

BEFORE

AFTER

Before and After Analysis for Traffic Crash at Intersection Straub Rd. / Middle-Bellville Rd.				
Stratified Traffic Crashes		Before: 2008 - 2011	After: 2020 - 2023	
Traffic Crash Stratified by Severity				
CRASH SEVERITY	BEFORE		AFTER	
	Total	%	Total	Crash Reduction
Serious Injury Suspected	1	5%	0	-100%
Minor Injury Suspected	4	19%	0	-100%
Injury Possible	3	14%	1	-67%
PDO/No Injury	13	62%	6	-54%
Total Crash	21	100%	7	-67%
Traffic Crash Stratified by Crash Type				
CRASH TYPE	BEFORE		AFTER	
	Total	%	Total	Crash Reduction
Angle	14	67%	2	-86%
Fixed Object	1	5%	2	100%
Head On	1	5%	0	-100%
Rear End	3	14%	0	-100%
Right Turn	1	5%	3	200%
Sideswipe - Passing	1	5%	0	-100%
Total Crash	21	100%	7	-67%
Traffic Crash Stratified by Contributing Factor				
CONTRIBUTING FACTOR	BEFORE		AFTER	
	Total	%	Total	Crash Reduction
Failure To Yield	11	52%	5	-55%
Followed To Closely/ACDA	4	19%	0	-100%
Improper Turn	2	10%	0	-100%
None	1	5%	0	-100%
Other Improper Action	1	5%	0	-100%
Ran Stop Sign	2	10%	0	-100%
Drove off Road	0	0%	2	100%
Total Crash	21	100%	7	-67%

Multiple Crashes at the same spot



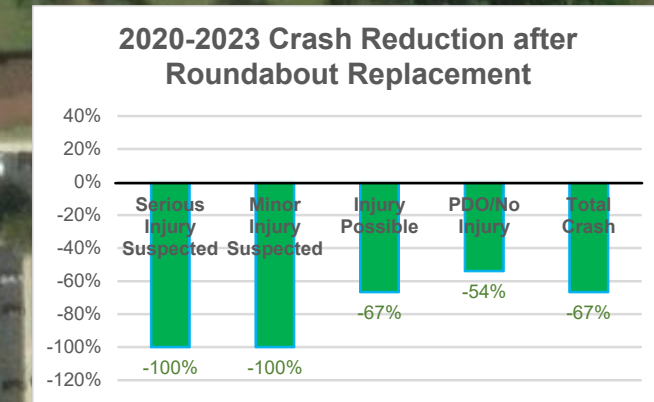
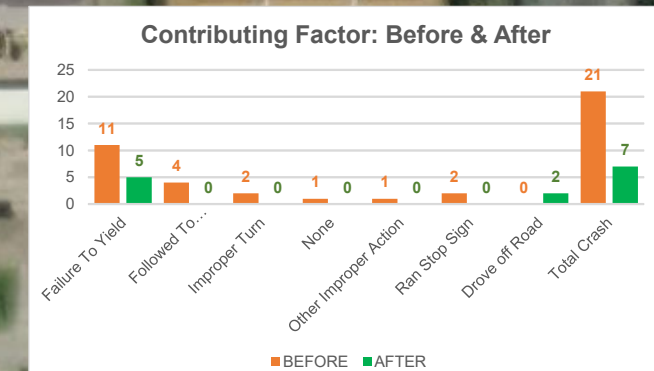
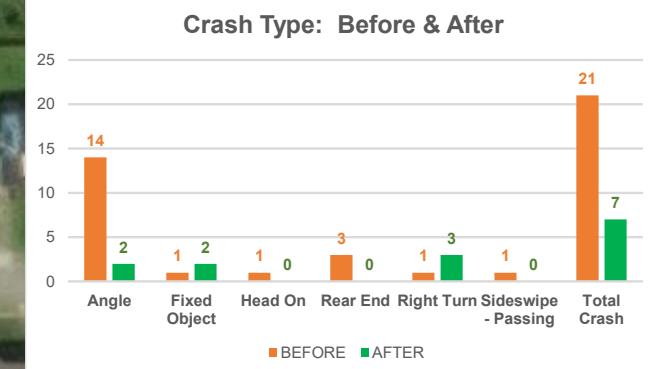
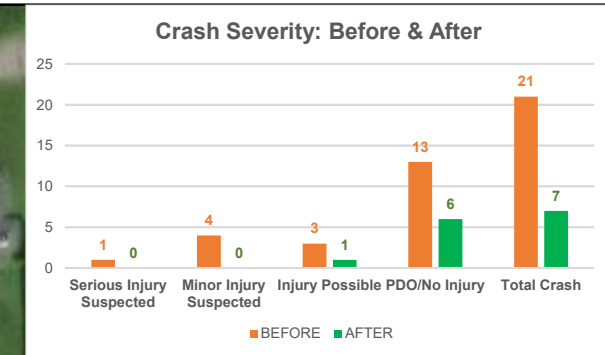
The Before/After analysis of the roundabouts at both Straub Rd. & Middle-Bellville Rd. and E Cook Rd. & Mansfield-Lucas Rd., the only two roundabouts in our region, indicates that there has been a significant reduction in total crashes and injury related crashes at both intersections after the roundabout installations.

The analysis of the four-year crashes from 2020-2023 compared to the same location in the four years period from 2008-2011, when the roundabout had not yet been built, reveals that 67% of total crashes, 100% serious and minor injury crashes, 67% injury possible crashes and 54% property damage only crashes have been reduced since the roundabout installation in 2012. These reductions have not only saved lives but also resulted in substantial cost savings to society.

The cost saving calculation table on right indicates that the investment (\$1,500,000 construction in 2012 equals 2023's value \$ 2,309,181 with 4% annual inflation) in building the roundabout in 2012 at intersection Straub Rd. & Middle- Bellville Rd. has clearly paid off in terms of both saving lives and money for the community even though only 2020-2023 four years crashes reduction was used in the monetary value calculation.

The decrease in crashes translates to lower property damage, reduced medical bills, and decreased overall impact on individuals' time and resources. This success is a testament to the effectiveness of roundabouts in improving traffic safety and reducing accidents at busy intersections.

- Legend**
- Serious Injury
 - ▲ Minor Injury
 - ▲ Injury Possible
 - Property Damage Only Crash



CRASH SEVERITY	NSC Ave. Crash Cost	Before: 2008 - 2011		After: 2020 - 2023		
		Crashes	Crash Costs	Crashes	Crash Costs	Cost Savings
Fatal	\$13,111,000	0	\$ -	0	\$ -	\$ -
Serious	\$1,066,000	1	\$ 1,066,000	0	\$ -	\$ (1,066,000)
Minor	\$232,000	4	\$ 928,000	0	\$ -	\$ (928,000)
Possible	\$126,000	3	\$ 378,000	1	\$ 126,000	\$ (252,000)
PDO	\$17,500	13	\$ 227,500	6	\$ 105,000	\$ (122,500)
TOTAL CRASH		21	\$ 2,599,500	7	\$ 231,000	\$(2,368,500)

Note: 1. The construction cost for this roundabout replacement was about \$1.5 million in 2012. With 4% annual inflation, the 2023 dollar value for the amount of 2012 is \$2,309,181.
 2. Source for Average Comprehensive Crash Cost by crash severity: the National Safety Council (NSC) Injury Facts 2022