



Meeting Topic: Garden Grove Local Road Safety Plan (LRSP)
– Working Group Meeting No. 1

Date: Thursday, September 30, 2021

Time: 6:00 PM

Place: Online via Zoom

Attendees: City of Garden Grove – Dai Vu, Ken Vu
Traffic Commission – Ricardo Cepeda, Joe Laricchia
Planning Commission – Josh Lindsay, Dale Soeffner
AGA Engineers, Inc. – Greg Wong and Roland P. Hizon

Not in Attendance
Police Department: Corporal Michael Elhami

Minutes:

The minutes for the September 30, 2021 Working Group meeting for the Garden Grove LRSP are as follows:

- ◆ Dai Vu explained the objective of the Local Roadway Safety Plan (LRSP) and the State’s requirement that an agency will need the LRSP for Highway Safety Improvement Program (HSIP) funding. Dai also explained AGA was awarded the task to develop the LRSP for the City and to evaluate the Top 30 highest collision intersections in the City.
- ◆ Greg Wong presented an overview of the LRSP and explained that the HSIP Call for Projects, Cycle 11 will begin April 2022 (date yet to be confirmed). Therefore, the LRSP report will need to be completed in early 2022 to be sent for Caltrans review/approval.
- ◆ Greg explained the LRSP emphasis areas and that AGA’s primary task is to evaluate the top 30 highest collision locations. However, the top 10 highest locations with severe injury/fatal collisions will also be closely evaluated as some of these locations will most likely be eligible for HSIP funding. Collisions involving pedestrians, bicyclists, speeding and impaired driving will be included in the report as well.
- ◆ Total collisions were charted from 2016 to 2020. The trend line showed a descending pattern in yearly collisions. It was noted that year 2020 could be an anomaly due to the COVID-19 pandemic and less vehicles were on the roadways at that time.
- ◆ The fatal and severe injury collisions were shown by year and the highest collision types (broadside and vehicle-pedestrian) were evaluated.
- ◆ Most of the vehicle-pedestrian collisions were due to the pedestrian at fault.

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- ◆ The top ten fatal/severe collision locations were further evaluated. AGA provided potential recommendations (where feasible) for some of the locations.
- ◆ Total bicycle involved collisions were shown as well as the streets with the highest number of bicycle collisions. Most of the bicycle collisions occurred along streets with the heaviest vehicular demand and over one-third of the collisions were due to bicyclists travelling on the wrong side of the road. Of the 19 severe injury/fatal bicycle collisions evaluated, the bicyclist was at fault for 12 of the collisions.
- ◆ Collisions due to unsafe speed were also evaluated and shown on a chart for the five year study period from 2016 to 2020. There is a descending trend line similar to the total number of collisions. The highest number of collisions due to unsafe speed were also shown and similar to the bicycle collisions, the streets with the heaviest vehicular demand had the highest number of collisions for unsafe speed. There were 22 severe injury/fatal collisions due to unsafe speed. Of the 22 collisions, ten involved a single vehicle and there were no apparent patterns between the 22 collisions as all of them occurred in separate areas of the City.
- ◆ Greg also explained that the overall top 30 collisions at intersections were evaluated. The highest primary collision type was then evaluated at each of the 30 intersections by movement and by year. Potential recommendations at some of the locations were identified. A sample of the top five locations were shown.
- ◆ Greg then explained that the top four mid-block collisions were evaluated. Although the number of collisions seem high for these locations (varies from 20-29 collisions), most of the collisions occurred at the intersections, with some already included in the top 30 intersections. After refining the mid-block collision data, the mid-block collisions varied at each of the four locations from two to eight collisions. A sample of the first mid-block location was shown.
- ◆ Corporal Elhami could not attend the meeting, but had previously asked AGA to evaluate West Street, between Garden Grove Boulevard and Orangewood Avenue. AGA conducted a collision analysis of the unsignalized and mid-block locations in this area and the initial evaluation analyzed each area around the intersections. The evaluation showed multiple collisions at each intersection or mid-block area, but a full understanding of the concerns could not be concluded. Therefore, a broader/overall evaluation of the entire study area was conducted and it was determined that the street has a high number of collisions due to unsafe speed (34%) and a high number of single vehicle collisions (45%). There was a discussion regarding the characteristics of street and its complexities due to the roadway speed, number of lanes, parking and the surrounding residential community. Dai mentioned that the City has plans to provide “lane balancing” and reduce the number of lanes from a four lane roadway (no medians) to a two lane roadway with a two-way left turn lane, bicycle lane and parking.
- ◆ Roland Hizon discussed the cost-benefit ratio (CBR) and how it could be incorporated using a single location or multiple locations for HSIP grant applications. Roland showed what the State defines the “collision cost” for each injury collision type. He showed a preliminary CBR analysis for the top three signalized fatal/severe injury locations with different combinations of countermeasures and how they can be scored independently or as a group.
- ◆ Greg briefly explained the Leading Pedestrian Interval (LPI) countermeasure and how it can be applied to locations with heavy pedestrian movements and that it does score well in the BCR

analysis. Dai mentioned that the City does utilize this signal timing parameter and Commissioner Lindsay recommended it to be implemented at the intersection of Chapman Avenue/Springdale Street due to the heavy demand of students and vehicles.

- ◆ Roland also explained that the Active Transportation Program (ATP) grants could be considered for bike lane and bike paths and other improvements.
- ◆ Roland showed that the average BCR of the selected projects was 13.4 from years 2011 to 2018. However, as stated beforehand, it is expected that the number of applications for the new HSIP Call for Projects 2022 will be significantly higher and that the BCR value will most likely need to be higher for a project to be awarded.
- ◆ Greg mentioned the next steps for the project. The recommendations to the intersection analysis will be the primary focus area. The other collisions (pedestrians/bicyclists, speeding and impaired driving) will also be evaluated and discussed in the report. AGA will begin field reviews of the emphasis areas. Commissioner Lindsay would like to attend the field review with AGA. Greg agreed to have Commissioner Lindsay attend the field review(s) and will provide the Working Group all of the analyses conducted for review prior to conducting the field review.
- ◆ The next meeting for the Working Group is expected to be in-person, approximately four-to-six weeks (early November).
- ◆ AGA will upload all analyses and worksheets and provide the Working Group a link to download for review.

Prepared by:

Greg Wong
AGA Engineers, Inc.

Distribution: Meeting attendees, Slide Presentation

Note: The above minutes represent the author's understanding of the items discussed and the decisions made during the context of the meeting. All items are assumed to be correct if the author is not contacted with clarifications.



Garden Grove Local Road Safety Plan (LRSP) Working Group Meeting No. 1



September 30, 2021

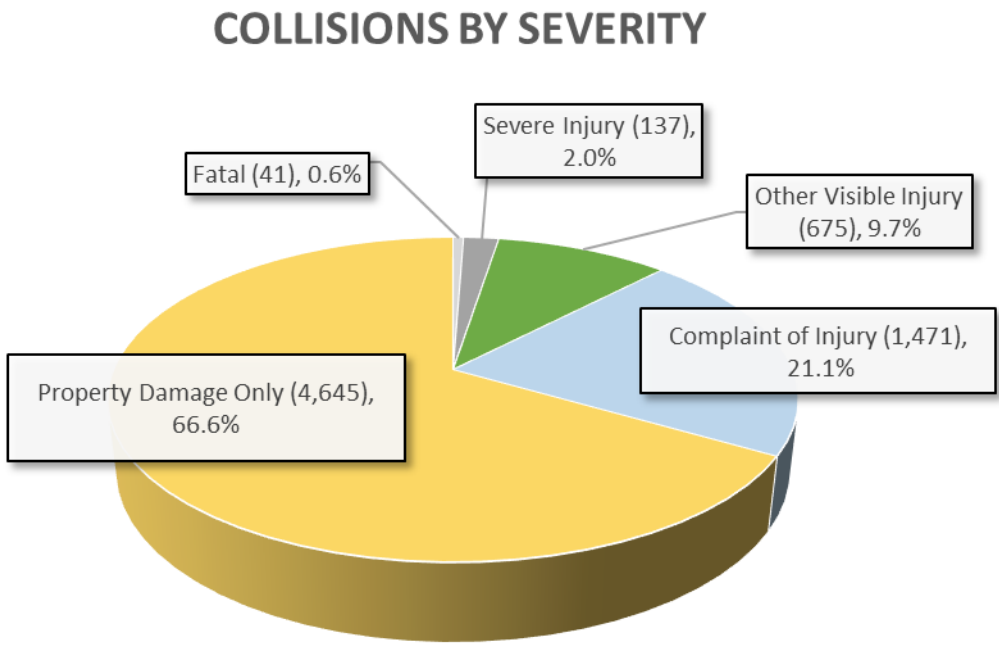
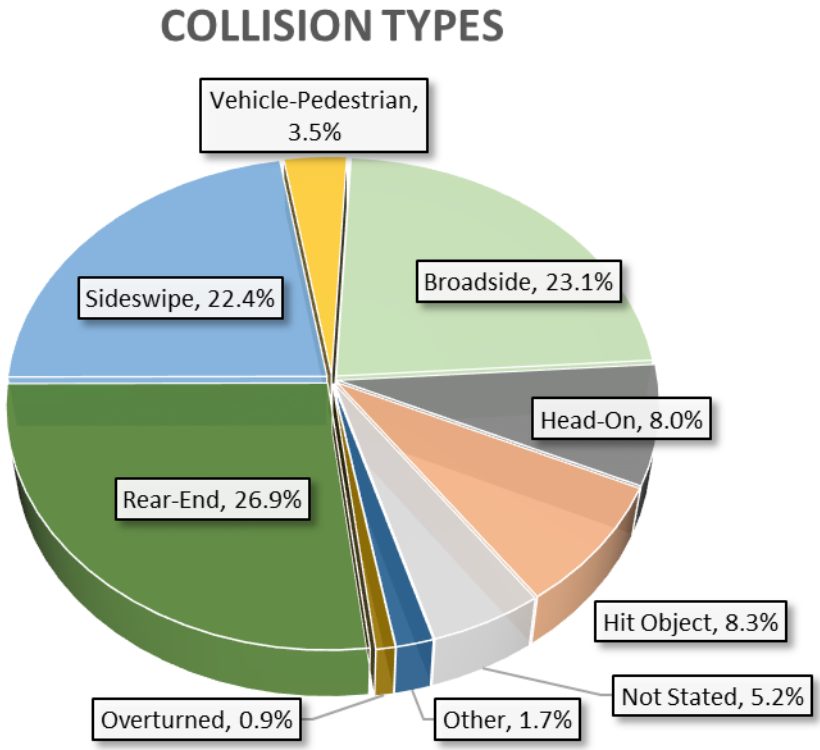
Garden Grove LRSP

