



Oregon State
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SAFETY INVESTIGATION MANUAL WORKSHEET

CASE STUDY: OR-22 AND PERRYDALE RD

Online Training

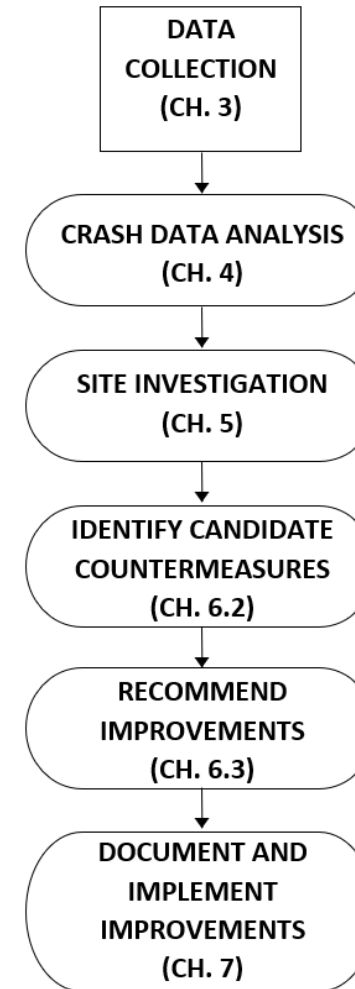
Presented by:

Dr. Jason C. Anderson

Portland State University

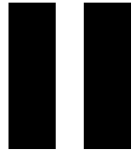
Case Study #3: OR-22 and Perrydale Rd

- Skewed two-way stop-controlled intersection
- Five-year study period
- 1/1/2013 – 12/31/2017
 - MP 11.70 to MP 11.88 on OR-22 (Segment)
 - MP 11.79 (Intersection)



Step 1: Data Collection

- In-Office Data
 - [Crash Data](#)
 - Oregon Traffic Data Explorer
 - [Safety Priority Index System \(SPIS\) \(SPIS Brochure\)](#)
 - [Highway Inventory Reports](#)
 - [Facility Functional Class](#)
 - [TransGIS](#)
 - [Traffic Volumes](#)
 - [Digital Video Log](#)
 - [Google Maps](#)
- Field Data



PAUSE VIDEO HERE WHILE YOU COMPLETE THE ITEMS BELOW

1. Download data and process data in the SIM Worksheet
2. Complete all necessary fields and selections in the SIM Worksheet
3. Assess and identify crash patterns on the segments tab and intersections tab. Which crash types and patterns are highlighted?

Highway Inventory Report

- [Highway Inventory Reports](#)

Roadway	Mileage Type	Overlap Code	Mile Point	Dup	Roadway Codes	Description	# of Lanes	Total Lane Width	Total Surface Width	L1 SR TP	Engineering Station Code	ID	MEDIAN TYPE	WIDTH
<i>Highway #: 030 WILLAMINA-SALEM Hwy</i>														
1			11.82	-	) + ( -	(DFMS)S(1)018"X018" CON CIRC RDSIDE DRNG	2	25	55	AU			1	14
1			11.81		| = K	LEG (FROM PERRYDALE RD.)	2	25	55	AU			1	14
1			11.79	20	L | L	DOLPH CORNER	2	25	55	AU	F 623+09		0	0
1			11.79	10	K = | = K	PERRYDALE RD.	2	25	55	AU	F 623+09		0	0
1			11.79	-	) + ( -	(DFMS)S(1)018"X018" CON CIRC RDSIDE DRNG	2	25	55	AU	F 623+09		0	0
1			11.77		|	ENGSTA ATTACHED	2	25	55	AU	F 622+00		0	0
1			11.76		| = K	LEG (TO PERRYDALE RD.)	2	25	55	AU			0	0
1			11.74	-	) + ( -	(DFMS)S(1)018"X018" CON CIRC RDSIDE DRNG	2	25	51	AU			1	10

Please note that on this report, median width does NOT include the width of inside shoulders.

