Crash DART

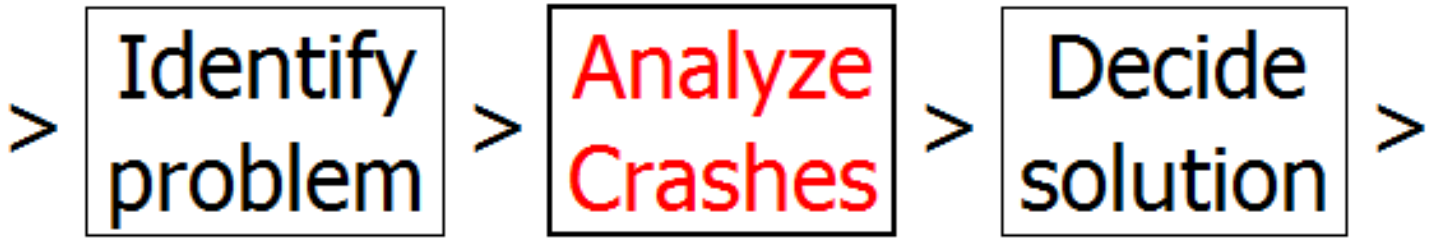
Bryan Costello, P.E.

Crash What?

- Data
- Analysis &
- Research
- Tool

- Formerly known as Crash Data Analyzer

Big Picture Process



History & Need

- 2011
  - No known crash data analysis tools
  - Need: replicatable platform
  - Account for errors
  - Oct DTOE – v5
- 2012 Autumn
  - Error detection
  - Input tab
- 2013 Autumn – Research
- 2015 Spring
  - Improved layout by grouping similar features
  - Improved input through drop-down options
- 2015 June – Annual Traffic Engineer – v29x

v.5 versus v.29x

Version 5

- Upgradable elements
  - Collision type
  - Accident type
  - Lighting
  - Surface condition
  - Intersection
  - Location
- Total summary report
- Crash Rate (Single ADT)
- Location spread
- Crash1 only

Version 29x

- Upgradable elements
  - Alcohol
  - Parish
  - Travel Direction
  - Intersection ID
- Analysis Summary Report
- Crash Rate (multiple years)
- Input page
- Over-represented spreads
- Before & After
- Crash1 or Crash3

Unique Features

fulfill unmet needs

- Notes
- Solution
- Upgradeable elements – 10
- Error Detection – 6
  - Intersection & Intersection ID mismatch
  - Control-section v Parish
  - Collision type v Travel Directions
  - Collision type v Accident type
  - Hour v Lighting
  - Collision type & Intersection mismatch
- Prioritizes review

Crash1 Needs

6. **Indicate optional items to include in Report:**

☐ ADT	☑ Alcohol Involvement
☐ Vehicle Type	☐ Intersection Quadrant
☐ Lat/Long as entered on form	☑ Lat/Long as revised by LADOTD
☐ Spotted By	☑ Intersection ID
☐ LRS_ID	☐ LRS Logmile
☑ Severity	☐ City
☐ Roadway Departure	☐ Lane Departure
☐ Relation to Roadway	☐ Highway Class

Original data from LSU database

☐ parish_cd	☐ pri_contrib_fac_cd
☐ hwy_type_cd	☐ sec_contrib_fac_cd
☐ pri_hwy_num	☑ vision_obscure_1
☐ bypass	☐ vision_obscure_2
☐ milepost	☑ movement_reason_1
☐ pri_road_name	☐ movement_reason_2
☐ pri_dist	☐ ped_actions_1
☐ pri_measure	☐ ped_actions_2
☐ pri_dir	☐ veh_lighting_1
☐ inter_road	☐ veh_lighting_2
☐ dr_age_1	☐ traff_cntl_cond_1
☐ dr_age_2	☐ traff_cntl_cond_2
☐ dr_sex_1	☐ pri_road_dir
☐ dr_sex_2	☑ lighting_cd
☐ crash_time	☐ num_veh
☑ dr_cond_cd1	☑ veh_cond_cd1
☐ dr_cond_cd2	☐ veh_cond_cd2

Start – Assumptions

	H	I
1	***Assumptions & Explanations***	
2	**Read this column first**	
3	DART => Data Analysis Research Tool	
4		
5	***Assumptions***	
6	Those using this tool are Engineers, capable of making	
7	Engineering judgments.	
8	The road segment under examination shall be geometrically &	
9	operationally homogeneous. The analysis is geared toward	
10	motorized vehicles following the lead of the Louisiana Motor	
11	Vehicle Traffic Crash Report.	
12	Only tab's "sum", "B&A", "location", "ORL", "CToD", "QC&T", or	
13	"Ref" shall be printed	
14	Without vetting, the results are only as good as the crash data.	
15	Vet the higher priority crashes to attain better results. Vetting is	
16	accomplished by correcting errors.	
17	You already have access to Crash1, the Abnormal	
18	<http://engrapps/crash1r/abnormal.asp>, ThinkStream, Surface	
19	type log file , and Highway Geographic features. The last two are	
20	the sixth and fifth links respectively under "Highway Inventories"	
21	at <http://engrapps/hwyinfo/home.aspx>.	

... All crash | sum | B&A | location | ORL | inputs | start | CToD | QC&T | CM

Start – Explanations

	H	I
1	***Assumptions & Explanations***	
52	***Explanations***	
53	Typical colors for mandatory user entered values	
54	Typical colors for optional user entered values	
55	Typical colors for automatically calculated values, that can users	
56	can overwrite if desired	
57	Typical colors for automatically calculated values	
58	B&A => Before and After	tabs
59	ORL => Over-represented location	
60	CToD => Cumulative Time of Day	
61	QC&T => Quarterly Crashes and Trend	
62	CM => Countermeasures	
63	PSI => Potential Safety Improvement List formerly Abnormal List	
64	Ref => References	
65	Avg => Louisiana Averages	

Start – Tabs

	I	J	K	L	M
1		***Tab Explanations***			
103					
104		***Tab Explanations***			***tabs***
105		The other tab is divided into four sections. The first is to the far left and has a few calculation cells for the other sections. The next three sections are similar to the location and ORL tabs and feed information to those tabs. They are from right to left: Night, Wet, Analysis.			other
110		The "All crash" tab is divided into nine areas. The area to the far left is the place to put the raw data as outputted form either Crash 1 or Crash 3.			All crash
113		The Management section has several functions to facilitate/manage the crash data analysis. Authenticity notes whether the row is a valid crash or not. If through investigating it is determined that the crash does not belong in the analysis, overwrite the value with a "B".			All crash
118	unique	Status 1 provide an evaluation priority. If the analysis indicated further investigation, it is recommended to review the crashes noted as "high". If further investigation is warranted, then it is recommended to review the crashes noted as "med". Rarely will all the crashes noted as "low" need to be reviewed.			ll crash

LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

Start – Tabs

	I	J	K	L	M
1		***Tab Explanations***			
124		Status 2 notes whether the crash has been reviewed, a solution proposed, and the location verified.			
125					All crash
126		Status 3 notes whether any potential errors have been determined by the error detection functions.			
127					
128		Status 4 notes whether the crash has been documented for research. Part of Directions D - Advanced Evaluation.			
129					
130		Status 5 notes whether the crash has been reported in external documents to report errors. Part of Directions D.			All crash
131					
132	unique	The Errors Detection section has several error detecting functions. On the infrequent occasion where the crash was coded correctly, but an error persists, you can {Copy&Paste} the cell in row 612 into that column.			
133					
134					
135					
136	unique	Coll & Angle Agreement compares the travel directions to the Collision type. This function has a high accuracy rate when excluding the few crashes where U-turn occurs.			All crash
137					
138					
139		Coll & Acc Agreement compare the Accident type to the Collision type and compares the number of travel directions to the Collision type. This function has a high accuracy rate for Issues 1, 2, and 3. Issues 8 & 9 flag high error types, but may be correct.			
140	unique				
141					
142					All crash
143					

LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

Inputs – All

	Name	Input	Suggested	Notes
3	All Analysis			
5	Analysis Type	Segment	Segment Intersection	Method by which the analysis will be conducted. Choose the desired value from the drop-down box. This value affects the output on the "sum" tab.
8	Land Use / Area Type	Urban	Urban Rural	Area type surrounding the road. Choose the appropriate value from the drop-down box. This value affects the Average Column below.
11	Highway Type	2-Lane		Highway type analyzing. Choose the appropriate value from the drop-down box. This value affects the Average Column below. Odd number of lanes are typically a center two-way-turn-lane.
13	Average Column		AU Urban	Letter of column from the "average" tab. Notice that there are three sets of data. This affects the output on the "sum" tab.
16	First Year of Analysis		2010	The first whole year of data to evaluate on the "sum" tab.
18	Last Year of Analysis	2013	2013	The last whole year of data to evaluate on the "sum" tab.
20	First Year of Data	2009	2009	The first year of data from your query.