- Overall Goal: Reduce Severe/Fatal Collisions
- State requirement for Highway Safety Improvement Program (HSIP)
 - **HSIP Call For Projects, Cycle 11 - April 2022**
 - Active Transportation Program (ATP), Capital Improvements Program (CIP)
 - More Competitive – Require a Higher Benefit-Cost Ratio (BCR)
- Analyze Safety Data
 - Statewide Integrated Traffic Records System (SWITRS)
 - Five Years, 2016 – 2020, Only City Locations
- Determine Emphasis Areas
- Living Document – Updated Periodically, both Data, Potential/Planned Improvements and Vision
 - Coordination with other City Departments

Garden Grove LRSP – Emphasis Areas

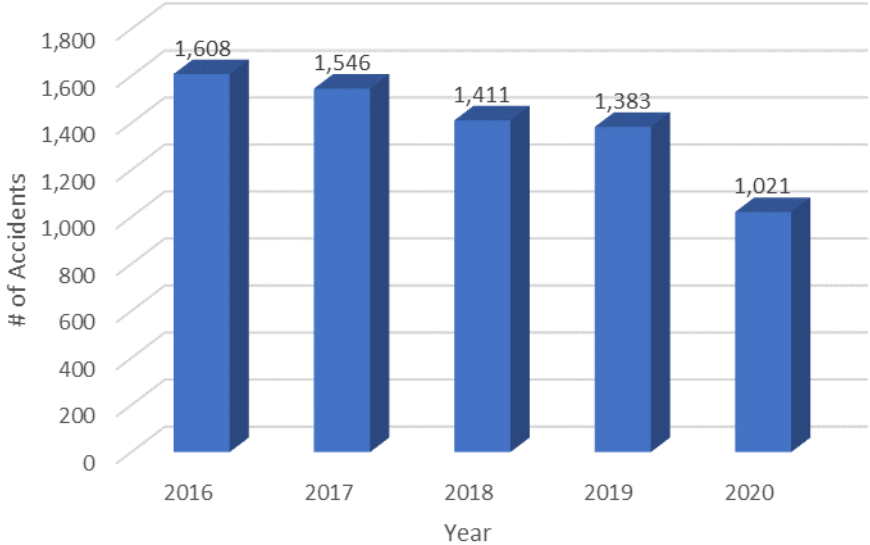
- **Intersections**
 - Severe Injury/Fatal (Main focus for future funding)
 - Traffic Signals
 - Unsignalized Locations
- **Pedestrians & Bicyclists**
- **Speeding**
- **Impaired Driving**

