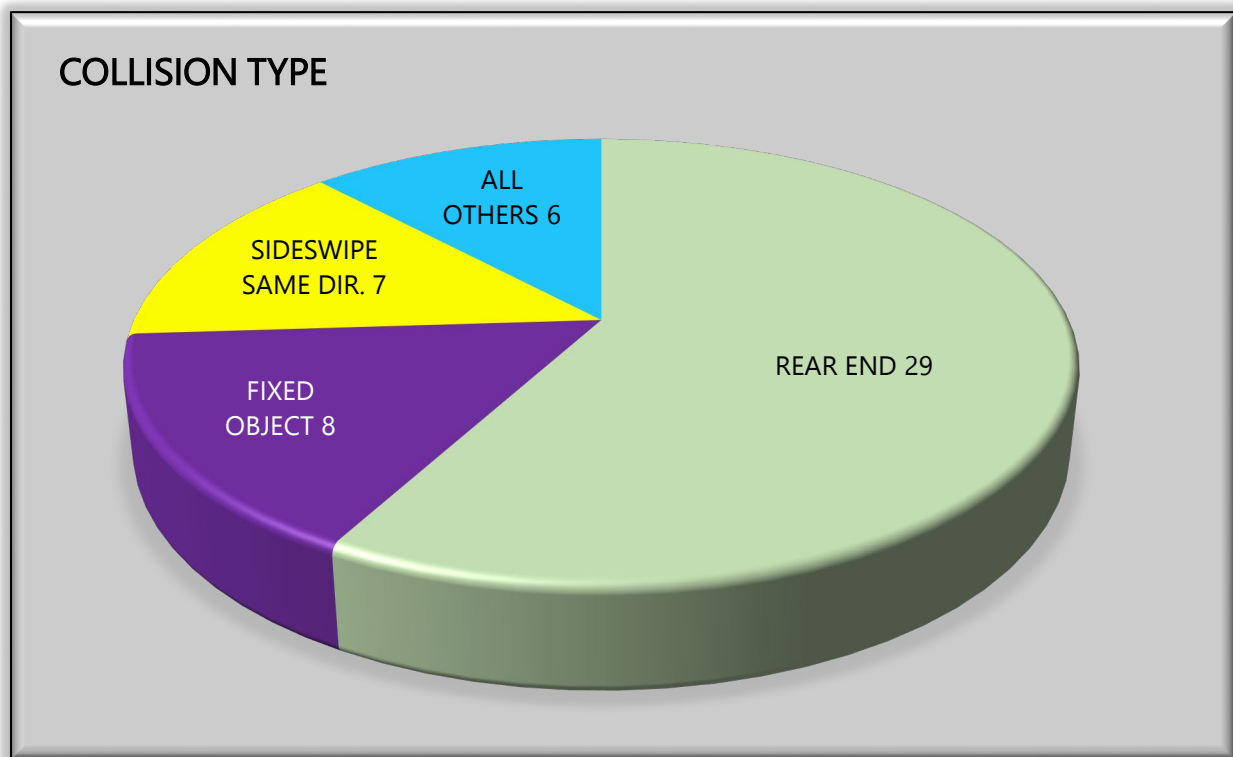
TOP CRASH INTERSECTION (#2)	ROUTE 41 / WESTLEIGH

ACTIVITY	2020 DATA	TTCI RANK*
IDOT Average Daily Traffic Volume	52,250 vehicles	3T
12 Month Traffic Volume	19,071,250 vehicles	3T
2020 TOTAL CRASHES	43	2
Crash Rate per million vehicles	2.25	2
Serious Injury (K, A) Crash Rate per million vehicles	0.10	3T
Property Damage Only Crashes (Type O)	33	
Property Damage Crash Percent	76.74%	
All Injury Crashes (Type K, A, B, C)	10	
All Injuries Crash Percent	23.25%	
Serious Injury Crashes (Type K, A)	2 (A)	
Serious Injury Crash Percent	4.65%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)	2.86%	
State of ILLINOIS Serious Inj. Crash Percent (Type K,A)	3.14%	

*(*TTCI Rank: 1-10 ranking, with 1 being highest number or percentage of events and 10 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 fourth during 2019 with 40 crashes and 8 total injuries, including one fatal. The 43 crashes in 2020 represented a 7.5% increase over 2019, making this the only top ten intersection to show an increase in 2020.

One of two fatal roadway crashes in 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 a passenger. There were no fatalities and two Type A crashes in 2020.

CRASH DIRECTION	CRASHES	PERCENTAGE
NB RT 41	27	62.8%
SB RT 41	11	25.6%
WB WESTLEIGH	4	9.3%
EB WESTLEIGH	1	2.3

Northbound Route 41 alone surpassed the other three quadrants combined in crash volume. Route 41 accounted for 88.4% of all crash activity.

COLLISION TYPES

As with a significant number of the TTCI locations, *rear end* crashes were the prevalent event accounting for 55.8% of collisions. *Fixed object* was the second most prolific action, with 16.3% of activity. For 2019, the top two collision types were *rear end* (70.0%) and *sideswipe same direction*.

The two Type A serious injury crashes in 2020 were *pedestrian* and *turning* crashes, which are incorporated in the *all others* collision category.

