



Traffic Safety Effects of Roundabouts

A review with emphasis on bicyclist's safety

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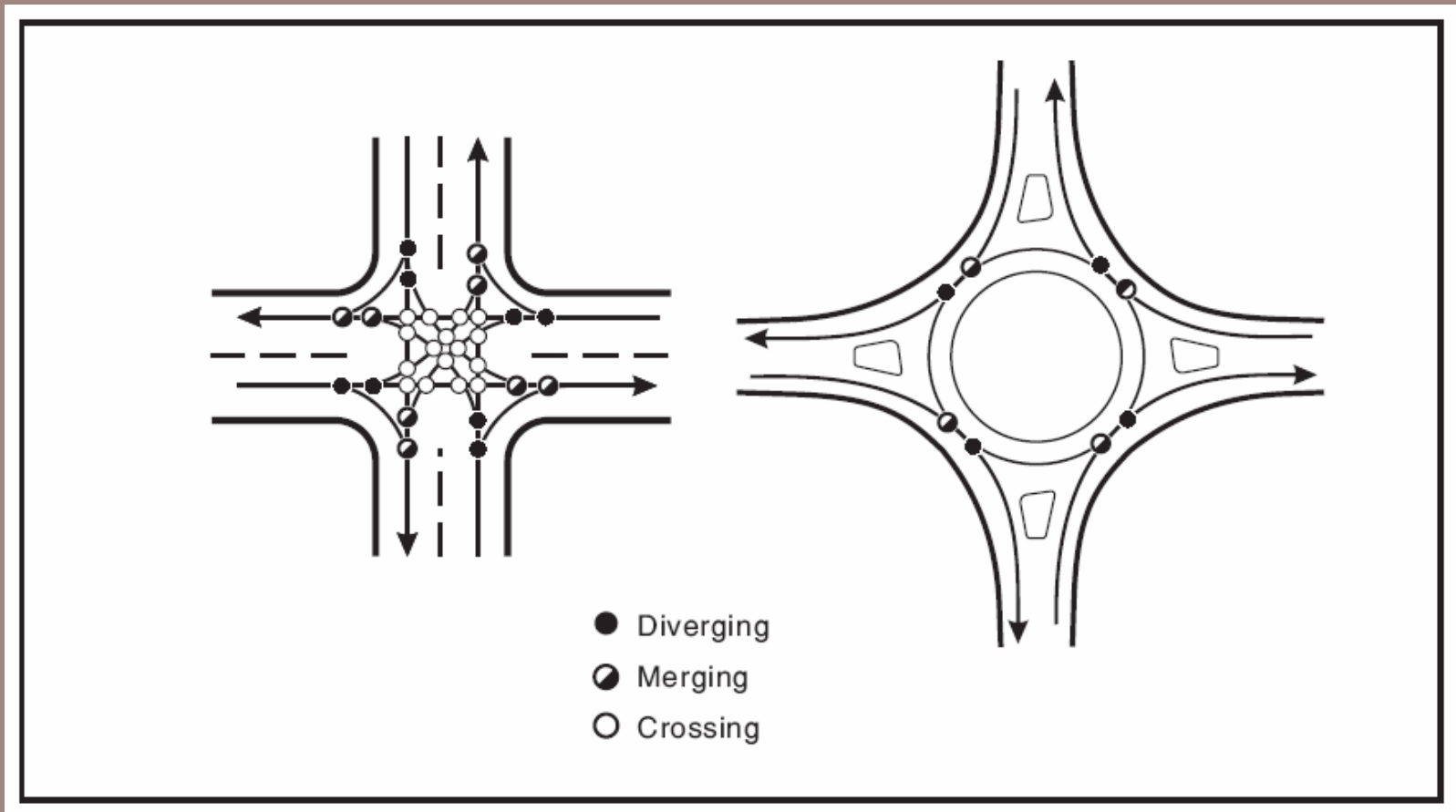


Outline

- Theoretical safety effects
- Research on safety for all road users
- Design of cycle facilities
- Research on bicyclist's safety
- Conclusions