Collisions by Type and Severity

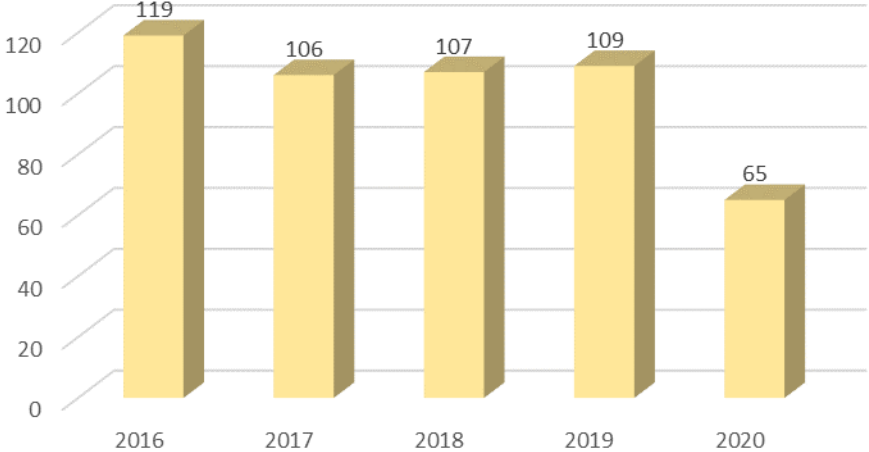


Collisions Year-by-Year

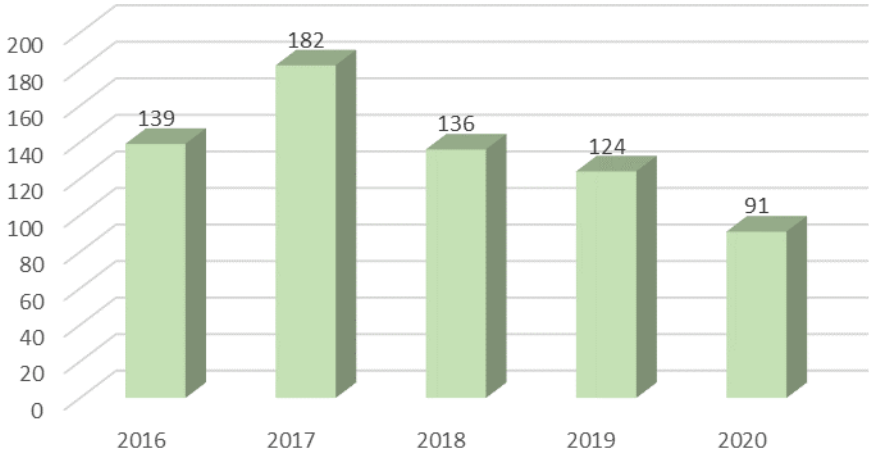
Collisions by Year



Ped/Bike Collisions by Year



DUI per Year

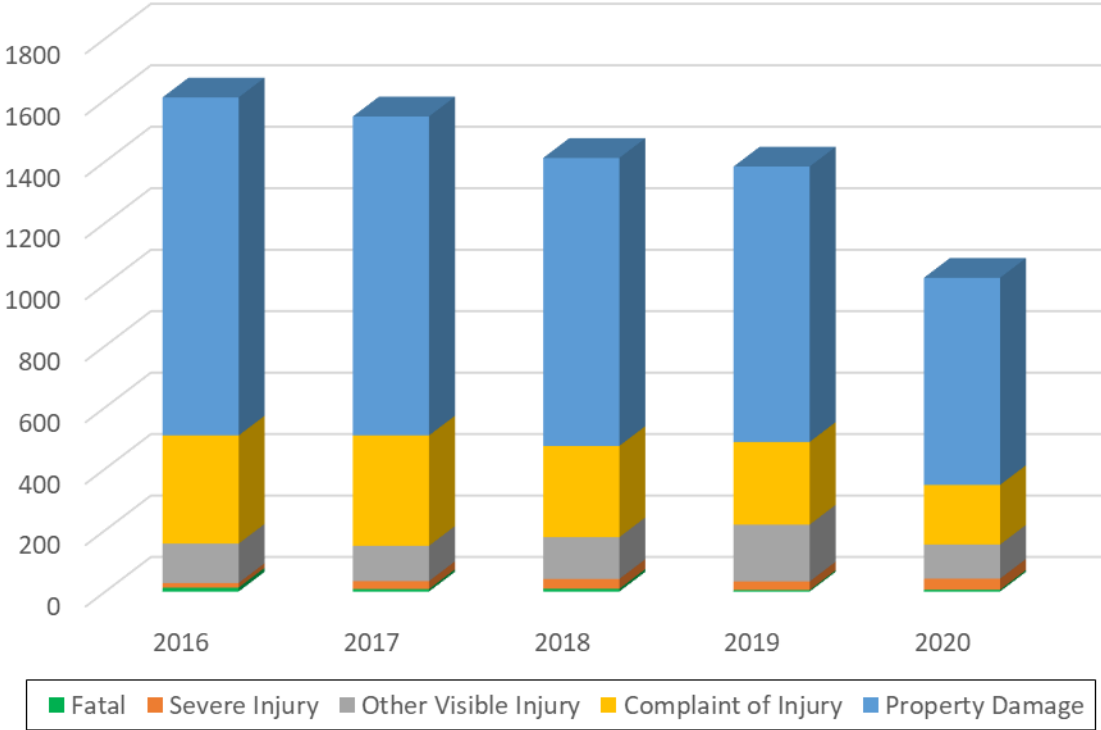


Collisions by Severity per Year

Collision by Severity per Year

Year	Fatal	Severe Injury	Other Visible Injury	Complaint of Injury	Property Damage
2016	13	15	128	352	1,100
2017	8	26	115	359	1,038
2018	9	32	136	297	937
2019	5	28	185	269	896
2020	6	36	111	194	674
Total	41	137	675	1,471	4,645

Collisions by Severity per Year

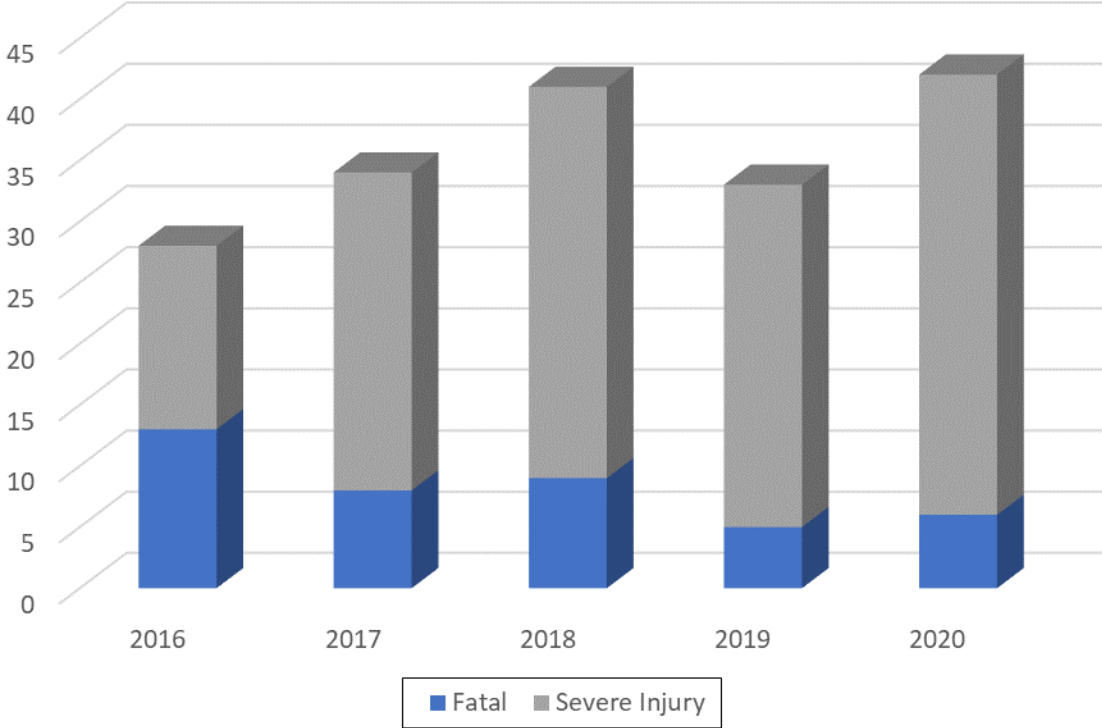


Severe Injury & Fatal Collisions by Severity per Year

Collision by Severity per Year

Year	Fatal	Severe Injury	Other Visible Injury	Complaint of Injury	Property Damage
2016	13	15	128	352	1,100
2017	8	26	115	359	1,038
2018	9	32	136	297	937
2019	5	28	185	269	896
2020	6	36	111	194	674
Total	41	137	675	1,471	4,645

Fatal and Severe Collisions per Year



Severe Injury & Fatal Collisions by Collision Type

Date Range Reported: 1/1/2016 - 12/31/2020

Total Collisions: 178

Collision by Severity per Year

Year	Fatal	Severe Injury	Other Visible Injury	Complaint of Injury	Property Damage
2016	13	15	128	352	1,100
2017	8	26	115	359	1,038
2018	9	32	136	297	937
2019	5	28	185	269	896
2020	6	36	111	194	674
Total	41	137	675	1,471	4,645

Collision Type

Broadside	59
Head-On	19
Hit Object	13
Not Stated	5
Other	10
Overturned	1
Rear-End	17
Sideswipe	8
Vehicle - Pedestrian	46

Total: 178



Severe Injury & Fatal Collisions, Broadside Collisions

Primary Collision Factor by Degree of Injury

09-Jul-21

Primary Collision Factor	Total Collisions		Fatal		Severe Injury		Other Visible Injury	
	Count	%	Count	%	Count	%	Count	%
Auto R/W Violation	28	47.46%	2	22.22%	26	52.00%		
Driving Under Influence	9	15.25%	3	33.33%	6	12.00%		
Traffic Signals and Signs	7	11.86%			7	14.00%		
Improper Turning	5	8.47%	2	22.22%	3	6.00%		
Unknown	4	6.78%			4	8.00%		
Other Hazardous Movem	2	3.39%			2	4.00%		
Wrong Side of Road	2	3.39%	1	11.11%	1	2.00%		
Lights	1	1.69%	1	11.11%				
Other	1	1.69%			1	2.00%		
Total:	59		9		50			

Date Range Reported: 1/1/2016 - 12/31/2020

Total Collisions: 178

Collision Type

Broadside	59
Head-On	19
Hit Object	13
Not Stated	5
Other	10
Overtaken	1
Rear-End	17
Sideswipe	8
Vehicle - Pedestrian	46
Total:	178

Severe Injury & Fatal Collisions, Vehicle-Pedestrian Collisions

Primary Collision Factor by Degree of Injury

08-Jul-21

Primary Collision Factor	Total Collisions		Fatal		Severe Injury		Other Visible Injury	
	Count	%	Count	%	Count	%	Count	%
Pedestrian Violation	27	58.70%	9	56.25%	18	60.00%		
Ped R/W Violation	7	15.22%	2	12.50%	5	16.67%		
Driving Under Influence	3	6.52%	1	6.25%	2	6.67%		
Unknown	3	6.52%	2	12.50%	1	3.33%		
Improper Turning	2	4.35%	1	6.25%	1	3.33%		
Improper Passing	1	2.17%			1	3.33%		
Other Than Driver or Ped	1	2.17%			1	3.33%		
Traffic Signals and Signs	1	2.17%			1	3.33%		
Unsafe Speed	1	2.17%	1	6.25%				
Total:	46		16		30			

Date Range Reported: 1/1/2016 - 12/31/2020

Total Collisions: 178

Collision Type

Broadside	59
Head-On	19
Hit Object	13
Not Stated	5
Other	10
Overtuned	1
Rear-End	17
Sideswipe	8
Vehicle - Pedestrian	46

Total: 178



Severe Injury & Fatal Collisions, Vehicle-Pedestrian Collisions

No.	Location	Total	Fatal	Primary Collision Factor
1	Acacia Pkwy - Main St	1		Improper Turning
2	Brookhurst St - 13th St	2	X (1)	- Unknown - Pedestrian Violation
3	Brookhurst St - Bixby Ave	2	X	Pedestrian Violation
4	Brookhurst St - Chapman Ave	1		Ped R/W Violation
5	Brookhurst St - Garden Grove Blvd	1		Pedestrian Violation
6	Brookhurst St - Jennrich Ave	1		Pedestrian Violation
7	Brookhurst St - Route 22	1		Pedestrian Violation
8	Chapman Ave - Bayport St	1		Pedestrian Violation
9	Chapman Ave - Euclid St	1	X	DUI
10	Chapman Ave - Santa Rosalia St	1		Pedestrian Violation
11	Chapman Ave - Somerset Pl	2	X (1)	- Pedestrian Violation - Pedestrian Violation (Impairment)
12	Dale St - Stanford Ave	1	X	Unsafe Speed
13	Euclid St - Garden Grove Blvd	1	X	Pedestrian Violation
14	Euclid St - Stanford Ave	1	X	Pedestrian Violation
15	Faye Ave - Chapman Ave	1		Pedestrian Violation
16	Garden Grove Blvd - Benton St	1	X	Pedestrian Violation
17	Garden Grove Blvd - Century Blvd	1		Ped R/W Violation
18	Garden Grove Blvd - Jefferson St	1		Pedestrian Violation
19	Garden Grove Blvd - Monroe St	1		Pedestrian Violation
20	Garden Grove Blvd - Nelson St	3		- Ped R/W Violation (2) - Pedestrian Violation (1)

