



Traffic Safety, Now!

→ How roundabouts save lives



Lindsey Van Parys, PE
**US West Client Relations Lead | Highways,
Roads & Active Transportation**

The pursuit for safer roads

1.3M per year

people die in accidents worldwide
According to SaferAmerica
March 25, 2021



40%

of collisions occur at
intersections

50%

serious injury
collisions occur at
intersections



9th

leading cause of death for all people
According to SaferAmerica
March 25, 2021

20%

of fatal collisions occur at intersections



Roundabout Basics

→ Just because it's round, doesn't mean it's a roundabout



What modern roundabouts are not



Rotary

Traffic Circle

Neighborhood Calming Circle

What modern roundabouts are

Every roundabout should unique and customized design. One size does not fit all.

Location! Location! Location! Context is key!

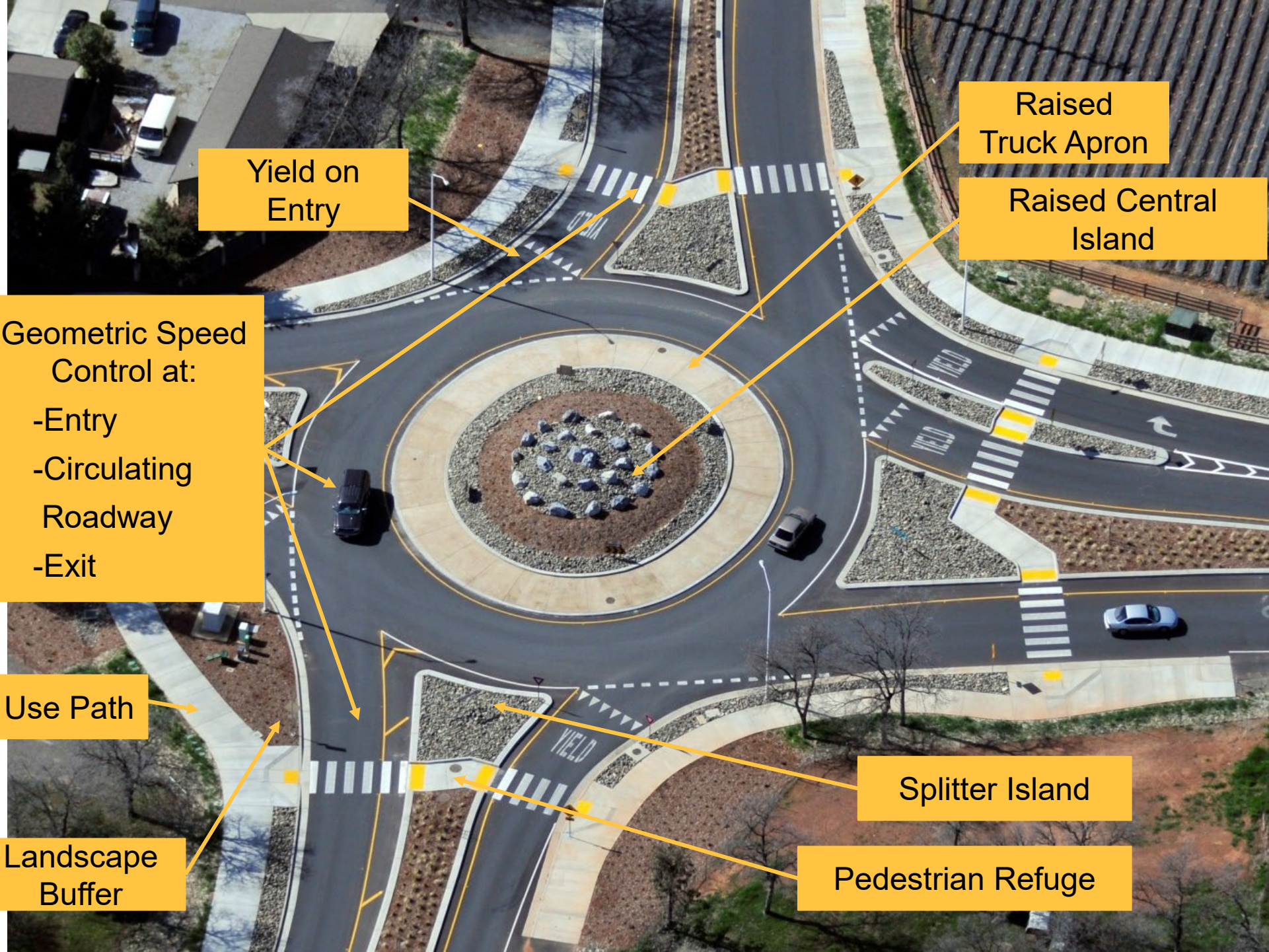
Key Features of a modern roundabout:

- Circular in nature (not a true circle)
- Not based on standards – but principals
- Provide a safe systems approach to design
- Set driver's up for success
- Accomodate various design vehicles
- Accommodate all roadway users



 Example of a single lane roundabout, with right turn lane and shared use pathway.

A closer look at the features of a modern roundabout



Yield on Entry

Raised Truck Apron

Raised Central Island

Geometric Speed Control at:
-Entry
-Circulating Roadway
-Exit

Shared Use Path

Landscape Buffer

Splitter Island

Pedestrian Refuge

What modern roundabouts do



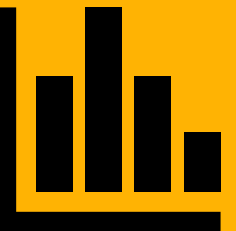
- Reduce speed = reduction in collision severity
- Positively control speeds on entry, circulating, and exit
- Eliminate broadside and head-on collisions
- Reduce conflict points
- Minimize crossing distances
- Accommodate road and recreational cyclists
- Simplify road user decision making
- Separate decision points for drivers
- Match capacity to demand

Who can roundabouts be designed for?



