



# Traffic Safety Improvements Countywide for the areas of Gates Pass at Kinney Road, Bopp Road at San Joaquin, and Bopp Road at Donald Avenue

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Pima County Department of Transportation

# Welcomes You!

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# Project Life Cycle



*Public Input*



You are here

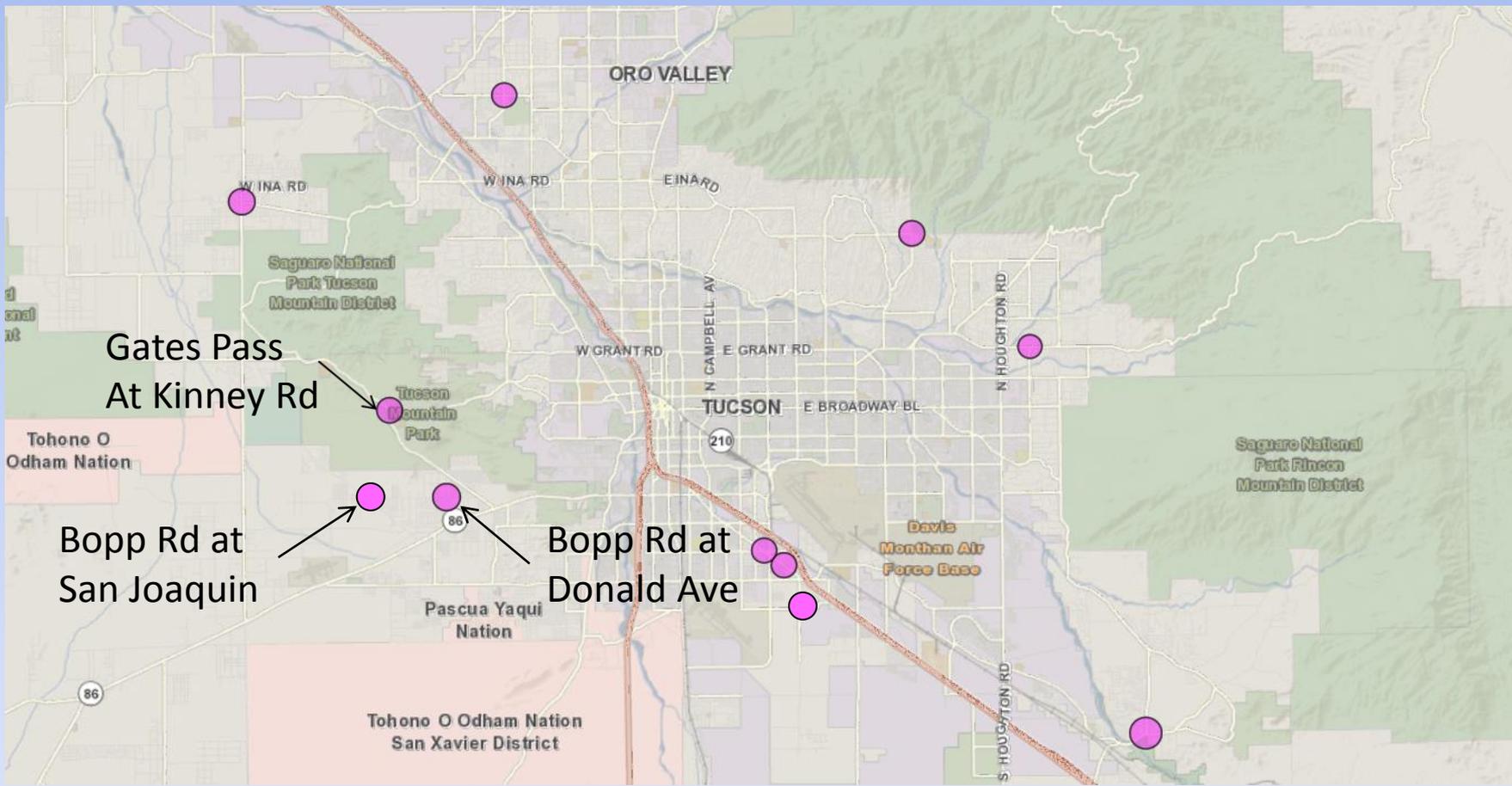


*Life Cycle of the Project Development Process*