No.	Location	Total	Fatal	Primary Collision Factor
21	Gilbert St - Arlene Ave	1		Pedestrian Violation
22	Gilbert St - Maureen Dr	1		Pedestrian Violation
23	Haster St - Lampson Ave	1	X	Pedestrian Violation
24	Hazard Ave - Michael St	1		DUI
25	Katella Ave - Magnolia St	1		Ped R/W Violation
26	Lampson Ave - Brookhurst St	1		Pedestrian Violation
27	Lampson Ave - Haster St	1	X	Ped R/W Violation
28	Lampson Ave - Valley View St	1	X	Unknown
29	Larson Ave - Coast St	1		DUI
30	Magnolia St - Mays Ave	1	X	Ped R/W Violation
31	Magnolia St - Rosana Ave	1		Pedestrian Violation
32	Manley St - Huntley Ave	1		Pedestrian Violation
33	Marty Ln - Lewis St	1		Unknown
34	Newland St - Garden Grove Blvd	1		Pedestrian Violation
35	Parkway Dr - Parkside Ln	1		Other Than Driver or Ped
36	Trask Ave - Donegal Dr	1	X	Pedestrian Violation
37	Westminster Ave - Brookhurst St	1	X	Improper Turning
38	Westminster Ave - Euclid St	1		Pedestrian Violation
39	Westminster Ave - Flower St	1	X	Pedestrian Violation
40	Westminster Ave - Kerry St	1		Traffic Signals and Signs
41	Westminster - Roxey Dr	1		Improper Passing

Other Injury (non-severe injury/fatal) - 80

Severe Injury & Fatal Collisions, Top Ten Locations

Top 10 Fatal/Severe Locations 2016-2020

➤ Top Ten Fatal and Severe Locations

		Fatal-Severe Collisions							Notes/Recommendations	
		No.	Collision Type	Severity	Direction	Time of Day	Party at Fault	Date		
1	Garden Grove Blvd at Nelson St	A	Veh-Ped	Severe	EBL/NBT	Dark	Auto EBL	11/15/2018	REC: Upgrade Traffic Signal Protected Left Turns, Countdown Ped Heads (check for existing), Additional Vehicle Head Indications for east/west, Dilemma zone detection	
		B	Veh-Ped	Severe	WBL/NBT	Daylight	Auto WBL	3/6/2019		
		C	Veh-Ped	Severe	WBL/NBT	Dark	Auto WBL	10/31/2019		
		D	Broadside	Severe	SBL/NBT	Daylight	Auto SBL	10/15/2020		
		Notes: Other Predominant Non-Fatal-Severe Collisions								
		Rear End (7)	SB Thru	1	Broadside (8)	NB Left	1			
			WB Thru	3		SB Left	1			
			EB Thru	3		WB Left	2			
						EB Left	2			
						Other	2			

		Fatal-Severe Collisions							Notes/Recommendations	
		No.	Collision Type	Severity	Direction	Time of Day	Party at Fault	Date		
2	Garden Grove Blvd at Newland St	A	Head-On	Severe	SBL/WBT/NBO	Daylight	Auto SBL	3/23/2017	REC: Upgrade Traffic Signal Protected Left Turns, Additional Vehicle Head Indications for east/west, Dilemma zone detection 6/25/17 WBL - DUI SBL/EBT - Remove trees on west median for better corner sight distance	
		B	Sideswipe	Severe	WBL/EBT	Dark	Auto WBL	6/25/2017		
		C	Broadside	Severe	WBL/EBT	Dark	Auto WBL	8/16/2018		
		D	Broadside	Severe	SBL/EBT/NBO	Dark	Auto SBL	2/25/2020		
		Notes: Other Predominant Non-Fatal-Severe Collisions								
		Sideswipe (6)	NB	1	Broadside	WBL/EBT (9)				
			SB	1		SBL/EBT (5)				
			EB	2						
			Other	2		RTO/NB Stopped (2)				

Haster St at Lampson Ave	A	Head-On	Severe	SBT/WBL/EBR	Dark	Auto SBT	2/24/2016	City to add PPLT Lefts
	B	Not Stated	Fatal	EBT/STB	Dark	Auto EBT	4/15/2016	
	C	Veh-Ped	Fatal	EBL/EBT	Dark	Auto EBL	1/21/2017	

		Fatal-Severe Collisions							Notes/Recommendations	
		No.	Collision Type	Severity	Direction	Time of Day	Party at Fault	Date		
3	Westminster Ave at Kerry St	A	Veh-Ped	Severe	WBT/STB/STB/STB	Daylight	Auto WBT	7/19/2018	REC: Upgrade Traffic Signal Protected Left Turns, Additional Vehicle Head Indications for east/west, Dilemma zone detection	
		B	Rear-End	Fatal	WBT/WBO	Daylight	Auto WBT	9/2/2019		
		C	Broadside	Severe	WBL/EBT	Dark	Auto WBL	2/2/2020		
		Notes: Other Predominant Non-Fatal-Severe Collisions								
		Broadside (7)	NB Left	1						
			WB Left	4						
			Other	2						
		Rear End (9)	WB	2						
			EB	7						

Severe Injury & Fatal Collisions, Top Ten Locations

➤ Top Ten Fatal and Severe Locations

Top 10 Fatal/Severe Locations 2016-2020

		Fatal-Severe Collisions						Notes/Recommendations		
No.	Collision Type	Severity	Direction	Time of Day	Party at Fault	Date				
4	Central Ave at Brookhurst St	A	Broadside	Fatal	EBO/NBT/O	Dark	Auto EBO	6/15/2017	Unsignalized	
		B	Broadside	Severe	EBL/NBT	Dark	Auto EBL	9/1/2020		
		Notes: Other Predominant Non-Fatal-Severe Collisions								
		Broadside (5)	SB Left	1						
			WB Left	2						
	EB Left	1								
	Other	1								
5	Chapman Ave at Santa Rosalia St (W)	Fatal-Severe Collisions						Notes/Recommendations		
		No.	Collision Type	Severity	Direction	Time of Day	Party at Fault		Date	
		A	Veh-Ped	Severe	NBT/WBO	Dark	Ped NBT		1/15/2018	Unsignalized Ped at fault
		B	Broadside	Severe	SBL/WBT	Daylight	Auto SBL		6/12/2018	
Notes: Other Predominant Non-Fatal-Severe Collisions										
	NA									
6	Cynthia Cir at Euclid St	Fatal-Severe Collisions						Notes/Recommendations		
		No.	Collision Type	Severity	Direction	Time of Day	Party at Fault		Date	
		A	Other	Severe	NBT/NA	Daylight	Auto NBT		9/20/2019	Unsignalized Total of three WBL collisions
		B	Broadside	Severe	WBL/NBT	Daylight	Auto WBL		9/22/2020	
		Notes: Other Predominant Non-Fatal-Severe Collisions								
Broadside (4)	WB Left	2								
	EB Left	1								
	Other	1								
7	Euclid St at Chapman Ave	Fatal-Severe Collisions						Notes/Recommendations		
		No.	Collision Type	Severity	Direction	Time of Day	Party at Fault		Date	
		A	Veh-Ped	Fatal	EBR/NA	Daylight	Auto EBR		6/2/2017	Veh-Ped DUI REC: Dilemma zone detection, Additional NB/SB vehicle head indications
		B	Rear-End	Fatal	EBT/EBO/EBO	Daylight	Auto EBT		4/15/2020	
		Notes: Other Predominant Non-Fatal-Severe Collisions								
Rear End (17)	NB Thru	2								
	SB Thru	5								
	WB Thru	5								
	EB Thru	5								

Severe Injury & Fatal Collisions, Top Ten Locations

Top 10 Fatal/Severe Locations 2016-2020

➤ Top Ten Fatal and Severe Locations

		Fatal-Severe Collisions							Notes/Recommendations
		No.	Collision Type	Severity	Direction	Time of Day	Party at Fault	Date	
8	Garden Grove Blvd at Dale St	A	Broadside	Severe	NBL/EBT	Dark	Auto NBL	12/18/2017	NBL ? Check operation for SBL/WBT and NBL collisions REC: Dilemma zone detection, Additional EB/WB vehicle head indications
		B	Broadside	Severe	SBT/SBT	Daylight	Auto SBT	4/7/2020	
		Notes: Other Predominant Non-Fatal-Severe Collisions							
		Broadside (13)	NBL	3	NBL/EBT, NBL/WBT, NBL/WBT/SB				
			SBL	2	SBL/WBT (7)				
			EBL	1					
			SBT	1					
WBT	5								
Other	1								

