



# ROUNDBABOUTS: HOW THEY WORK FOR PEDESTRIANS

# Roundabouts:

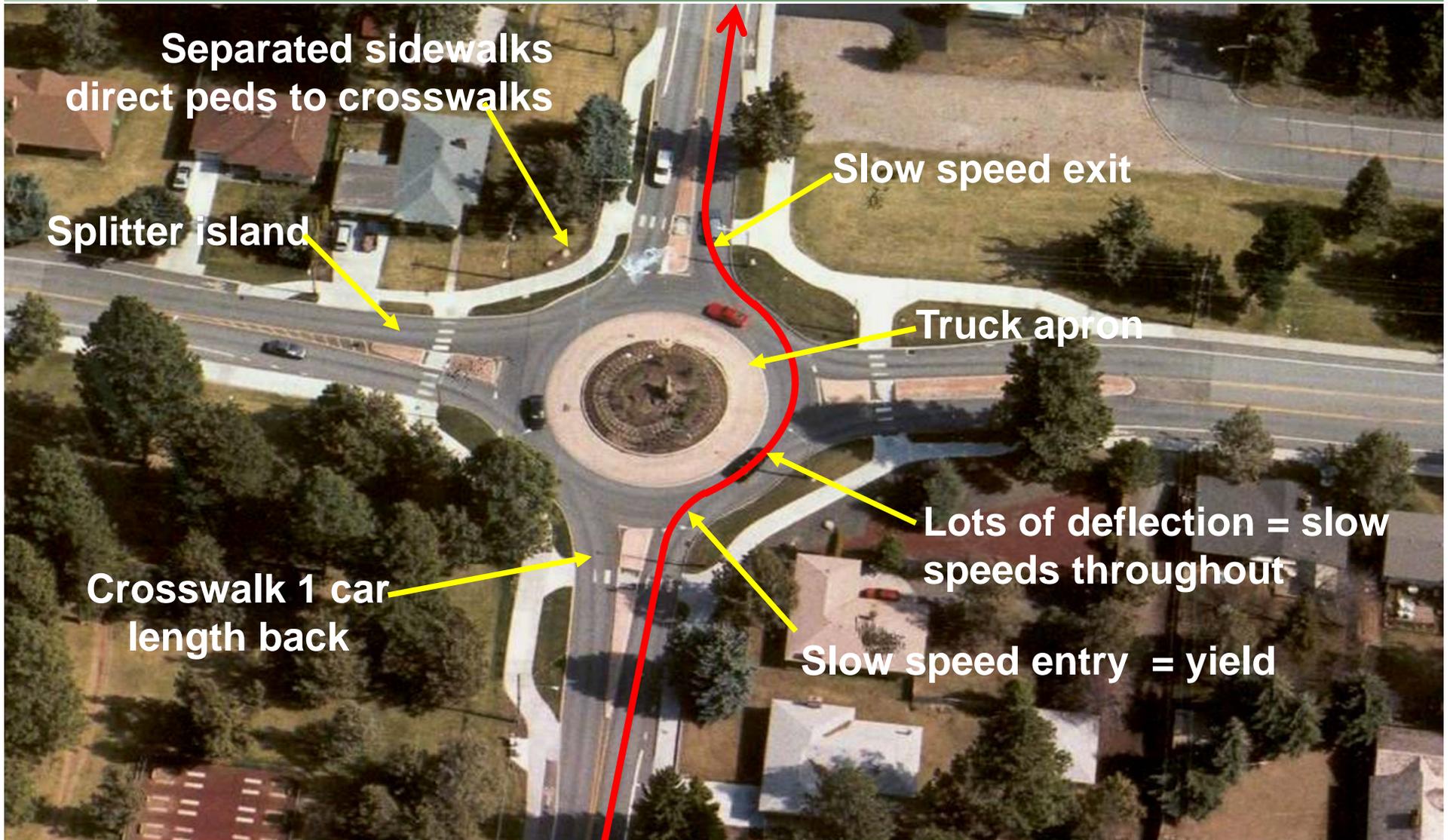
## Learning Objectives:

8-2

- At the end of this module, you will be able to:
- Explain why roundabouts reduce crashes
- Describe the safety benefits for pedestrians and motor vehicles of roundabouts
- Describe how roundabout safety depends on correct design

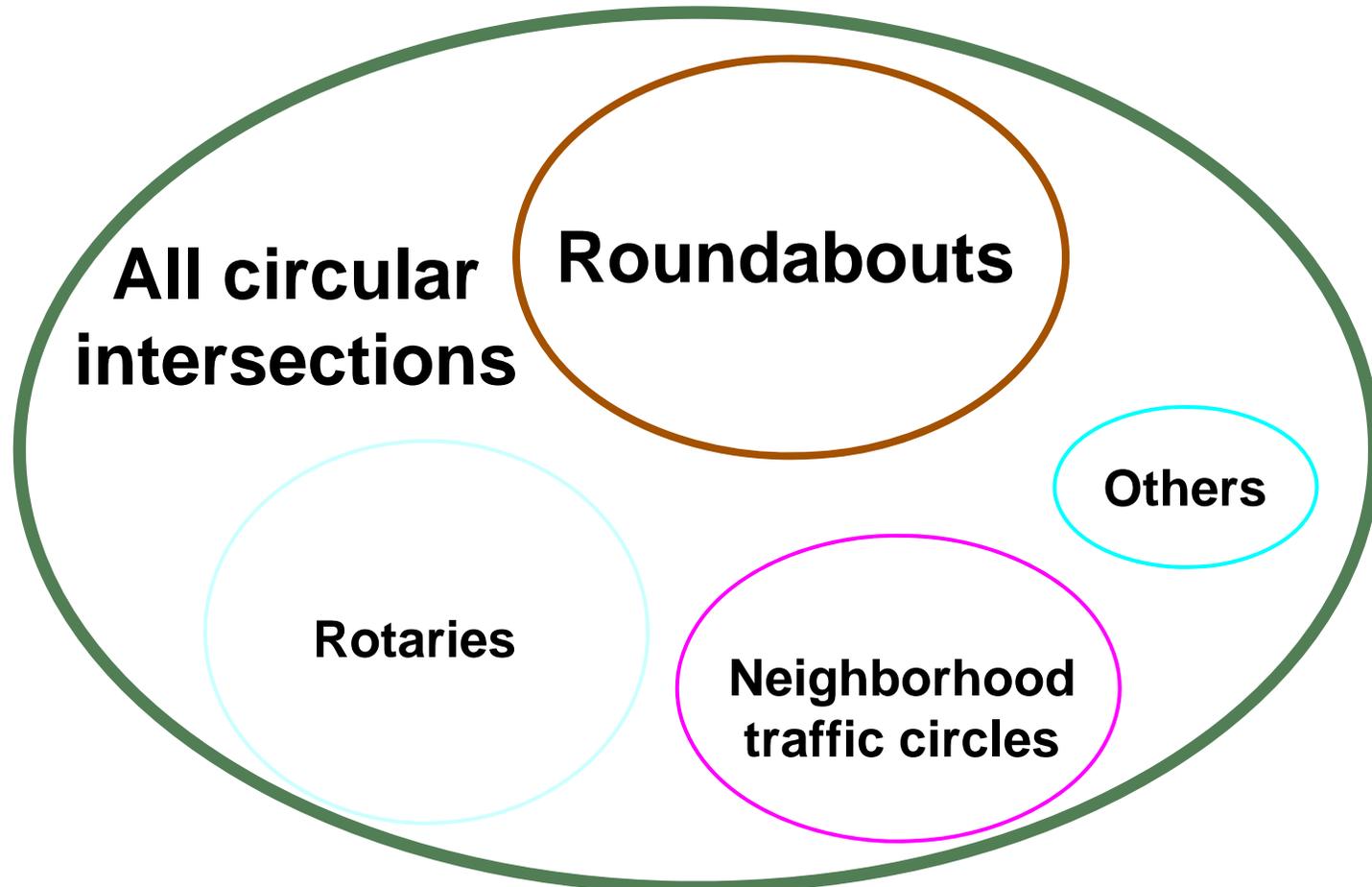
