

# Roundabout Data Collection



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TOPS Lab



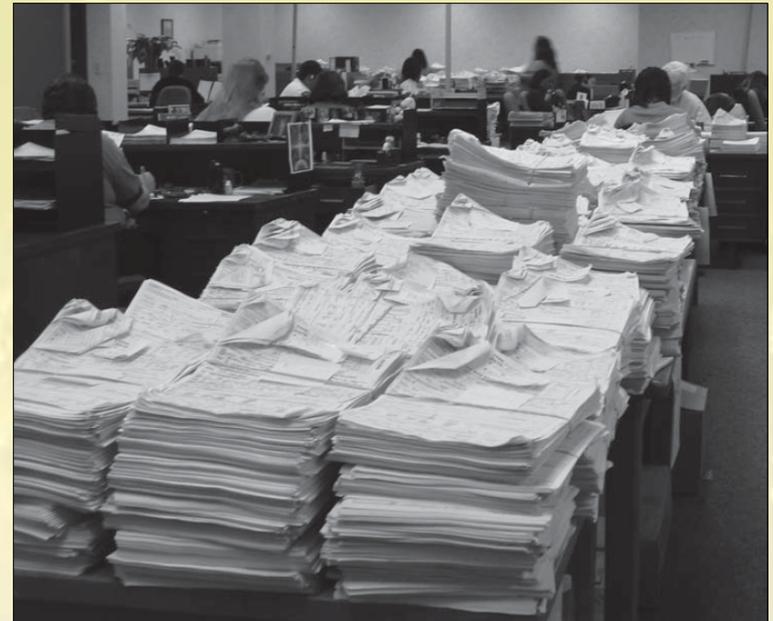
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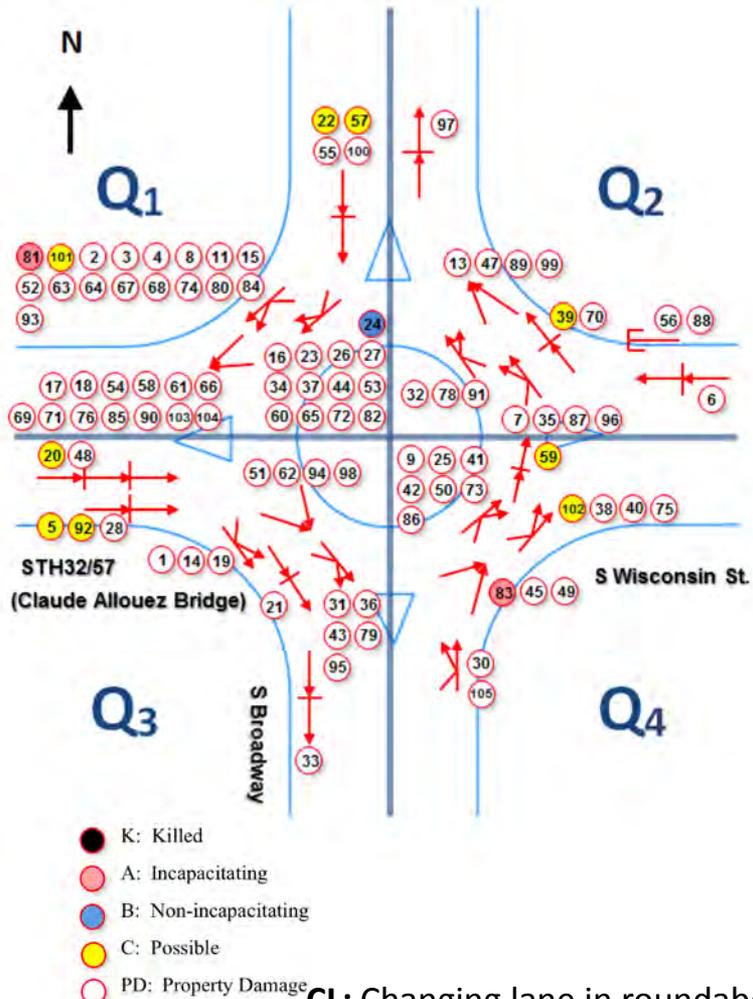