		Fatal-Severe Collisions							Notes/Recommendations
		No.	Collision Type	Severity	Direction	Time of Day	Party at Fault	Date	
9	Haster St at Aspenwood Ave	A	Broadside	Severe	EBL/SBT	Daylight	Auto EBL	9/6/2017	Unsignalized EB Corner Sight Distance - Power poles and trees along West Side Total of three EBL collisions
		B	Broadside	Fatal	EBT/SBT	Dark	Auto EBT	10/28/2017	
		Notes: Other Predominant Non-Fatal-Severe Collisions							
		Broadside (5)	NB Left	1					
			EB Left	2					
Other	2								

		Fatal-Severe Collisions							Notes/Recommendations
		No.	Collision Type	Severity	Direction	Time of Day	Party at Fault	Date	
10	Knott St at Stanford Ave	A	Broadside	Severe	NBT/SBT	Dark	Auto NBT	11/26/2017	Wrong side of road DUI 145 n/o, Ran off Road, hit fixed object (unsafe speed)
		B	Head-On	Fatal	SBO	Dark	Auto SBO	2/26/2018	
		C	Other	Fatal	SBT	Daylight	Auto SBO	4/17/2016	
		Notes: Other Predominant Non-Fatal-Severe Collisions							
		Broadside (3)	WB Left	1					
Other	2								

Bicycle Involved Collisions

Primary Collision Factor by Degree of Injury

Primary Collision Factor	Total Collisions		Fatal		Severe Injury		Other Visible Injury		Complaint of Pain		Property Damage Only	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Wrong Side of Road	91	36.11%	2	33.33%	1	7.14%	30	36.59%	40	38.83%	18	38.30%
Improper Turning	40	15.87%	2	33.33%	4	28.57%	11	13.41%	14	13.59%	9	19.15%
Auto R/W Violation	39	15.48%	1	16.67%	2	14.29%	11	13.41%	20	19.42%	5	10.64%
Traffic Signals and Signs	23	9.13%			1	7.14%	9	10.98%	7	6.80%	6	12.77%
Unknown	15	5.95%	1	16.67%	1	7.14%	3	3.66%	7	6.80%	3	6.38%
Ped R/W Violation	14	5.56%					5	6.10%	7	6.80%	2	4.26%
Unsafe Speed	8	3.17%					4	4.88%	2	1.94%	2	4.26%
Other Hazardous Movem	5	1.98%			2	14.29%	2	2.44%	1	0.97%		
Driving Under Influence	4	1.59%			2	14.29%	2	2.44%				
Lights	4	1.59%					2	2.44%	2	1.94%		
Pedestrian Violation	3	1.19%			1	7.14%			1	0.97%	1	2.13%
Other Than Driver or Ped	2	0.79%							2	1.94%		
Improper Passing	1	0.40%									1	2.13%
Other	1	0.40%					1	1.22%				
Other Improper Driving	1	0.40%					1	1.22%				
Unsafe Lane Change	1	0.40%					1	1.22%				
Total:	252		6		14		82		103		47	

Streets with Bicycle Collisions Greater than Five

Street	No. of Collisions
Garden Grove Blvd	29
Chapman Ave	26
Euclid St	19
Brookhurst St	18
Magnolia St	17
Lampson Ave	13
Westminster Ave	13
Harbor Blvd	12
Trask Ave	9
Dale St	6
Katella Ave	6
Newland St	6
Orangewood Ave	6
Gilbert St	5
Hazard Ave	5
Knott St	5

Bicycle Involved Collisions

Streets with Bicycle Collisions Greater than Five

Street	No. of Collisions
Garden Grove Blvd	29
Chapman Ave	26
Euclid St	19
Brookhurst St	18
Magnolia St	17
Lampson Ave	13
Westminster Ave	13
Harbor Blvd	12
Trask Ave	9
Dale St	6
Katella Ave	6
Newland St	6
Orangewood Ave	6
Gilbert St	5
Hazard Ave	5
Knott St	5

Bicycle Collisions - Primary Collision Factory (PCF)

Location	Auto R/W Violation	Driving Under Influence	Improper Passing	Improper Turning	Lights	Other	Other Hazardous Movement	Other Improper Driving	Other Than Driver or Ped	Ped R/W Violation	Pedestrian Violation	Traffic Signals and Signs	Unknown	Unsafe Lane Change	Unsafe Speed	Wrong Side of Road	Total
Garden Grove Blvd - 8Th St				1													1
Garden Grove Blvd - Benton St				1													2
Garden Grove Blvd - Brookhurst St				1												1	1
Garden Grove Blvd - Casa Linda Ln (E)				1													1
Garden Grove Blvd - Casa Linda Ln (W)																	1
Garden Grove Blvd - Century Blvd																1	1
Garden Grove Blvd - Civic Center Dr										1							1
Garden Grove Blvd - Dale St																	1
Garden Grove Blvd - Euclid St				1													1
Garden Grove Blvd - Galway St (W)																1	1
Garden Grove Blvd - Garden Grove Bl 13522															1		1
Garden Grove Blvd - Gilbert St																1	1
Garden Grove Blvd - Harbor Blvd				1													1
Garden Grove Blvd - Haster St																1	2
Garden Grove Blvd - Kerry St										1			1				1
Garden Grove Blvd - Knott St											1						1
Garden Grove Blvd - Lemonwood Ln																	1
Garden Grove Blvd - Magnolia St															1		1
Garden Grove Blvd - Nelson St																1	1
Garden Grove Blvd - Nutwood St																1	1
Garden Grove Blvd - Rainbow St																	1
Garden Grove Blvd - Shackelford Ln																	1
Garden Grove Blvd - Siemon Ave																	1
Garden Grove Blvd - Taft St																1	1
Garden Grove Blvd - Village Center Dr															1		1
Garden Grove Blvd - Village Rd													1				1
Garden Grove Blvd - Yockey St																1	1



Bicycle Involved Collisions – Severe Injury/Fatal

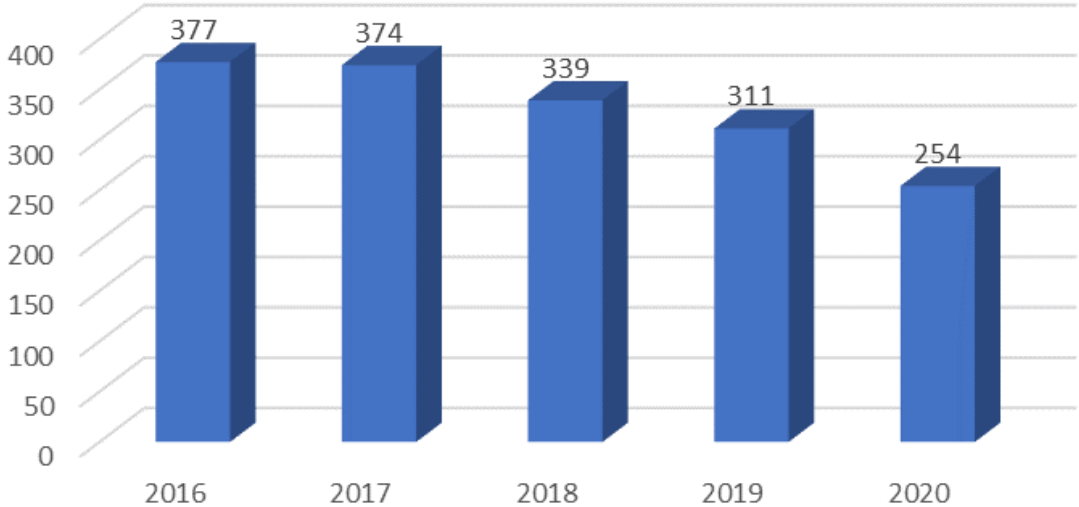
Bicycle Collisions - Severe Injury/Fatal