COLLISION TYPE

ALL OTHERS 7

SIDESWIPE SAME DIR. 5

FIXED OBJECT 7

REAR END 24
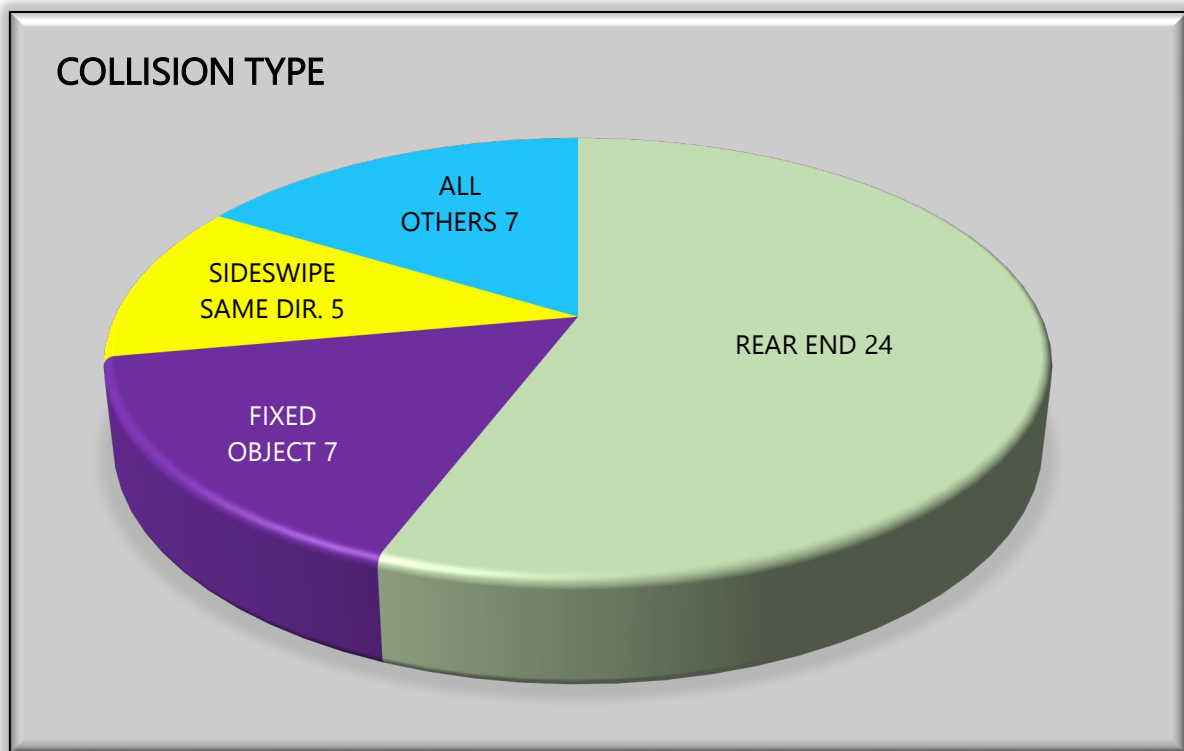
TOP CRASH INTERSECTION (#3)	ROUTE 60 / ROUTE 43 (Waukegan)
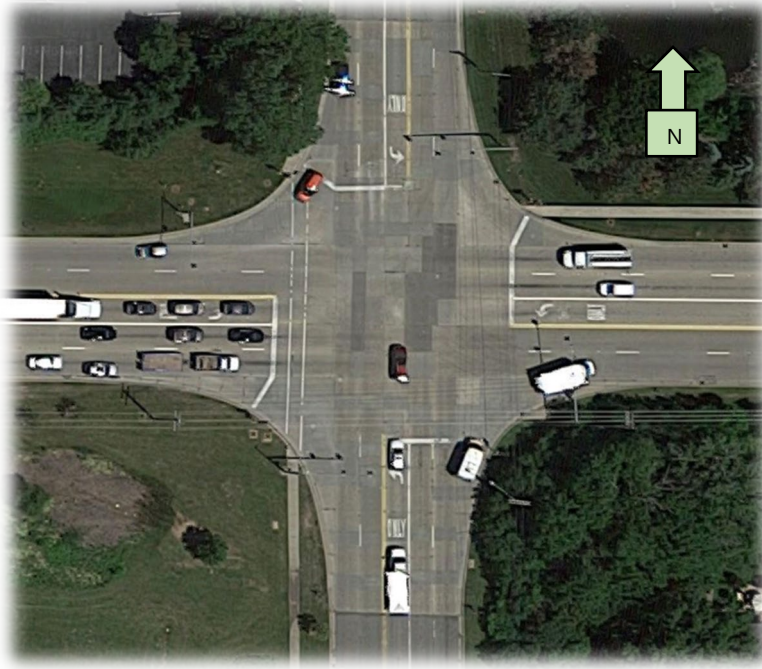
ACTIVITY	2020 DATA	TTCI RANK*
IDOT Average Daily Traffic Volume	33,150 vehicles	7
12 Month Traffic Volume	12,099,750 vehicles	7
2020 TOTAL CRASHES	27	3T
Crash Rate per million vehicles	2.23	3
Serious Injury Crash Rate per million vehicles	0.16	2
Property Damage Only Crashes (Type O)	22	
Property Damage Crash Percentage	81.48%	
All Injury Crashes (Type K, A, B, C)	5	
All Injuries Crash Percentage	18.51%	
Serious Injury Crashes (Type K, A)	2 (A)	
Serious Injury Crash Percentage	7.40%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)	2.86%	
State of ILLINOIS Serious Inj. Crash Percent (Type K,A)	3.14%	

(*TTCI Rank: 1-10 ranking, with 1 being highest number or percentage of events and 10 being the lowest. T indicates ties.)

OBSERVATIONS: Ranking mid-level in traffic volume, this is the only intersection within the top five with a standard four-way intersection configuration and no Route 41 component. The number 3 ranking for this location was the same for 2019 and 2020; however, there were 19 fewer crashes in 2020, providing a 41.3% decline over 2019 collisions.

There were two Type A serious injury crashes in 2020 and one in 2019.

CRASH DIRECTION	CRASHES	PERCENTAGE
EB RT 60	9	33.3%
WB RT 60	9	33.3%
SB RT 43	5	18.5%
NB RT 43	4	14.8%

Route 60 traffic accounted for two out of every three crashes at this intersection, and this numeric mirrored data from the 46 crashes in 2019.

COLLISION TYPES

Not surprisingly, *rear end* events were the most significant cause of crashes at this intersection accounting for 55.5% of collisions for 2020. Reviewing 2019 data reveals *rear end* collisions were responsible for 56.5% of events.

The two 2020 Type A serious injury crashes were both the result of *turning* collisions.
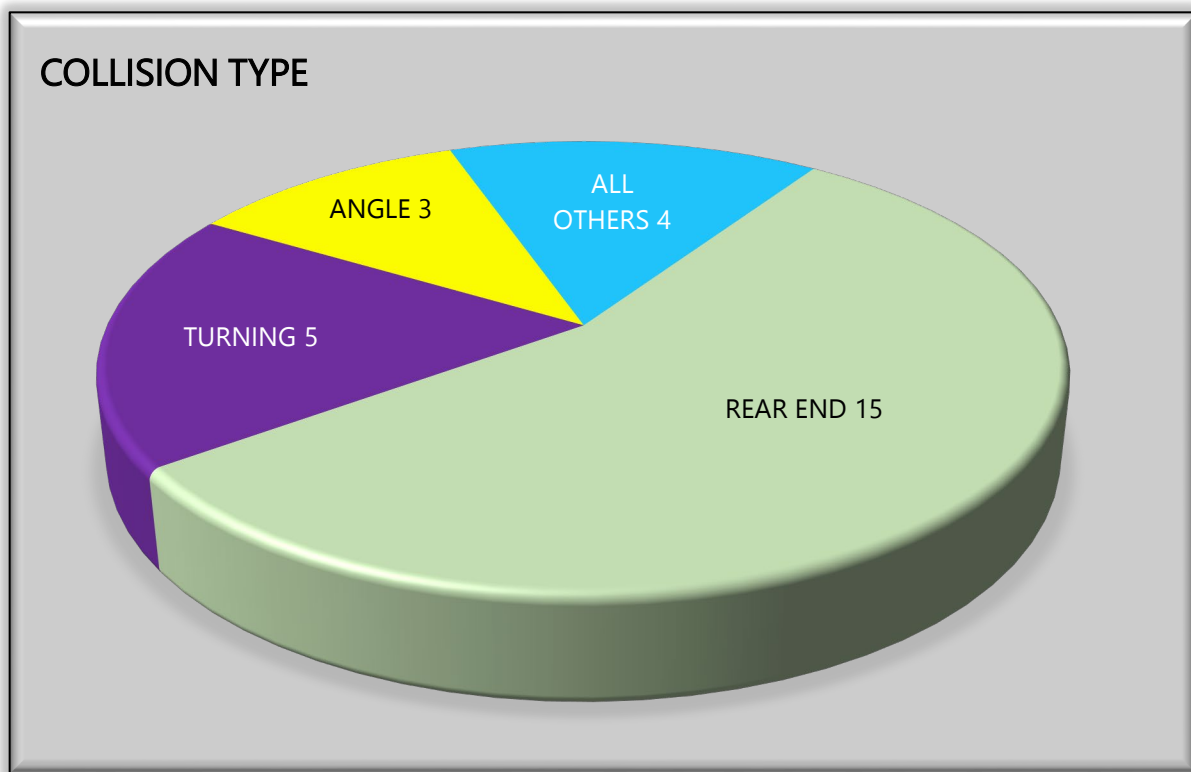
COLLISION TYPE