# Outline

- Why's the data important
- RAB Crash Types
- Common Issues



Paper crash report backlogs in Texas. (GAO-10-454)



**CL:** Changing lane in roundabout  
**FC:** Following too close  
**FYBL:** Failed to yield to both lanes  
**FYROW:** Failed to yield right-of-way  
**UR:** Unknown reason  
**WLC:** Wrong lane choice

No.	Date	Time	Type	Road Condition	Injure Severity	Q Number	Main Cause
1	2/7/2008	11:43	Sideswipe			3	CL
2	3/6/2008	05:32	Sideswipe			1	WLC
3	3/7/2008	17:16	Sideswipe			1	FYBL
4	3/7/2008	17:56	Sideswipe			1	CL
5	3/7/2008	18:37	Rear-end		C	3	FC
6	3/14/2008	11:39	Rear-end			2	FC
7	3/26/2008	16:18	Sideswipe			2	WLC
8	3/26/2008	17:55	Sideswipe			1	FYBL
9	4/17/2008	06:51	Sideswipe			4	WLC
10	4/17/2008	16:45	Sideswipe				x
11	4/21/2008	17:25	Sideswipe			1	WLC
12	4/28/2008	17:46	Angle				x
13	4/30/2008	07:57	Angle			2	WLC
14	6/10/2008	14:16	Sideswipe			3	WLC
15	6/17/2008	16:18	Sideswipe			1	WLC
16	6/23/2008	20:18	Sideswipe			1	WLC
17	7/2/2008	08:41	Angle			1	ID
18	7/15/2008	11:20	Angle			1	FYBL
19	7/20/2008	11:25	Sideswipe			3	WLC
20	7/21/2008	14:38	Rear-end		C	3	FC
21	8/1/2008	08:33	Rear-end			3	CL
22	8/15/2008	13:26	Rear-end		C	1	FC
23	8/21/2008	20:10	Sideswipe			1	FYBL
24	9/9/2008	05:59	Sideswipe		B	1	FYBL
25	9/16/2008	15:08	Sideswipe			4	WLC
26	11/20/2008	07:49	Sideswipe			1	FYBL