Location	Outside of Intersection	Total	Fatal	Primary Collision Factor	Party at Fault
Buaro St - Stanford Ave	- Yes - No	2	X (1)	- Fatal, Wrong Side of Road - Improper Turning	- Veh - Bicycle
Chapman Ave - 9th St	Yes	1		Improper Turning	Bicycle
Euclid St - Jerry Ln	Yes	1	X	Unknown - No vehicles involved	Bicycle
Euclid St - Katella Ave	Yes	1		Improper Turning	Bicycle
Euclid St - Oranewood Ave	Yes	1		DUI	Vehicle
Garden Grove Blvd - Shackelford Ln		1		Auto R/W Violation	Vehicle
Garden Grove Blvd - Village Rd	Yes	1		Improper Turning	Vehicle
Gilbert St - Blanche Ave		1		DUI	Vehicle
Harbor Blvd - Trask Ave		1	X	Improper Turning	Bicycle
Lampson Ave - Sally St	Yes	1		Other Hazardous Movement	Vehicle
Magnolia St - Imperial Ave		1	X	Auto R/W Violation	Bicycle
Magnolia St - Mays Ave		1		Traffic Signals and Signs	Bicycle
Magnolia St - Oranewood Ave		1		Other Hazardous Movement	Bicycle
Magnolia St - Tracy Ave		1	X	Improper Turning	Bicycle
Newland St - Lomay Ave		1		Auto R/W Violation	Vehicle
Taft St - Ranney Ave	Yes	1		Improper Turning	Bicycle
Westminster Ave - Brookhurst St	Yes	1	X	Wrong Side of Road	Bicycle
Westminster Ave - Nautilus Dr	Yes	1		Wrong Side of Road	Bicycle
Total		19			Bicycle (12) Vehicle (7)

Other Injury (non-severe injury/fatal) - 82

Collisions due to Unsafe Speeds

Collisions due to Unsafe Speeds per Year
Five Year Total - 1,655



Streets with Five or More Collisions due to Unsafe Speed

Street	Total Collisions (5 Years)
Brookhurst St	188
Garden Grove Blvd	170
Euclid St	142
Chapman Ave	139
Harbor Blvd	91
Trask Ave	89
Magnolia St	88
Lampson Ave	61
Westminster Ave	55
Valley View St	51
Haster St	41
Gilbert St	28
West St	28
Orangewood Ave	26
Knott Ave	23
Western Ave	19
9th St	18
Dale St	18
Hazard Ave	17
Beach Blvd	15
Newhope St	15
Stanford Ave	13
Fairview St	12
Katella Ave	12
Clinton St	11
Buaro St	9
Taft St	9
Springdale St	7
Central Ave	6
Ward St	6
Woodbury Rd	6
McFadden Ave	5
Nutwood St	5
Paloma Ave	5



Unsafe Speed – Severe Injury/Fatal Collisions

Location	Collision Type						Grand Total	Notes
	Hit Object	Rear-End	Sideswipe	Vehicle - Pedestrian	Not Stated	Other		
Buaro St - Jentges Ave					1		1	Motorcycle Involved
Chapman Ave - Faye Ave						1	1	Single Vehicle - Motorcycle
Chapman Ave - Somerset Pl		1					1	
Coast St - Garden Grove Blvd						1	1	Single Vehicle
Dale St - Stanford Ave				1			1	Fatal, Hit & Run
Euclid St - Allen Dr		1					1	
Euclid St - Cynthia Cir						1	1	Single Vehicle - Motorcycle
Euclid St - Stanford Ave	1						1	Single Vehicle
Euclid St - Wakefield Ave		1					1	
Gilbert St - Maureen Dr			1				1	Motorcycle Involved
Harbor Blvd - Banner Dr		1					1	Motorcycle Involved
Harbor Blvd - Great Wolf		1					1	
Knott St - Stanford Ave						1	1	Fatal, Single Vehicle, Motorcycle - Ran off road
Lewis St - Lampson Ave	1						1	Single Vehicle
Magnolia St - Garden Grove Blvd			1				1	
Magnolia St - Larson Ave	1						1	Single Vehicle - Motorcycle
Mcfadden Ave - Ward St						1	1	Single Vehicle
Medina Dr - Poindexter Ave		1					1	Motorcycle Involved
Skylark Ln - Roselee Dr	1						1	Single Vehicle
Tacoma St - Perrin Dr		1					1	
Valley View St - Lampson Ave	1						1	Single Vehicle
Wakefield Ave - Eileen Dr		1					1	
Total	5	8	2	1	1	5	22	Single Vehicle (10)

Overall Top 30 Intersections (1-15)

City of Garden Grove

Traffic Engineering Department

Intersection Collision Type Summary

3/31/21

Number of Collisions for the Top 30 Locations

From 1/1/2016 to 12/31/2020

<u>Rank</u>	<u>Intersection</u>	<u>Rear End</u>	<u>Head On</u>	<u>Side Swipe</u>	<u>Broad Side</u>	<u>Hit Obj.</u>	<u>Over Turn</u>	<u>Veh Ped</u>	<u>Other</u>	<u>Not Stated</u>	<u>Total Collisions</u>
1	West St at Garden Grove Blvd	6	3	5	35	4	0	0	0	8	61
2	Fairview St at Garden Grove Blvd	16	3	20	15	1	1	0	0	3	59
3	Brookhurst St at Chapman Ave	21	2	11	8	7	1	2	0	3	55
4	Harbor Blvd at Trask Ave	18	4	14	9	4	0	1	1	3	54
5	Euclid St at Trask Ave	21	4	10	12	3	0	0	1	2	53
6	Brookhurst St at Trask Ave	30	2	6	2	2	0	1	1	6	50
7	Euclid St at Chapman Ave	18	1	8	9	3	0	2	1	7	49
8	Euclid St at Garden Grove Blvd	15	2	15	6	2	1	2	0	5	48
9	Magnolia St at Garden Grove Blvd	17	2	8	11	3	0	2	2	2	47
10	Newhope St at Trask Ave	8	11	4	17	1	0	0	0	5	46
11	Garden Grove Blvd at Brookhurst St	21	2	12	3	2	0	2	0	1	43
12	Westminster Ave at Brookhurst St	19	0	8	4	3	0	5	1	2	42
13	Magnolia St at Trask Ave	22	0	8	6	2	0	0	1	2	41
14	Magnolia St at Orangewood Ave	8	3	4	18	2	0	3	0	2	40
15	Garden Grove Blvd at Haster St	8	5	10	5	4	0	1	0	3	36

Overall Top 30 Intersections (16-30)

Number of Collisions for the Top 30 Locations

From 1/1/2016 to 12/31/2020

<u>Rank</u>	<u>Intersection</u>	<u>Rear End</u>	<u>Head On</u>	<u>Side Swipe</u>	<u>Broad Side</u>	<u>Hit Obj.</u>	<u>Over Turn</u>	<u>Veh Ped</u>	<u>Other</u>	<u>Not Stated</u>	<u>Total Collisions</u>
16	Beach Blvd at Garden Grove Blvd	13	1	7	3	2	0	4	0	5	35
17	Harbor Blvd at Garden Grove Blvd	4	1	5	12	6	1	3	0	3	35
18	Chapman Ave at West St	7	8	4	14	1	0	0	0	0	34
19	Westminster Blvd at Bushard St	4	3	4	16	1	0	3	0	3	34
20	Newland St at Garden Grove Blvd	1	2	7	20	0	0	2	1	0	33
21	Chapman Ave at 9th St	9	4	3	11	0	1	0	0	3	31
22	Chapman Ave at Magnolia St	15	0	3	6	3	1	0	0	3	31
23	Lampson Ave at Knott St	7	4	4	14	1	0	1	0	0	31
24	Chapman Ave at Gilbert St	13	1	3	11	0	0	0	0	2	30
25	Haster St at Lampson Ave	6	4	3	10	0	0	3	0	4	30
26	Westminster Ave at Euclid St	15	0	6	3	1	0	2	1	2	30
27	Harbor Blvd at Chapman Ave	10	2	6	6	2	0	2	0	1	29
28	Garden Grove Blvd at Nelson St	7	3	1	9	1	1	4	0	2	28
29	Haster St at Chapman Ave	17	1	2	7	0	0	0	0	1	28
30	Taft St at Trask Ave	6	3	1	12	1	0	0	0	4	27
Total for Each Type		382	81	202	314	62	7	45	10	87	1190
Percent of Total		32.10%	6.81%	16.97%	26.39%	5.21%	0.59%	3.78%	0.84%	7.31%	100.00%



Overall Top 30 Intersections

Garden Grove LRSP
Top 30 Signalized Intersections - Primary Collision Type

No.	Intersection	Primary Collision Type	Total Number of Collisions	Collision by Movement	Total	2016			2017			2018			2019			2020		
						Day	Night	Total	Day	Night	Total	Day	Night	Total	Day	Night	Total	Day	Night	Total
1	West St at Garden Grove Blvd	Broadside	35	NB Left	19	1	3	4	1	1	3	0	3	7	2	9	1	1	2	
				EB Left	8			0	4	4		0	1	2	3	1		1		
				Other	8			0	0	0		0		0						
2	Fairview St at Garden Grove Blvd	Rear End	16	NB Thru	7			0			0			0						
				SB Thru	2			0			0			0						
				WB Thru	3			0			0			0						
				EB Thru	4			0			0			0						
				NB	10			0			0			0						
		Broadside	15	SB	3			0			0									
				WB	1			0			0			0						
				EB	6			0			0			0						
				NB Left	2			0			0			0						
				EB Left	1			0			0			0						
				Other	10			0			0			0						
3	Brookhurst St at Chapman Ave	Rear End	21	NB Thru	7		1	1		0	2		2	3		3		1	1	
				SB Thru	5			0			0			0						
				WB Thru	7		1	1	2	1	3		1	1	1	1		1	1	
				EB Thru	2			0			0			0						
4	Harbor Blvd at Trask Ave	Rear End	18	NB Thru	5			0			0			0						
				SB Thru	4			0			0			0						
				WB Thru	5			0			0			0						
				EB Thru	4			0			0			0						
		Sideswipe	14	NB	6	1		1	1	2		1	1	1	1	1		1		
				SB	2			0			0			0						
				WB	2			0			0			0						
5	Euclid St at Trask Ave	Read End	21	EB	4			0			0			0						
				NB Thru	8		1	1	3		3		1	1		1		2	2	
				SB Thru	2			0			0			0						
				WB Thru	4			0			0			0						
6	Brookhurst St at Trask Ave	Rear End	30	EB Thru	7	2		2	2	2		2		2		2	1			
				NB Thru	11	1	1	2	2	1	3	1	1		3	3	2		2	
				SB Thru	14		1	1	3	2	5	2	4	6		2	2		0	
				WB Thru	2			0			0			0			0			
				EB Thru	2			0			0			0			0			

Rear Ends & Broadside - Yellow reflective backplates?

