

HOW DANGEROUS IS A ROLLING RIGHT TURN?

by

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A Report by Safer Streets L.A.

Prepared by: Jay Beeber

INTRODUCTION

Safer Streets L.A. recently reviewed statistics regarding violation rates at the City of Los Angeles' 32 Photo Red-Light (PRL) Intersections from data provided by the LAPD covering the 9 month period Jan. 1 to Sept. 30, 2010. One criticism of the PRL program is that a majority of the citations are given for relatively benign rolling-right-turn (RRT) violations as opposed to the potentially more dangerous straight through violations which the PRL program is actually meant to curtail. The LAPD has previously stated that the percentage of citations given for rolling-right-turns was in the 67% range. However, using the data provided by the LAPD, we discovered that the percentage of rolling-right-turn violations averages 75% and at many intersection approaches in the City is significantly higher. The northbound intersection of De Soto and Roscoe has the distinction of having the highest percentage of rolling-right-turn citations of any red-light camera (RLC) monitored intersection approach in the City. Rolling-right-turn citations make up 97% of the violations at that approach. For the 9 month period, a full 1225 citations were given for rolling-right-turns and only 32 citations were given for straight through violations. For the southbound approach, the rolling-right-turn percentage was a comparable 95%. For comparison, the top 10 intersection approaches with rolling-right-turn violations appears below.

Citations at PRL Intersection Approaches Jan 1, 2010 - Sept. 30, 2010

	Council District	Through Citations	RT Citations	% RT Turn
DeSoto NB / Roscoe	3	32	1225	97%
Van Nuys NB / Nordhoff	7	23	474	95%
DeSoto SB / Roscoe	3	52	1000	95%
Van Nuys SB / Nordhoff	7	45	706	94%
La Brea SB / Rodeo	10	61	734	92%
Balboa NB / Vanowen	6	150	1322	90%
Manchester EB / Airport	11	92	790	90%
Whittier WB / Lorena	14	21	177	89%
Florence WB / Figueroa	8	45	337	88%
Sepulveda SB / Victory	6	204	1504	88%

Supporters of the PRL program have often claimed that high numbers of citations for rolling-right-turns are appropriate since this behavior poses a significant danger to pedestrians, bicyclists and other motorists. We set out to determine how much danger the rolling-right-turn presents by reviewing the number and severity of collisions in the City of Los Angeles caused by this behavior in comparison to collisions caused by motorists who first stop at a red light but then fail to yield appropriately to pedestrians and other vehicles in the roadway.

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DATA COLLECTION

Accident statistics were compiled from the California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS) database. The SWITRS database serves as a means to collect and process data gathered from collision scenes by multiple police agencies throughout the state. The most recent complete year for which data is available is 2009. No relevant data is yet available through this database for 2010, although local police agencies may have more up-to-date information.

For each accident, the SWITRS database provides information regarding the time and place of the accident as well as the primary collision factor (PCF) and California Vehicle Code violation if any. Number and severity of injuries and fatalities to pedestrians, bicyclists, and motorcyclists are provided when applicable as well as other relevant data. A separate Party Record data file is provided with information about each party involved in the collision including which party was at fault and each party's action immediately prior to the collision. Each collision in the Collision Record file is assigned a unique Case ID Number which is also assigned to the parties involved in the collision. This provides a cross reference between the Collision Record file and the Party Record file.

California Vehicle Code 21453A requires motorists to come to a full stop when facing a circular red or red arrow signal. CVC 21453B permits motorists to make a right turn on a circular red signal provided the motorist first comes to a complete stop as required under 21453A and yields to any pedestrians, bicyclists or other vehicles. The vehicle code does not currently distinguish between drivers who fail to come to a complete stop before making a right turn on red (a rolling-right-turn) and drivers who violate the red on a straight through movement. Therefore, drivers who make a rolling-right-turn are cited under CVC 21453A, while drivers who first come to a complete stop, but fail to yield to pedestrians, bicyclists and other vehicles are cited under CVC 21453B.