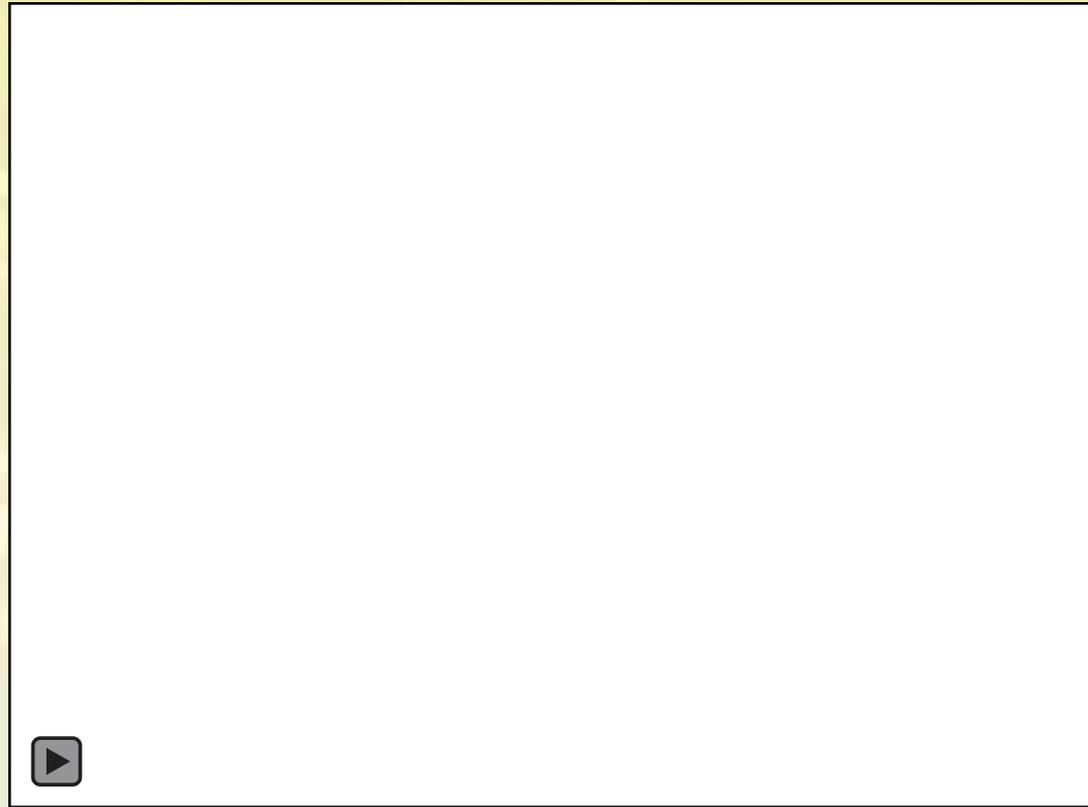
Rank	Main Cause	Q1	Q2	Q3	Q4	Crashes
1	WLC (Wrong lane choice)	31	5	5	5	46
2	FYBL (Failed to yield both lanes)	10	5	4	8	27
3	FC (Follow too close)	4	2	5	1	12
4	CL (Changing lane)	1	2	3	1	7
5	ID(Inattentive Driving)	1	2	0	2	5
6	FYROW (Failed to yield right-of-way)	0	1	1	0	2
	Ice	0	0	1	0	1

Year	Collision Type					Total
	Angle	Rear-end	Sideswipe	No	Head	
2004	5	2	3	0	0	10
2005	3	3	2	2	0	10
2006	2	6	1	2	1	12
2007	7/12/2007 Roundabout open to traffic					
2008	3	6	17	0	0	26
2009	10	7	22	1	0	40
2010	11	3	19	1	0	34
2011	4	7	19	5	0	35



# Exit and Entry Errors

- USH 41/Breezewood Ln - Frequency



# Validation of Highway Engineering Data Quality on Wisconsin Crash Reports

- Accuracy
  - Internal validation (electronic forms)
  - External validation (this research)
- Completeness—no “blank” entries
- Consistency—uniformity among files
  - All WI agencies use MV4000
  - National standard is *Model Minimum Uniform Crash Criteria* (MMUCC)

# Site Visits

- Observed ~250 foot radius around intersection
- Marked appropriate field attribute for each intersection approach
- In accordance with *WisDOT Training Manual* when possible—used engineering judgment when manual did not offer clear guidance
  - Curve: Alignment change of 15 degrees or more
  - Hill: Noticeable change in elevation
  - Thinking from perspective of an officer—they would not be measuring curve radii or grades