ALL OTHERS 4
ANGLE 3
TURNING 5
REAR END 15

ACTIVITY	2020 DATA	TTCI RANK*
IDOT Average Daily Traffic Volume	52,250 vehicles	3T
12 Month Traffic Volume	19,071,250 vehicles	3T
2020 TOTAL CRASHES	27	3T
Crash Rate per million vehicles	1.41	5
Serious Injury Crash Rate per million vehicles	0.00	6T
Property Damage Only Crashes (Type O)	22	
Property Damage Crash Percent	81.48%	
All Injury Crashes (Type K, A, B, C)	5	
All Injuries Crash Percent	18.51%	
Serious Injury Crashes (Type K, A)	0	
Serious Injury Crash Percent	0.0%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)	2.86%	
State of ILLINOIS Serious Inj. Crash Percent (Type K,A)	3.14%	

*(*TTCI Rank: 1-10 ranking, with 1 being highest number or percentage of events and 10 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 Route 41 off-ramp at the east quadrant. This fourth ranked location was second in 2019 with 68 total crashes, revealing a 60.3% decrease in 2020.

There were no serious injury crashes at this location in 2020. One of two fatal crashes during 2019 occurred here within an active roadway construction zone. A truck, backing up within a job site on southbound Route 41, struck a roadway crewmember killing her.

CRASH DIRECTION	CRASHES	PERCENTAGE
SB RT 41	13	48.1%
NB RT 41	10	37.0%
EB OLD ELM	3	11.1%
WB OLD ELM	1	3.7%

Route 41 accounted for 85.2% of all crashes at this location. This was down slightly from 2019 data which revealed 91.1% of crashes were on Route 41.

COLLISION TYPES

There were only three types of collisions occurring at this location during 2020; an anomaly among the five most prolific intersections which all had between five and eight differing collision types. For 2020, *rear end* collisions comprised 77.8% of all collisions while in 2019 *rear end* crashes, also ranked first with a 70.0% occurrence.

This was the only top five intersection for both years without a serious injury collision.

COLLISION TYPE

FIXED OBJECT 3

TURNING 3

REAR END 21
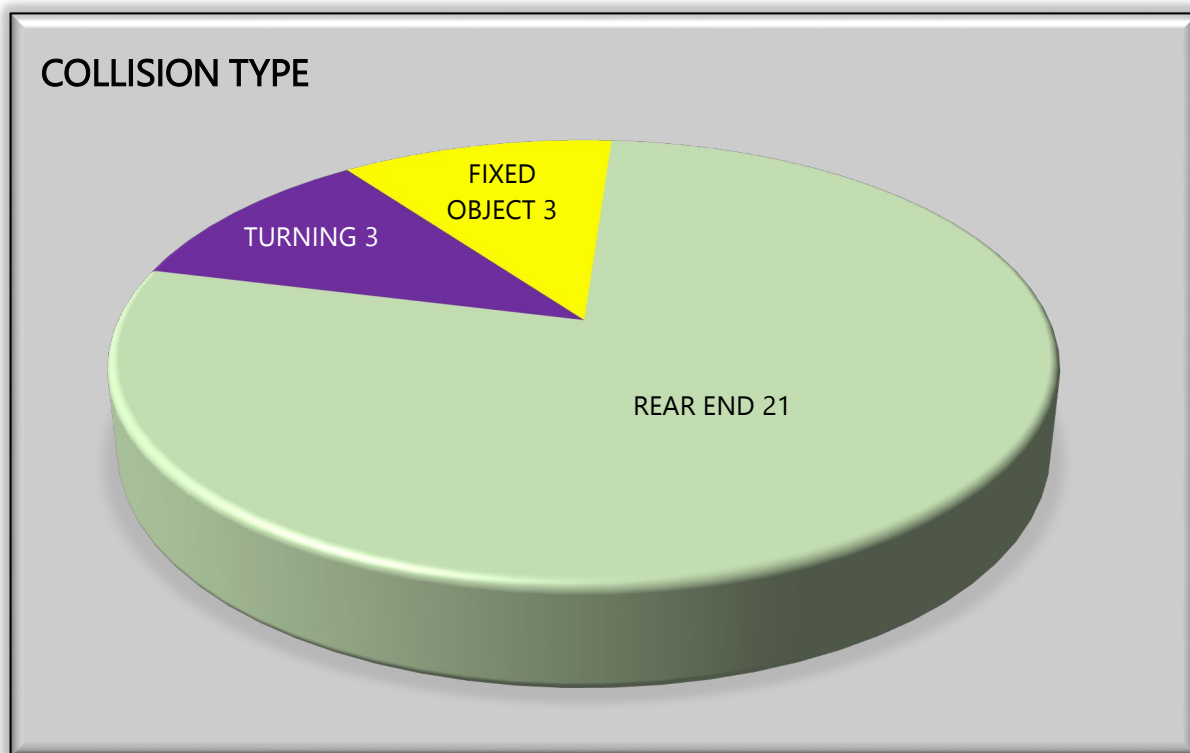
TOP CRASH INTERSECTION (#5)	ROUTE 41 / DEERPATH

ACTIVITY	2020 DATA	TTCI RANK*
IDOT Average Daily Traffic Volume	59,250 vehicles	1
12 Month Traffic Volume	21,626,250 vehicles	1
2020 TOTAL CRASHES	20	5
Crash Rate per million vehicles	0.92	7
Serious Injury Crash Rate per million vehicles	0.04	5
Property Damage Only Crashes (Type O)	15	
Property Damage Crash Percent	75.00%	
All Injury Crashes (Type K, A, B, C)	5	
All Injuries Crash Percent	25.00%	
Serious Injury Crashes (Type K, A)	1 (A)	
Serious Injury Crash Percent	5.00%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)	2.86%	
ILLINOIS Serious Inj. Crash Percent (Type K,A)	3.14%	

*(*TTCI Rank: 1-10 ranking, with 1 being highest number or percentage of events and 10 being the lowest. T indicates ties.)*

OBSERVATIONS: Ranking first in traffic volume, this is the only TTCI with multiple surface and elevated intersection segments, a parallel-elevated railroad section and multiple on and off ramps. This location maintained its ranking at fifth for both 2020 and 2019, while exhibiting a 31.0% decrease with nine fewer crashes.