Notes

Verify Operation, Potential Improvement - Add All-Red timing, video/radar detection, additional EBT/WBT signal veh indication, potential E/W Prot only left turns

Potential Improvement - Add video/radar detection all directions

Potential Improvement - Add video/radar detection all directions, Add 2nd NBT veh indication

NB Chg lanes/NBT, NBR/NBR, NBR/SBT, NBR/NBT, NBL/SBR, NBR/NBL, NBR/NBT...Check signage for Fwy EB on-ramp

Potential Improvement - Add video/radar detection all directions

Check advance detection zone...Potential Improvement - Add video/radar detection all directions, add 3rd NBT/SBT veh indication (may need upgraded pole or move SNS to signal pole)

Overall Top 30 Mid-Block Locations

City of Garden Grove
Traffic Engineering Department

High Incidence Midblock Report

3/30/21

Number of Collisions for the Top 30 Locations
From 1/1/2016 to 12/31/2020

<u>Rank</u>	<u>Segment</u>	<u>Total Collisions</u>
1	HARBOR BLVD from GARDEN GROVE BLVD to FLAGSTONE AVE	29
2	WESTMINSTER AVE from BROOKHURST ST to LA JOLLA PLZ	28
3	BROOKHURST ST from MELODY PARK DR to CHAPMAN AVE	22
4	BROOKHURST ST from TRAYLOR WAY to WESTMINSTER AVE	20
5	HARBOR BLVD from QUATRO AVE to WESTMINSTER AVE	17
6	CHAPMAN AVE from PROMENADE LN to GILBERT ST	16
7	EUCLID ST from KATELLA AVE to DUDLEY AVE	15
8	VALLEY VIEW ST from CHAPMAN AVE to BELGRAVE AVE	15
9	BROOKHURST ST from GARDEN GROVE BLVD to STANFORD AVE	15
10	MAGNOLIA ST from CANNERY ST to GARDEN GROVE BLVD	14
11	EUCLID ST from CENTURY BLVD to TRASK AVE	14
12	DALE ST from DALE AVE to DAVMOR AVE	13
13	HARBOR BLVD from TRASK AVE to CARDINAL CIR	13
14	MAGNOLIA ST from RT 22 to RT 22 EB OFFRAMP	12
15	BEACH BLVD from RT 22 WB OFFRAMP to RT 22 WB ONRAMP	12
16	BROOKHURST ST from WESTMINSTER AVE to 15TH ST	11
17	BROOKHURST ST from KATELLA AVE to ALDGATE AVE	11
18	GARDEN GROVE BLVD from GROVE AVE to CENTURY BLVD	11
19	TRASK AVE from RT 22 EB OFFRAMP to HARBOR BLVD	11
20	EUCLID ST from WESTMINSTER AVE to CYNTHIA CIR	11
21	HARBOR BLVD from CHAPMAN AVE to RESORT WAY	10
22	EUCLID ST from HAVEN LN to ORANGEWOOD AVE	10
23	EUCLID ST from WOODBURY RD to RT 22 EB OFFRAMP	10
24	WESTMINSTER AVE from FLOWER ST to BROOKHURST ST	10
25	GARDEN GROVE BLVD from RAINBOW ST to HARBOR BLVD	10
26	BROOKHURST ST from STANFORD AVE to LAMPSON AVE	10
27	NEWHOPE ST from ANABEL AVE to WESTMINSTER AVE	10
28	VALLEY VIEW ST from LAMPSON AVE to CERULEAN AVE	10
29	HARBOR BLVD from PALM ST to BUARO ST	10
30	CHAPMAN AVE from BAYPORT ST to HASTER ST	10

Mid-Block Location #1 (Broadside Collisions – 5)

1. Harbor between Garden Grove Blvd to Flagstone Ave - Broadside Collisions (2 Locations)



1A - Harbor south of Garden Grove Blvd (appx 450 feet) - Broadside Collisions (3)



1B - Harbor at XXX (appx 470 feet north of Flagstone) - Broadside Collisions (2)



West Street – Garden Grove Blvd to Orangewood Ave

West St from Garden Grove Blvd to Orangewood
Unsignalized Intersection Related Collisions

No.	Street	Date	Dark/Day	Direction(s)	Cause	Location	Distance	Single / Multiple Veh Collision	Collision
1	West St - Garden Grove	1/9/2017	Dark	NBR/Object	Improper Turning	North	264'	Single	
2	West St - Acacia Ave	2/5/2017	Day	SBT/S(Parked)	Improper Turning	South	90	Single	Sideswipe
		4/1/2018	Day	SB/S(Parked)	Improper Turning	North	48	Single	
		12/23/2019	Day	EBU/NBT	Auto R/W Violation	Not Stated	0	Veh (2)	Broadside
		1/12/2020	Day	SBT/S(Parked)	Improper Turning	South	30	Single	
		9/26/2020	Dark	NBT/NBT	Unsafe Speed	North	130	Veh (2)	Rear-End
3	West St - Dunklee Ln	1/2/2016	Dark	SBU/NBT/N(Parked)	Auto R/W Violation	North	10	Veh (2)	Sideswipe
		10/3/2017	Day	EBL/SBT	Auto R/W Violation	Not Stated	0	Veh (2)	Broadside
		12/17/2017	Dark	SBT/S (Parked)	Improper Turning	South	6	Single	
		1/29/2019	Day	SBT/SBT	Unsafe Speed	North	43	Veh (2)	Rear-End
4	West St - College Ave	8/4/2108	Day	SBT/SBT	Unsafe Speed	Not Stated	0	Veh (2)	Rear-End
		5/6/2017	Day	Not Stated/E (Parked)	Unknown	Not Stated	0	Single	
		8/11/2017	Dark	SBT/S(Parked)	DUI	South	131	Single	
5	West St - Morgan Ln/ Emerys Ave	10/3/2017	Dark	EBO/SBL/NBT	Pedestrian Violation	South	222'	Ped-Veh (2)	
		11/30/2019	Dark	SBT/S(Parked)	DUI	South	85	Single	
		4/20/2016	Day	EBL/SBT	Auto R/W Violation	Not Stated	0	Veh (2)	Broadside
		12/20/2016	Dark	NBT/NBT/NBL	Unsafe Speed	North	130	Veh (2)	Rear-End
		10/29/2017	Day	WBL/Backing/EB (Stopped)	Unsafe Starting	North	10	Veh (2)	Sideswipe
6	West St - Lampson Ave	7/18/2018	Day	NBT/Object	Unsafe Speed				
		11/2/2018	Dark	SBT/S(Parked)	Unsafe Speed				
		12/26/2018	Dark	WBR/SBT	Improper Turning				
		12/4/2019	Dark	NBT/NBT/NBL	Unsafe Speed				
7	West St - Comstock Rd	11/20/2016	Dark	NBL/Object	Improper Turning				
		12/15/2017	Dark	SBT/S(Parked)	DUI				
		5/15/2018	Dark	NBT/N(Parked)	DUI				
		11/28/2019	Dark	NBT/N(Parked)	Improper Turning				
8	West St - Shetland Rd	2/28/2020	Dark	NBT/NBT	Unsafe Speed				
		4/26/2020	Dark	SBT/S(Parked) S(Parked)/N(Parked)	DUI				
		8/15/2017	Dark	NBL/Object	Improper Turning				
		12/27/2017	Dark	NBT/NBL	Unsafe Speed				
9	West St - John Ave	10/10/2020	Day	NBT/NBT	Unsafe Speed				
		1/20/2017	Day	NBT/NBT	Unsafe Speed				
		5/5/2018	Day	SBT/SBT/SBT	Unsafe Speed				
		3/20/2019	Day	SBT/SBT	Unsafe Speed				
10	West St - Chapman Ave	8/31/2019	Dark	SBO/SBT/SBT	Unsafe Lane Change				
		12/26/2019	Day	SBU/SBT	Auto R/W Violation				
		9/30/2017	Dark	NBT/Object	DUI				
		9/4/2019	Dark	SBO/N(Parked)/N(Parked)	Wrong Side of Road				
11	West St - Donna Ln	7/30/2016	Dark	NB/N (Parked)	Unsafe Speed				
		6/22/2018	Dark	EBT/NBL	Lights				
12	West St - Reva Dr	5/5/2018	Day	EBT/SBT	R/W Violation				
		5/19/2020	Day	NBL/SBT	Auto R/W Violation				
		9/6/2016	Day	SBT/S (Parked)	Improper Turning				
		11/10/2018	Dark	NBT/N(Parked)	DUI				
13	West St - Samuel Dr	6/23/2019	Day	WBL/NBT	Improper Turning				
		8/30/2019	Dark	NBT/N(Parked)	DUI				
14	West St - Daniel Ave	11/7/2018	Day	EBL/SBT	Auto R/W Violation				
		3/9/2019	Day	SBU/Object	Improper Turning	South	10	Single	Rear-End
15	West St - Cliffwood Ave	6/26/2018	Day	NBT/SB?	Unsafe Speed	South	10	Veh (2)	Rear-End
		8/16/2018	Dark	SBT/SBT	Unsafe Lane Change	Not Stated	0	Veh (2)	Sideswipe
16	West St - Orangewood Ave	11/17/2019	Dark	SBT/NBT/NBT	Wrong Side of Road	Not Stated	0	Veh (3)	Sideswipe
16	West St - Orangewood Ave	1/6/2017	Dark	SBT/S(Parked)	Unsafe Speed	South	180'	Single	
		8/3/2018	Dark	SBT/SBT	Unsafe Speed	South	197'	Veh (2)	Rear-End