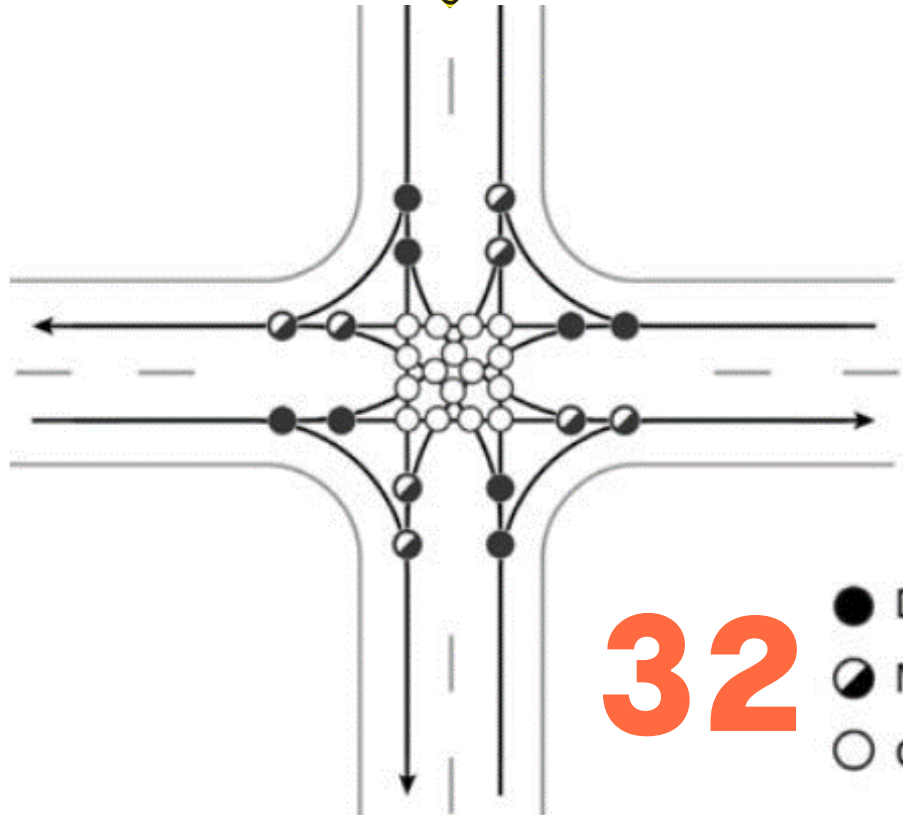
Traffic Safety, Now!