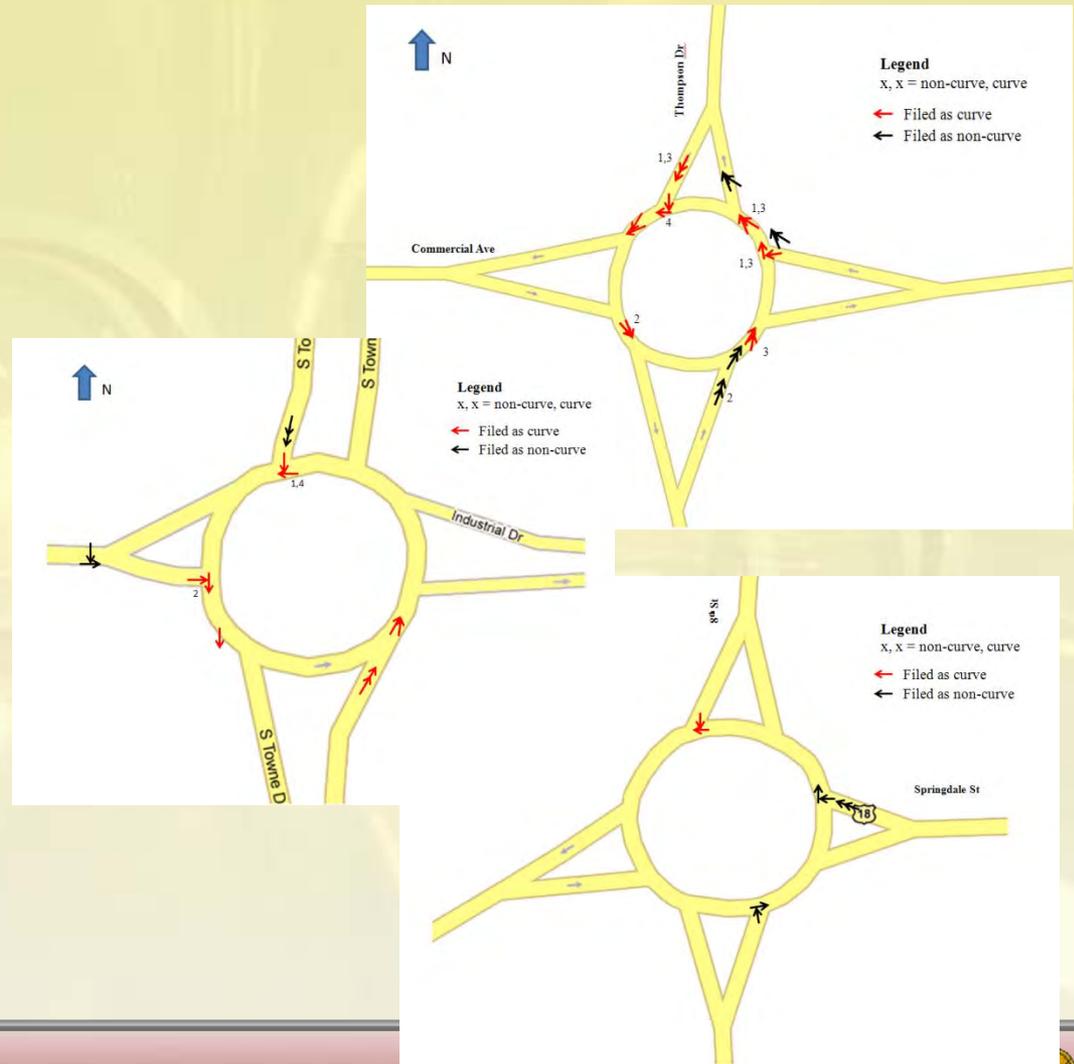
# Roundabouts

- Three roundabout intersections were studied
- The most inaccurate fields were traffic-way, horizontal curvature, and traffic control

	S Towne & Industrial	8th St & Springdale	Commercial Ave & N Thompson	Round-about Total
HWYCLASS	100.0%	100.0%	100.0%	<b>100.0%</b>
ACSCNTL	69.2%	100.0%	83.9%	<b>82.0%</b>
ROADHOR	30.8%	66.7%	29.0%	<b>34.0%</b>
ROADVERT	100.0%	100.0%	96.8%	<b>98.0%</b>
TRFCWAY	53.8%	50.0%	54.8%	<b>54.0%</b>
TRFCNTL1	92.3%	60.0%	86.2%	<b>85.1%</b>
TRFCNTL2	61.5%	100.0%	72.4%	<b>72.3%</b>

# Results: Roundabouts

- Horizontal curvature reporting errors were tied to the circulating lane
- Majority of crashes flagged with a curve involved at least one vehicle in the circulating lane



