Special Committee to Study and Make Recommendations Regarding Truck Traffic & Freight Movements Along SR 41, SR 48 & SR 7

SAFETY DATA

Jim Burnett, P.E., PTOE August 9, 2017

Crash Data 101

- All crash data based on crash reports from responding police agency
 - Individual crash reports completed by responding officer(s)
 - Not reported? → Not in data
 - Police entry of "non-reportable" → Not in data
- Crash Analysis Reporting System (C.A.R.S.)
 - Data entered by Police
 - Quality Control of data by DelJIS
 - Data access/analysis by DelDOT



SR 7/41/48 Crash Analysis



Focused on Total Crashes and Truck Crashes

Heavy Vehicle Definition – Volume



Truck Definition – C.A.R.S. Data



Crash Data Segments





Truck-related crash trends

- Five crashes resulted in injuries (13%) and[•] there were zero fatalities
- Rear-end crashes were the most common (53%)
- Sideswipe, same direction crashes were

- 48% of crashes occurred between 12:00 noon and 5:00 pm
- 90% of crashes occurred during daylight hours

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 65% of crashes occurred between Tuesday and Thursday

Short-Term Crash Data: Use With Caution!







Source: AASHTO Highway Safety Manual, 1st Edition, 2010

Crash Data Summary – SR 7

"Before"
January 2013 – June 2016
Daily Traffic: 29,196
3.5-yr Total Crashes: 748
3.5-yr Truck Crashes: 40

Crashes per year: 214 Truck Crashes per year: 11

Total Crash Rate:3.38Crashes per millionvehicle miles traveled

Truck Crash Rate: 0.18 Truck crashes per million vehicle miles traveled

"During"
August 2016 – December 2016
Daily Traffic: 30,263
4-mo Total Crashes: 64
4-mo Truck Crashes: 3

Crashes per year: 199 Truck Crashes per year: 9

Total Crash Rate:3.03Crashes per millionvehicle miles traveled

Truck Crash Rate: 0.14 Truck crashes per million vehicle miles traveled

Crash Data Summary – SR 41 North of SR 41/SR 48 Split



Truck-related crash trends

- 12 crashes resulted in injuries (36%) and there was one fatality
- Rear-end crashes were the most common (42%)
- Sideswipe, same direction crashes were

- 30% of crashes occurred between 3:00 pm and 6:00 pm
- 73% of crashes occurred during daylight hours
- 73% of crashes occurred between 10
 Wednesday and Eriday

Crash Data Summary – SR 41 North of SR						
41/SR 48 Split						
	"Before"	"During"				
	January 2013 – June 2016	August 2016 – December 2016				
	Daily Traffic: 18,683	Daily Traffic : 19,197				
	3.5-yr Total Crashes: 292	4-mo Total Crashes: 35				
	3.5-yr Truck Crashes: 33	4-mo Truck Crashes: 6				
	Crashes per year: 83	Crashes per year: 109				
	Truck Crashes per year: 9	Truck Crashes per year: 19				
	Total Crash Rate: 4.45 Crashes per million vehicle miles traveled	Total Crash Rate: 5.63 Crashes per million vehicle miles traveled				
	Truck Crash Rate: 0.50	Truck Crash Rate: 0.97				

Truck crashes per million vehicle miles traveled

Truck Crash Rate: 0.50 Truck crashes per million vehicle miles traveled

Crash Data Summary – SR 41 South of SR 41/SR 48 Split



Truck-related crash trends

- Five crashes resulted in injuries (16%) and there were zero fatalities
- Rear-end crashes were the most common (50%)
- Sideswipe, same direction crashes were also common (25%)
- 28% of crashes occurred mid-day between 11:00 am and 1:00 pm
- 81% of crashes occurred during daylight hours
- 34% of crashes occurred on Tuesdays ¹²

Crash Data Summary – SR 41 South of SR 41/SR 48 Split

"Before""During"January 2013 – JuneAugust 201220162016Daily Traffic:13,264Daily Traffic:Daily Traffic:

Daily Traffic:13,2643.5-yr Total Crashes:2693.5-yr Truck Crashes:32

Crashes per year: 77 Truck Crashes per year: 9

Total Crash Rate:4.61Crashes per millionvehicle miles traveled

Truck Crash Rate: 0.55 Truck crashes per million vehicle miles traveled

August 2016 – December 2016 Daily Traffic: 13,517 4-mo Total Crashes: 29

4-mo Truck Crashes: 3

Crashes per year: 90 Truck Crashes per year: 9

Total Crash Rate:5.30Crashes per millionvehicle miles traveled

Truck Crash Rate: 0.55 Truck crashes per million vehicle miles traveled



Truck-related crash trends

- Two crashes resulted in injuries (33%) and[•] there were zero fatalities
- Four crashes (67%) were rear-end crashes
- One crash was an angle collision

- One crash was a sideswipe, same direction collision
- All six crashes occurred between 8:00 am and 6:00 pm
- Crashes were evenly split on Mondays 14 and Wednesdays

Crash Data Summary – SR 48

"Before" January 2013 – June 2016

Daily Traffic:22,7383.5-yr Total Crashes:1983.5-yr Truck Crashes:6

Crashes per year: 57 Truck Crashes per year: 2

Total Crash Rate:1.78Crashes per millionvehicle miles traveled

Truck Crash Rate: 0.05 Truck crashes per million vehicle miles traveled

"During" August 2016 – December 2016

Daily Traffic:23,3984-mo Total Crashes:23

4-mo Truck Crashes: 1

Crashes per year: 71 Truck Crashes per year: 3

Total Crash Rate:2.18Crashes per millionvehicle miles traveled

Truck Crash Rate: 0.09 Truck crashes per million vehicle miles traveled

Crash Data Comparison

Segment	Total Crash Rate (Crashes per million vehicle miles traveled)		Truck Crash Rate (Truck crashes per million truck miles traveled)	
	Jan '13 – Jun'16 3.5 years	Aug '16 – Nov '16 4 months	Jan '13 – Jun'16 3.5 years	Aug '16 – Nov '16 4 months
SR 41 North of SR 41/SR 48 Split	4.45	5.63	0.50	0.97
SR 41 South of SR 41/SR 48 Split	4.61	5.30	0.55	0.55
Statewide Average Two-Lane Arterial	4.71			-
SR 7	3.38	3.03	0.18	0.14
SR 48	1.78	2.18	0.05	0.09
Statewide Average Multilane Arterial	4.02		-	-

DelDOT Highway Safety Improvement Program (HSIP)

Hazard Elimination Program (HEP)

- High crash locations selected annually using the Critical Ratio method
 - Determine whether crash rate is higher than the average crash rate for locations with similar characteristics (3/10 mile segments)
 - Critical Ratio > 1 means crash rate is statistically significantly higher than the
 statewide average for similar roadways

statewide average for similar roadways

- DelDOT ranks sites with Critical Ratio > 1
- DelDOT selects the top 15 HEP segments (not part of an ongoing project or studied recently) for additional safety study each year
- 2017 HEP Sites based on January 2013 December 2015 crash data
- SR 7/41/48 HEP Sites
 - 10 sites with Critical Ratio >1

SR 41, SR 48 & SR 7 HEP Sites



HEP Studies Since 2010



Strategic Highway Safety Plan (SHSP)

- Statewidecoordinated safety plan
- Looks at crashes systemically
- Integrates the four E's
 - Engineering
 - Education
 - Enforcement
 - Emergency Medical Services (EMS)
- Proactive, rather

- Current priorities
 - Intersections
 - Roadway departure
 - Impaired driving
 - Unrestrained motorists
 - Motorcycles
 - Speeding
 - Pedestrians
 - Traffic records

Summary

- No HEP locations on SR 7, 41 or 48 on DelDOT's selected list for 2017
- Similar truck crash types (rear-end, sideswipe)
- Most truck crashes → weekdays during daylight hours
- "Before" Period
 - Non segments had crash rates higher than statewide averages for similar roadways
 - SR 41 and SR 7 had similar total crash rates
 - SR 48 had lower total crash rate
 - SR 41 & SR 7 truck crash rates notably greater than the SR 48 truck crash crate
- "During" Period
 - Use results with caution!
 - SR 7: Both total and truck crash rates went down
 - SR 41 (south of split): Total crash rate down slightly, truck crash rate the same
 - SP 18: Both total and truck crash rates went up: rates still lower