There was one Type A serious injury crash during 2020, mirroring results from 2019.

CRASH DIRECTION	CRASHES	PERCENTAGE
NB RT 41	8	41%
SB RT 41	6	28%
EB DEERPATH	5	21%
WB DEERPATH	1	10%

Over two-thirds (70.0%) of all crashes took place on Route 41 and the ramps at this location. This closely resembles quadrant data from 2019 in terms of percentages.

COLLISION TYPES

Rear end collisions accounted for 40.0% of crashes, the lowest percentage for a primary collision type in any of the top five intersections. This was followed closely by *turning* at 25.0%. This was slightly different from 2019 data showing *rear end* and *fixed object* collisions were first and second respectively.

The single Type A serious injury crash in 2020 was the result of an *angle* collision.
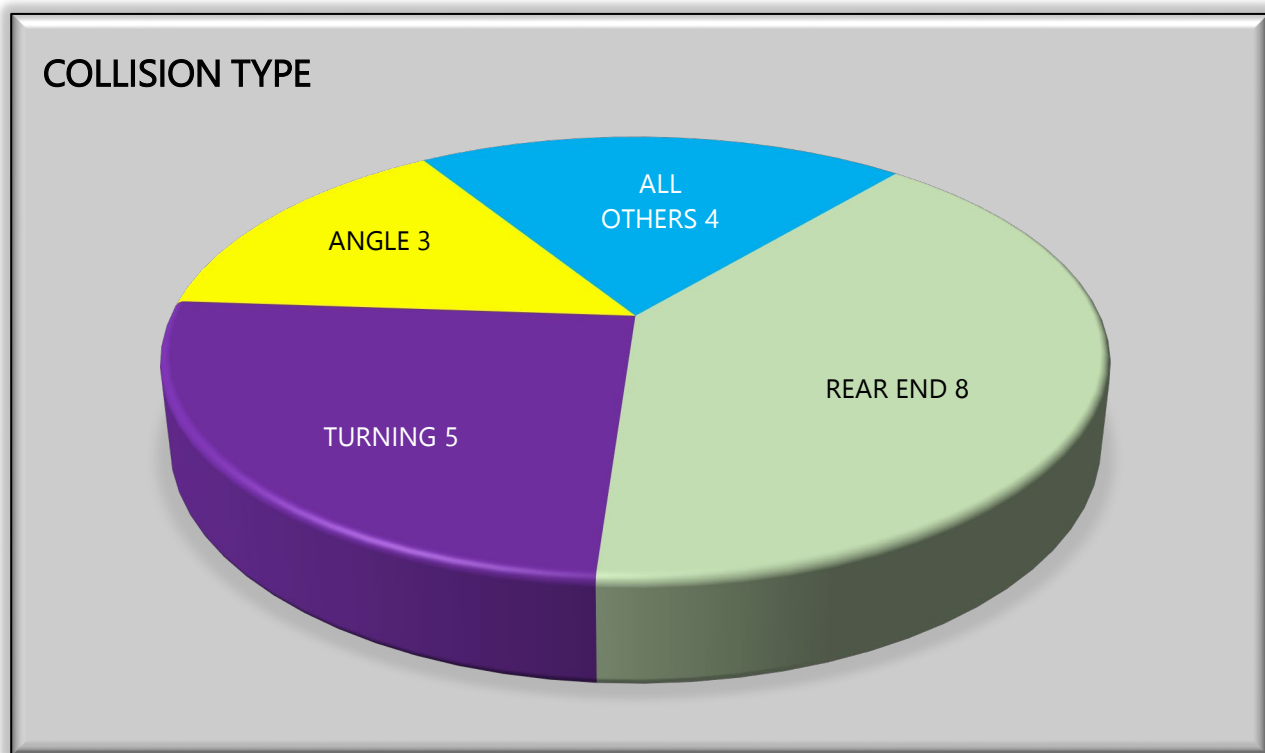
TOP CRASH INTERSECTION (#6)	ROUTE 41 / GAGE

ACTIVITY	2020 DATA	TTCI RANK*
IDOT Average Daily Traffic Volume	39,626 vehicles	5
12 Month Traffic Volume	14,463,490 vehicles	5
2020 TOTAL CRASHES	8	6
Crash Rate per million vehicles	0.55	8
Serious Injury Crash Rate per million vehicles	0.00	6T
Property Damage Only Crashes (Type O)	7	
Property Damage Crash Percent	87.50%	
All Injury Crashes (Type K, A, B, C)	1	
All Injuries Crash Percent	12.50%	
Serious Injury Crashes (Type K, A)	0	
Serious Injury Crash Percent	0.00%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)	2.86%	
ILLINOIS Serious Inj. Crash Percent (Type K,A)	3.14%	

*(*TTCI Rank: 1-10 ranking, with 1 being highest number or percentage of events and 10 being the lowest. T indicates ties.)*

OBSERVATIONS: A single stop sign with right turn only sign control this T-intersection for eastbound Gage, limiting traffic to southbound Route 41 only. Northbound Route 41 signage prevents left turns onto westbound Gage. This singular top ten location is less intersection specific and more general area description in determining crash totals. This stretch of Route 41 has no addressing feature or other roadway intersecting it, so several nearby crashes utilize this intersection in order to provide a location description. There were 8 crashes in 2020 and 13 during 2019 exhibiting a 38.4% decrease. There were no Type A serious injury crashes for either year.

CRASH DIRECTION	CRASHES	PERCENTAGE
NB RT 41	4	50%
SB RT 41	4	50%
EB GAGE	0	0%
WB GAGE	0	0%

All eight crashes (100%) took place on Route 41. This closely resembles quadrant data from 2019 where all 13 crashes took place on Route 41; five northbound and 8 southbound.

COLLISION TYPES

Rear end collisions accounted for 37.5% of crashes in 2020. The other five crashes were all singular events. This was slightly different from 2019 data showing a tie for first between *rear end* (4) and *fixed object* (4) collisions among the 13 crashes.