# Results: Roundabouts

- Traffic-way errors were most commonly associated with incorrectly using “not physically divided” or divided with a barrier
- Low traffic control accuracy most often resulted from officers indicating no traffic control, when the correct response should have been a yield sign

# Roundabouts



# Oshkosh Roundabouts

- History of Roundabouts in Oshkosh
  - Jackson and W Murdock Av (June, 2010)
  - Hwy 45 and Vinland Rd (August 2010)
  - Witzel Overpass of Hwy 41 (September 2010)
  - W 9th Av Overpass of Hwy 41 (July 2011)
    - Intersections with Ingress and Egress for both directions of Hwy 41
  - Hwy 21 Overpass of Hwy 41 (November 2012)
    - S. Koeller Rd
    - S. Washburn Rd
    - This was a significant change as it involved the re-grading of highway 41 from an overpass to an underpass of Hwy 21.

# Crash Investigations

- Roundabout crash vs. traditional intersection
  - Frequency – Up from installation of round-about
  - Severity – Down significantly
- “Steer it, Clear it.”
  - 90% or more have been clearable
  - 346.67 & .68

# § 346.67 Duty upon striking person or attended or occupied vehicle.

- *(Driver removal portion of law commonly referred to as the Steer It, Clear It Law)*
- **(2)** Any stop required under sub. (1) shall be made without obstructing traffic more than is necessary.

# § 346.68 Duty upon striking unattended vehicle.

- *(Driver removal portion of law commonly referred to as the Steer It, Clear It Law)*
- The operator of any vehicle which collides with any vehicle which is unattended shall immediately stop and either locate and notify the operator or owner of such vehicle of the name and address of the operator and owner of the vehicle striking the unattended vehicle or leave in a conspicuous place in the vehicle struck, a written notice giving the name and address of the operator and of the owner of the vehicle doing the striking and a statement of the circumstances thereof. Any such stop shall be made without obstructing traffic more than is necessary.