2-Lane
3-Lane
4-Lane
4-Lane Divided
4-Lane Interstate
5-Lane
6-Lane
6-Lane Interstate

other | All crash | sum | B&A | location | ORL | CToD | time | inputs | start | CM | PSI | Ref | Avg

LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

Inputs – Segment

	Name	Input		Suggested	Notes
Segment Analysis					
Location Method		Log Mile		Log Mile Mile Point	The primary method by which the crashes are located. Choose the appropriate value from the drop-down box. If using multiple Control-sections, use Mile Point.
Length		1.19		1.19	Length of segment, in miles. Value is ignored for intersections.
		6283	ft.	6283	
Pages		3		3	Number of pages to spread the crashes through. No more than 8 and no less than 1.
Increment		0.033		0.034	Size, in miles, of the "location bucket" to divide the segment of road into for location analysis.
		176	ft.	180	
Speed Preference		Speed Limit		Speed Limit	The legal speed limit set for a section of road if different than the state statutory speed limit of 55.
				85th Percentile Speed	A statistical value of the speeds taken from a speed study performed with no adverse conditions to artificially limit the speeds surveyed.
Speed Limit		50			The speed preference of each part of the road segment. If the 85th percentile is unknown, use the speed limit. If more are needed place these appropriately within the "by location" tab. There is a map of speed limits available at <http://ladotnet/planning/pms/> as the sixth option of the left titled "PMS Road Conditions".
		50			
		50			
		50			
		50			
Issue Threshold		0.85		0.85	Percentile of crashes used to determine if a "location bucket" is an "issue".

other | All crash | sum | B&A | location | ORL | CToD | time | inputs | start | CM | PSI | Ref | Avg

Inputs – ADT Segment

G	H	I	J	K	L	M	N	O	P	Q
ADT Corridor Calculator										
Average Daily Traffic (ADT)								Log Mile		
2009	2010	2011	2012	2013	2014	2015	2016	begin	end	len
26900	26900	29400	29800	30100	35400	35400	35400	0	0.54	0.54
23800	23800	16100	15700	15300	25400	25400	25400	0.54	1.13	0.59
16100	16100	13800	13700	13800	13100	13100	13100	1.13	5.39	4.26
16100	16100	13800	13700	13800	13100	13100	13100	5.39	0	-5.4
16100	16100	13800	13700	13800	13100	13100	13100	0	0	0
16100	16100	13800	13700	13800	13100	13100	13100	0	0	0
16100	16100	13800	13700	13800	13100	13100	13100	0	0	0
16100	16100	13800	13700	13800	13100	13100	13100	0	0	0
16100	16100	13800	13700	13800	13100	13100	13100	0	0	0
16100	16100	13800	13700	13800	13100	13100	13100	0	0	0
16100	16100	13800	13700	13800	13100	13100	13100	0	0	0
16100	16100	13800	13700	13800	13100	13100	13100	0	1.13	1.13
17691	17691	15300	15214	15286	16060	16060	16060	<= Length weighted ADT		
good	good	warn-ing	warn-ing	warn-ing	too great	too great	too great	<= ADT difference evaluation		

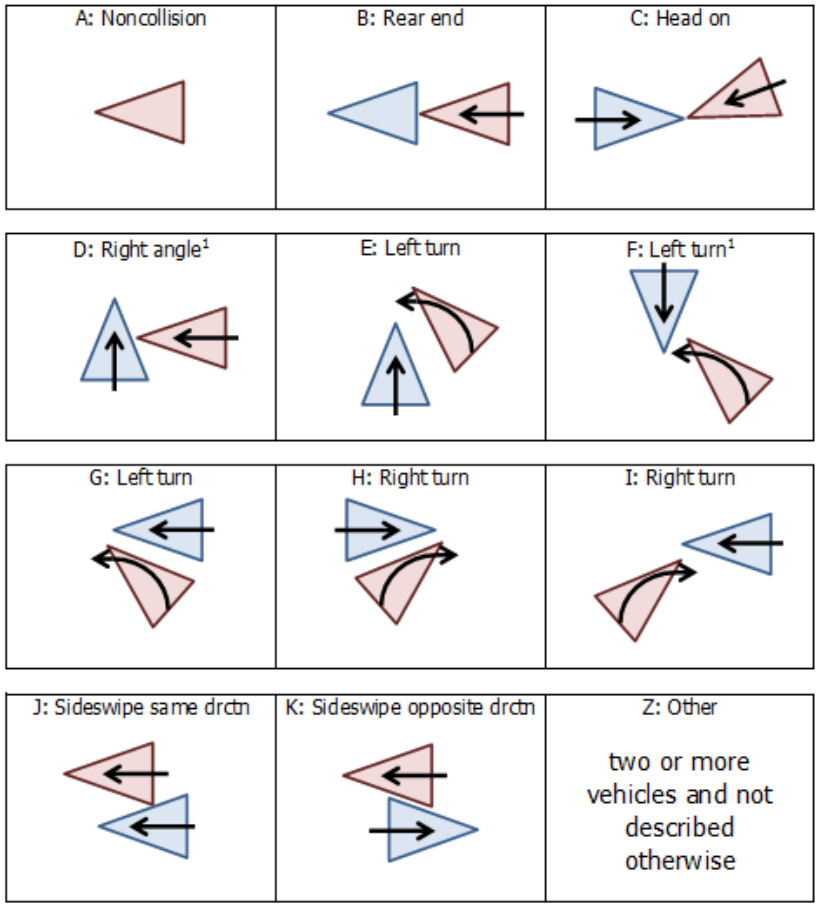
Inputs – ADT Intersection

G	H	I	J	K	L	M
ADT Intersection Calculator						
Entering Average Daily Traffic (ADT)						
2009	ADT N			2010	ADT N	
3000	10983	ADT E		2400	8787	ADT E
	ADT S				ADT S	
2011	ADT N			2012	ADT N	
2400	8787	ADT E		2400	8787	ADT E
	ADT S				ADT S	
2013	ADT N			2014	ADT N	
1900	6956	ADT E		1900	6956	ADT E
	ADT S				ADT S	
2009	2166			2010	2166	
2166		327		2166		327
	3270				3270	

LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

Ref

Crash types



[1] traffic signal could correct, for MUTCD Warrant 7

All Crash – Management

	A	B	C	D	E
1	status 0: 2 & 3 & 4	status 3: quality	authenticity	status 1: evaluation priority	status 2: review
12	finish	good	A	low	verify location
16	finish	issue	A	low	verify location
42	finish	good	A	mid	verify location
49	good	good	B	X	done
57	finish	issue	A	high	verify location
58	finish	issue	A	mid	solution?
86	good	good	A	high	done
87	good	good	A	mid	done
104	good	good	A	low	done

LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

All Crash – Error f(x)

	A	B	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	C
1					0		:								
2															
3								Intersection & Intersection ID Agreement							
4	status 0: 2 & 3	status 3: quality		Coll & Angle Agreement		Coll & Acc Agreement				Coll & Intersection Agreement		Parish Check	0	Might be Night	
5															
6															
50	finish	issue		check	WEW	issue 1	gle:Non Col on Rd	X	0	check	X	X		X	
111	finish	good		X		X		X	0	X	X	X		X	
251	finish	issue		check	NNE	issue 1	n-h:Non Col on Rd	check	0	check	X	X		X	
275	finish	issue		X		issue 1	Other:Run off rd	check	0	X	X	X		X	
280	finish	good		X		X		X	0	X	X	X		X	
309	finish	good		X		X		X	0	X	X	X		X	
310	finish	issue		check	NE	X		check	0	X	X	X		X	
312	finish	issue		X		X		check	0	check	X	X		X	
315	finish	issue		X		X		check	0	X	X	X		X	
318	finish	issue		check	WE	X		check	0	check	X	X		X	
608	good	good													
609	finish	issue													
610															
611	10			= = > >				= = > >				= = > >			
612	5%														
613				checked		checked		checked		checked		checked			
614	212	record								no effect					

All Crash – Analysis f(x)