Theoretical safety effects





Theoretical safety effects

- Reducing conflict points
 - 32 to 8 conflict points
 - One way traffic
 - No left-turning movements
 - Reducing frontal/right-angle collisions
- Speeds are low and homogenous
 - Entering traffic has to give priority
 - Lateral displacement /circulatory movement



Safety for all road users

General findings:

- Decrease of injury accidents
- Higher reduction of severe accidents
- Stronger effect outside built-up area
- Decrease of speeds up to 300m distance
- Relation between
 - speeds and accidents
 - speeds and injuries
- More priority offences when higher traffic volume



Safety for all road users

Insure/not corresponding findings:

- Effects on property-damage-only accidents
- Effects not equal for different road users
- Increase of number of registered conflicts, tendency towards less severe conflicts
- Lower decrease on signalled intersections
- More effect on 4-leg intersections

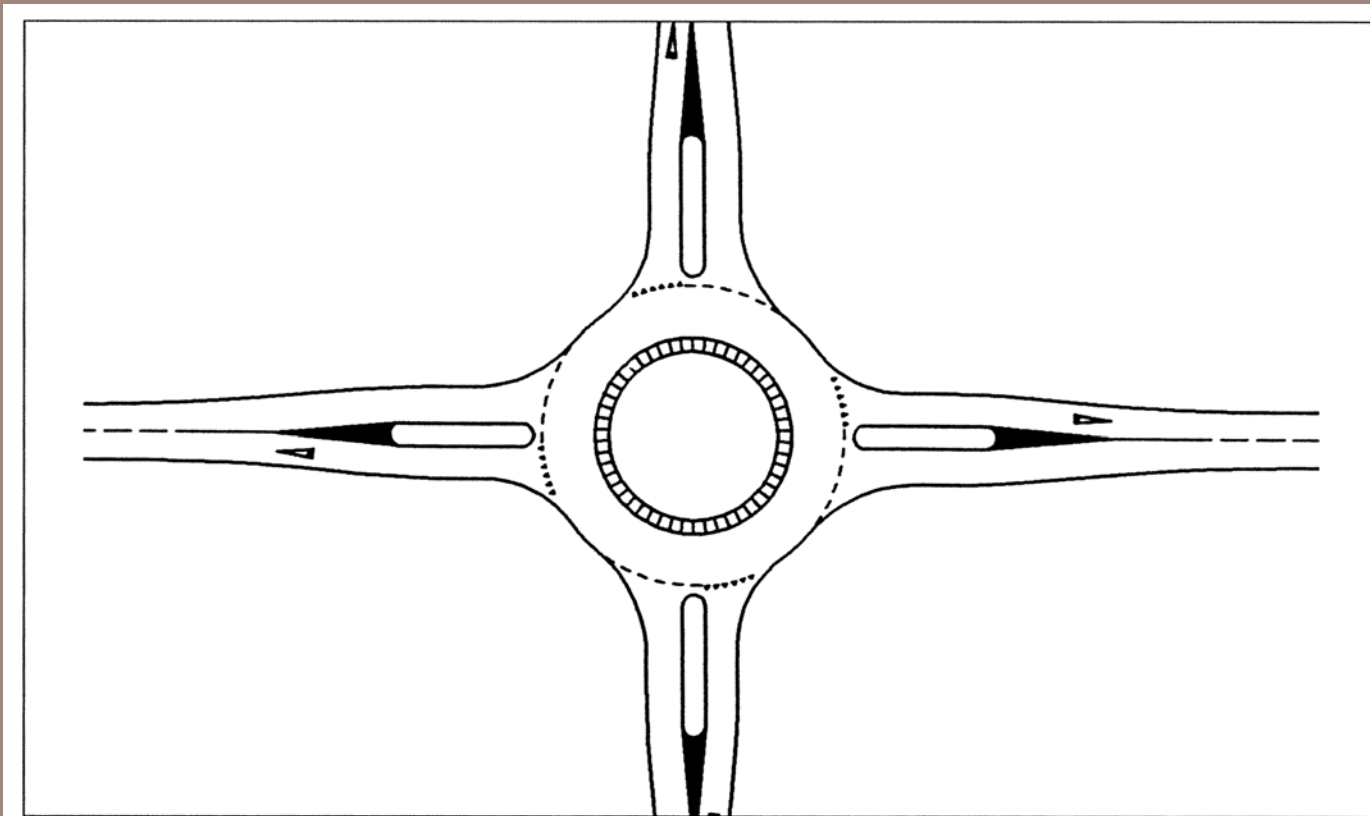


Design of cycle facilities

- Mixed traffic
- Adjacent cycle lanes
- Separated cycle lanes
 - Priority to bicyclists
 - No priority to bicyclists