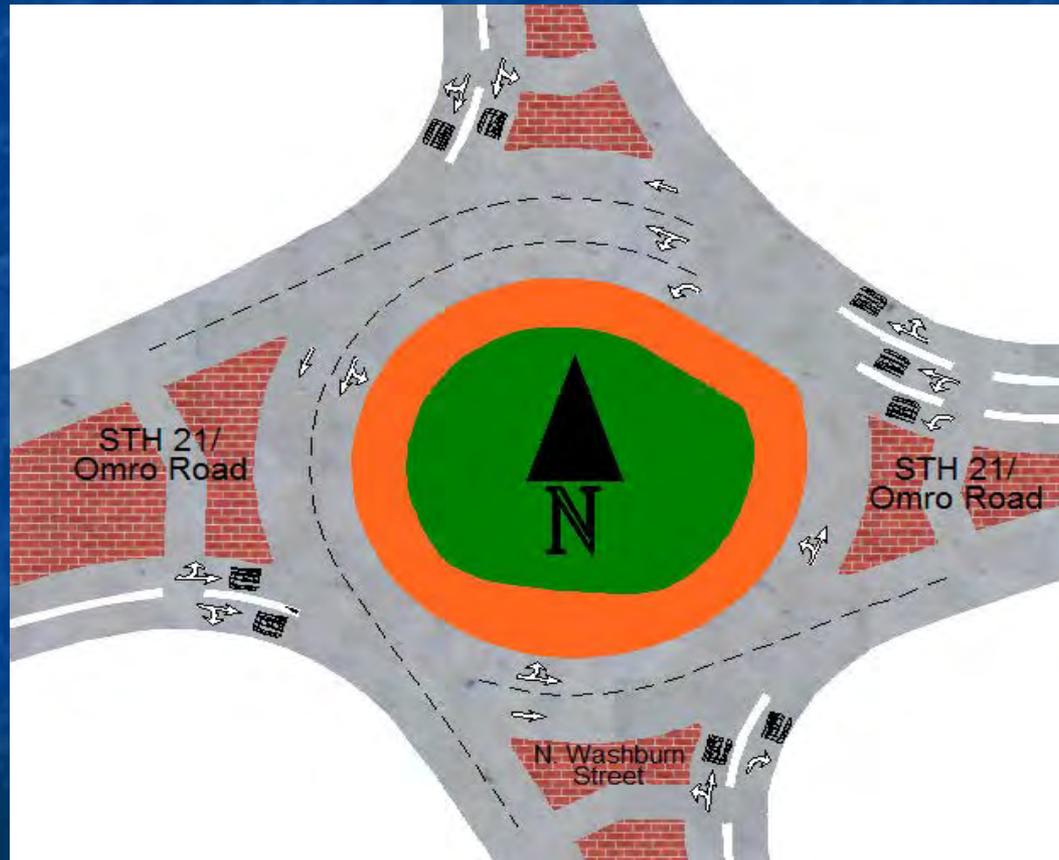
# Crash Investigations

- If the crash can not be cleared right away it typically only blocks one lane
- Redirecting other traffic for severe crashes
  - allowing through access on part of the roundabout
- Blocking off at the preceding intersection

# TraCS

- Unique shape compared to traditional intersections
  - Crash Team investigator created templates for each roundabout
  - Using Google Maps
  - Using GIS Files

# TraCS Template



# Education

## Ongoing effort

- DOT literature
- PSA
  - DOT
  - Oshkosh Police Chief Scott Greuel  
(<http://www.oshkoshpd.com/information/roundabouts.asp>)
  - Oshkosh City Manager Mark Rohloff  
(<http://www.ci.oshkosh.wi.us/Transportation/traffic/roundabouts.asp>)

# Enforcement

- Warnings -> Citations
- Utilizing BOTS grants to focus on roundabouts (ie. Seatbelt Enforcement)
  - At least three deployments of Seatbelt Grants
    - Officer standing on side of road to observe violations
    - Other officers in squads to make stops and issue citations
    - 5 officers working a 4 hour HVE
    - 54 stops-> 51 Citations on one grant

# Turning at roundabouts

- PLAN AHEAD!
  - Follow signs that direct turning maneuvers
  - WI § 346.31
    - ... If, because of the size of the vehicle or the nature of the intersecting roadway, the turn cannot be made from the traffic lane next to the right-hand (or left hand) edge of the roadway, the turn shall be made with due regard for all other traffic.
  - Change lanes only if it can be done safely

# Commercial Motor Vehicles and Large Trucks

- Wider turning radius
  - Large vehicles need more space in a roundabout.
  - All drivers should be cautious and avoid driving next to or passing large trucks while approaching and maneuvering through a roundabout.
  - Trucks may cross into other lanes or onto the truck apron.
  - Truck aprons are not to be used by cars, SUVs or pickup trucks.

# Commercial Motor Vehicles and Large Trucks *(cont.)*

- If necessary, approach using both lanes so other vehicles do not pull alongside
- Must operate with due regard for other motorists and pedestrians