Functional Classification

- [Facility Functional Class](#)
 - [Functional Classification Table by Highway and MP](#)



Oregon Department of Transportation

Functional Classification and National Highway System Status As of November 2021* on Oregon State Highways

https://www.oregon.gov/ODOT/Data/Documents/FC_NHS_State_Highway_List.pdf

LRS	Hwy	Rdwy ID	Mlge Type	Begin MP	End MP	NHS	FC Code	Historic FC Code	FC Description	HPMS Area	Urban Area
02900I00	029	1		19.96	20.40	No	4	16	Minor Arterial	4	PORTLAND
02900I00	029	1		21.08	23.17	No	4	16	Minor Arterial	4	PORTLAND
02900I00	029	1		23.17	25.73	No	4	06	Minor Arterial	1	
02900I00	029	1		26.52	42.41	No	4	06	Minor Arterial	1	
02900I00	029	1		42.41	42.46	No	4	16	Minor Arterial	2	MCMINNVILLE
03000D00	030	2		0	0.54	Yes	3	02	Other Principal Arterial	1	
03000D00	030	2		15.34	18.38	Yes	3	02	Other Principal Arterial	1	
03000D00	030	2		18.84	19.40	Yes	3	02	Other Principal Arterial	1	
03000D00	030	2		24.09	26.18	Yes	2	12	Other Freeways and Expressways	4	SALEM
03000I00	030	1		0	16.17	Yes	3	02	Other Principal Arterial	1	
03000I00	030	1		16.20	20.56	Yes	3	02	Other Principal Arterial	1	

Traffic Volumes

- [Traffic Volumes](#)
 - Willamina-Salem Highway, No. 030
 - Milepost indicates distance from Salmon River Highway (OR-18), at Wallace Bridge
 - Closest mile point is 11.65

Year	MP	AADT (All Vehicles)	Location
2013	11.65	12,500	0.14 mi west of Perrydale Rd at Dolph Corner
2014	11.65	10,200	0.14 mi west of Perrydale Rd at Dolph Corner
2015	11.65	10,800	0.14 mi west of Perrydale Rd at Dolph Corner
2016	11.65	11,200	0.14 mi west of Perrydale Rd at Dolph Corner
2017	11.65	10,600	0.14 mi west of Perrydale Rd at Dolph Corner

OR-22 and Perrydale Rd – SIM Output (Segment)

Severity	Crash	Obs %	Ex %	P(Norm)
Fatal+ Inj A	6	27.3%	7.4%	0.4%
Injury B+C	14	63.6%	45.2%	6.4%
PDO	2	9.1%	47.4%	100.0%
	22	100.0%	100.0%	

Collision Type (All)	Crash	Obs %	Ex %	P(Norm)
Angle	9	40.9%	0.4%	0.0%
Head-on	0	0.0%	3.6%	
Rear	2	9.1%	16.4%	89.7%
Sideswipe-Meet	0	0.0%	4.9%	
Sideswipe-Over	2	9.1%	3.8%	20.2%
Turn	6	27.3%	4.8%	0.0%
Parked	0	0.0%	0.2%	
NonCollision	0	0.0%	6.5%	
Backing	0	0.0%	0.2%	
Pedestrian	0	0.0%	0.4%	
Fixed Object	2	9.1%	44.3%	100.0%
Other	1	4.5%	14.5%	96.8%
	22	100%	100%	

*P(norm) values in indicate overrepresentation

On Roadway	Crashes	Obs %	Ex %	P(Norm)
Intersection	15	68.2%	0.1%	0.0%
Alley	0	0.0%	5.0%	
Straight	5	22.7%	31.4%	86.8%
Transition	0	0.0%	0.3%	
Curve	0	0.0%	7.5%	
Open Access	0	0.0%	0.5%	
Grade	0	0.0%	4.9%	
Bridge	0	0.0%	0.4%	
Tunnel	0	0.0%	0.0%	
Unknown	0	0.0%	0.3%	
	20	91%	50%	