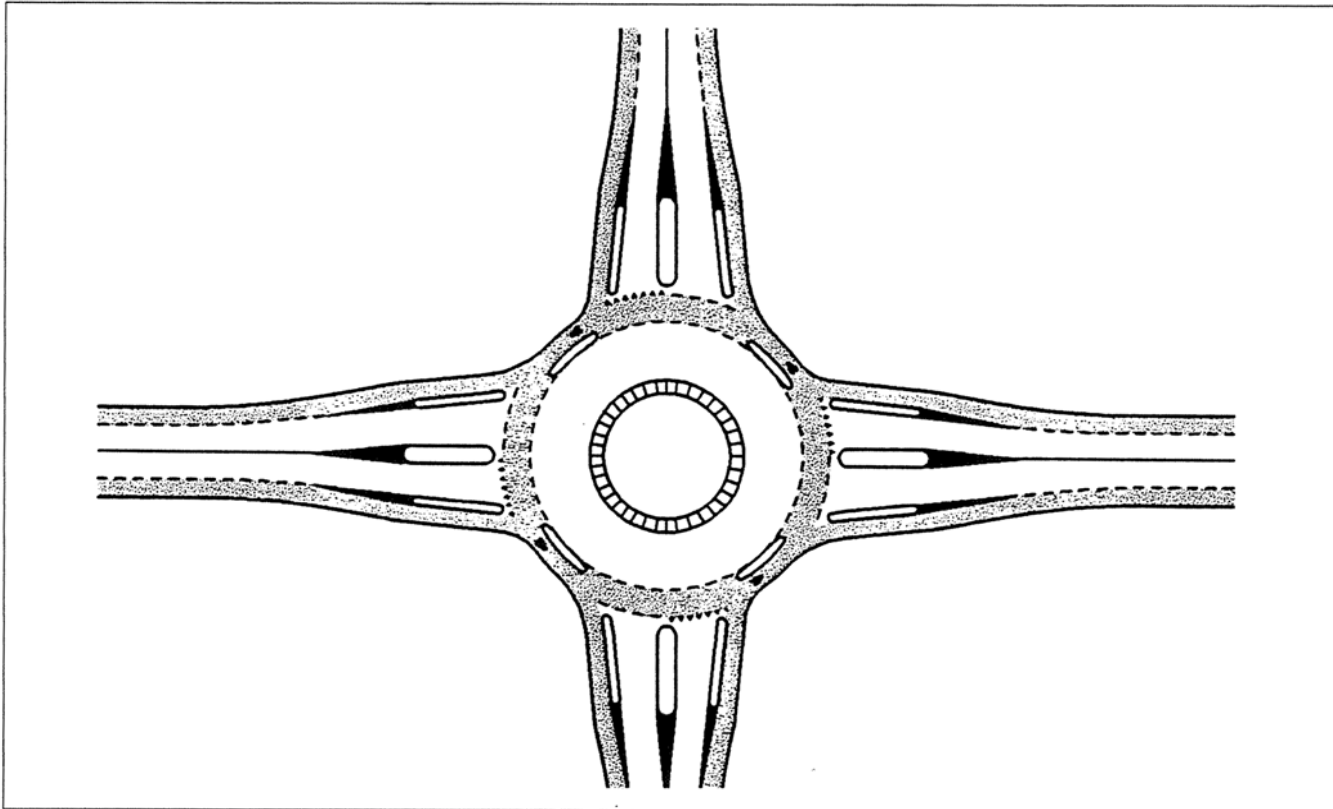
Mixed traffic



Roundabout with mixed traffic. Source: CROW (1998)