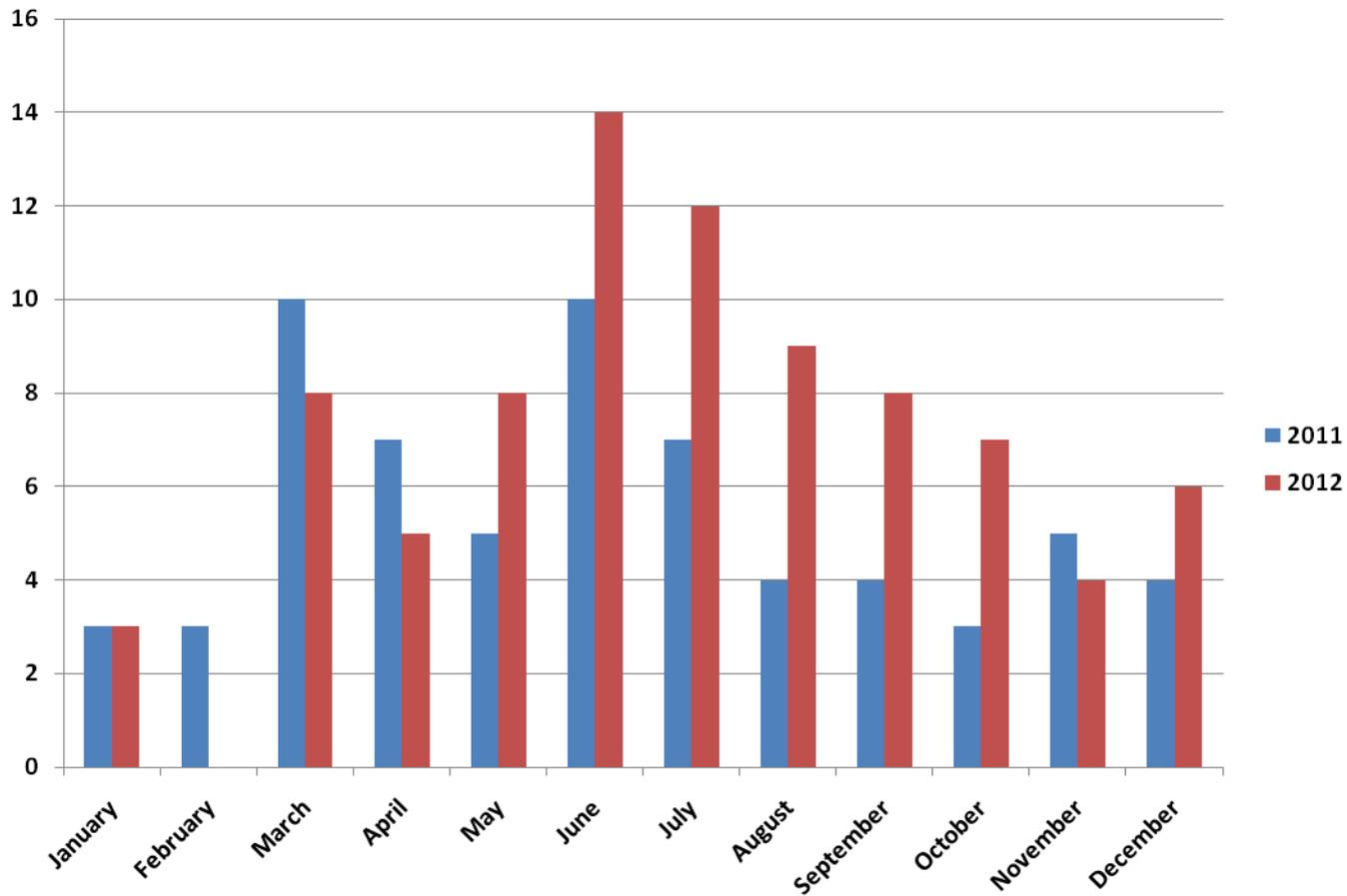
# Pedestrian Safety @ Roundabouts

- Pedestrian Right of Way
  - Vehicles yield to Peds before entering AND before exiting roundabout
- Slow speeds critical to assessing all users of the roundabout
- Additional warning devices for roundabouts where pedestrians are frequent