COLLISION TYPE

ALL OTHERS 3

FIXED OBJECT 1

ANIMAL 1

REAR END 3
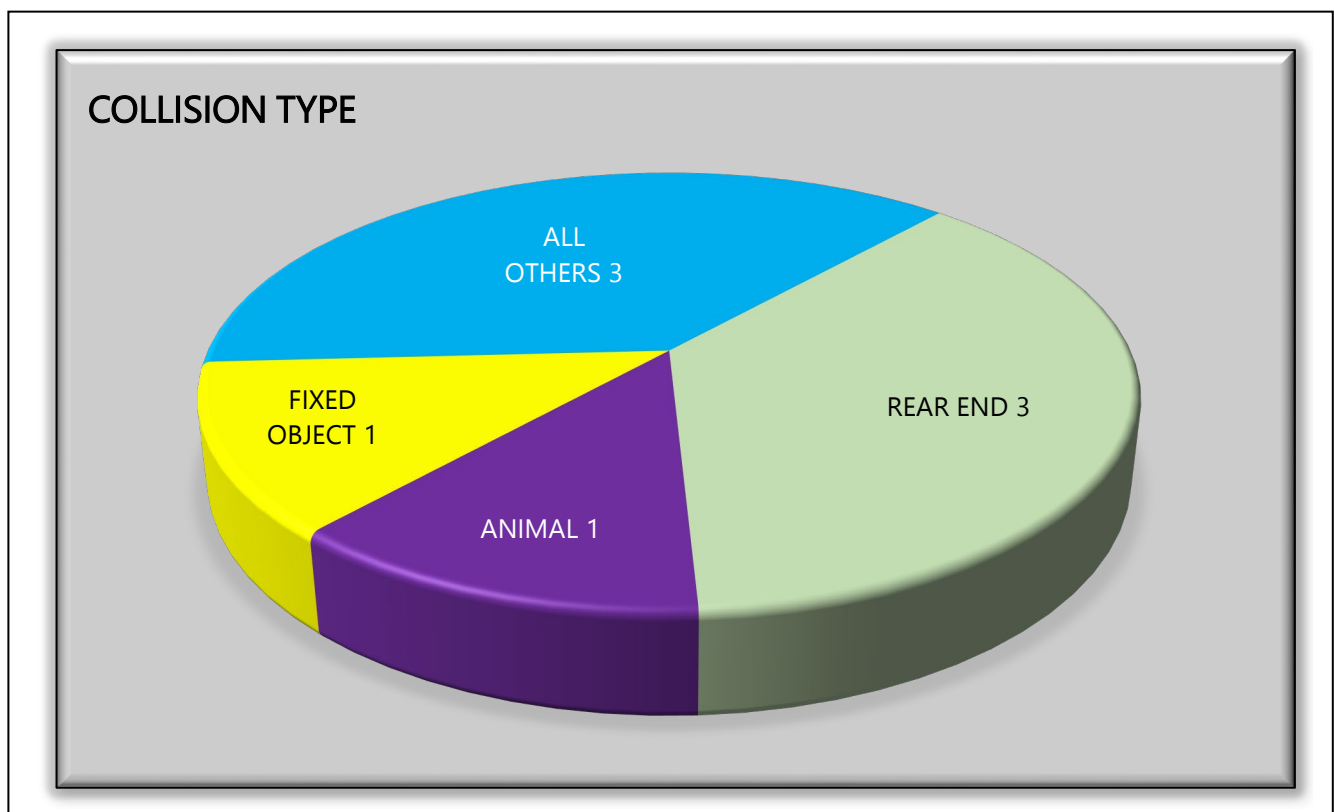
TOP CRASH INTERSECTION (#7)	GREEN BAY / WESTLEIGH

ACTIVITY	2020 DATA	TTCI RANK*
IDOT Average Daily Traffic Volume	14,175 vehicles	8
12 Month Traffic Volume	5,173,875 vehicles	8
2020 TOTAL CRASHES	7	7T
Crash Rate per million vehicles	1.35	6
Serious Injury Crash Rate per million vehicles	0.58	1
Property Damage Only Crashes (Type O)	4	
Property Damage Crash Percent	57.14%	
All Injury Crashes (Type K, A, B, C)	3	
All Injuries Crash Percent	42.85%	
Serious Injury Crashes (Type K, A)	3 (A)	
Serious Injury Crash Percent	42.85%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)	2.86%	
ILLINOIS Serious Inj. Crash Percent (Type K,A)	3.14%	

*(*TTCI Rank: 1-10 ranking, with 1 being highest number or percentage of events and 10 being the lowest. T indicates ties.)*

OBSERVATIONS: This intersection is a standard four-way traffic intersection, with some residential incursion. There were 7 crashes in 2020 and 8 during 2019 exhibiting a 12.5% decrease.

There were three Type A serious injury crashes for 2020 and none during 2019. For 2020, this intersection provided the highest total number (3) and percentage (42.85%) of serious injury crashes in the top ten list.

CRASH DIRECTION	CRASHES	PERCENTAGE
NB GREENBAY	2	29%
SB GREENBAY	3	43%
EB WESTLEIGH	1	14%
WB WESTLEIGH	1	14%

Green Bay Road accounted for 71.4% of the 2020 collisions. Data for 2019 revealed westbound Westleigh alone provided five of the eight crashes at 62.5%

COLLISION TYPES

Angle collisions accounted for 42.9% of crashes in 2020. This is the first top ten crash intersection that did not exhibit *rear end* crashes as the predominant type. This differed from 2019 data showing *rear end* (3) crashes as the primary type.