→ A look at the statistics



Vehicle-vehicle conflict points

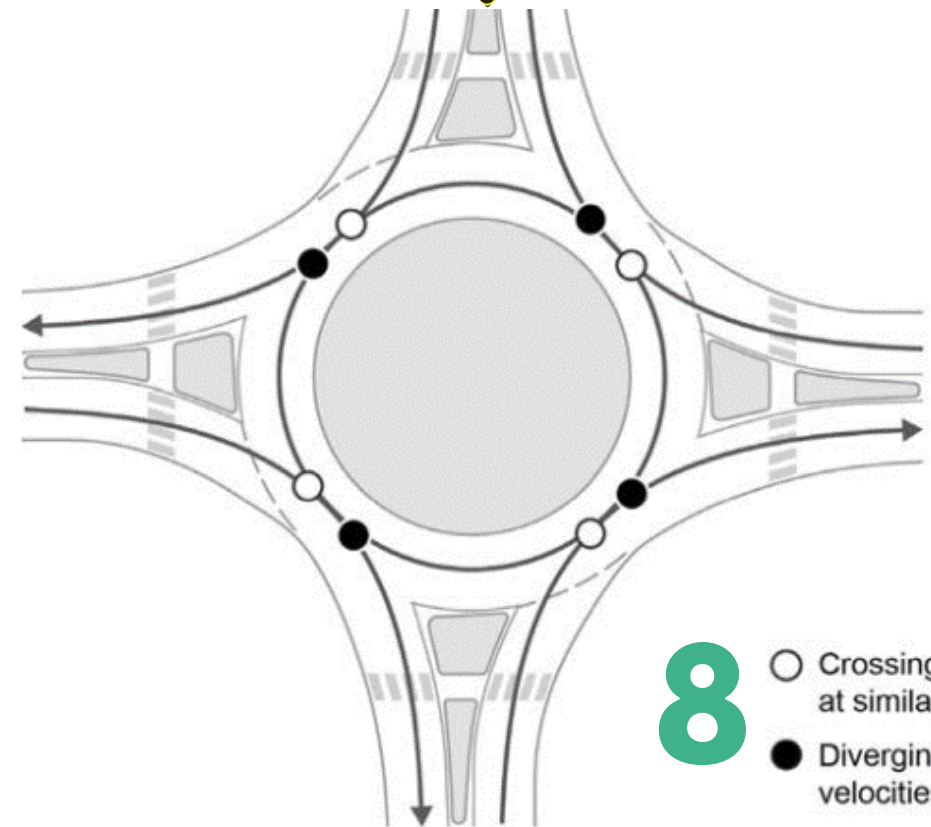
Signal or Stop Control



32

- Diverging
- ◐ Merging
- Crossing

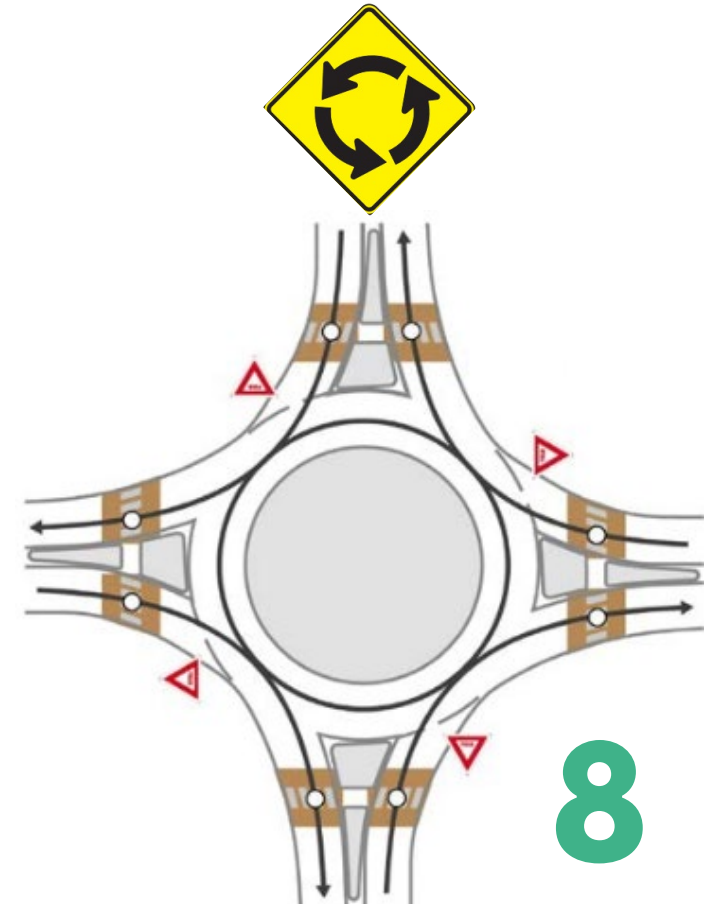
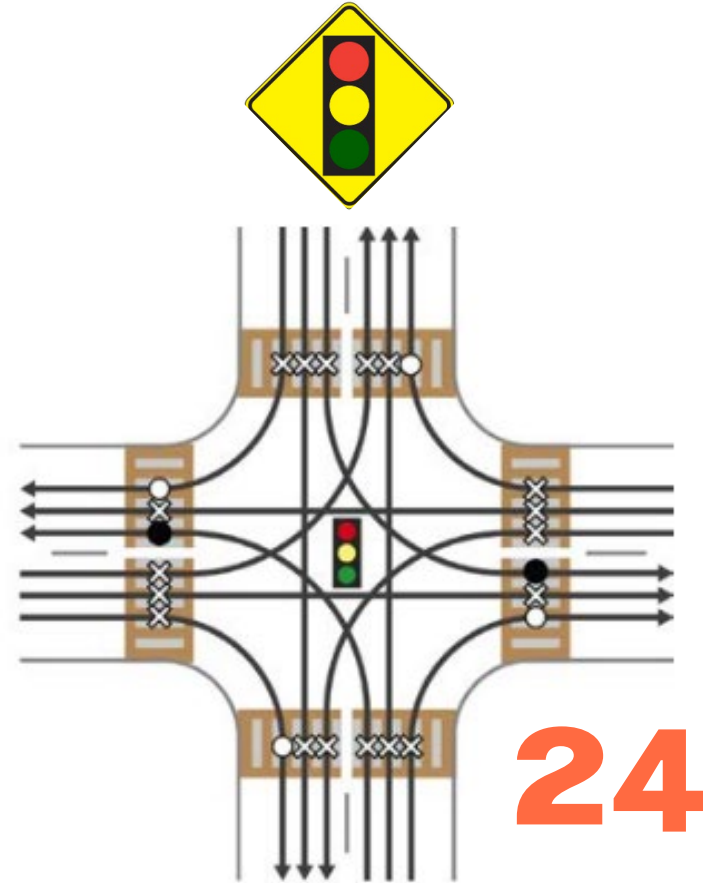
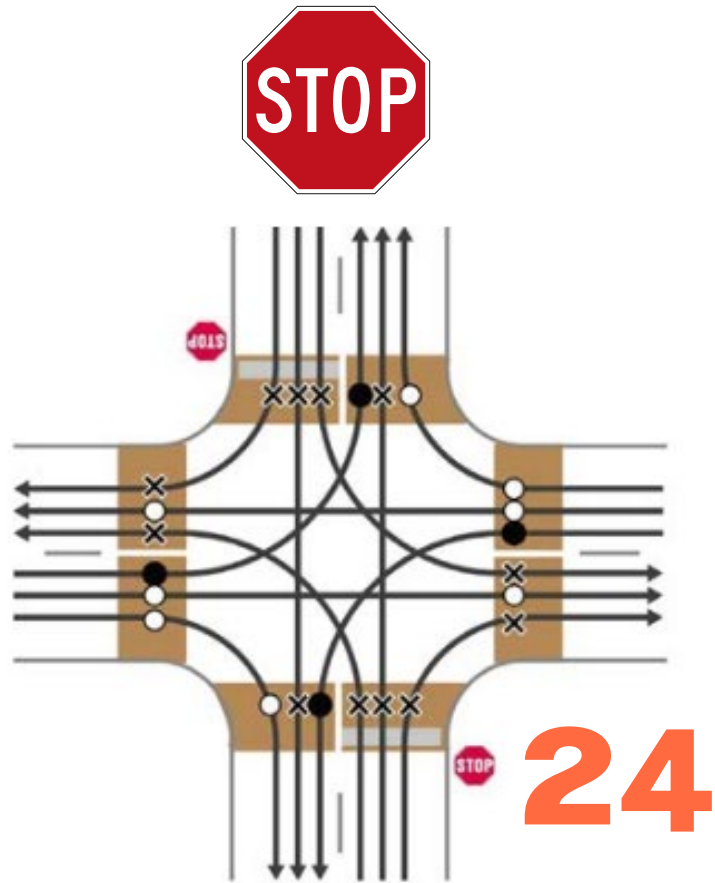
Roundabout