Driver Age	Drivers	Obs %	Ex %	P(Norm)
<15	0	0.0%	0.0%	
15-18	1	2.1%	3.0%	76.3%
19-21	4	8.3%	4.5%	16.8%
22-24	2	4.2%	4.2%	60.2%
25-34	9	18.8%	13.0%	16.3%
35-44	7	14.6%	9.6%	17.5%
45-54	2	4.2%	9.3%	94.6%
55-64	9	18.8%	9.7%	3.9%
65-74	6	12.5%	6.3%	7.9%
>74	6	12.5%	3.2%	0.4%
Not Stated	2	4.2%	37.3%	100.0%
	48	100%	100%	

Older Drivers Involved	Crash	Obs %	Ex %	P(Norm)
Older Drivers	12	25.0%	9.5%	0.1%
NA	36	75.0%		
	48	100.0%	9.5%	

Cause Codes	Drivers	Obs %	Ex %	P(Norm)
TOO-CLOS	2	7.1%	6.3%	53.2%
TOO-FAST	2	7.1%	27.5%	99.9%
NO-YIELD	13	46.4%	3.0%	0.0%
OTHR-IMP	0	0.0%	10.9%	
IMP LN C	0	0.0%	1.5%	
INATTENT	1	3.6%	6.3%	83.8%
DIS--RAG	0	0.0%	0.0%	
IMP-TURN	1	3.6%	1.7%	37.8%
OTHER	1	3.6%	15.8%	99.2%
CARELESS	1	3.6%	4.5%	72.7%
FATIGUE	1	3.6%	7.5%	88.7%
LEFT-CTR	0	0.0%	3.7%	
SPEED	0	0.0%	3.0%	
PHANTOM	0	0.0%	2.0%	
IMP-OVER	2	7.1%	2.1%	11.5%
RECKLESS	1	3.6%	2.6%	51.5%
PAS-STOP	1	3.6%	0.0%	0.8%
IN RDWY	1	3.6%	0.3%	6.9%
MECH-DEF	0	0.0%	0.5%	
LOADSHFT	0	0.0%	0.6%	
NT VISBL	1	3.6%	0.0%	0.4%
DIS TCD	0	0.0%	0.1%	
WRNG WAY	0	0.0%	0.0%	
IMP PKNG	0	0.0%	0.1%	
	28	100%	100%	

OR-22 and Perrydale Rd – SIM Output (Intersection)

Severity	Crash	Obs %	Ex %	P(Norm)
Fatal+ Inj A	6	37.5%	2.6%	0.0%
Injury B+C	9	56.3%	51.1%	43.5%
PDO	1	6.3%	46.3%	100.0%
	16	100.0%	100.0%	

Light Condition	Crash	Obs %	Ex %	P(Norm)
Dawn	0	0.0%	2.0%	
Daylight	12	75.0%	77.4%	71.3%
Dark-Lighted	1	6.3%	12.5%	88.2%
Dark	3	18.8%	3.5%	1.7%
Dusk	0	0.0%	4.5%	
UNK	0	0.0%	0.2%	
	16	100%	100%	

Older Drivers Involved	Crash	Obs %	Ex %	P(Norm)
Older Drivers Involved	9	23.7%	8.4%	0.4%
NA	29	76.3%		
	38	100.0%	8.4%	