	A	B	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK
1																			100%	100%	report
2			Location Issues																		
3																					
4																	Updated Coordinates		Coordinate Evaluation		Eval
5	status 0: 2 & 3	status 3: quality	All Crashes	Over Represented	Segment	Night Crashes	Wet Crashes		Evaluation Score			Severity	# Harmed		Over Represent						
6																	Latitude	Longitud	Lat	Long	
53	finish	good	X	Z	X	Z	Z		3.1			D	1		0						
91	finish	issue	X	X	X	X	Z		8.6			D	2		1						
116	finish	issue	X	issue	issue	X	issue		9.5			E	0		1						
161	finish	issue	issue	issue	issue	issue	Z		17			D	2		1						
183	finish	issue	X	X	X	issue	issue		14			D	1		1						
217	finish	good	X	X	Z	X	Z		4			E	0		1						
242	finish	issue	issue	issue	issue	issue	issue		15			E	0		1						
251	finish	issue	X	Z	X	Z	Z		22			C	1		0						
312	finish	issue	X	X	X	Z	X		11			E	0		2						
313	finish	issue	X	issue	X	Z	Z		12			E	0		1						
318	finish	issue	issue	issue	issue	Z	issue		15			E	0		1						
608	good	good																			
609	finish	issue																			

other | All crash | sum | B&A | location | ORL | inputs | start | CToD | QC&T | CM | PSI | time | Ref | Avg

Evaluation Score

1. Severity
2. Location issues
3. Error – Collision type v Travel Directions
4. Error – Intersection & ID mismatch
5. Error – Collision type v Accident type
6. Age of Crash
7. Fault

LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

All Crash – Upgrade

	A	B	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI
1	status 0: 2 & 3 & 4	status 3: quality	ntry											
2														Corrected Values
3						22006	382-05 0 3.9							
4						100%								the values in the below columns will su
5			Solutions Count			Review Notes	Possible Solutions		Alcohol	Parish	Part of Day	Intersection ID	Travel Directio	Collisio type
156	good	good	2			ran red	increase all red time by 1/2 sec							Rt Ang
209	good	good	8			access management	back to back median curbing		West			0		
258	good	good	1			not within study area	center rumble					0		
321	good	good	6			access management	back to back median curbing		East					Left Tur
324	good	good	0			driver error	none					0		Non Co
385	good	good	1			sun obscuring signal head	add back plates to signal heads							
443	good	good	8			access management	back to back median curbing		West				NE	Rt Ang
459	good	good	1			angle at intersection	roundabout at Central						NE	Rt Ang
472	finish	good	1			can't view	2012-05-11							
489	good	good	0			driver error	none				10LA384@ELLIOTT			
492	good	good	1			access management	back to back median curbing		South		10LA384@LA11382			Left Tur
543	good	good	8			access management	back to back median curbing		West					
552	good	good	8			access management	back to back median curbing		West					

LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

All Crash – Upgrade

	A	B	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO
1				Corrected Values										9.3%	Location errors
2															
3				the values in the below columns will supersede raw-data values											
4														Location	
5	status 0: 2 & 3 & 4	status 3: quality		Alcohol	Parish	Part of Day	Intersect ion ID	Travel Directio	Collision type	Accident type	Surf cond	Inters ectio	Log Mile	Evaluation	Feature
6															
56	good	good	/2 sec						Rt Angle				3.33	good locatio	La3092 (Lake)
09	good	good	ing	West			0					0	3.26	OK location	Popeyes
58	good	good					0							report	
21	good	good	ing	East					Left Turn-f			1	0.82	good locatio	Prien Lake
24	good	good					0		Non Coll	Run off rd			29.40	report	
85	good	good	heads								dry		1.81	good locatio	Weaver
43	good	good	ing	West				NE	Rt Angle			1	3.29	report	La3092 (Lake)
59	good	good						NE	Rt Angle				3.78	good locatio	Central
72	finish	good													
89	good	good				10LA384@ELLIOTT				Coll wt veh		1	1.30	report	Elliott
92	good	good	ing	South		10LA384@LA11382			Left Turn-f			1	2.32	report	La1138-2 (Nelson)
43	good	good	ing	West								1	3.31	good locatio	La3092 (Lake)
52	good	good	ing	West									3.30	good locatio	La3092 (Lake)

Sum

Crashes types	Segment per year	Segment Represent-ation		State Average	Segment Difference		
Non Coll	3.75	15	7.2%	21.45%	-14.27%		
Rear End	31.5	126	60.3%	46.11%	14.17%	30	7.4
Head on	0.25	1	0.5%	1.80%	-1.32%		
Rt Angle	7.25	29	13.9%	8.65%	5.23%	11	2.7
Left Turn-e	0.75	3	1.4%	2.13%	-0.69%		
Left Turn-f	2.75	11	5.3%	3.17%	2.09%	4.4	1.1
Left Turn-g	0.5	2	1.0%	1.83%	-0.88%		
Right Turn-h	1.25	5	2.4%	1.09%	1.30%		
Right Turn-i	0	0	0.0%	0.35%	-0.35%		
S Swipe(sd)	1.75	7	3.3%	5.79%	-2.44%		
S Swipe(od)	0.5	2	1.0%	2.63%	-1.68%		
Other	2	8	3.8%	5.00%	-1.17%		
All	69.7	209	100.0%			45	11.2
Non Coll & Other							
Non Col on Rd	0	0	0.0%				
Run off rd	3.5	14	6.7%	19.20%	-12.50%		
Coll wt animal	0	0	0.0%				
Coll wt bicycle	0	0	0.0%				
Coll wt fix obj	0.25	1	0.5%				
Coll wt other obj	0.25	1	0.5%				
Coll wt train	0	0	0.0%				
Coll wt ped	0.25	1	0.5%				
Coll wt pk car	0	0	0.0%				
Coll wt veh	1.5	6	2.9%				
Overturn on rd	0	0	0.0%				
All		23	11.0%				
Crash rate							
2009 to 2011		5.19 / MVM		1.20	3.99	2.6	
2010 to 2012		4.83 / MVM		1.23	3.60	X LA	
2011 to 2013		5.97 / MVM		2.34	3.63	Average	

This report is prepared solely for the purpose of identifying, evaluating, and planning safety improvements on public roads; and therefore is exempt from discovery or admission under 23 U.S.C. 409.

6/19/2015 Crash DART - LA 384 CS 382-05 LM 0 to 3.9 - 2014 to 2009 .xlsx

Crashes types	All per year	All Represent-ation		State Avg	All Difference		
Non Coll	5	20	5.2%	16.64%	-11.46%		
Rear End	53	212	54.9%	43.74%	11.18%	43	10.8
Head on	1.5	6	1.6%	1.72%	-0.16%		
Rt Angle	15.5	62	16.1%	13.22%	2.84%	11	2.7
Left Turn-e	0.75	3	0.8%	2.42%	-1.64%		
Left Turn-f	9.5	38	9.8%	4.99%	4.86%	19	4.7
Left Turn-g	1.75	7	1.8%	2.35%	-0.54%		
Right Turn-h	2	8	2.1%	1.57%	0.50%		
Right Turn-i	0.25	1	0.3%	0.57%	-0.31%		
S Swipe(sd)	3	12	3.1%	5.41%	-2.30%		
S Swipe(od)	0.5	2	0.5%	2.15%	-1.63%		
Other	3.75	15	3.9%	5.22%	-1.33%		
All	129	386	100.0%			73	18.2
Non Coll & Other							
Non Col on Rd	0	0	0.0%				
Run off rd	4	16	4.1%	19.20%	-15.05%		
Coll wt animal	0	0	0.0%				
Coll wt bicycle	0	0	0.0%				
Coll wt fix obj	0.5	2	0.5%				
Coll wt other obj	0.5	2	0.5%				
Coll wt train	0	0	0.0%				
Coll wt ped	0.5	2	0.5%				
Coll wt pk car	0	0	0.0%				
Coll wt veh	3.25	13	3.4%				
Overturn on rd	0	0	0.0%				
All		35	9.1%				

This report is prepared solely for the purpose of identifying, evaluating, and planning safety improvements on public roads; and therefore is exempt from discovery or admission under 23 U.S.C. 409.

Sum

Crashes types	Segment per year	Segment Represent-ation		State Average	Segment Difference		Segment per year
Wet	8.5	34	16.3%	15.02%	1.24%		
Dry	43.8	175	83.7%				
Other	0	0	0.0%				
Night	10.8	43	20.6%	24.10%	-3.52%		
Not Night	41.5	166	79.4%				
Fatal Crashes	0	0	0.0%	0.52%	-0.52%		
Injury Crashes	19.3	77	36.8%	31.44%	5.40%	11	2.8
PDO Crashes	33	132	63.2%	68.05%	-4.89%		
Alcohol Related	1.25	5	2.4%	5.26%	-2.87%		
Not Alcohol	51	204	97.6%				
Highway Safety Manual							
Head-on	0.25	1	0.5%	1.8%	-1.3%		
Sideswipe	4.75	19	9.1%	13.8%	-4.7%		
Rear-end	31.5	126	60.3%	46.1%	14.2%	30	7.4
Angle (D+F)	10	40	19.1%	11.8%	7.3%	15	3.8
Single & Other	5.75	23	11.0%	26.4%	-15.4%		
						45	11.2

Begin Date	2010 Jan 01
End Date	2013 Dec 31
Functional Class	Urban 2-Lane
Comparison	Non-Intersections
Average Daily Traffic	6900
Segment Length	3.9 miles

Level of Safety
4
(Highest = 4)

This report is prepared solely for the purpose of identifying, evaluating, and planning safety improvements on public roads; and therefore is exempt from discovery or admission under 23 U.S.C. 409.