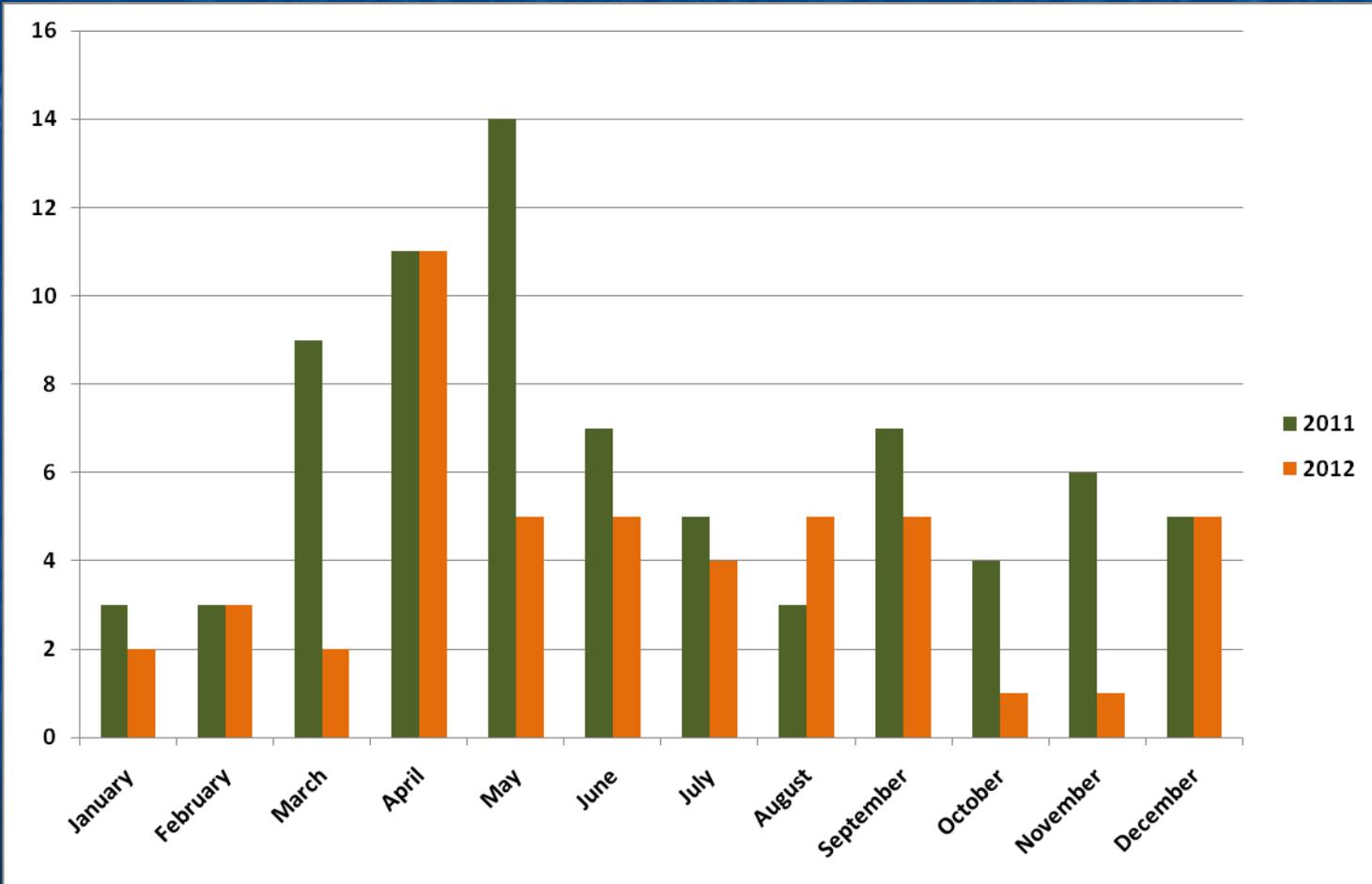
# Pedestrian Use of Crosswalk at Roundabout

- Pedestrians at the curb side
  - look left for oncoming traffic before crossing
- Pedestrians within the crosswalk island
  - look right for oncoming traffic before crossing.

# Witzel & Washburn Roundabout Accidents



# Witzel & Koeller Roundabout Accidents



# Jackson & Murdock Roundabout Accidents