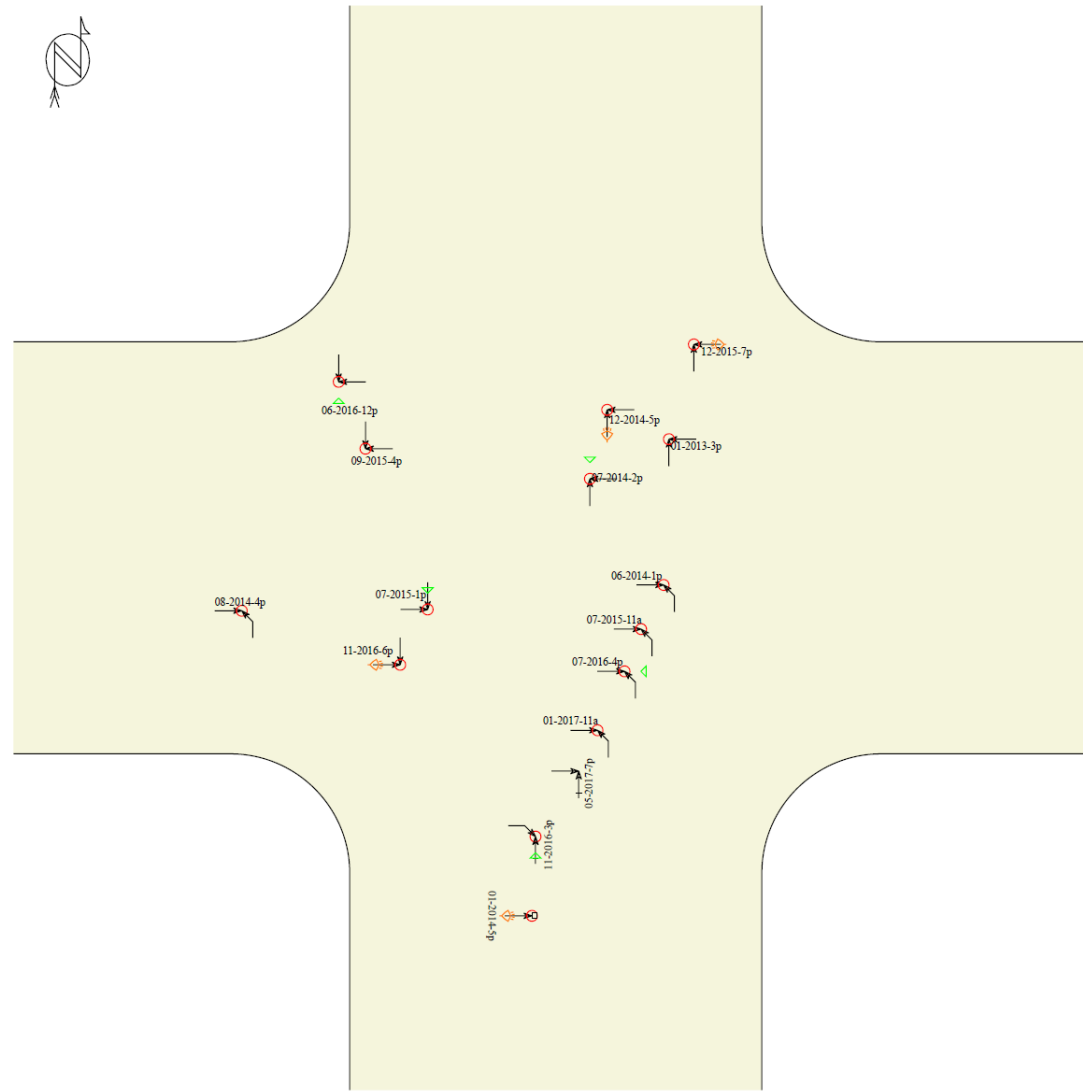
*P(norm) values in indicate overrepresentation

Month	Crash	Obs %	Ex %	P(Norm)
January	7	43.8%	7.7%	0.0%
February	0	0.0%	7.1%	
March	0	0.0%	7.6%	
April	0	0.0%	8.4%	
May	1	6.3%	8.5%	75.7%
June	2	12.5%	8.6%	40.4%
July	4	25.0%	8.4%	4.0%
August	1	6.3%	8.5%	75.8%
September	1	6.3%	8.4%	75.5%
October	0	0.0%	9.5%	
November	0	0.0%	8.4%	
December	0	0.0%	8.9%	
UNK	0	0.0%		
	16	100%	100%	

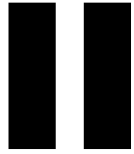
Driver Age	Drivers	Obs %	Ex %	P(Norm)
<15	0	0.0%	0.0%	
15-18	0	0.0%	4.0%	
19-21	3	7.9%	4.6%	25.0%
22-24	2	5.3%	4.3%	48.4%
25-34	8	21.1%	12.5%	9.4%
35-44	6	15.8%	10.2%	18.7%
45-54	2	5.3%	8.7%	85.3%
55-64	6	15.8%	7.8%	7.4%
65-74	5	13.2%	5.4%	5.2%
>74	4	10.5%	3.0%	2.8%
Not Stated	2	5.3%	39.5%	100.0%
	38	100%	100%	