6/19/2015 Crash DART - LA 384 CS 382-05 LM 0 to 3.9 - 2014 to 2009 .xlsx

Crashes types	All per year	All Represent-ation		State Avg	All Difference		All per year
Intersection	44.3	177	45.9%	33.96%	11.90%	46	11.5
Not Intersection	52.3	209	54.1%				
Wet	12.5	50	13.0%	15.02%	-2.07%		
Dry	84	336	87.0%				
Other	0	0	0.0%				
Night	22	88	22.8%	24.10%	-1.30%		
Not Night	74.5	298	77.2%				
Fatal Crashes	0	0	0.0%	0.52%	-0.52%		
Injury Crashes	35.8	143	37.0%	31.44%	5.61%	22	5.4
PDO Crashes	61.3	245	63.5%	68.05%	-4.57%		
Alcohol Related	3	12	3.1%	5.26%	-2.15%		
Not Alcohol	93.5	374	96.9%				

Begin Date	2010 Jan 01
End Date	2013 Dec 31
Functional Class	Urban 2-Lane
Comparison	All, Intersections + Non-Intersections
Average Daily Traffic	6900
Segment Length	3.9 miles

This report is prepared solely for the purpose of identifying, evaluating, and planning safety improvements on public roads; and therefore is exempt from discovery or admission under 23 U.S.C. 409.

B & A

Crashes types	Before per year	Before Represent-ation		State Average	Before Difference		Before per year
Non Coll	8.44	26	4.9%	9.02%	-4.16%		
Rear End	70.5	217	40.6%	55.65%	-15.09%		
Head on	0.97	3	0.6%	0.64%	-0.08%		
Rt Angle	28.9	89	16.6%	7.31%	9.33%	50	16.2
Left Turn-e	4.22	13	2.4%	0.98%	1.45%	7.8	2.52
Left Turn-f	15.6	48	9.0%	2.04%	6.93%	37	12
Left Turn-g	5.52	17	3.2%	1.73%	1.44%	7.7	2.51
Right Turn-h	6.82	21	3.9%	1.67%	2.25%	12	3.92
Right Turn-i	0.65	2	0.4%	0.18%	0.19%		
S Swipe(sd)	19.5	60	11.2%	15.32%	-4.10%		
S Swipe(od)	3.9	12	2.2%	0.56%	1.68%	9	2.93
Other	8.77	27	5.0%	4.89%	0.15%		
All	174	535	100.0%			124	40.1
Non Coll & Other							
Non Col on Rd	1.62	5	0.9%				
Run off rd	3.9	12	2.2%	8.27%	-6.03%		
Coll wt animal	0.32	1	0.2%				
Coll wt bicycle	0	0	0.0%				
Coll wt fix obj	1.95	6	1.1%				
Coll wt other obj	0.32	1	0.2%				
Coll wt train	0	0	0.0%				
Coll wt ped	0	0	0.0%				
Coll wt pk car	0	0	0.0%				
Coll wt veh	9.09	28	5.2%				
Overturn on rd	0	0	0.0%				
All	17.2	53	9.9%				

Crash rate 4.66 / MVM

This report is prepared solely for the purpose of identifying, evaluating, and planning safety improvements on public roads; and therefore is exempt from discovery or admission under 23 U.S.C. 409.

Crashes types	After per year	After Represent-ation		State Average	After Difference		After per year
Non Coll	17.1	44	7.5%	9.02%	-1.57%		
Rear End	106	274	46.4%	55.65%	-9.21%		
Head on	0.78	2	0.3%	0.64%	-0.30%		
Rt Angle	29.5	76	12.9%	7.31%	5.58%	33	12.8
Left Turn-e	2.72	7	1.2%	0.98%	0.21%		
Left Turn-f	18.2	47	8.0%	2.04%	5.92%	35	13.6
Left Turn-g	7.37	19	3.2%	1.73%	1.49%	8.8	3.4
Right Turn-h	9.32	24	4.1%	1.67%	2.40%	14	5.49
Right Turn-i	0	0	0.0%	0.18%	-0.18%		
S Swipe(sd)	27.6	71	12.0%	15.32%	-3.29%		
S Swipe(od)	1.94	5	0.8%	0.56%	0.29%		
Other	8.15	21	3.6%	4.89%	-1.33%		
All	229	590	100.0%			91	35.2
Non Coll & Other							
Non Col on Rd	2.72	7	1.2%				
Run off rd	7.37	19	3.2%	8.27%	-5.05%		
Coll wt animal	1.94	5	0.8%				
Coll wt bicycle	0	0	0.0%				
Coll wt fix obj	3.49	9	1.5%				
Coll wt other obj	1.16	3	0.5%				
Coll wt train	0	0	0.0%				
Coll wt ped	0	0	0.0%				
Coll wt pk car	0.39	1	0.2%				
Coll wt veh	8.15	21	3.6%				
Overturn on rd	0	0	0.0%				
All	25.2	65	11.0%				

Crash rate 5.72 / MVM

This report is prepared solely for the purpose of identifying, evaluating, and planning safety improvements on public roads; and therefore is exempt from discovery or admission under 23 U.S.C. 409.

B & A

Crashes types	Before per year	Before Represent-ation		State Average	Before Difference	Before per year	
Wet	20.1	62	11.6%	13.60%	-2.01%		
Dry	153	470	87.9%				
Other	0.97	3	0.6%				
Intersection	60.4	186	34.8%	42.77%	-8.00%		
Not Intersection	113	349	65.2%				
Night	46.1	142	26.5%	21.68%	4.86%	26	8.45
Day, Dawn; Dusk	128	393	73.5%				
Fatal Crashes	0	0	0.0%	0.30%	-0.30%		
Injury Crashes	108	334	62.4%	30.03%	32.40%	173	56.3
PDO Crashes	234	721	134.8%	69.67%	65.10%	348	113
Alcohol Related	7.47	23	4.3%	3.26%	1.03%	5.5	1.8
Not Alcohol	166	512	95.7%				

Highway Safety Manual							
Head-on	0.97	3	0.6%	0.6%	-0.1%		
Sideswipe	40.6	125	23.4%	20.4%	2.9%	16	5.1
Rear-end	70.5	217	40.6%	55.6%	-15.1%		
Angle (D+F)	44.5	137	25.6%	9.3%	16.3%	87	28.2
Single & Other	17.2	53	9.9%	13.9%	-4.0%		
						103	33.3

Begin Date	2008 Jan 01
End Date	2011 Jan 30
Functional Class	Urban 4-Lane Divided
Comparison	Non-Intersections
Average Daily Traffic	15,800
Segment Length	6.46 miles

This report is prepared solely for the purpose of identifying, evaluating, and planning safety improvements on public roads; and therefore is exempt from discovery or admission under 23 U.S.C. 409.

Crashes types	After per year	After Represent-ation		State Average	After Difference	After per year	
Wet	35.3	91	15.4%	13.60%	1.82%	11	4.17
Dry	193	497	84.2%				
Other	0	0	0.0%				
Intersection	59.8	154	26.1%	42.77%	-16.66%		
Not Intersection	169	436	73.9%				
Night	59.4	153	25.9%	21.68%	4.25%	25	9.74
Day, Dawn; Dusk	170	437	74.1%				
Fatal Crashes	0.39	1	0.2%	0.30%	-0.13%		
Injury Crashes	149	385	65.3%	30.03%	35.22%	208	80.7
PDO Crashes	347	893	151.4%	69.67%	81.69%	482	187
Alcohol Related	8.93	23	3.9%	3.26%	0.63%	3.7	1.5
Not Alcohol	220	567	96.1%				

Highway Safety Ma							
Head-on	0.78	2	0.3%	0.6%	-0.3%		
Sideswipe	48.9	126	21.4%	20.4%	0.9%	5.4	2.1
Rear-end	106	274	46.4%	55.6%	-9.2%		
Angle (D+F)	47.7	123	20.8%	9.3%	11.5%	68	26.3
Single & Other	25.2	65	11.0%	13.9%	-2.9%		
						73	28.4

Begin Date	2012 Oct 01
End Date	2015 Apr 30
Functional Class	Urban 4-Lane Divided
Comparison	Non-Intersections
Average Daily Traffic	17,000
Segment Length	6.46 miles

This report is prepared solely for the purpose of identifying, evaluating, and planning safety improvements on public roads; and therefore is exempt from discovery or admission under 23 U.S.C. 409.

LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

location

	A	B	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	**Crash Locatio**	Log M	0.60	0.63	0.67	0.70	0.73	0.77	0.80	0.83	0.87	0.90	0.93	0.97	1.00	1.03	1.07	1.10	1.13	1.17	1.20
622	Surface Condition = Wet		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	issue
624	Time of Day = Night		X	X	X	X	X	X	X	X	X	X	X	X	issue	issue	X	X	X	issue	X
626	Analysis = Segment		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	issue
628	Over Represeted		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	issue	X	issue	X
630	12.75	Issue	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	issue	issue
632	**Crash Locations**		Feature key							**Bold = Traffic Signal**				< <	Feature key						
633	Log Mile	From	0.57	0.60	0.63	0.67	0.70	0.73	0.77	0.80	0.83	0.87	0.90	0.93	0.97	1.00	1.03	1.07	1.10	1.13	1.17
634		To	0.60	0.63	0.67	0.70	0.73	0.77	0.80	0.83	0.87	0.90	0.93	0.97	1.00	1.03	1.07	1.10	1.13	1.17	1.20
636	2009 Jan 01	Sum	0	2	2	9	0	2	1	4	2	0	1	1	5	4	0	12	1	23	18
637	2014 Dec 26	Rank	34	25	16	12	33	27	26	19	22	35	31	24	15	18	32	8	11	1	2
639		Feature			Holly					Glenwood					Greenbriar						**La1111**
640	Feature location				0.68					0.82					1.00						1.19
642	Rear End	85	0	1	2	8	0	2	1	1	1	0	1	0	2	1	0	0	0	6	13
643	Head on	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
644	Rt Angle	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1	7	0
645	Left Turn-e	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
646	Left Turn-f	9	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
647	Left Turn-g	16	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	4	1
648	Right Turn-h	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0
649	Right Turn-i	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
650	S Swipe(sd)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	3
651	S Swipe(od)	5	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0

other | All crash | sum | B&A | location | ORL | CToD | time | inputs | start | CM | PSI | Ref | Avg

Location - print

6/19/2015 Crash DART - LA 1111 CS 801-30 LM 0 to 1.19 - 2014 to 2009 .xlsx

Crash Locations **Bold = Traffic Signal** < < Feature key

Log Mile													
	From	0.80	0.83	0.87	0.90	0.93	0.97	1.00	1.03	1.07	1.10	1.13	1.17
	To	0.83	0.87	0.90	0.93	0.97	1.00	1.03	1.07	1.10	1.13	1.17	1.20
2009 Jan 01 2014 Dec 26	Sum	4	2	0	1	1	5	4	0	12	1	23	18
	Rank	19	22	35	31	24	15	18	32	8	11	1	2
	Feature	Glenwood					Greenbriar						**La1111S**
	Feature location	0.82					1.00						1.19
Rear End	85	1	1	0	1	0	2	1	0	0	0	6	13
Head on	3	0	0	0	0	0	0	0	0	0	0	0	0
Rt Angle	34	0	0	0	0	0	0	0	0	8	1	7	0
Left Turn-e	1	0	0	0	0	0	0	0	0	0	0	0	0
Left Turn-f	9	0	0	0	0	0	1	1	0	0	0	0	0
Left Turn-g	16	1	0	0	0	0	0	1	0	1	0	4	1
Right Turn-h	4	0	0	0	0	0	0	0	0	2	0	1	0
Right Turn-i	0	0	0	0	0	0	0	0	0	0	0	0	0
S Swipe(sd)	9	0	0	0	0	0	0	0	0	1	0	3	3
S Swipe(od)	5	1	0	0	0	0	0	0	0	0	0	1	0
Non Col on Rd	2	0	0	0	0	0	0	0	0	0	0	0	0
Run off rd	7	0	1	0	0	1	0	1	0	0	0	0	0
Coll wt animal	0	0	0	0	0	0	0	0	0	0	0	0	0
Coll wt bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0
Coll wt fix obj	2	0	0	0	0	0	0	0	0	0	0	0	0
Coll wt other obj	2	0	0	0	0	0	0	0	0	0	0	0	0
Coll wt train	0	0	0	0	0	0	0	0	0	0	0	0	0
Coll wt ped	3	0	0	0	0	0	1	0	0	0	0	0	0
Coll wt pk car	0	0	0	0	0	0	0	0	0	0	0	0	0
Coll wt veh	5	1	0	0	0	0	0	0	0	0	0	1	1
Overturn on rd	1	0	0	0	0	0	1	0	0	0	0	0	0
Segment	35	2	1	0	1	0	3	3	0	0	0	3	1
High PSI Locations											1.10	East	1.20

Average Daily Traffic 2400 =>

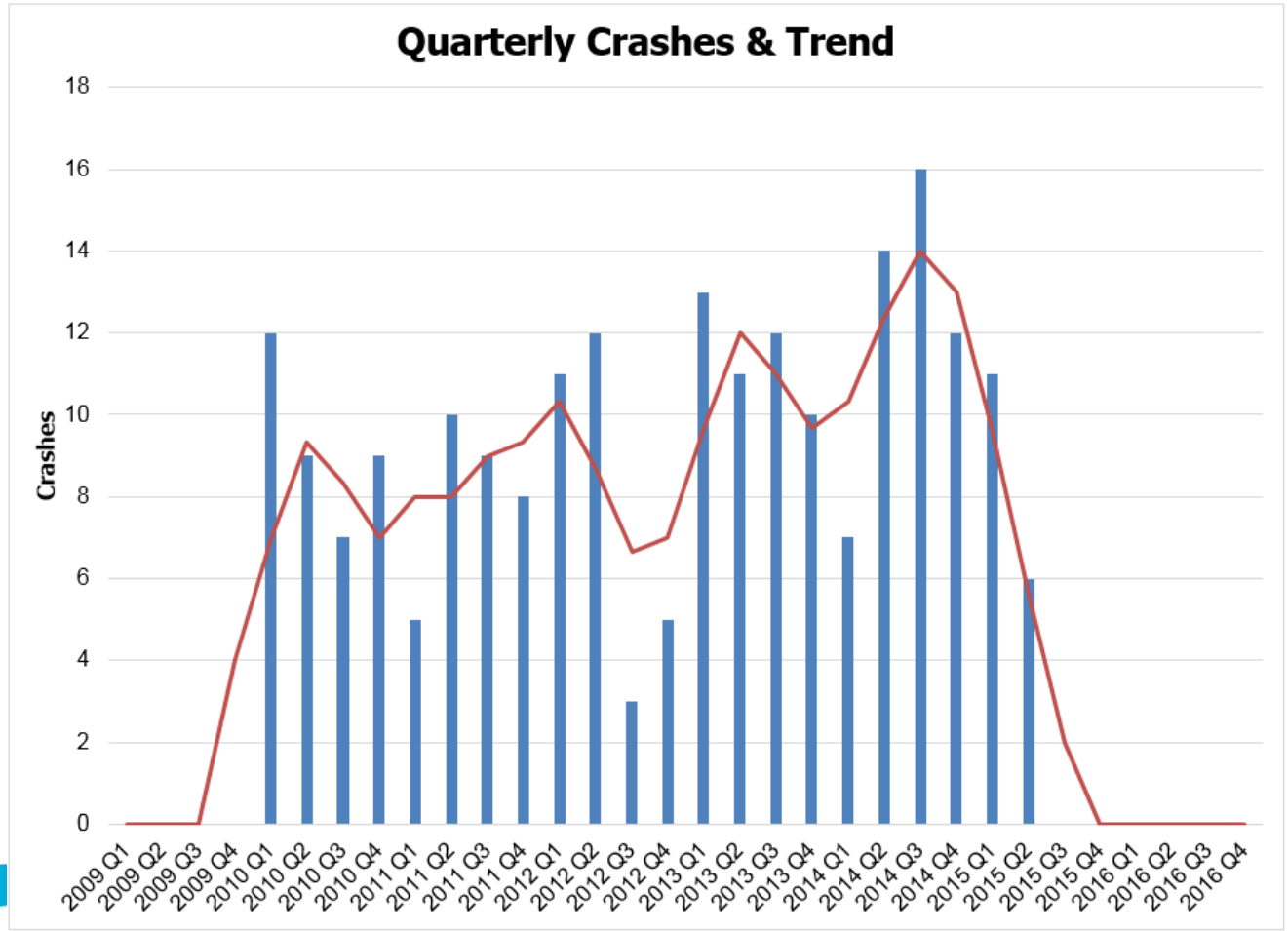
Speed Limit 50 =>

This report is prepared solely for the purpose of identifying, evaluating, and planning safety improvements on public roads; and therefore is exempt from discovery or admission under 23 U.S.C. 409.