# Improvement Project Locations



Proposed safety / capacity related projects



# Project Goals

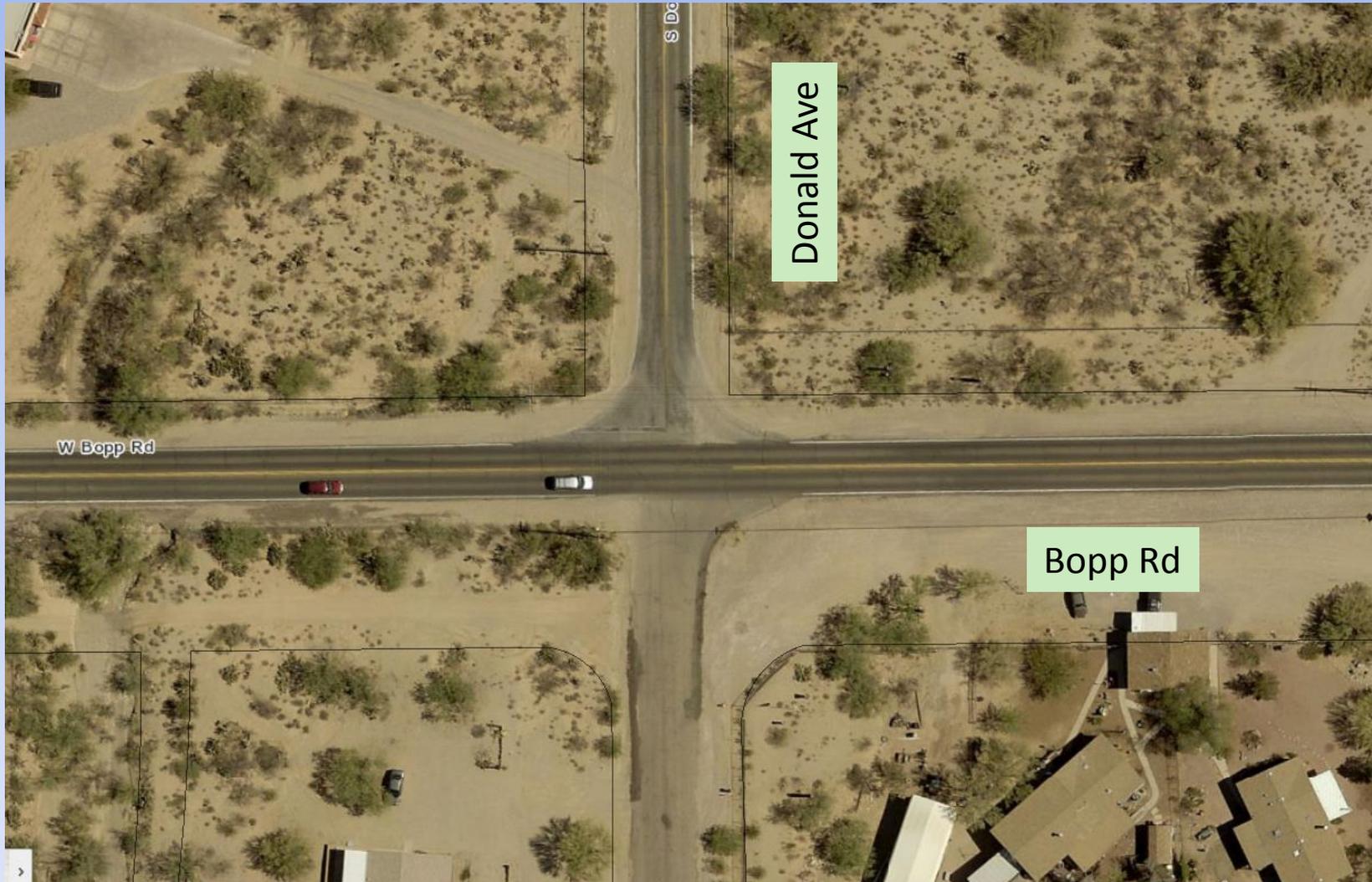


1. Reduce the total number of crashes and reduce crash severity.
2. Improve bicycle and pedestrian safety and access
3. Improve safety by reducing traffic congestion
4. Maintain existing access to businesses and driveways
5. Analyze life-cycle costs with predictive safety methodology
6. Provide improvements based on safety benefits