# Essential roundabout characteristics

8-3



# Roundabouts are a type (or subset) of circular intersections

8-4



**Bottom Line: Not all circular intersections are roundabouts!!**



8-5 Augusta ME

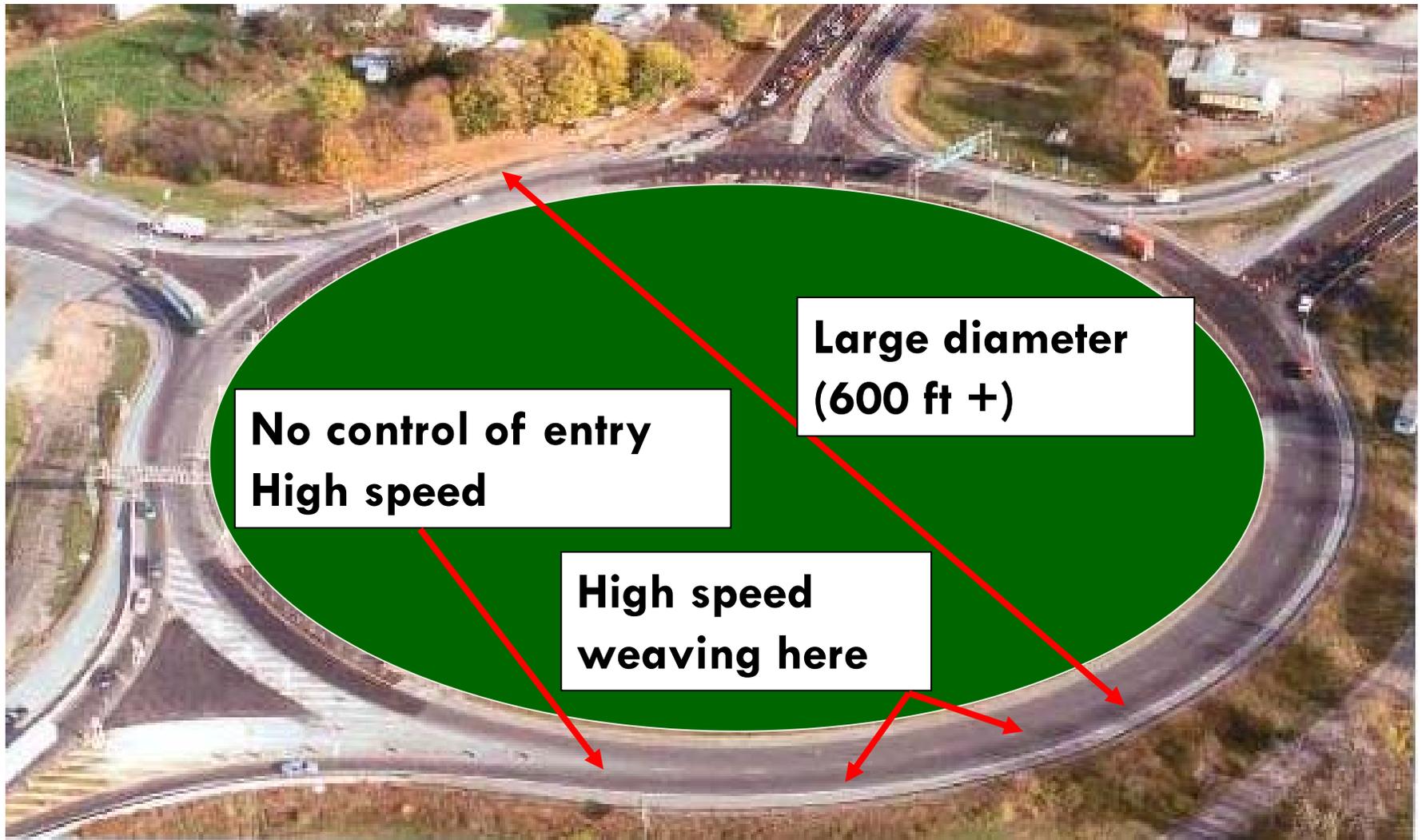
A roundabout is not:

1. A rotary, with large size & high speeds

# Problems with Existing Rotary

8-6

Kingston NY



**No control of entry  
High speed**

**Large diameter  
(600 ft +)**

**High speed  
weaving here**

# Rotary Reconstructed to Roundabout

8-7

Kingston NY

**Smaller diameter  
(Typically 120 – 250 feet)**





8-8 Washington DC

A roundabout is not:  
2. A Washington DC style circle, with traffic signal controls



8-9

A roundabout is not:  
3. A traffic-calming mini circle



8-10 Paris FR

A roundabout is not:  
4. Paris

# Before and After Example

8-11 Asheville NC



# Before and After Example

8-12

Asheville NC



# Advantages for Pedestrians

8-13

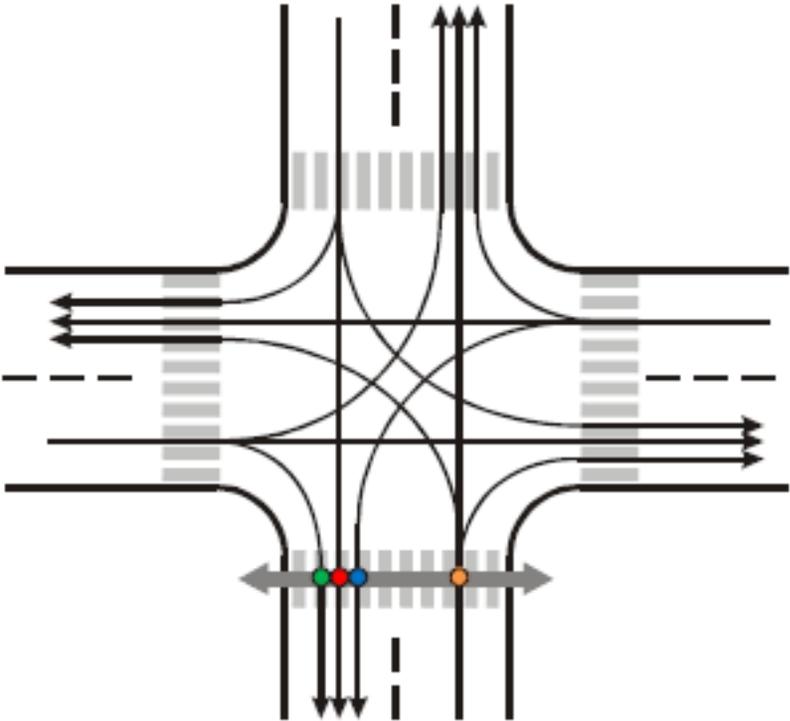
Lincoln NE

- ❑ Reduced vehicle speeds
- ❑ Reduced number of conflict points
- ❑ Shorter crossing distances
- ❑ Splitter island provides a refuge – ped crosses one direction of traffic at a time
- ❑ Crosswalk is placed one car length back