3 of 3

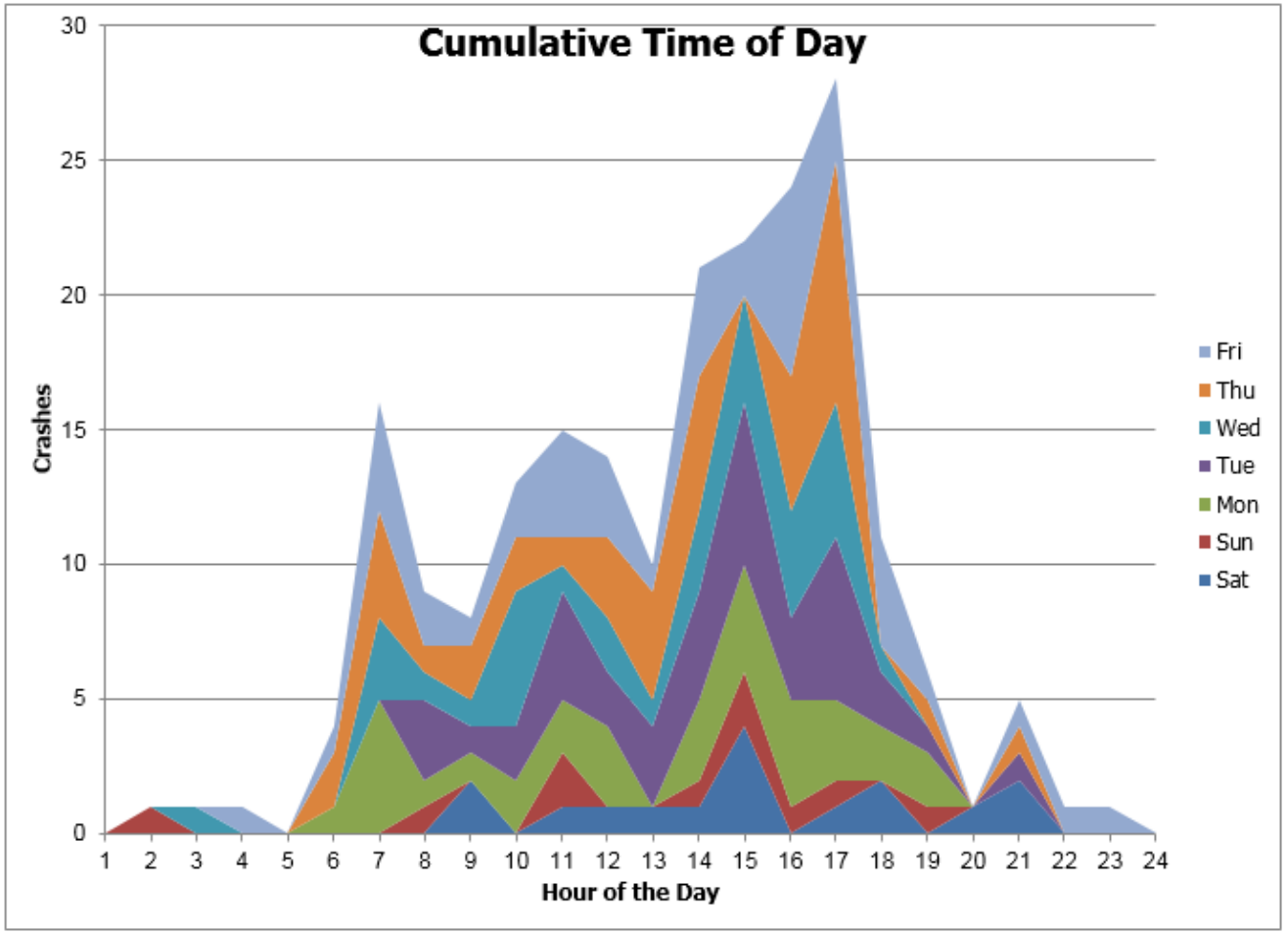
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

QC&T



LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

CToD



LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

CM

Potential Countermeasures for Identified Crash Types

	Crash Type	Possible Cause	Countermeasure	Notes
187	Rear-End or Side-Swipe	Old right-turn slip lane design	Redesign splitter island.	For perpendicular roads, the length (along approach) should be twice the width.
188			Improve right-turn slip-lane design to ensure either:	
189			(A) it empties into its own lane with current acceleration & taper lengths	
190			OR	
191			(B) the yield-line is not more than 30° from parallel to the entry road	to ensure there is not less than 60° between vehicle flows
192	Driver Behavior	All	Build a Regional Safety Coalition with Law Enforcement, Emergency Responders, Educators, and Transportation Engineers	include Everyone Interested like planners
193		Distraction, cell-phone	Lobby for hands-free while driving law	
194		Seat-belt	Lobby for primary seat-belt law	
195		Alcohol	Lobby for tougher laws	
196			Lobby to mandate Smart Start Alcohol Analyzer with Camera on 2nd offence	
197			Lobby to revoke license after 3rd offense	
198	Source: ITE Transportation Engineering Handbook (Unknown Edition)			
199	Additions or Modifications by Bryan Costello, P.E.			

other | All crash | sum | B&A | location | ORL | CToD | time | inputs | start | CM | PSI | Ref | Avg

LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

PSI

	A	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Type Loc	Intersection Id	Control Section	Log-miles		Route	Mile-points		District	Parish Id	Parish Name	ADT Main-line	ADT Cross-street	Crashes (3-yr Avg.)	Fatalities (3-yr Avg.)	Crash Rate	X (LA Avg.)	Rank	Injuries (3-yr Avg.)	2013 map
1088	spot		853-36	6.10	6.20	US0051-X	6.10		62	53	Tangipahoa	16600		16.3	0.0	2.70	4.0	21	2.0	Map
1089	spot		853-40	1.40	1.50	LA3234	1.40		62	53	Tangipahoa	23200		16.7	0.0	1.97	3.1	15	10.0	Map
1090	spot		855-04	0.50	0.60	LA0659	0.50		02	55	Terrebonne	15300		9.0	0.0	1.61	2.4	59	4.3	Map
1091	spot		855-04	1.70	1.80	LA0659	1.70		02	55	Terrebonne	18500		12.3	0.0	1.83	2.7	47	1.7	Map
1092	spot		855-08	2.50	2.60	LA0661	2.50		02	55	Terrebonne	15100		10.3	0.0	1.87	2.9	19	2.3	Map
1093	Section		855-09	0.00	1.14	LA0665	0.00	1.14	02	55	Terrebonne	3233		9.0	0.0	6.69	2.9	87	2.7	Map
1094	Section		855-12	0.29	0.82	LA0664	0.00	0.53	02	55	Terrebonne	5167		16.0	0.0	16.01	6.8	12	5.3	Map
1095	Section		855-15	0.00	0.73	LA0648	0.00	0.73	02	55	Terrebonne	7633		13.3	0.0	6.56	2.8	91	4.7	Map
1096	spot		855-15	0.00	0.10	LA0648	0.00		02	55	Terrebonne	8000		7.7	0.0	2.63	3.9	23	1.7	Map

other | All crash | sum | B&A | location | ORL | inputs | start | CToD | QC&T | CM | PSI | ime | Ref | Avg

This document and the information contained herein is prepared solely for the purpose of identifying, evaluating and planning safety improvements on public roads which may be implemented utilizing federal aid highway funds; and is therefore exempt from discovery or admission into evidence pursuant to 23 U.S.C. 409.

LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

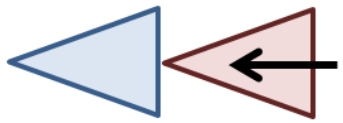
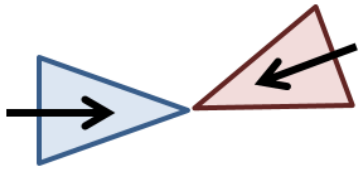
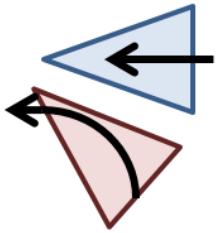
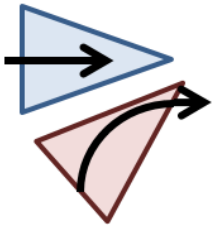
Research

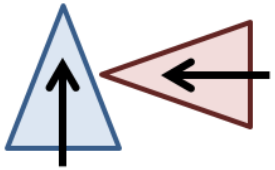
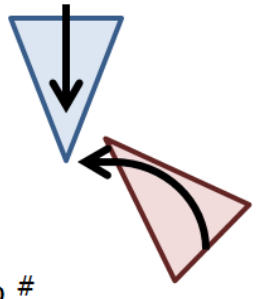
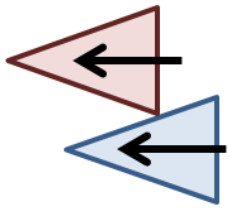
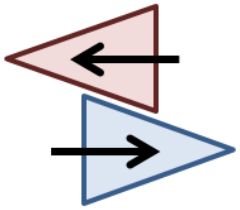
	A	B	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA
1			0	X	X	X	0	0	0	N/A	0	1900	X	X	X	0	0		0	0	X
2				Crash1 (coll)									Crash2 (acc)			Access					
3																					
4																					
5	status 0: 2 & 3 & 4	status 3: quality		Reported	Actual	Alt A	where1	where2	where3	Location deviation	who	when	Reported	Actual	Alternate	Reported	Actual	Alternate	crash #		Crash Recorded?
6																					
156	good	good	-	B	D	D	10	382-05	384	0	B	2010	H	H	H	1	1	2	100310103303113	Coll wt veh	Done
209	good	good	Rt Angle	D	D	D	10	382-05	384	0	B	2010	H	H	I	1	0	4	100630162301321	Coll wt veh	Done
258	good	good	Non Coll	A	A	A	10	382-05	384	12.98	A	2010	R	R	Q	0	0	0	20100039246	Run off rd	Done
321	good	good	-	K	F	F	10	382-05	384	0	B	2011	H	H	I	0	1	4	110514190411568	Coll wt veh	Done
324	good	good	-	Z	A	A	10	382-05	384	1.1	B	2011	H	R	R	0	0	0	110529181218128	-	Done
385	good	good	Rt Angle	D	D	D	10	382-05	384	0	B	2011	H	H	H	1	1	2	111101045712678	Coll wt veh	Done
443	good	good	-	E	D	D	10	382-05	384	0.0499	B	2012	H	H	I	0	1	4	120314183952244	Coll wt veh	Done
459	good	good	-	E	D	D	10	382-05	384	0	B	2012	H	H	I	1	1	2	120425070134140	Coll wt veh	Done
472	finish	good	Rear End	B	B	B	10	382-05	384	N/A	B	2012	H	H	H	0	0		120511082150297	Coll wt veh	X
489	good	good	Rear End	B	B	B	10	382-05	384	N/A	B	2012	X	H	H	0	1	3	120707231848738	-	Done
492	good	good	-	E	F	F	10	382-05	384	0.04	B	2012	H	H	I	0	1	4	120724003345840	Coll wt veh	Done
543	good	good	Rt Angle	D	D	D	10	382-05	384	0.0169	B	2012	H	H	I	0	1	4	121005152120888	Coll wt veh	Done
552	good	good	Rt Angle	D	D	D	10	382-05	384	0	B	2012	H	H	I	0	0	4	121109140917842	Coll wt veh	Done

... | other | All crash | sum | B&A | location | ORL | CToD | QC&T | time | inputs | start | CM | PSI | Ref | Avg

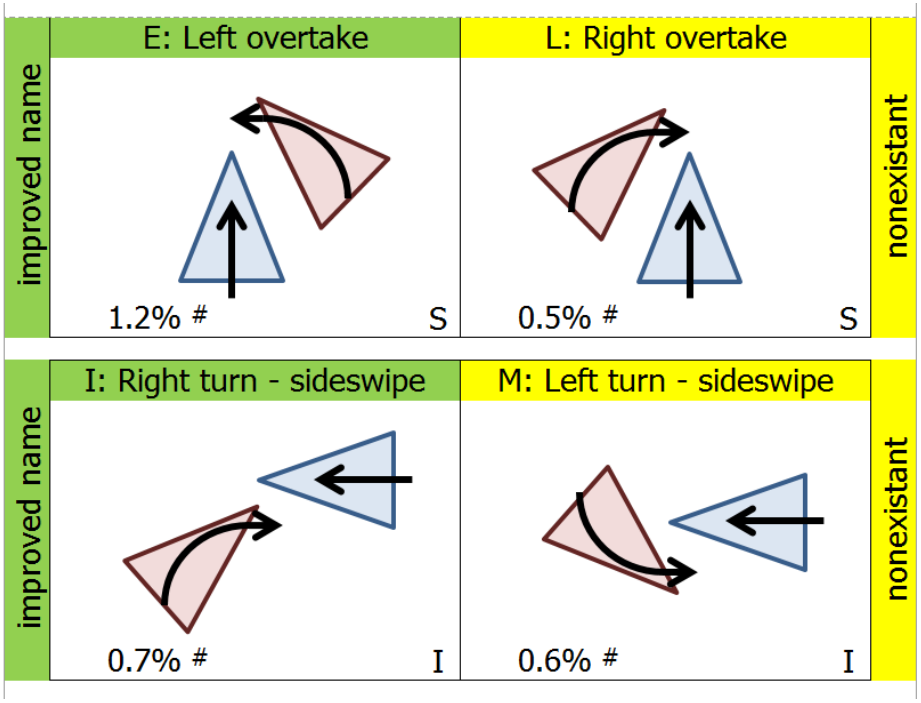
Research – Crash types pairs

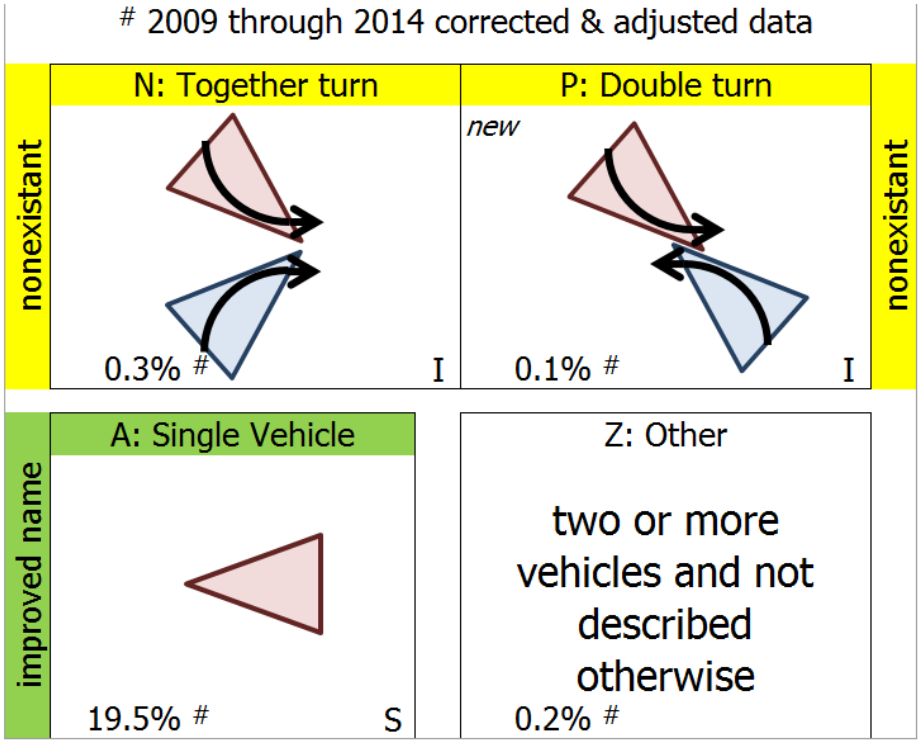
Pairs

B: Rear end	C: Head on	G: Left turn	H: Right turn
			
37.0% # I	1.2% # S	3.0% # I	2.6% # I

D: Right angle[1]	F: Left turn[1]	J: Sideswipe same drctn	K: Sideswipe opposite drctn
			