# Project Site #1



## Bopp Rd at Donald Ave



# Traffic Operations



## Bopp Rd at Donald Ave

### Safety and Capacity related issues:

- Crash History - 14 crashes total; 7 property damage only, 6 injury crashes and 1 fatal crash
- Average Daily Traffic (ADT) – 6,698 vpd on Bopp Rd and 600 vpd on Donald Ave
- Excessive speed on Bopp Ave

# Traffic Operations



Looking north on Donald Ave



# Traffic Operations

Looking west on Bopp Rd



# Traffic Operations

Looking south on Donald Ave



# Possible Solutions



Bopp Rd at Donald Ave

*Reasonable alternatives:*

- Improve the intersection of Bopp Rd at Donald Ave
- Improve pedestrian facilities
- Improve bicycle facilities
- Add lighting to intersection
- Slower traffic on Bopp Road

# Project Site #2



## Bopp Rd at San Joaquin



# Traffic Operations



## Bopp Rd at San Joaquin

### Safety and Capacity related issues:

- Crash History - 4 property damage crashes total ; 2 ran stop sign crashes, 1 rear end crash and 1 hit object
- Average Daily Traffic (ADT) – 2,906 vpd and on San Joaquin and 6,033 vpd on Bopp Rd
- Excessive speeds on Bopp Rd

# Traffic Operations



Looking east on Bopp Rd



# Project Site



Bopp Rd at San Joaquin



# Traffic Operations

Looking northwest on San Joaquin



# Possible Solutions



## Bopp Rd at San Joaquin

Reasonable alternatives to solving safety and capacity related issues:

- Improvements to the intersection of Bopp Rd and San Joaquin
- Improve pedestrian facilities
- Add lighting

# Project Site #3



Kinney Rd at Gates Pass Rd



# Traffic Operations



Kinney Rd at Gates Pass Rd

Safety and Capacity related issues:

- Crash History - 2 crashes total; 1 motorcycle lost control, 1 rear end crash
- Average Daily Traffic (ADT) – 2,973 vpd on Gates Pass Rd and 2,985 vpd on Kinney Rd

# Traffic Operations



Looking west on Gates Pass Rd



# Project Site

Kinney Rd at Gates Pass Rd



# Traffic Operations

Kinney Rd at Gates Pass Rd



# Possible Solutions



Kinney Rd at Gates Pass Rd

Reasonable alternatives :

- Improvements to the intersection of Kinney Rd at Gates Pass Rd
- Improve pedestrian facilities
- Add lighting

# Intersection Types

Stop Control

Traffic Signals

Roundabouts



Hannah Olsen E.I.T

# Modern Roundabout Example



96<sup>th</sup> Street and Cholla Street in Scottsdale

# Other Circular Intersections



## Neighborhood Traffic Circles

- Common in Tucson neighborhoods
- Used to slow down traffic on local streets

## Rotaries

- First circular intersections in the U.S.
- Common back east
- Very large radii



# Roundabouts vs. Traffic Signals

- ✓ Fewer & Less Severe Accidents
- ✓ No Red Light Running
- ✓ Slower Speeds (operating speeds 15–23 mph)
- ✓ Improved Pedestrian Safety
- ✓ Faster Commute Travel Times
- ✓ Less Congestion and Delay
- ✓ Increased Capacity
- ✓ Aesthetics
- ✓ Reduced Air Pollution