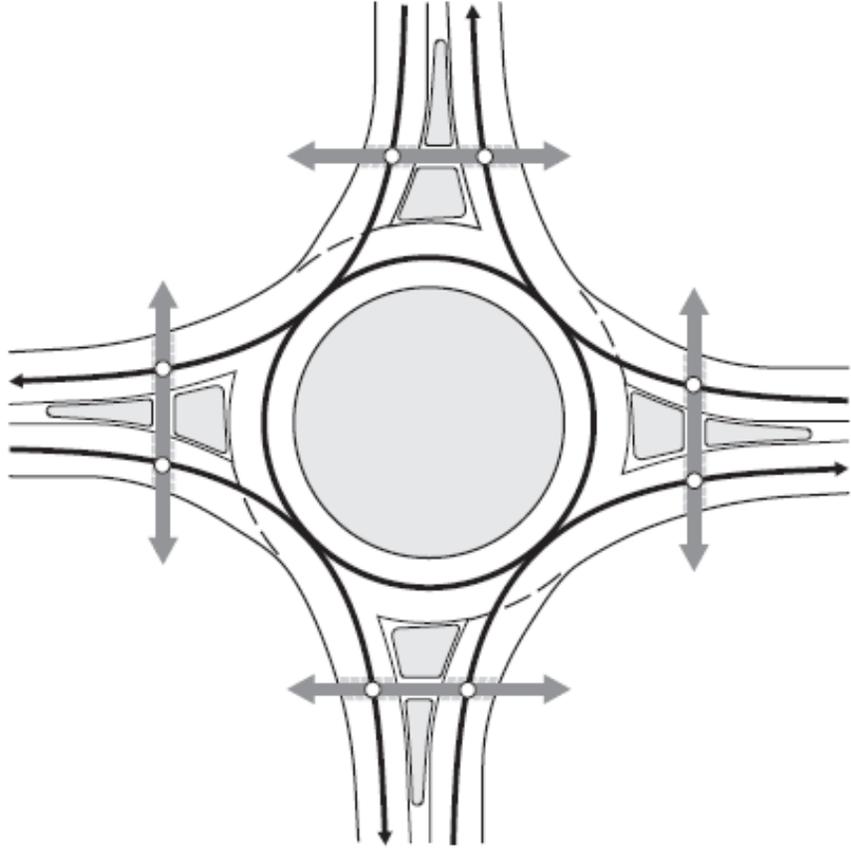
# Vehicle-Pedestrian Conflict Points

8-14



- Right turn on green conflict
- Red light running conflict
- Left turn on green conflict
- Red light running or right turn on red conflict

**Conventional Intersection**  
**16 Conflict Points**



○ Vehicle/Pedestrian Conflicts

**Roundabout**  
**8 Conflict Points**

# Roundabout are Safer for All Users

8-15

Clearwater FL

Pedestrian crashes:

- CMF = 0.73 (CRF = 27%)

All crashes:

- Conversion from Two-way stop control:
  - All crashes: CMF = 0.56 (CRF = 44%)
  - Injury crashes: CMF = 0.18 (CRF = 82%)
- Conversion from signal control:
  - All crashes: CMF = 0.52 (CRF = 48%)
  - Injury crashes: CMF = 0.22 (CRF = 78%)



# Observational Pedestrian Safety Findings

8-16

Santa Barbara CA San Diego CA

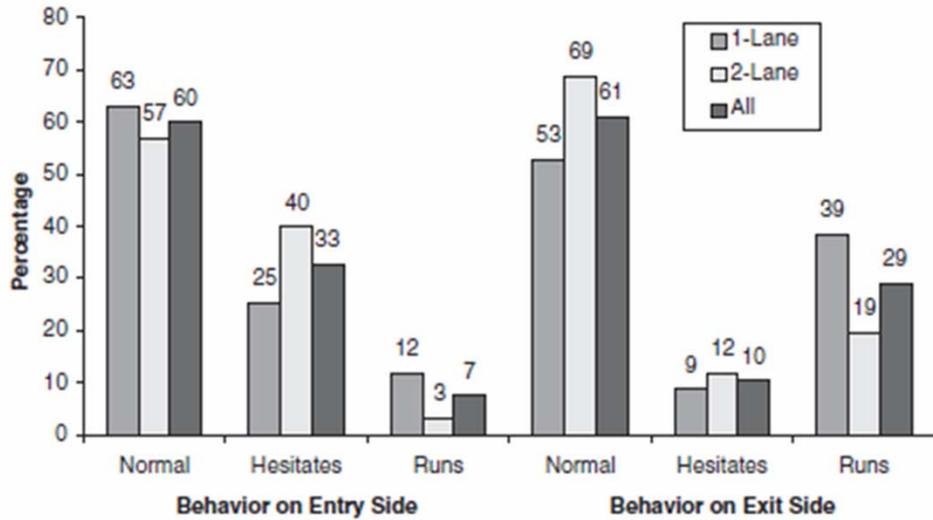


Figure 59. Pedestrian crossing behaviors when a vehicle was present and the crossing began on the entry side.