8

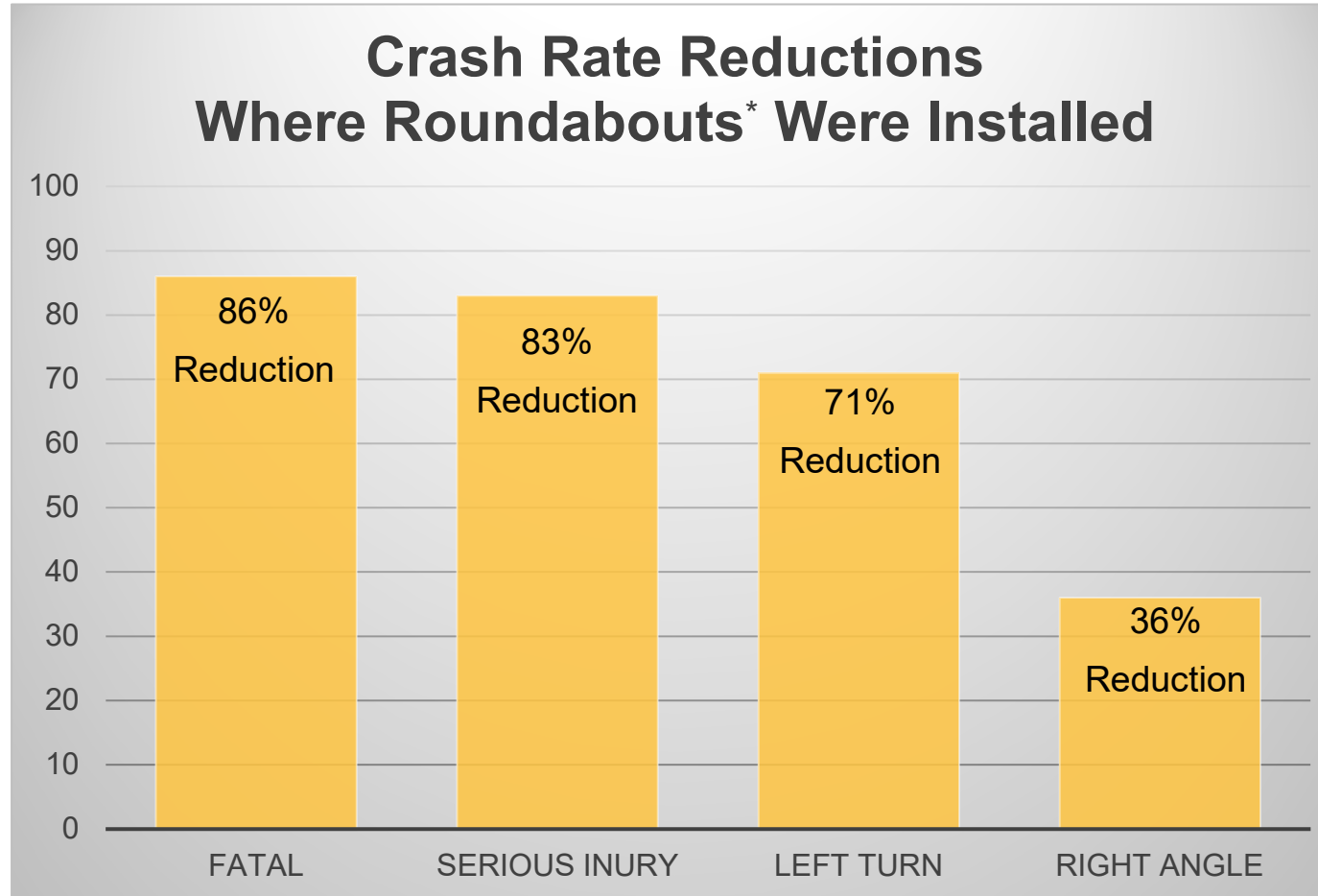
- Crossing or merging at similar velocities
- Diverging at similar velocities

Vehicle-pedestrian conflict points



- Uncontrolled, no driver gap seeking
 - Uncontrolled, coincident with driver gap seeking
 - ⊗ Controlled, no driver gap seeking
 - ✕ Controlled, coincident with driver gap seeking
- Conflict area

Traffic safety



*Single, hybrid and multilane roundabouts

Bicycles, pedestrians & roundabouts!

Oh My!



Pedestrian safety



1. Shorter crossings
2. Pedestrian refuges
3. Slower traffic
4. Separation from traffic (landscape buffer)
5. Guided crossings
6. Vehicle-pedestrian conflict zone separated from vehicle-vehicle conflict zone