West St from Garden Grove Blvd to Orangewood
Unsignalized Intersection Related Collisions

No.	Street	Date	Dark/Day	Direction(s)	Cause	Location	Distance	Single / Multiple Veh Collision	Collision
1	West St - Garden Grove	1/9/2017	Dark	NBR/Object	Improper Turning	North	264'	Single	
2	West St - Acacia Ave	2/5/2017	Day	SBT/S(Parked)	Improper Turning	South	90	Single	Sideswipe
		4/1/2018	Day	SB/S(Parked)	Improper Turning	North	48	Single	
		12/23/2019	Day	EBU/NBT	Auto R/W Violation	Not Stated	0	Veh (2)	Broadside
		1/12/2020	Day	SBT/S(Parked)	Improper Turning	South	30	Single	
		9/26/2020	Dark	NBT/NBT	Unsafe Speed	North	130	Veh (2)	Rear-End
3	West St - Dunklee Ln	1/2/2016	Dark	SBU/NBT/N(Parked)	Auto R/W Violation	North	10	Veh (2)	Sideswipe
		10/3/2017	Day	EBL/SBT	Auto R/W Violation	Not Stated	0	Veh (2)	Broadside
		12/17/2017	Dark	SBT/S (Parked)	Improper Turning	South	6	Single	
		1/29/2019	Day	SBT/SBT	Unsafe Speed	North	43	Veh (2)	Rear-End
4	West St - College Ave	8/4/2108	Day	SBT/SBT	Unsafe Speed	Not Stated	0	Veh (2)	Rear-End
		5/6/2017	Day	Not Stated/E (Parked)	Unknown	Not Stated	0	Single	
		8/11/2017	Dark	SBT/S(Parked)	DUI	South	131	Single	
4	West St - College Ave	10/3/2017	Dark	EBO/SBL/NBT	Pedestrian Violation	South	222'	Ped-Veh (2)	
		11/30/2019	Dark	SBT/S(Parked)	DUI	South	85	Single	



West Street – Garden Grove Blvd to Orangewood Ave

➤ Collisions at Unsignalized/Midblock Locations (53)

West Street (Garden Grove Blvd - Orangewood Ave)

Type:	Collector Street
Posted Speed Limit	35 MPH
Lanes	Four Lanes, no medians
Adjacent Land Area	Primarily residential with parking Schools

<u>Primary Collision Factors</u>	<u>No.</u>	<u>%</u>
Unsafe Speed	18	34%
Improper Turning	12	23%
Auto R/W Violation	8	15%
DUI	8	15%

<u>Collision Types</u>	<u>No.</u>	<u>%</u>
Single Vehicle Collisions	24	45%
Rear-End	13	25%
Broadside	8	15%
Sideswipe	7	13%



Garden Grove LRSP - Potential Projects

- **Cost-Benefit Ratio**

- HSIP

- Top Three Fatal and Severe Locations

- Combination of Fatal and Severe Locations with other Locations with similar Countermeasures

- Active Transportation Program and other Funding Programs

Benefit-Cost Evaluation – Collision Injury Types

California Injury Classification and Definition

Injury Type	Code	Definition	Collision Cost
Fatality	K	Death as a result of injury sustained in a collision or an injury resulting in death within 30 days of the collision. Note: The fetus of a pregnant female involved in a traffic collision will be documented as a fatal injury if the coroner attributes the death to the collision.	\$ 1,460,000
Severe Injury	A	An injury other than a fatal injury which results in broken bones, dislocated or distorted limbs, severe lacerations, or unconsciousness at or when taken from the collision scene. It does not include minor lacerations.	\$ 1,460,000
Visible Injury	B	This includes: bruises (discolored or swollen); places where the body has received a blow (black eyes and bloody noses); and abrasions (areas of the skin where the surface is roughened or blotchy by scratching or rubbing which includes skinned shins, knuckles, knees and elbows).	\$ 126,500
Complaint of Pain	C	This classification could contain authentic internal or other non-visible injuries and fraudulent claims of injury. This includes: <ol style="list-style-type: none"> 1. Persons who seem dazed, confused or incoherent (unless such behavior can be attributed to intoxication, extreme age, illness or mental infirmities). 2. Persons who are limping but do not have visible injuries. 3. Any person who is known to have been unconscious as a result of the collision, although it appears he/she has recovered. 4. Persons who say they want to be listed as injured but do not appear to be so. 	\$ 71,900
Property Damage Only	O	Damage to personal property (car, house, etc.)	\$ 11,800

HSIP Benefit/Cost Summary

Intersection	Left-Turn Phasing Operation		Proposed Improvement	Project Benefit	Project Cost	B/C Ratio
	North/South	East/West				
Garden Grove Boulevard and Nelson Street	PPLT / PPLT	PPLT / PPLT	Protected Left Turns, Countdown Ped Heads (check for existing), Additional Vehicle Head Indications for east/west, Dilemma zone detection	\$ 12,990,768	\$502,500	25.9
Garden Grove Boulevard and Newland Street (T - intersection NB only) <i>Adelle St located just west of the intersection.</i>	NB - Protected	WB PPLT	Protected Left Turns, Additional Vehicle Head Indications for east/west, Dilemma zone detection 6/25/17 WBL - DUI SBL/EBT - Remove trees on west median for better corner sight distance	\$ 13,555,436	\$487,200	27.8
Westminster Avenue and Kerry Street	Permissive / Permissive	PPLT / PPLT	Protected Left Turns, Additional Vehicle Head Indications for east/west, Dilemma zone detection	\$ 9,784,379	\$487,200	20.1
			TOTAL	\$ 36,330,584	\$ 1,476,900	24.60

Selected Countermeasures:

- S2: Improve signal hardware, lenses, back-plates with retroreflective borders, mounting, size and number
- S4: Provide advance dilemma zone detection for high speed approaches
- S6: Provide protected left-turn phase (left-turn lane already exists)

State's Previous Calls for Projects

HSIP Calls for Projects

Cycles 4 to 9:

- \$894 million awarded to 1,258 projects. 459 completed/372 in construction. Expected benefits: \$12 billion!

Cycle	Release Date	Number of Applications	Number of projects selected	Federal funds approved (\$M)	Average BCR of selected projects
4	2/23/11	357	179	\$74.5	7.9
5	10/19/12	276	221	\$111.3	14.6
6	11/14/13	389	231	\$150.0	10.7
7	11/12/15	212	182	\$160.5	16.9
8	11/21/16	247	225	\$216.9	10.3
9	12/12/18	351	220	\$180.8	17.7
Total		1,832	1,258	\$894.0	13.4

Next Steps

- Emphasis/Focus Areas
 - Intersections
 - Traffic Signals (Main focus for future funding)
 - Unsignalized Locations
 - Pedestrians/Bicyclists
 - Speeding
 - Impaired Driving
- AGA to conduct field reviews based on collision analysis and discussion with the Working Group
- Continued Efforts on the BCR Analysis
- Working Group Meeting No. 2