Cause Codes	Proj	Obs %	Ex %	P(Norm)
CARELESS	3	13.0%	1.9%	0.9%
DEF BRKE	0	0.0%	0.2%	
DEF STER	0	0.0%	0.0%	
DIS TCD	0	0.0%	0.3%	
DIS--RAG	0	0.0%	0.7%	
FATIGUE	0	0.0%	0.3%	
IMP LN C	0	0.0%	1.6%	
IMP-OVER	0	0.0%	0.8%	
IMP-TURN	3	13.0%	6.1%	16.3%
IN RDWY	0	0.0%	0.4%	
INATTENT	0	0.0%	3.4%	
LEFT-CTR	0	0.0%	0.3%	
LOADSHFT	0	0.0%	0.0%	
MECH-DEF	0	0.0%	0.0%	
NO-YIELD	12	52.2%	58.9%	80.8%
NT VISBL	0	0.0%	0.1%	
OTHER	1	4.3%	0.2%	3.6%
OTHR-IMP	0	0.0%	0.0%	
PAS-STOP	1	4.3%	16.6%	98.5%
PHANTOM	0	0.0%	0.5%	
RECKLESS	0	0.0%	1.1%	
SPEED	0	0.0%	0.4%	
TOO-CLOS	0	0.0%	3.7%	
TOO-FAST	3	13.0%	2.3%	1.5%
WRNG WAY	0	0.0%	0.3%	
	23	100%	100%	

Collision Diagram



- | | | | |
|--------------|------------------|--------------|----------------|
| ← Straight | ▭ Parked | ⊗ Pedestrian | Fixed objects: |
| ←+ Stopped | ⚡ Erratic | ⊗ Bicycle | □ General |
| ← Unknown | ⚡ Out of control | ○ Injury | ▣ Signal |
| ↔ Backing | ↘ Right turn | ● Fatality | ▣ Tree |
| ↔ Overtaking | ↙ Left turn | 🕒 Nighttime | ⊗ Pole |
| ↔ Sideswipe | ↻ U-turn | 🚔 DUI | ⊗ Curb |
| | | | ⊗ Animal |
| | | | ◀ 3rd vehicle |
| | | | * Extra data |



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1. Use the Digital Video Log and Google Maps to show conditions before countermeasure was implemented.

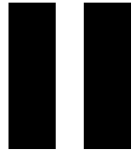
Digital Video Log

- [Digital Video Log](#)



Google Maps and Streetview





**PAUSE VIDEO HERE WHILE YOU COMPLETE
THE ITEMS BELOW**

1. Summarize your site investigation.

Summary of Site Investigation

Segment

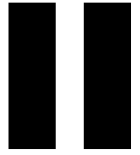
- 22 crashes
 - 6 severe, 14 minor
- 9 angle crashes, 6 turning movement crashes
- 12 older drivers involved
- 16 classified as intersection crashes
- Leading cause
 - Failure to yield right-of-way
 - Passing stop sign
 - Not visible

Intersection

- 16 crashes
 - 6 severe, 9 minor
- 9 angle crashes, 6 turning movement crashes
- 7 crashes in January
- 9 older drivers involved
- Leading cause
 - Failure to yield right-of-way

Step 4: Identify Countermeasure

- [FHWA Intersection Safety](#)
- [CMF Clearinghouse](#)
- [ARTS Crash Reduction Factor \(CRF\) List](#)
- [ARTS Crash Countermeasure Selection Tool](#)



**PAUSE VIDEO HERE WHILE YOU COMPLETE
THE ITEMS BELOW**

1. Identify potential countermeasures.

Step 5: Recommended Solution

- Applied for hotspot project for roundabout in 2022-2024 ARTS round
 - Did not make list for 100% funding due to high cost.
- Will apply again for next ARTS funding cycle.
- Approved with Quick Fix funds to install TRAWS as interim solution.