Pedestrian safety

Pedestrian Crash Rates



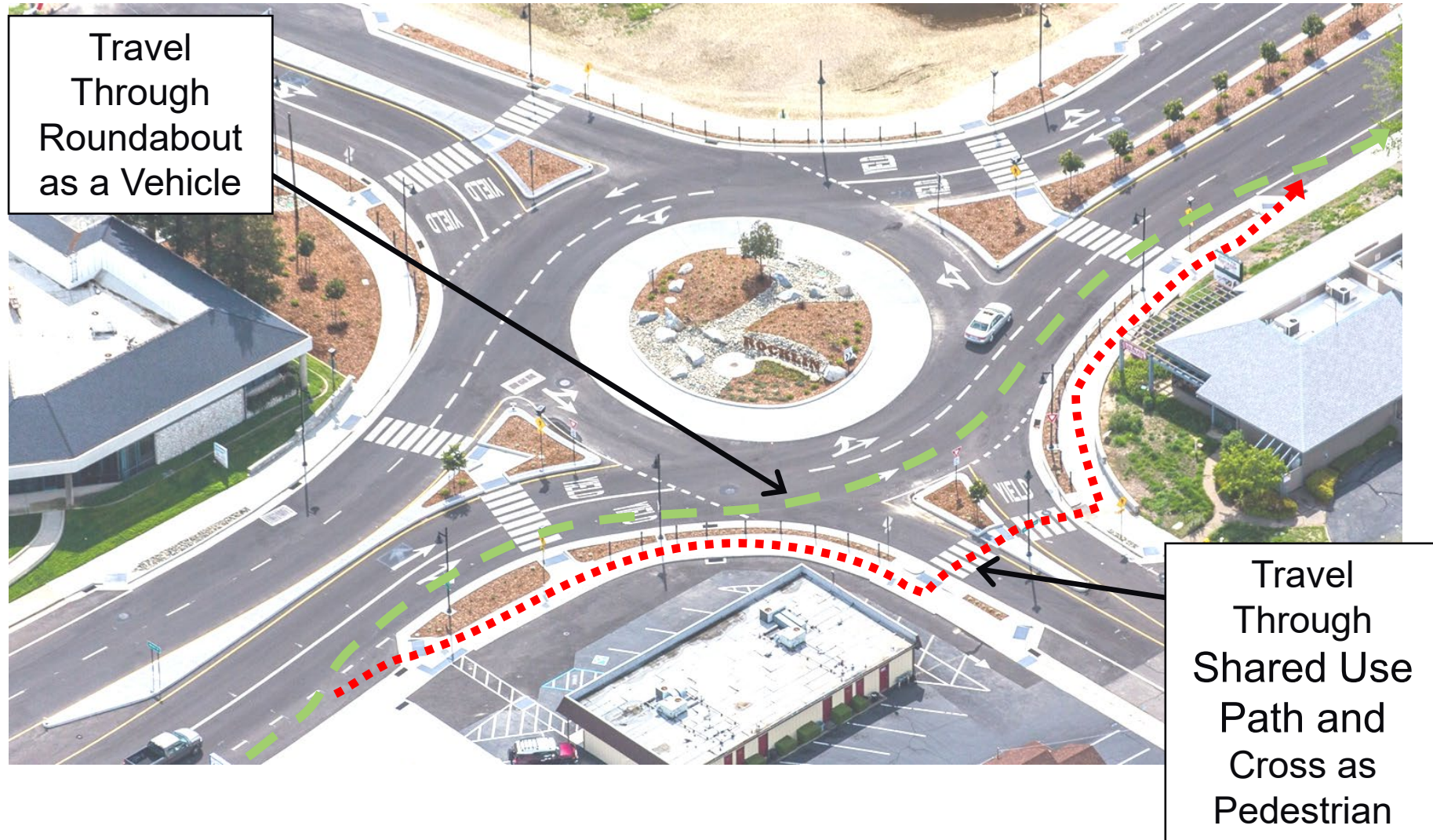
57.9% fewer pedestrian crashes at roundabouts

Comparison of Average Pedestrian Crash Rates for Roundabouts vs. Non-Roundabout/Comparable Sites

Average crash rate	Roundabout Intersections	Alternative Intersections
	0.002	0.0048

Source: A Study of the Traffic Safety at Roundabouts in Minnesota
Dated 10-30-17 | Amended 8-2-18

Bicycle safety for all cyclists



Cycling safety

Bicycle Crash Rates



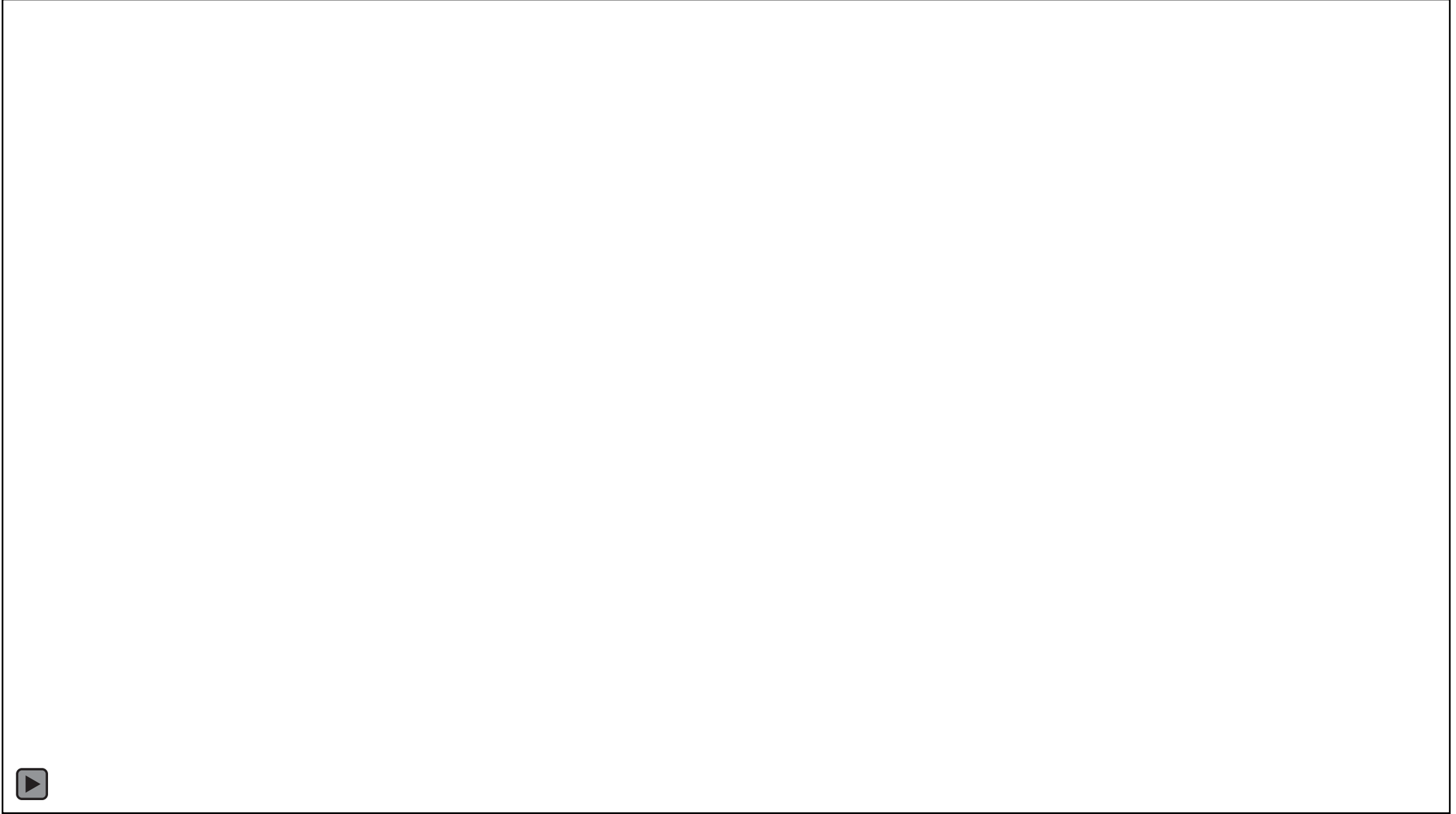
3.5% fewer bicycle crashes at roundabouts