The three 2020 Type A serious injury crashes were the result of two *angle* crashes and one *turning* collision.
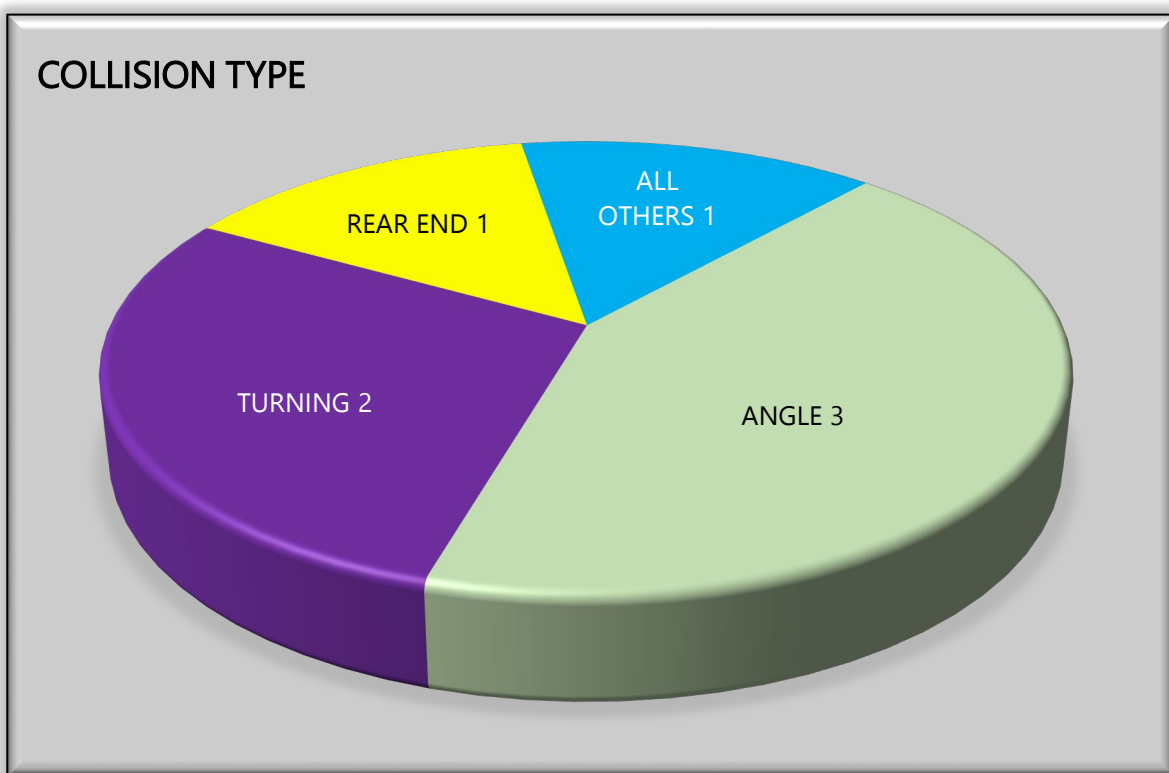
COLLISION TYPE

ACTIVITY	2020 DATA	TTCI RANK*
IDOT Average Daily Traffic Volume	35,550 vehicles	6
12 Month Traffic Volume	12,975,750 vehicles	6
2020 TOTAL CRASHES	7	7T
Crash Rate per million vehicles	0.54	9
Serious Injury Crash Rate per million vehicles	0.00	6T
Property Damage Only Crashes (Type O)	4	
Property Damage Crash Percent	57.14%	
All Injury Crashes (Type K, A, B, C)	3	
All Injuries Crash Percent	42.85%	
Serious Injury Crashes (Type K, A)	0	
Serious Injury Crash Percent	0.00%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)	2.86%	
ILLINOIS Serious Inj. Crash Percent (Type K,A)	3.14%	

(*TTCI Rank: 1-10 ranking, with 1 being highest number or percentage of events and 10 being the lowest. T indicates ties.)

OBSERVATIONS: Traffic counts include Route 60 and two I-94 ramps, while eliminating traffic counts on the I-94 surface roadway. Generally, traffic crashes occurring eastbound and westbound on Route 60 which are east of the centerline on the I-94 overpass are counted in Lake Forest crash totals. Crashes on the ramps and I-94 are the responsibility of Illinois State Police.

Of the seven crashes during 2020, none were serious injury crashes. Data for 2019 depicts 11 crashes with no serious injuries, resulting in a year over year decrease of 36.4%.

CRASH DIRECTION	CRASHES	PERCENTAGE
NB I-94	n/a	0%
SB I-94	n/a	0%
EB RT 60	3	43%
WB RT 60	4	57%

There were no totals gathered for northbound and southbound I-94 due to these quadrants being outside Lake Forest's jurisdiction. The splits for eastbound and westbound Route 60 were very similar between 2019 and 2020, with 2019 data revealing six eastbound and five westbound crashes.

COLLISION TYPES

Turning collisions accounted for 85.7% of crashes in 2020. This is the second top ten crash intersection that did not display *rear end* crashes as the predominant type. This differed from 2019 data showing *rear end* (4) crashes as the primary type at 36.4%.

COLLISION TYPE

FIXED OBJECT 1

TURNING 6
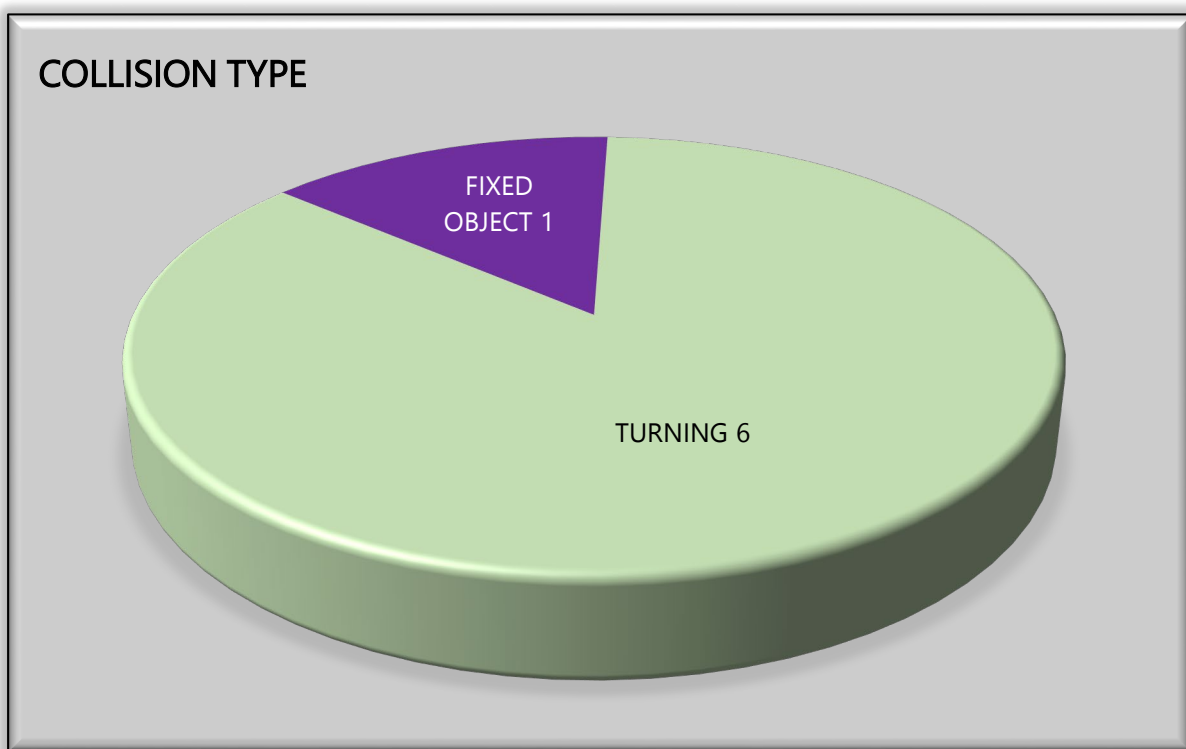
TOP CRASH INTERSECTION (#9)	DEERPATH / WESTERN

ACTIVITY	2020 DATA	TTCI RANK*
IDOT Average Daily Traffic Volume	10,250 vehicles	9
12 Month Traffic Volume	3,741,250 vehicles	9
2020 TOTAL CRASHES	6	9
Crash Rate per million vehicles	1.60	4
Serious Injury Crash Rate per million vehicles	0.00	6T
Property Damage Only Crashes (Type O)	6	
Property Damage Crash Percent	100%	
All Injury Crashes (Type K, A, B, C)	0	
All Injuries Crash Percent	0.00%	
Serious Injury Crashes (Type K, A)	0	
Serious Injury Crash Percent	0.00%	
LAKE CO. Serious Inj. Crash Percent (Type K,A)	2.86%	
ILLINOIS Serious Inj. Crash Percent (Type K,A)	3.14%	