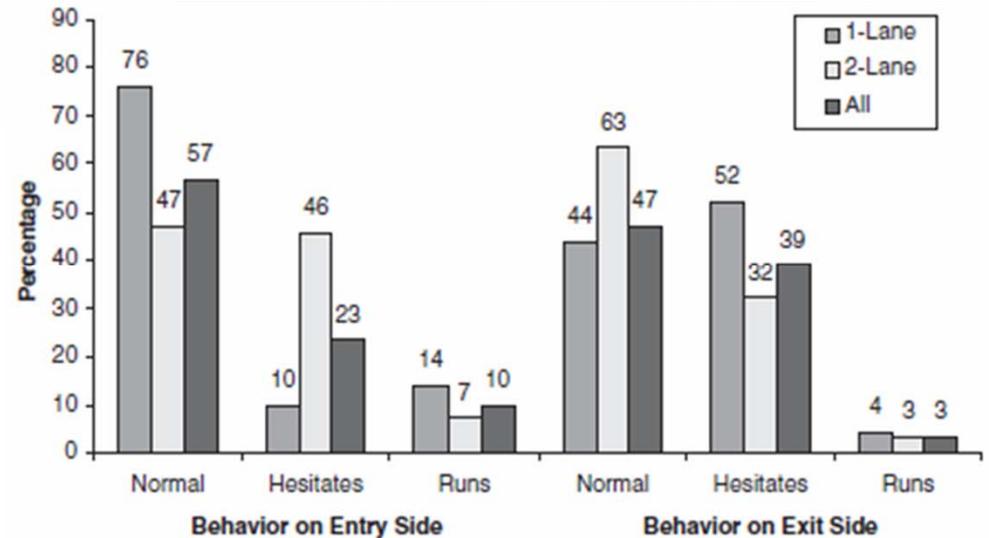


Figure 60. Pedestrian crossing behaviors when a vehicle was present and the crossing began on the exit side.

# Observational Pedestrian Safety Findings

8-17 Clearwater FL Bend OR

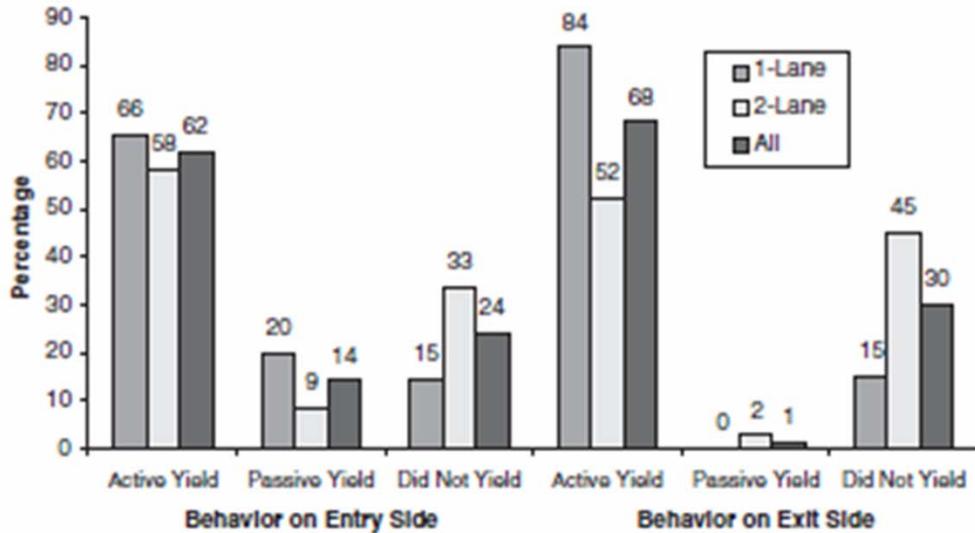


Figure 62. Yielding behavior of motorists when the pedestrian crossing begins on the entry side.