Comparison of Average Bicycle Crash Rates for Roundabouts vs. Non-Roundabout/Comparable Sites

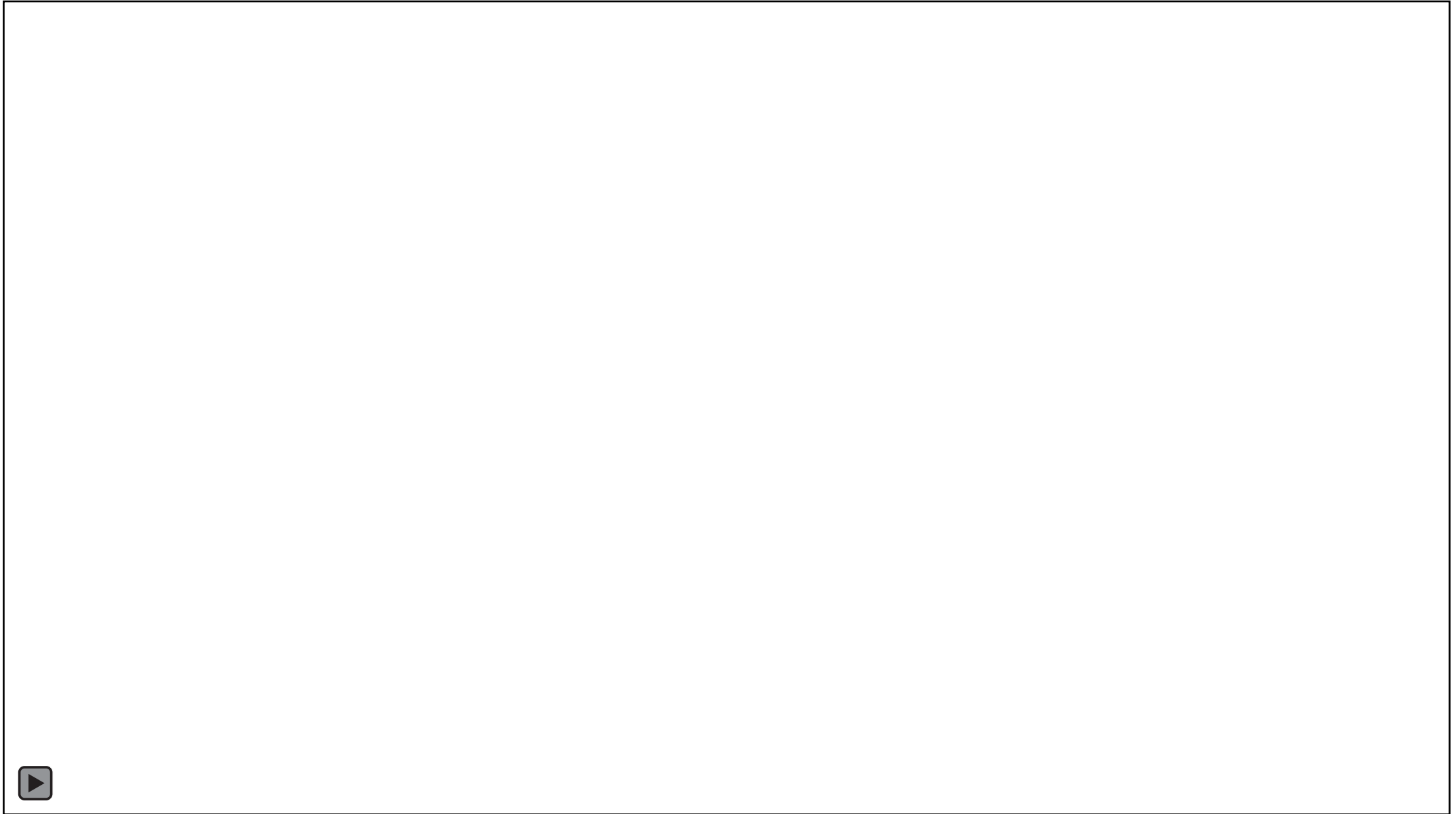
Average crash rate	Roundabout Intersections	Alternative Intersections
	0.0057	0.0059

Source: A Study of the Traffic Safety at Roundabouts in Minnesota
Dated 10-30-17 | Amended 8-2-18