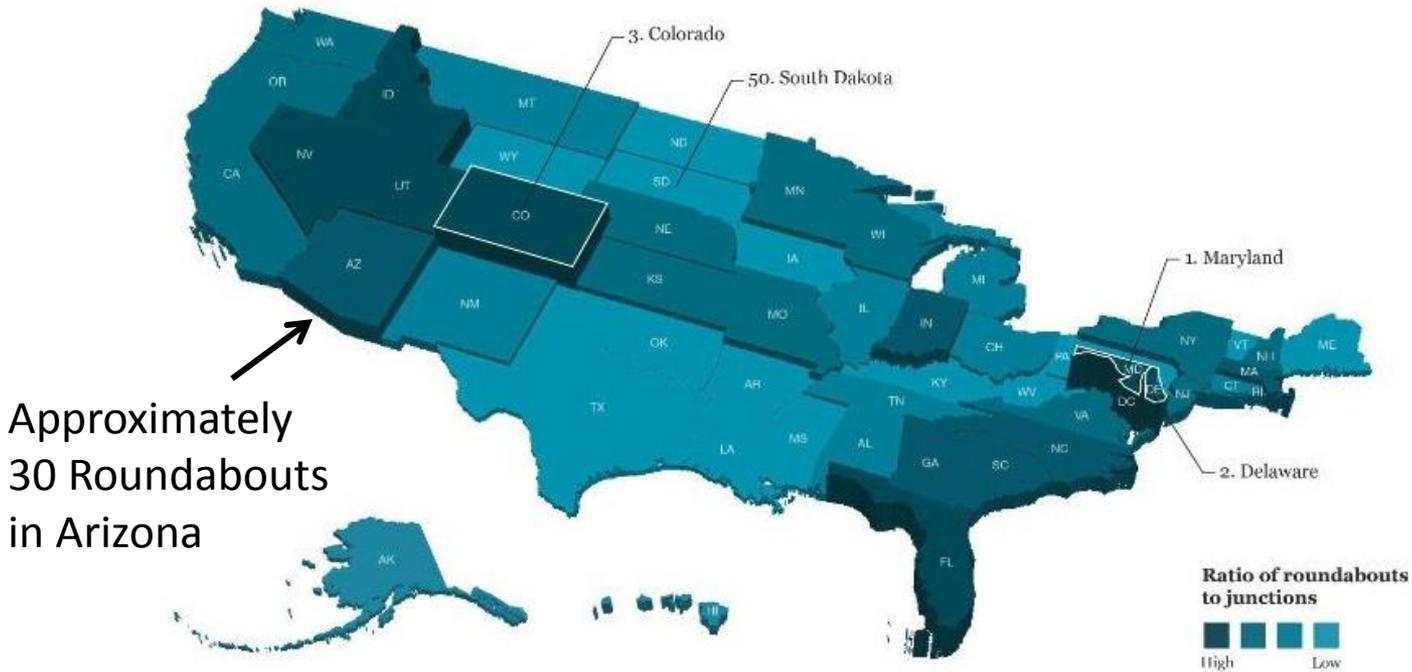
# Roundabout Conversion

(click on image to play video)



# Roundabout Locations

Source: Nokia's 2014 Here Maps (Graphic by Damien Hauser with ESRI)



## Roundabout Locations in Pima County:

- Hardy Rd/ Calle Buena Vista (Town of Oro Valley)
- I-19 at Canoa Rd Traffic Interchange (Green Valley)
- Continental Rd/Camino Del Sol (Green Valley)