*(*TTCI Rank: 1-10 ranking, with 1 being highest number or percentage of events and 10 being the lowest. T indicates ties.)*

OBSERVATIONS: This intersection is a four-way traffic intersection, controlled by stop signs on three sides, with RR tracks at the east quadrant and a Metra railroad station in walking distance. There were 6 crashes in 2020 and 7 during 2019 exhibiting a 14.3% decrease.

None of the crashes for either year were Type A serious injury crashes.

CRASH DIRECTION	CRASHES	PERCENTAGE
NB WESTERN	3	50%
SB WESTERN	2	33%
EB DEERPATH	1	17%
WB DEERPATH	0	0%

Overall, traffic on Western Avenue accounted for 83.3% of all crashes.

COLLISION TYPES

Rear end and *Angle* designations equally (50%) split the collision type factors with three events each. This was similar to 2019's data revealing *rear end* (4) crashes as the primary collision type at 57.1%.

COLLISION TYPE

REAR END 3

ANGLE 3
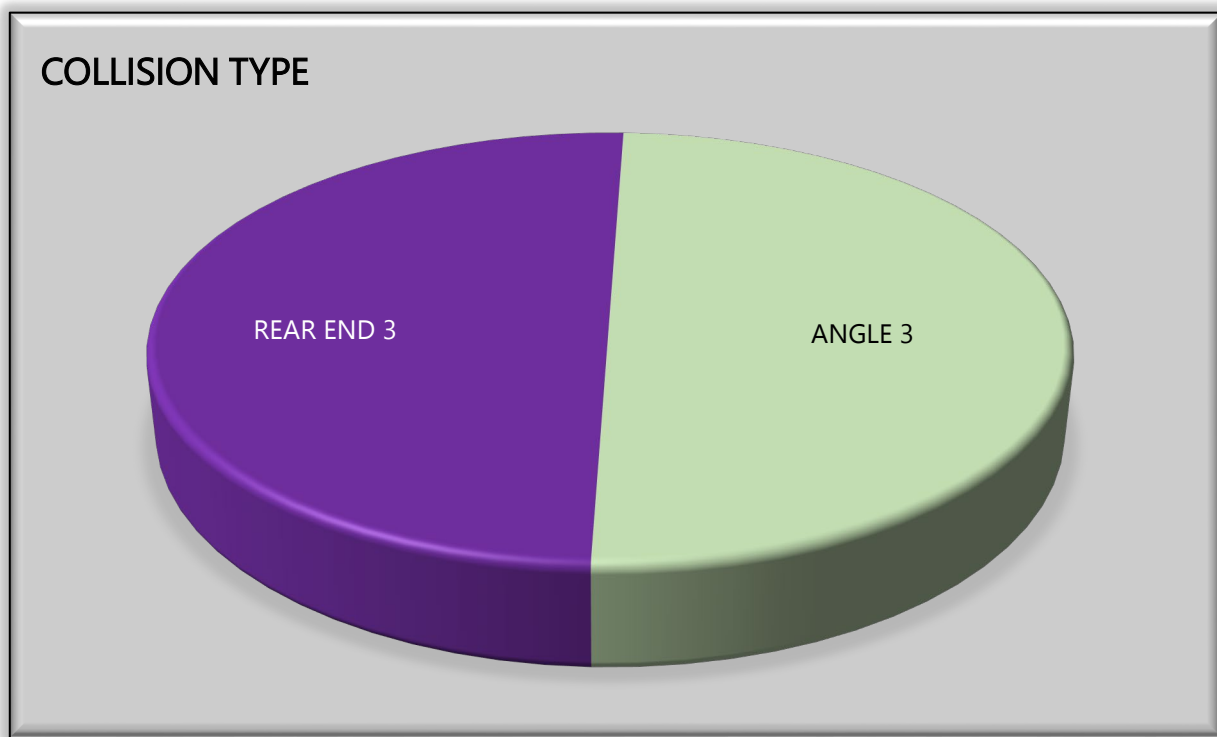
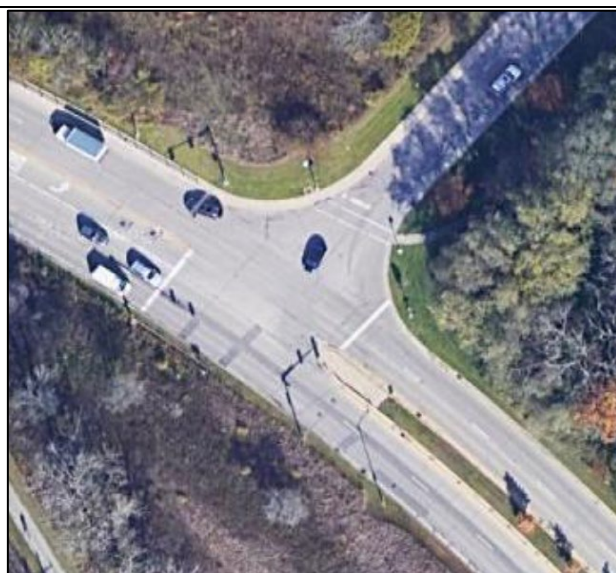| TOP CRASH INTERSECTION (#10)	Four Tied @ 5 Crashes

RT 43 / Everett (10.1)
5 crashes
Injury: 1(A) – 1(B)
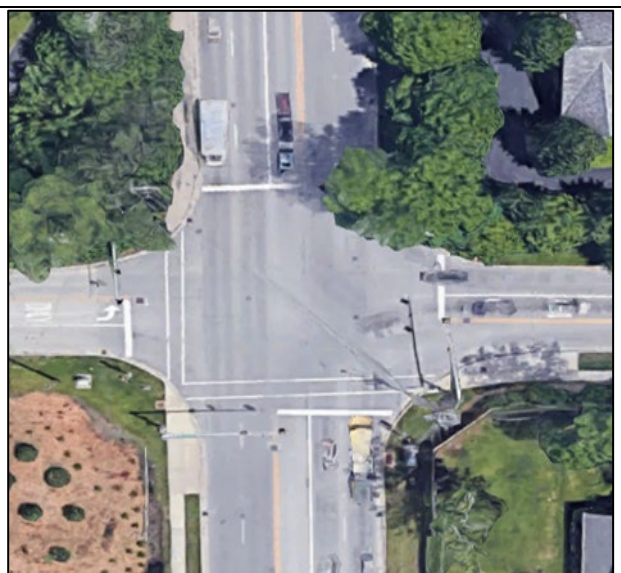

Deerpath / Green Bay (10.2)
5 crashes
Injury: 2 (B)

Sheridan / Westleigh (10.3)
5 crashes
Injury: 1 (B)

RT 43 / Deerpath (10.4)
5 crashes
Injury: none

The captions for these four intersections, which tied for 10th, depict total crashes and total injuries.