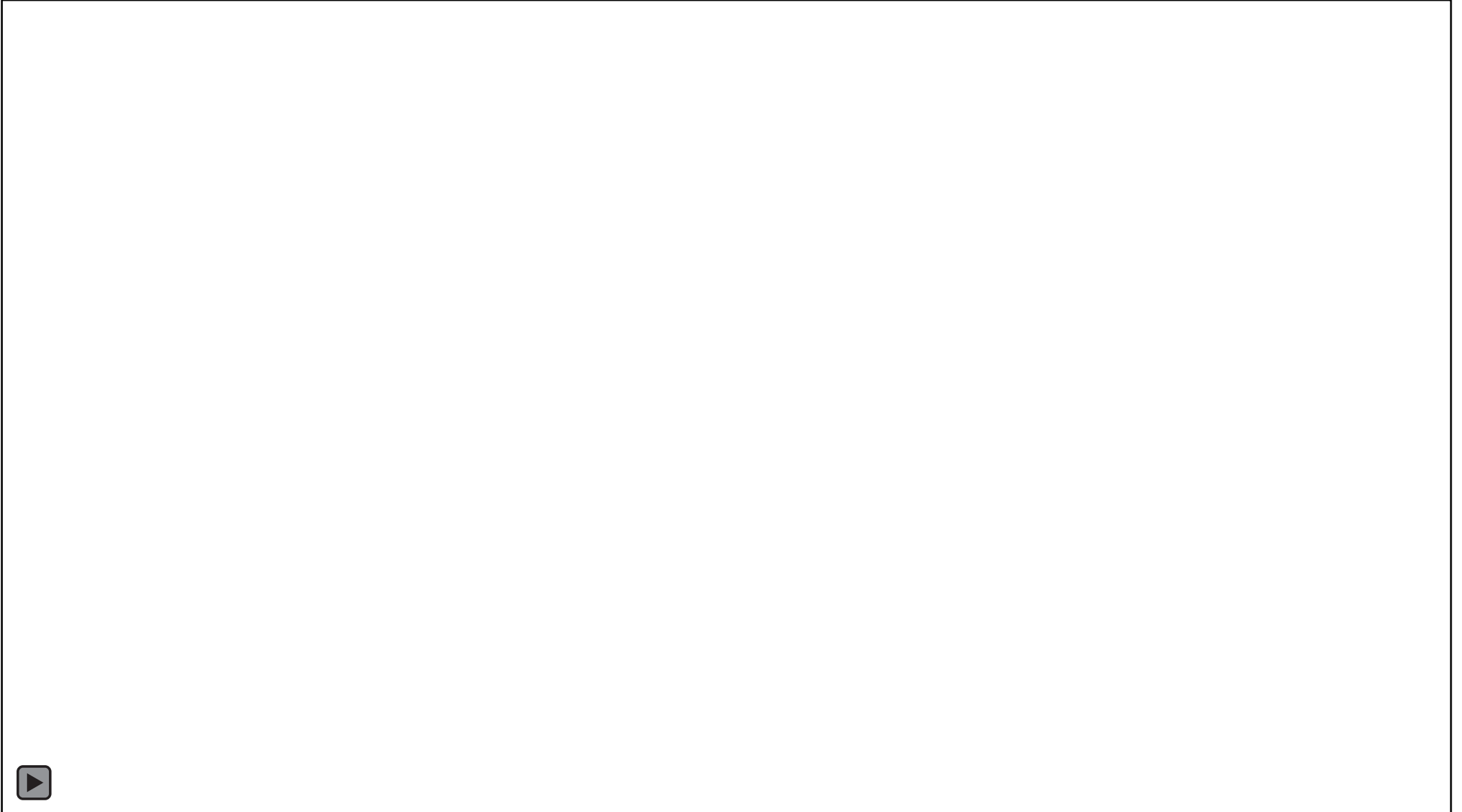
GHD's bike friendly roundabouts in action!



GHD's bike friendly roundabouts in action!