In order to determine the number of collisions caused by rolling-right-turns, we queried the SWITRS database to provide all accidents in the City of Los Angeles for the years 2002 through 2009. We combined the Collision Record file with the Party Record file to provide a full range of data points for each accident. We then filtered the list of collisions by choosing collisions in which the primary collision factor was a violation of CVC 21453A and where the movement immediately preceding the collision of the party at fault was a right turn. This set of data was designated as collisions resulting from a rolling-right-turn. We also compiled a list of violations of CVC 21453B where the movement immediately preceding the collision of the party at fault was a right turn. This set of data was designated as collisions resulting from a failure to yield (FTY) while making a right turn after stopping as required at a red light. We compared these two sets of data as to total number of collisions, severity of injury, whether or not the collision occurred at an intersection currently monitored by a red-light camera, etc. Collision data for all study years appears in Appendix A.

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RESULTS

The average number of rolling-right-turn collisions each year was 45 out of an average of approximately 56,000 collisions annually in the City of L.A. The average number of failure to yield after stopping (FTY) collisions was 41. This suggests that when making a right turn at a red light, it is not the prior stop which determines whether an accident will occur, it is whether or not the driver yields appropriately. The 45 annual accidents attributed to rolling-right-turns represent just 0.079% of all accidents per year in the City of Los Angeles, an extremely low percentage. For comparison, about three times as many accidents are caused each year by drivers opening their car door into passing traffic. Additionally, the majority of collisions were classified as resulting in minimal or no injuries, even when pedestrians or bicyclists were involved. In fact, there were no fatalities noted due to RRTs for any of the 8 years studied, whereas 2 fatalities occurred due to FTY after stopping. This again suggests that the rolling-right-turn does not present a significant hazard to other motorists, pedestrians or bicyclists.

We also looked at how often a RRT movement might result in an accident. To determine this, we used the figures on rolling-right-turns at PRL intersections provided by the LAPD. For the first 9 months of 2010, the red-light cameras at the 32 photo enforced intersections captured almost 49,000 RRT movements. This translates to an annual rate of 65,000 RRTs at these intersections. Each intersection is monitored on 2 approaches with the exception of one one-way intersection that is monitored on only one approach. Therefore, the 65,000 rolling-right-turns which occur annually at the 63 intersection approaches represent approximately 1033 RRTs at each approach. The City of Los Angeles has approximately 4300 signalized intersections throughout the city. Assuming that the RRT behavior exhibited at the PRL intersections is typical of driver behavior throughout the city, and assuming 3.5 approaches per signalized intersection, we can estimate that there are approximately 15,540,519 rolling-right-turns occurring annually in the City of Los Angeles. Therefore, statistically speaking, the chance that a rolling-right-turn will result in a collision is 0.00029%. This means that a driver would have to make over 345,000 rolling-right-turns before they might be involved in an accident. In actuality though, a careful driver who yields appropriately prior to making a right turn on red, whether or not they come to a complete stop, may never be involved in a collision due to this behavior.

CONCLUSION

The question of whether a rolling-right-turn is so dangerous that it should be enforced with a nearly \$500 fine has been debated for some time. We now have the definitive answer and it is a resounding "no". The millions of taxpayer dollars the City of Los Angeles spends annually on the PRL program could be put to better use than giving thousands of otherwise law-abiding citizens tickets of \$466 each for a technical violation that rarely results in any type of accident.

Appendix A
Rolling Right Turn and Failure to Yield Collisions in Los Angeles
2002 - 2009