IV.   COMPARATIVE COMMUNITY, LAKE COUNTY AND STATE CRASH RATES

### A.   Population, Roadway Crashes and Crash Rates

An examination of our crash totals in relation to neighboring communities' data provides a comparison to further scrutinize our results. Table 8 compiles 2018 roadway crash rates per 1,000 population from Lake Forest, eight proximate municipalities, Lake County and the State of Illinois. The data collected utilizes the most current version of the *Illinois Department of Transportation, State-County-City Summary Crash Report(s) (2018)*. The State of Illinois will not have their newest version (2019) of the report available until later in 2021.

Due to a State mandated change in 2009, the dollar amount of damage utilized to trigger mandatory crash reporting increased, thereby decreasing the number of crashes required to be reported. "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).* This creates a situation where our internal crash report totals for 2018, showing 525 roadway crashes, is greater than those recorded by the State at 447. To make this report section statistically comparable, the State reported totals were utilized for all entities listed below.

TABLE 8.

2018 (Alpha Sort) JURISDICTION	POPULATION	CRASHES	CRASH RATE PER 1,000 POP.
DEERFIELD	18,779	372	19.81
GURNEE	30,576	979	32.01
HIGHLAND PARK	29,622	343	11.57
ILLINOIS	12,700,000	319,146	25.13
LAKE BLUFF	5,612	114	20.31
LAKE COUNTY	699,587	14,054	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

The following multi-scale chart (Chart 4) uses the same data, but a differing presentation. The left vertical axis uses a logarithmic scale to show a range of population totals and crashes in each jurisdiction. The blue points along the gray line use the right vertical axis to portray the crash rate per 1,000 residents.

Chart 4. POPULATION, CRASHES & CRASH RATE
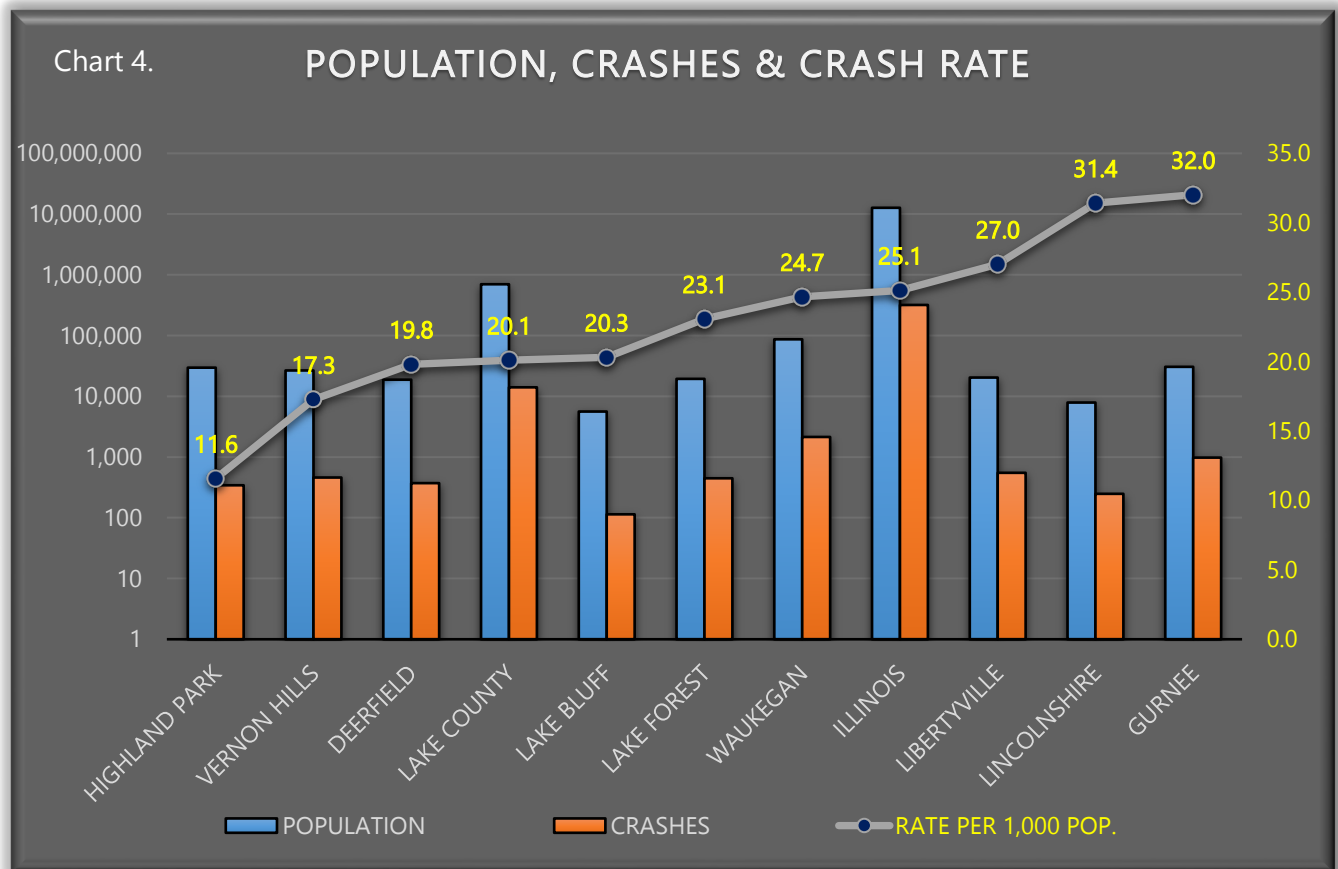
Lake Forest ranked sixth in crash rate at 23.1 crashes per one-thousand population, of the eleven jurisdictions analyzed. Highland Park ranked one exhibiting the lowest rate at 11.6 crashes while Gurnee was eleventh and highest, at 32.0 crashes per thousand.