Separated bike lane in a roundabout

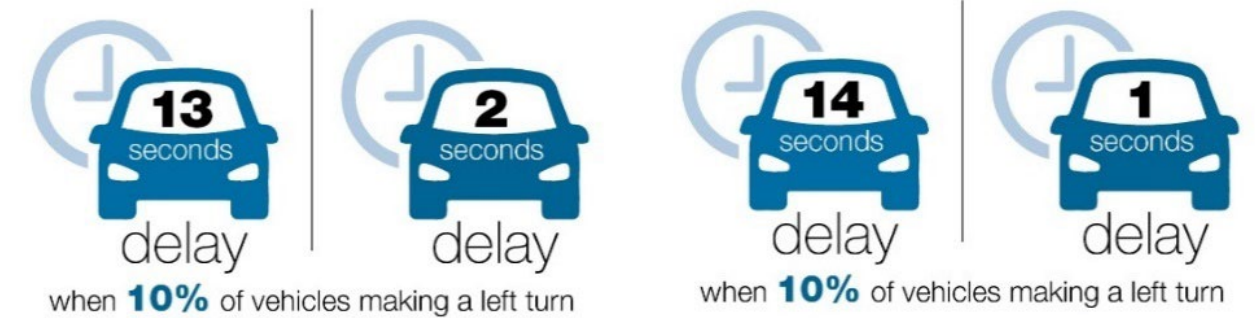


Operations, environment & more

→ Other benefits of roundabouts



Operational benefits



Less Delay = Less Time Idling
Less Emissions
Less Fuel Consumption



Reduction in emissions



38-45%

- Carbon monoxide

55-61%

- Carbon dioxide

44-51%

- Nitrogen Oxides

62-68%

- Hydrocarbons

Large vehicles & emergency vehicles





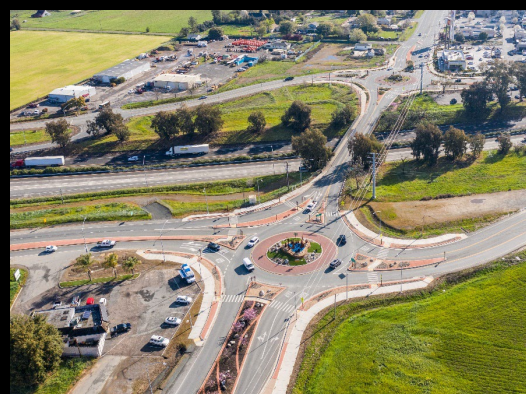
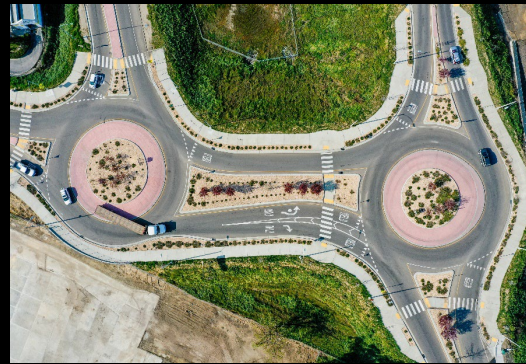


Emergency Vehicles Circulating Through Roundabout
Courtesy of City of Clearwater, FL

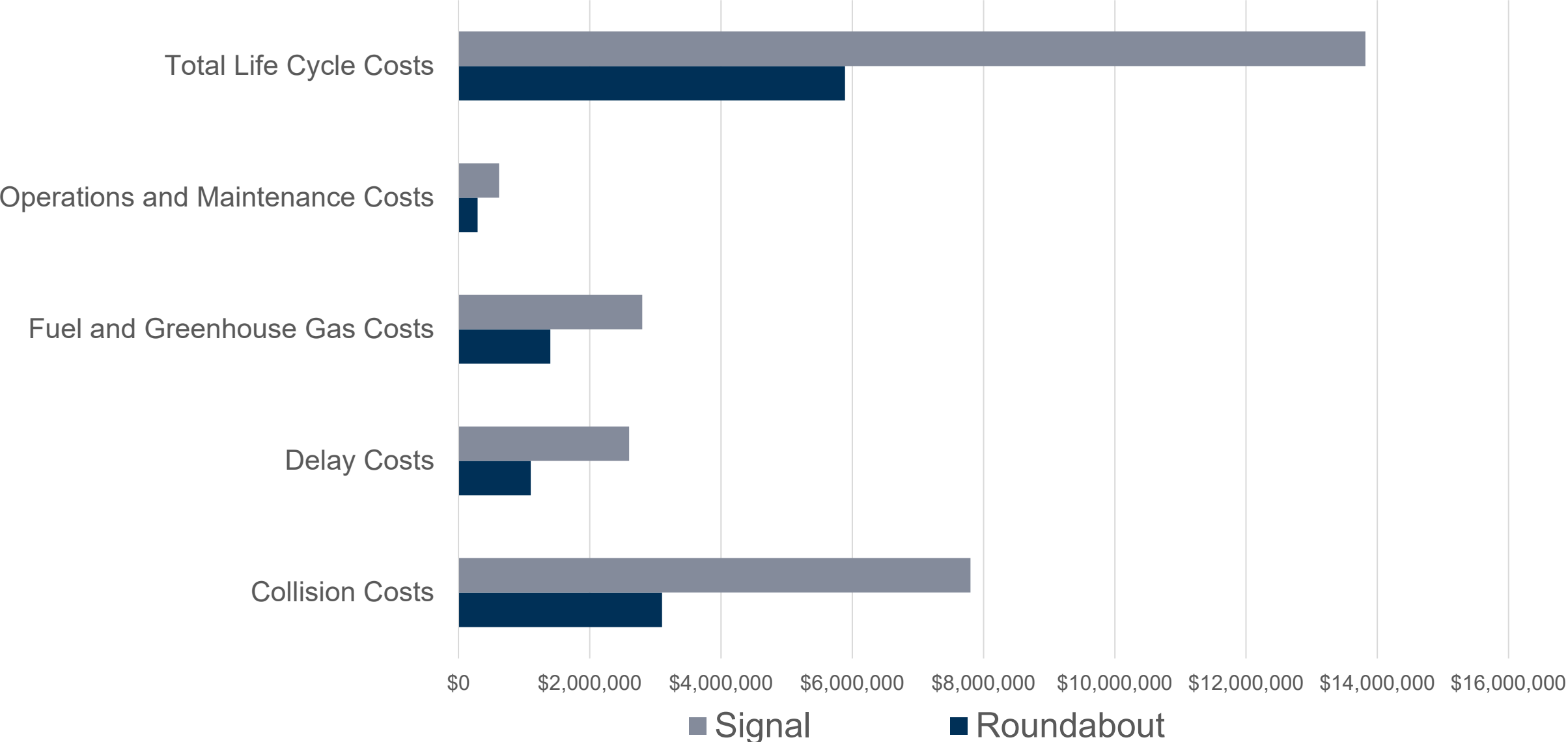
The versatility of roundabouts



The versatility of roundabouts



Real project life cycle cost evaluation



Costs obtained from an Intersection Control Evaluation and Traffic Operations and Analysis Report

Creating a way of life

→ More than a roadway



Transforming corridors





Before



California Blvd Roundabouts at
First and Second Streets

After

Transforming corridors









Questions?



Lindsey Van Parys, PE

Lindsey.vanparys@ghd.com

www.ghd.com



*** Thank You**

Don't just take our word for it

“*The benefits of the La Quinta Complete Streets Projects is more than an active transportation road project. It provides a safe place for residents and visitors alike to walk and bike through our beautiful village area, while enhancing the connectivity of our businesses and neighborhoods. It will have a lasting, positive impact for our community.*”

➔ **Linda Evans,**
Mayor of the City of La Quinta
(La Quinta Complete Streets Project)