# Roundabout Locations

Camino Del Sol at Continental Road in Green Valley

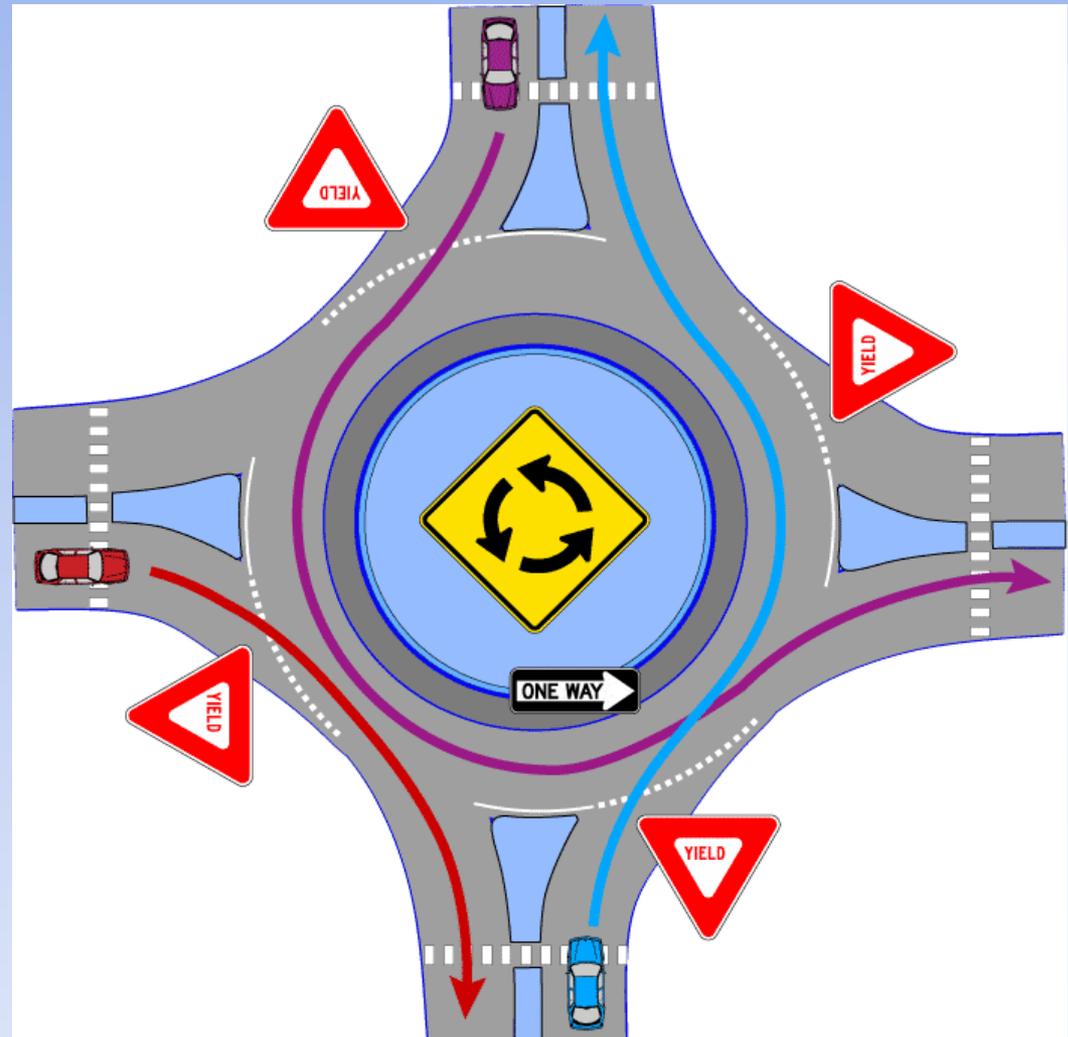


Before: 12 crashes in five years

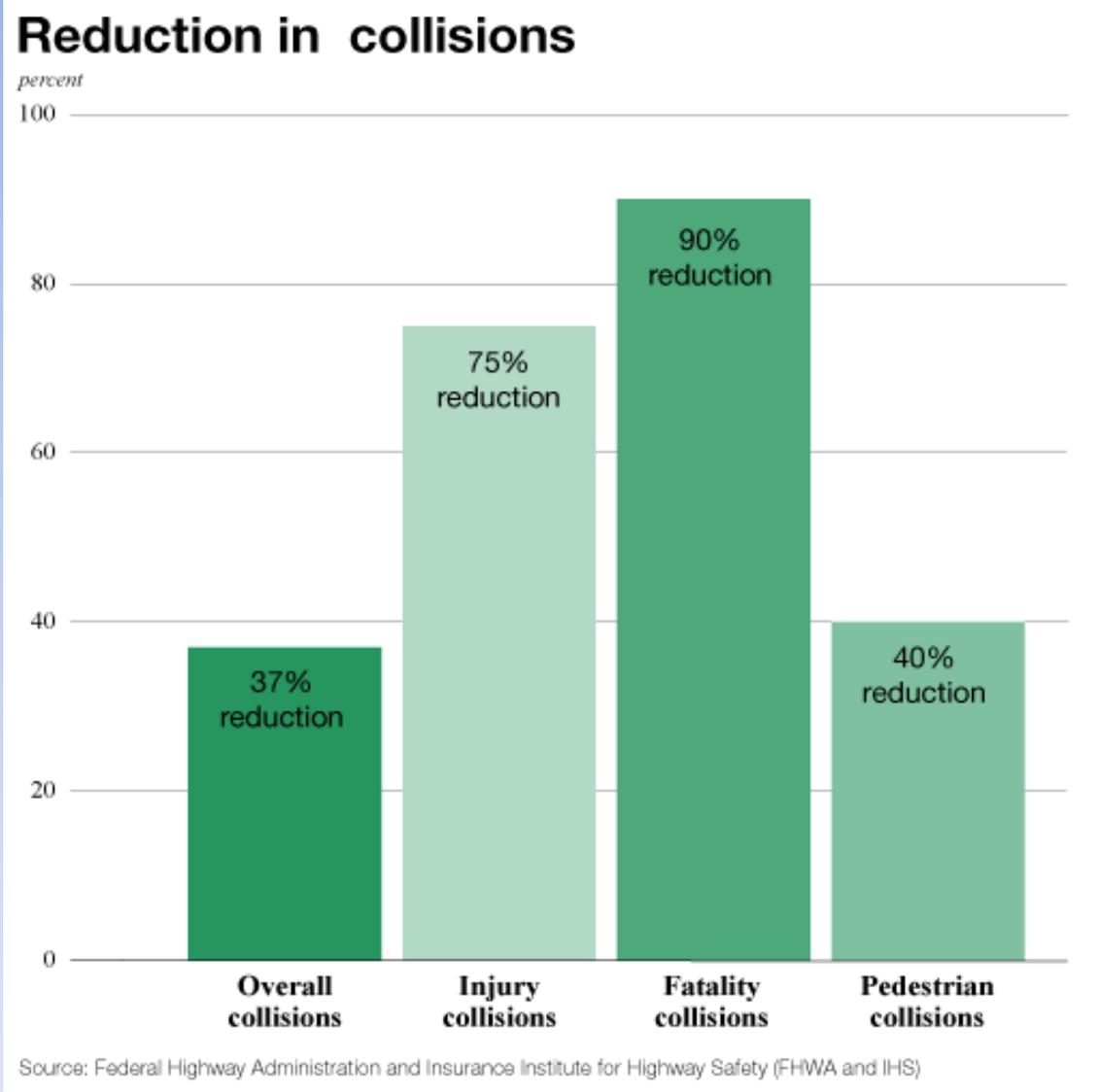
After: 0 crashes in five years

# Frequently Asked Questions

- ✓ How to Use Them
- ✓ Vehicular Safety
- ✓ Pedestrian Safety
- ✓ Bicycle Safety
- ✓ Large Trucks
- ✓ Buses