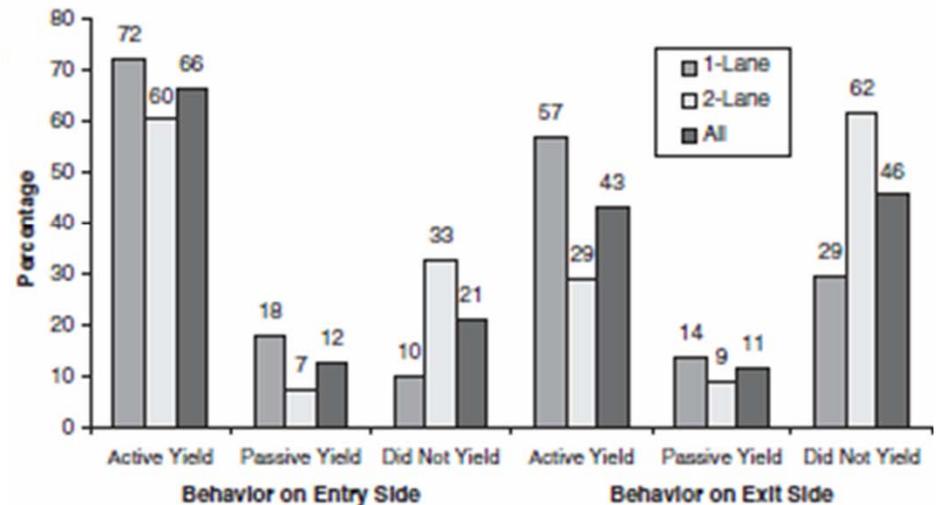
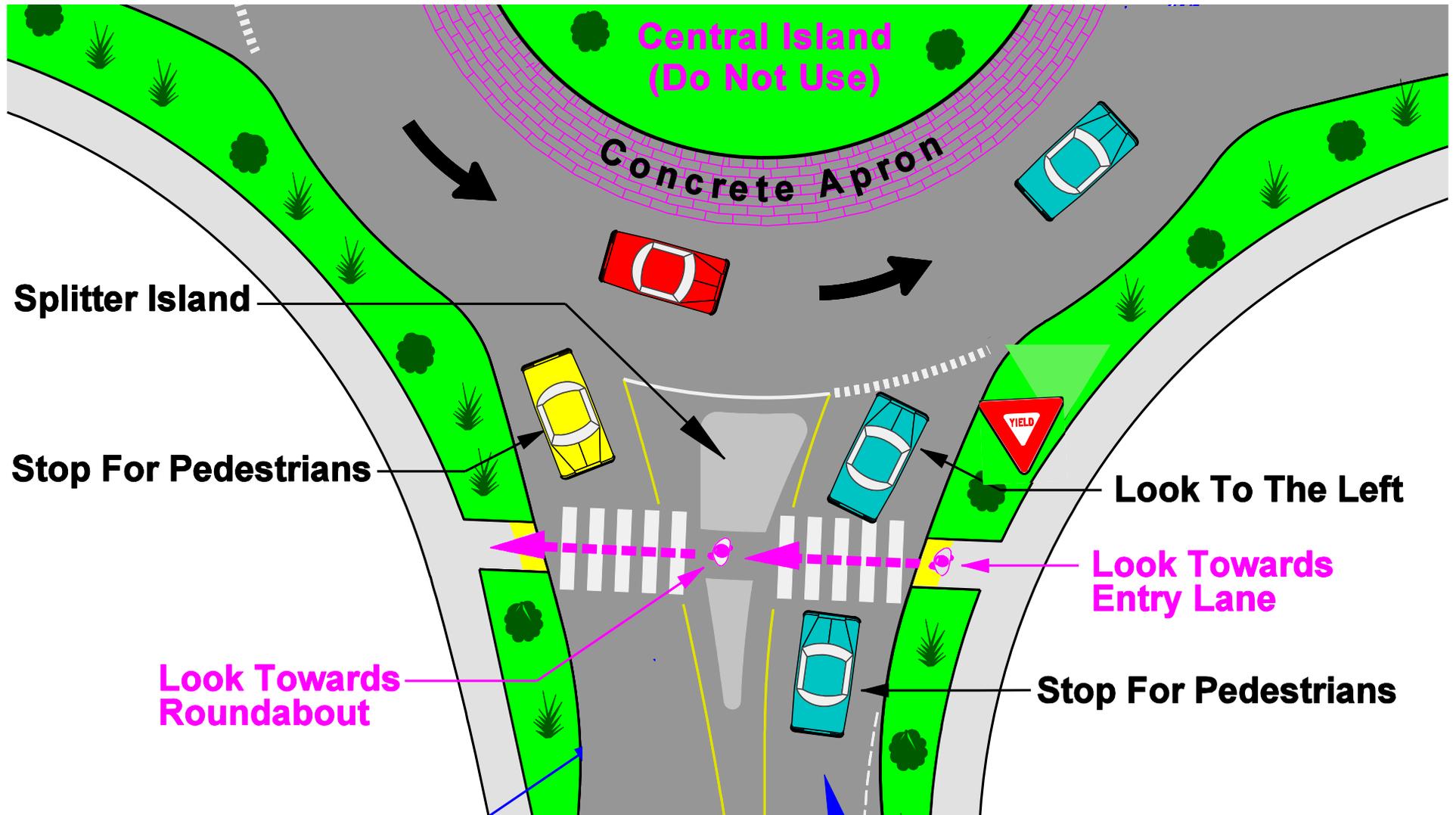