Adjacent cycle lanes



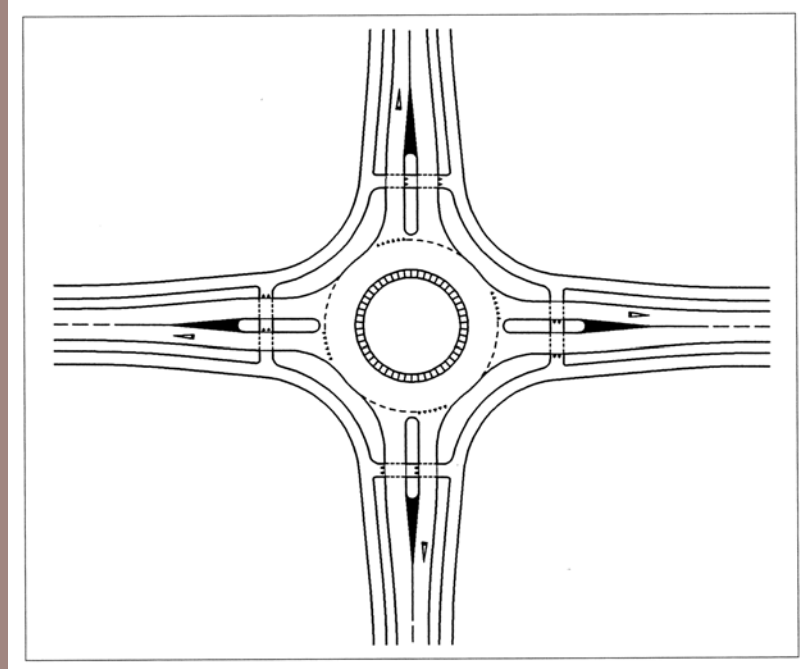
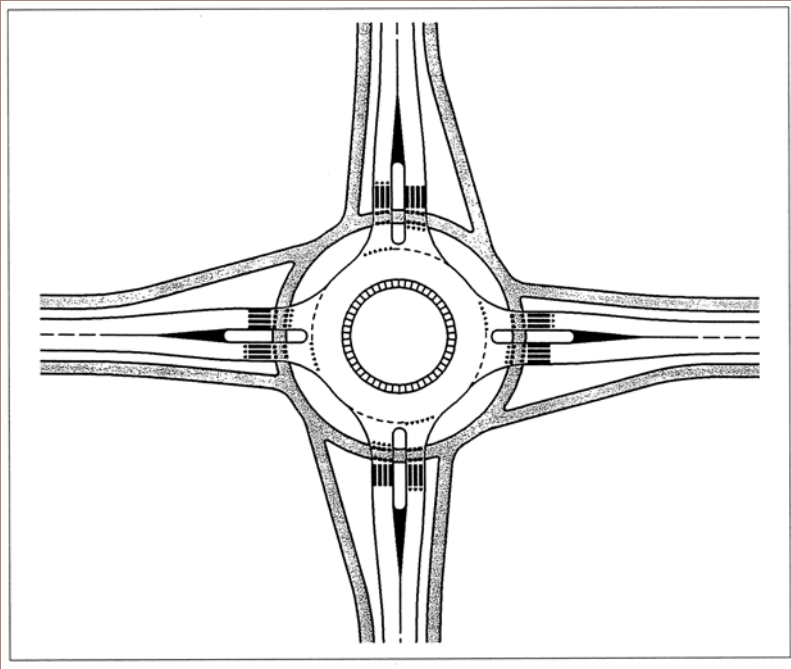
Roundabout with adjacent cycle lanes. Source: CROW (1998)



Separated cycle lanes

Priority to bicyclists

No priority to bicyclists





Research on safety for bicyclists

- More accidents than expected.
- Safety improvement, but lower than for other road users.
- Smaller, one-lane better than larger, two lane.
- Larger central island = safer.
- Few effects on conflicts, shift to less severe.



Research on safety for bicyclists (2)

- Separated cycle lanes safer than other designs.
- Priority giving is problematic, for cars and for bicyclists.
- Somewhat more accidents on roundabouts with separated cycle lanes and priority to bicyclists.



Conclusions

- Roundabouts contribute to traffic safety
- Effects not equal for all road users
- Some work left to
 - Investigate safety effects for bicyclists
 - Compare effects of different designs