- ✓ Fire Engines
- ✓ Emergency Vehicles
- ✓ Access to Businesses
- ✓ Cost
- ✓ Aesthetics



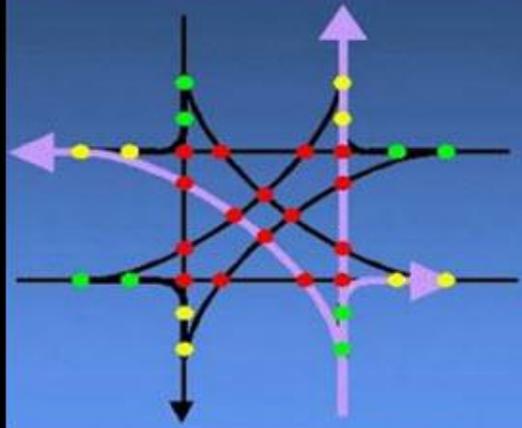
# Roundabouts and Safety



# Conflict Points at Intersections



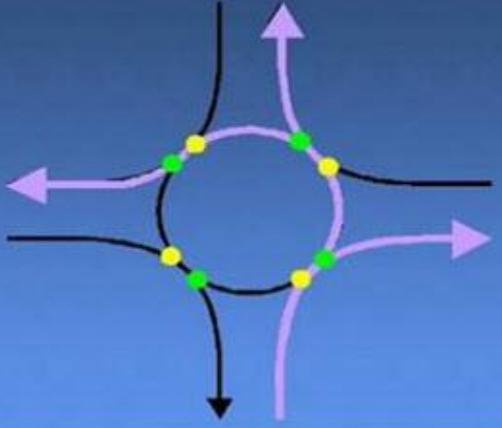
## Vehicle conflict points: Conventional intersection



Conflict Types	
● Diverge:	8
● Merge:	8
● Crossing:	16
<b>Total:</b>	<b>32</b>

vs.