Figure 63. Yielding behavior of motorists when the pedestrian crossing begins on the exit side.

# Pedestrian Movements at Roundabouts

8-18





8-19 Huntington NY

Narrow entry slows drivers



# 1. At entry lane

8-20 Bend OR

Well defined crossings & splitter islands



## 2. At exit lane

8-21

Bend OR

Well defined crossings & splitter islands

# Roundabout near Schools



8-22

Clearwater FL

- ❑ Slow speeds improve safety at schools
- ❑ There are 100-plus roundabouts at schools in the US

# Lighting at Roundabouts

- ❑ Center Mounted Lighting:
- ❑ Peds visible only as silhouettes
- ❑ Signs not visible



# Lighting at Roundabouts

- ❑ Approach Mounted Lighting:
- ❑ Peds illuminated
- ❑ Signs illuminated





8-25 Monona WI

Multi-lane roundabouts have potential for “multiple threat” and higher speeds



8-26 Vail CO

Drivers may take a straighter, faster path on entry and exit, resulting in higher speeds – lane markings are recommended to minimize this

# Roundabout concerns for peds with vision impairments:



8-27

- ❑ Circulating traffic masks the sound cues used to identify gaps and masks the sound of yielding vehicles
- ❑ Problems are much worse at multi-lane roundabouts

# Possible Mitigation Measures for Blind Pedestrians at Multi-Lane Roundabouts

8-28

- Public Right-of-Way Accessibility Guidelines (PROWAG, proposed rule July 26, 2011) require signals at multi-lane roundabout approaches:
  - Pedestrian Hybrid Beacon (HAWK)
  - Regular Red-Yellow-Green Signal
- Research – other solutions may work:
  - Raised Crosswalk
  - Rectangular Rapid Flash Beacon
    - Ped signal may rest in dark (optional use by peds)

# Pedestrian Hybrid Beacon at Two-lane Roundabout

8-29

Golden CO



# Pedestrian Signal at Roundabout with Heavy Pedestrian and Vehicle Volumes

8-30

Clearwater FL



Signalized Pedestrian  
Crossing

Spring Break Statistics (2000)

- 8,000 peds/day
- 58,000 vehicles/day

# Raised Crosswalk at Two-lane Roundabout

8-31

Golden CO



# Rectangular Rapid Flash Beacon at Two-lane Roundabout

8-32

Olympia WA



# Roundabout: Learning Outcomes

8-33

- You should now be able to:
- Explain why roundabouts reduce crashes
- Describe the safety benefits for pedestrians and motor vehicles of roundabouts
- Describe how roundabout safety depends on correct design

8-34

Questions?