10.7% # I	10.8% # I	8.5% # S	1.8% # S

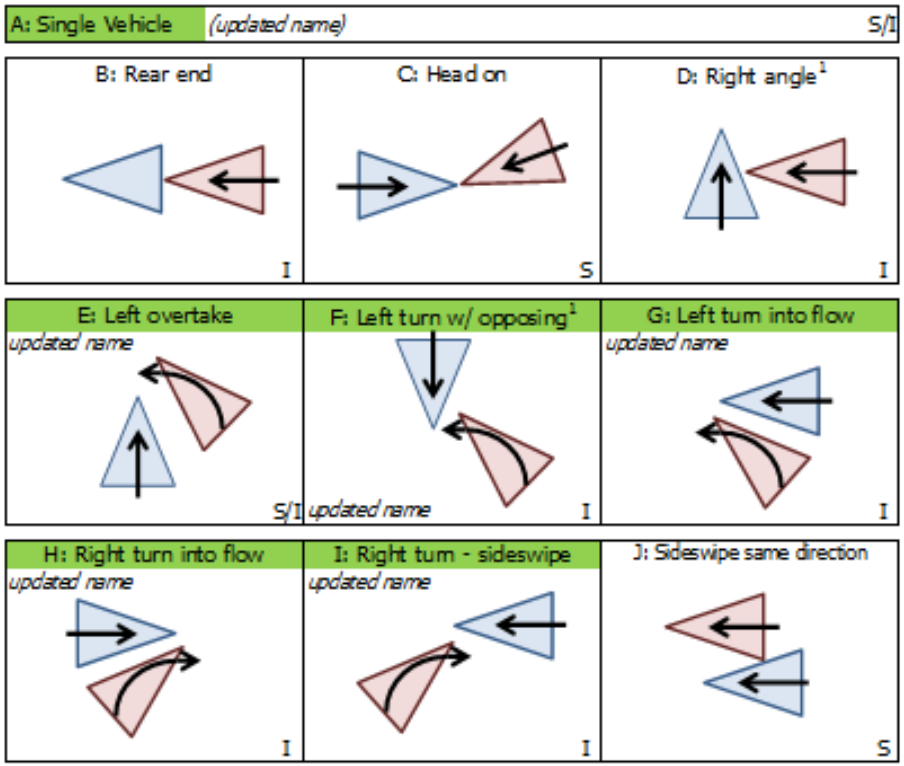
Research – Crash types pairs

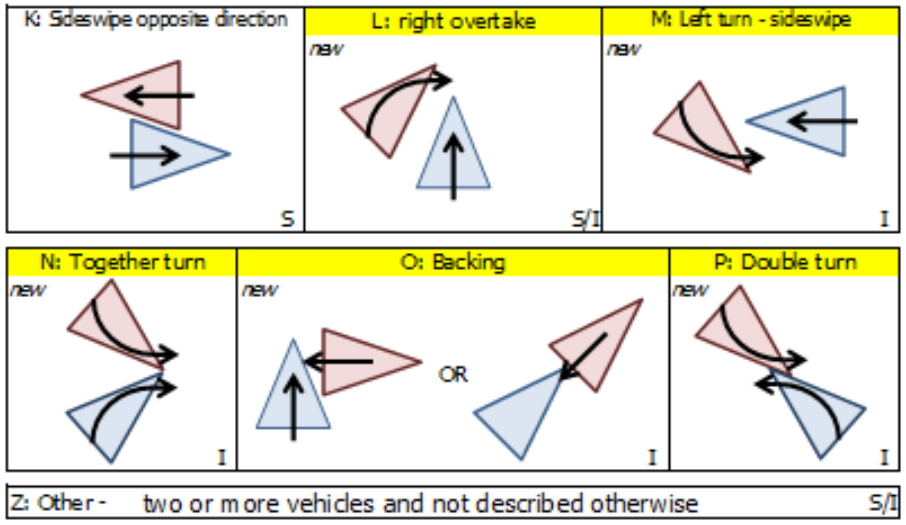




Research – Crash types

Crash types Alternative A





[1] traffic signal could correct, for MUTCD Warrant 7

Research – Location Modifier

- 0 = None of the below
- 1 = intersection
- 2 = within intersection
- 3 = intersection related
- 4 = at access connection
- 5 = access connection related
- 6 = at nonroad transit way (bike, rail, etc)
- 7 = nonroad transit way related
- 8 = on bridge
- 9 = bridge related

Research

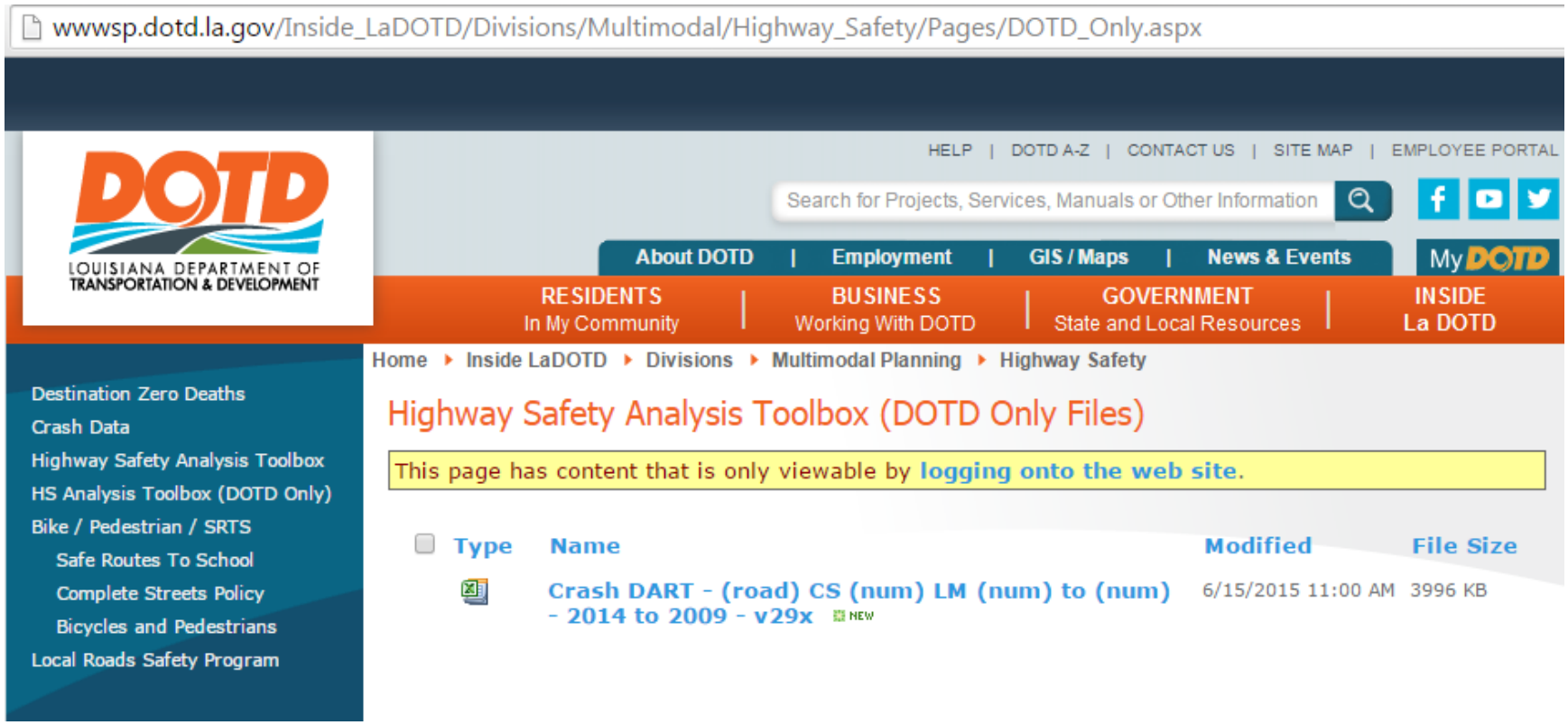
- Item – % correct
- Crash Type
  - Unadjusted – 71%
  - Adjusted – 78%
- Intersection
  - Noted 0 – 71%
  - Noted 1 – 96%

2013 to 2009 - Location Deviation

Between{	0 0.05	0.05 0.5	0.5 5	5 50	50 500	}miles	All
Count	804	106	26	1	3		940
	86%	11%	2.8%	0.1%	0.3%		

					Errors
	106	26	1	3	136
	78%	19%	0.7%	2.2%	

Where


wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Highway_Safety/Pages/DOTD_Only.aspx
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
HELP | DOTD A-Z | CONTACT US | SITE MAP | EMPLOYEE PORTAL
Search for Projects, Services, Manuals or Other Information
About DOTD | Employment | GIS / Maps | News & Events
My DOTD
RESIDENTS In My Community
BUSINESS Working With DOTD
GOVERNMENT State and Local Resources
INSIDE La DOTD
Home ▸ Inside LaDOTD ▸ Divisions ▸ Multimodal Planning ▸ Highway Safety
Destination Zero Deaths
Crash Data
Highway Safety Analysis Toolbox
HS Analysis Toolbox (DOTD Only)
Bike / Pedestrian / SRTS
Safe Routes To School
Complete Streets Policy
Bicycles and Pedestrians
Local Roads Safety Program
Highway Safety Analysis Toolbox (DOTD Only Files)
This page has content that is only viewable by logging onto the web site.
Type
Name
Modified
File Size
Crash DART - (road) CS (num) LM (num) to (num) - 2014 to 2009 - v29x
NEW
6/15/2015 11:00 AM
3996 KB

Questions?

Bryan.Costello@LA.gov