

Operational Performance and Safety Comparison: Roundabouts vs. Traditional Signalized and Unsignalized Intersections

Vincent Spahr

Advisor: Deogratias Eustace, Ph.D., P.E., P.T.O.E.

Objective

1. To perform a safety analysis of the roundabouts and traditional intersections for comparison.
2. To perform an efficiency analysis of the intersections using SIDRA software results for area intersections.

Motivation

Roundabouts have become increasingly popular in the United States where new intersections are being constructed and where old intersections are being remodeled.

Ohio, specifically Columbus and its surrounding suburbs, has seen a large influx of roundabout installations in the past decade.

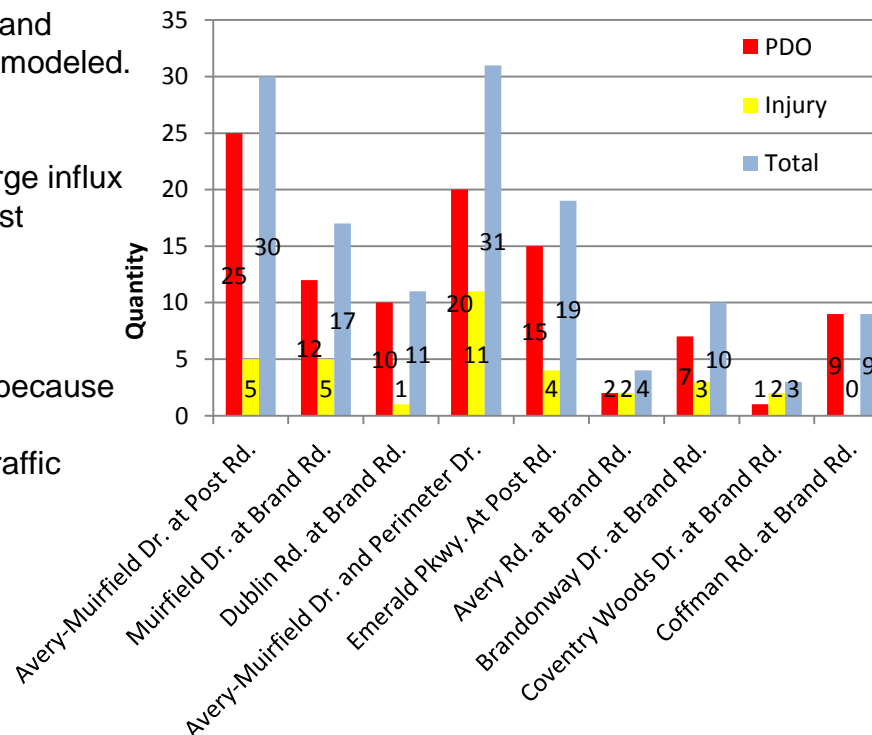
Study Area

An area of Dublin, OH was chosen because of the proximity of various types of intersections and readily available traffic volumes and accident reports.

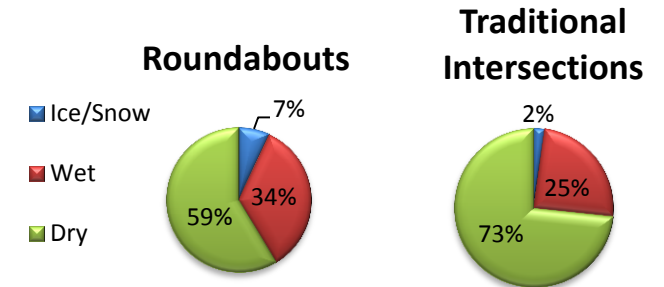
Input

- **Safety:** Accident Reports
 - Quantity
 - Severity
 - Collision Type
 - Weather
- **Performance:** Turning Movement Counts
 - Left, Through, Right movements
 - From each approach

Accidents By Location



Road Conditions



Level of Service

		AM LOS	PM LOS
Avery-Muirfield Dr. at Post Rd.	4 way Roundabout	C	C
Emerald Pkwy. At Post Rd.	3 way Signal	B	D
Muirfield Dr. at Brand Rd.	4 way Roundabout	-	A
Avery Rd. at Brand Rd.	4 way Stop	E	E
Coffman Rd. at Brand Rd.	3 way (1 Stop)	D	C
Dublin Rd. at Brand Rd.	3 way Roundabout	B	B
Brandonway Dr. at Brand Rd.	4 way (2 Stop)	F	E
Coventry Woods Dr. at Brand Rd.	4 way (2 Stop)	C	-

Conclusions

- Roundabouts and traditional intersections have similar accident rates per capacity
- Roundabout accidents are generally less severe
- Roundabouts performed better than traditional intersections in terms of traffic flow
 - Higher capacity

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