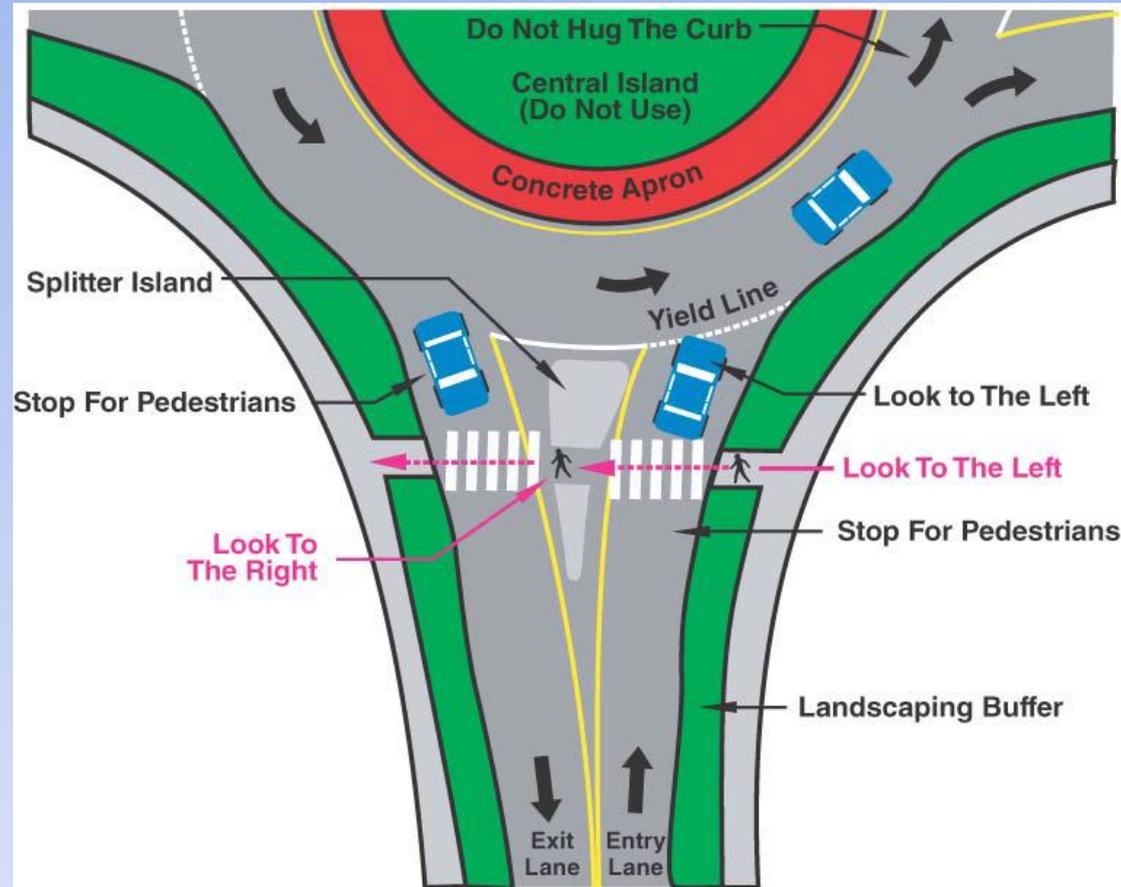
## Vehicle conflict points: Roundabout



Conflict Types	
● Diverge:	4
● Merge:	4
● Crossing:	0
<b>Total:</b>	<b>8</b>

# Pedestrian Safety

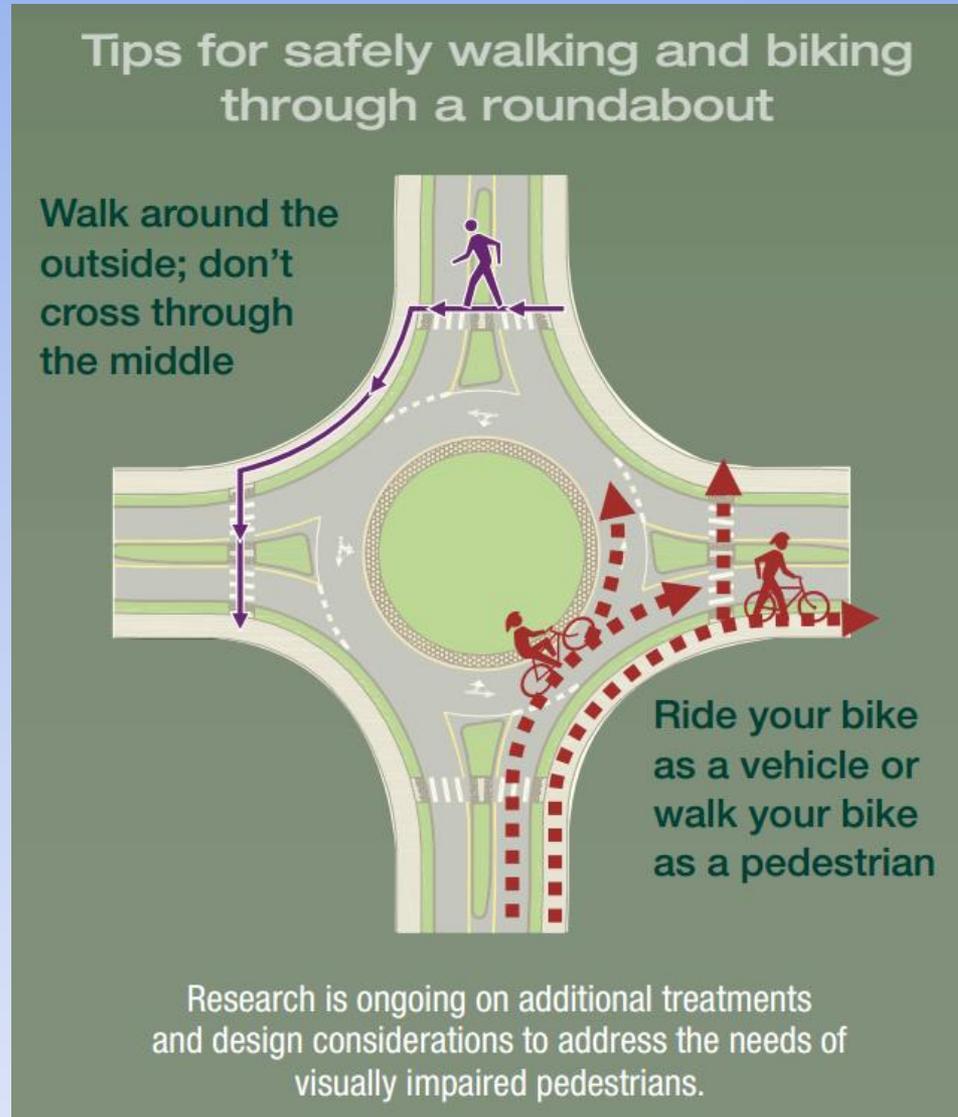
- Roundabouts are safer than signalized intersections
- Slower traffic speeds
- Two stage crossing for Pedestrians
- Crosswalk set back from circulatory roadway



# Bicycle Safety

## TIPS for using a Roundabout:

- Riders follow the same rules as vehicles.
- Be assertive when merging with traffic.
- Riders should travel at approximately the same speed as motorists.
- Cyclists should ride in the center of the lane, not along the curb line.
- Be sure to use proper hand signals when exiting the roundabout.



# Buses



104<sup>th</sup> Street & Cactus Street in Scottsdale

# Semi-Tractor Trailers

(click on image to play video)



# Fire Trucks

(click on image to play video)



# Access to Businesses



- *Most business owners agree that slower speeds and safer travel enhance business*
- *Roundabouts provide better access to businesses near the intersection than traffic signals because roundabouts do not have left-turn storage lanes with raised medians*

# Roundabout Cost vs. Traffic Signals



- *Initial capital cost about slightly higher*
- *Serviceable life 2x longer*
- *Annual equipment maintenance costs \$10,500 less*
- *Safety costs significantly lower*
- ***Overall life-cycle cost ½ the life-cycle cost of a signal***

# Roundabouts Landscaping



# More Information on Roundabouts

**Pima County Department of Transportation website:**

<http://webcms.pima.gov/Transportation/Single-Lane Roundabouts>

**Arizona Department of Transportation website:**

<https://azdot.gov/about/transportation-safety/roundabouts/overview>

**Federal Highway Administration Roundabouts - An Informational Guide:**

<https://www.fhwa.dot.gov/publications/research/safety/00067/000671.pdf>

**NCHRP Report 672 – Roundabouts: An Informational Guide**

[https://onlinepubs.trb.org/.../nchrp\\_rpt\\_672.pdf](https://onlinepubs.trb.org/.../nchrp_rpt_672.pdf)

**RoundaboutsUSA:** [www.roundaboutsusa.com](http://www.roundaboutsusa.com)

**Roundabouts Resources:** [www.roundaboutresources.org](http://www.roundaboutresources.org)