2002	Total	% of Total Collisions	Fatal	Severe	Visible Injury	Pain Only	PDO ¹	Pedestrian	Bicycle	Alcohol ²	PRL Int. ³	H&R ⁴	Total LA Collisions
21453A	45	0.0767%	0	1	14	17	13	5	10	2	1	22	58,685
21453B	39	0.0665%	0	0	10	20	9	4	12	2	1	11	58,685
2003	Total	% of Total Collisions	Fatal	Severe	Visible Injury	Pain Only	PDO ¹	Pedestrian	Bicycle	Alcohol ²	PRL Int. ³	H&R ⁴	Total LA Collisions
21453A	56	0.0947%	0	2	15	28	11	4	15	1	1	27	59,137
21453B	39	0.0659%	0	1	13	13	12	6	9	1	1	11	59,137
2004	Total	% of Total Collisions	Fatal	Severe	Visible Injury	Pain Only	PDO ¹	Pedestrian	Bicycle	Alcohol ²	PRL Int. ³	H&R ⁴	Total LA Collisions
21453A	49	0.0858%	0	2	12	17	18	4	5	2	4	23	57,083
21453B&C	51	0.0893%	0	1	13	26	11	15	10	1	0	18	57,083
2005	Total	% of Total Collisions	Fatal	Severe	Visible Injury	Pain Only	PDO ¹	Pedestrian	Bicycle	Alcohol ²	PRL Int. ³	H&R ⁴	Total LA Collisions
21453A	55	0.0960%	0	0	17	19	19	10	11	0	2	36	57,311
21453B&C	35	0.0611%	0	3	7	16	9	11	5	0	0	12	57,311
2006	Total	% of Total Collisions	Fatal	Severe	Visible Injury	Pain Only	PDO ¹	Pedestrian	Bicycle	Alcohol ²	PRL Int. ³	H&R ⁴	Total LA Collisions
21453A	40	0.0702%	0	1	6	22	11	9	3	0	4	18	57,005
21453B	48	0.0842%	1	1	12	24	10	10	7	2	0	17	57,005
2007	Total	% of Total Collisions	Fatal	Severe	Visible Injury	Pain Only	PDO ¹	Pedestrian	Bicycle	Alcohol ²	PRL Int. ³	H&R ⁴	Total LA Collisions
21453A	38	0.0673%	0	0	8	17	13	3	10	0	0	21	56,468
21453B	42	0.0744%	1	2	8	16	15	13	6	1	1	16	56,468
2008	Total	% of Total Collisions	Fatal	Severe	Visible Injury	Pain Only	PDO ¹	Pedestrian	Bicycle	Alcohol ²	PRL Int. ³	H&R ⁴	Total LA Collisions
21453A	30	0.0564%	0	1	3	14	12	0	10	2	0	12	53,184
21453B&C	44	0.0827%	0	0	7	20	17	6	5	3	0	13	53,184
2009	Total	% of Total Collisions	Fatal	Severe	Visible Injury	Pain Only	PDO ¹	Pedestrian	Bicycle	Alcohol ²	PRL Int. ³	H&R ⁴	Total LA Collisions
21453A	43	0.0850%	0	0	12	19	12	7	10	4	1	20	50,610
21453B&C	30	0.0593%	0	0	5	13	12	3	6	1	0	10	50,610
2002-2009	Total	% of Total Collisions	Fatal	Severe	Visible Injury	Pain Only	PDO ¹	Pedestrian	Bicycle	Alcohol ²	PRL Int. ³	H&R ⁴	Total LA Collisions
21453A	356	0.0792%	0	7	87	153	109	42	74	11	13	179	449,483
21453B&C	328	0.0730%	2	8	75	148	95	68	60	11	3	108	449,483

Citable Right Turn Violations at PRL Intersections 9 mos	48,790
Citable Right Turn Violations at PRL Intersections extrapolated to 1 yr	65,053
Citable Right Turn Violations per PRL approach extrapolated to 1 yr	1,033
Number of signalized intersections in LA per LADOT	4,300
Conservative estimate of signalized approaches in LA	15,050
Yearly estimate of RRT violations in Los Angeles	15,540,519
Average RRT accidents per year	45
Chance of RRT resulting in an accident	1 in 345,345
Chance of RRT resulting in an accident	0.00029%

Notes:

21453A = Rolling Right Turn Violations

21453B = Failure to Yield After Stop at Red Light

1. PDO = Property Damage Only

2. Alcohol = Alcohol was a factor in collision

3. PRL Int = Collision occurred at an intersection monitored by a photo red-light camera

4. H&R = Hit and run