

Presentation to Bike Futures Conference  
Melbourne, Thursday 18 October 2012

# Bicycle Lanes at Roundabouts

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The logo for ViaStrada, featuring the word "VIA" in yellow and "STRADA" in white, both in a bold, sans-serif font, set against a dark grey rounded rectangular background with a vertical yellow line on the left side.

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TRANSPORT PLANNING AND DESIGN

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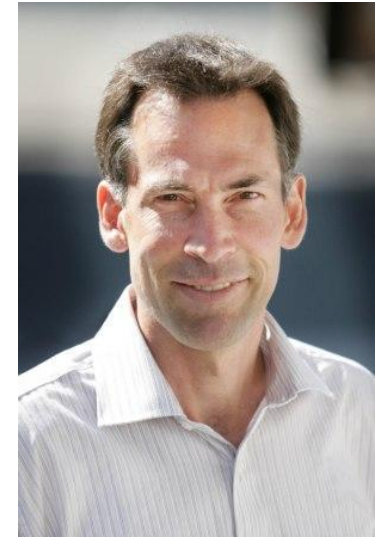
# Research team



Axel Wilke  
ViaStrada  
lead researcher



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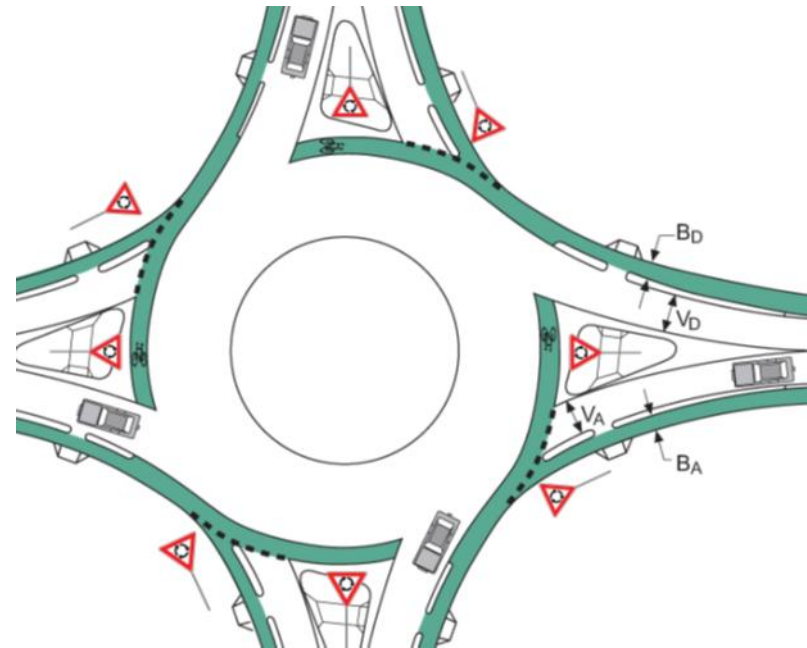


John Lieswyn  
researcher

Client: Austroads

# Background

- Tony Barton presented in 2011 at Bike Futures on the ‘two schools of thought’
  - Cyclists take the lane at roundabouts, or
  - Bicycle lanes at roundabouts should provide separation
- Austroads guidance allows for bicycle lanes
- Some jurisdictions do not favour bicycle lanes



# Caveat

- There are some strongly held opinions within the profession
  - for and against bicycle lanes
- When research does not directly measure crash rates, critics possibly unconvinced
  - Our research did not undertake before / after studies on crash rates
- More before / after research is needed of roundabouts that undergo change

# Research brief

- Objective evidence of the effectiveness of on-road bicycle lanes
  - Near roundabouts, and
  - On roundabouts
- Support formation of Austroads policy and design guidance
  - Aim is for this to be included in future revision of Austroads guides



# Method

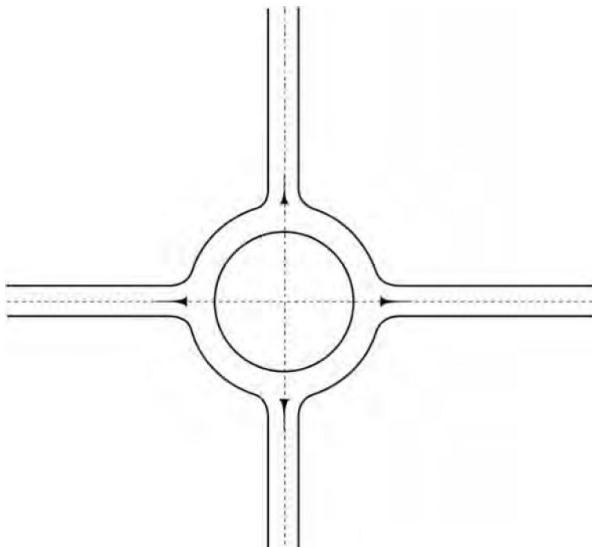
1. Review literature and crash data
2. Identify measures of effectiveness
  - Which quantifiable items will inform research?
3. Undertake fieldwork
4. Analyse data
5. Report on findings



# Literature review

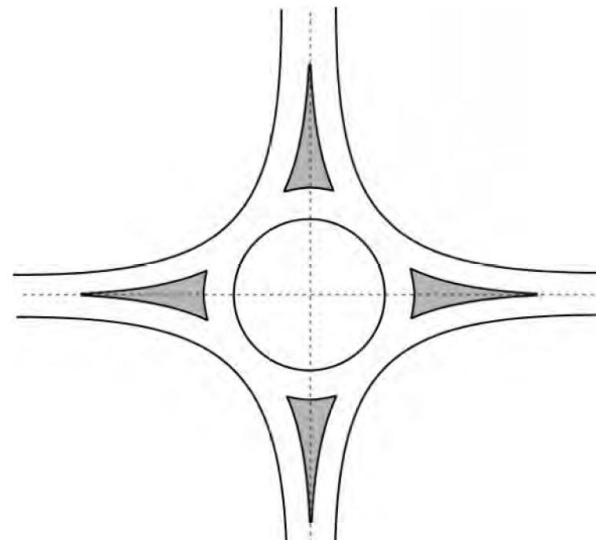
## Radial

- Minimises speed
- Maximises safety
- Used in continental Europe



## Tangential

- Encourages speed
- Maximises efficiency
- Used by English-speaking nations

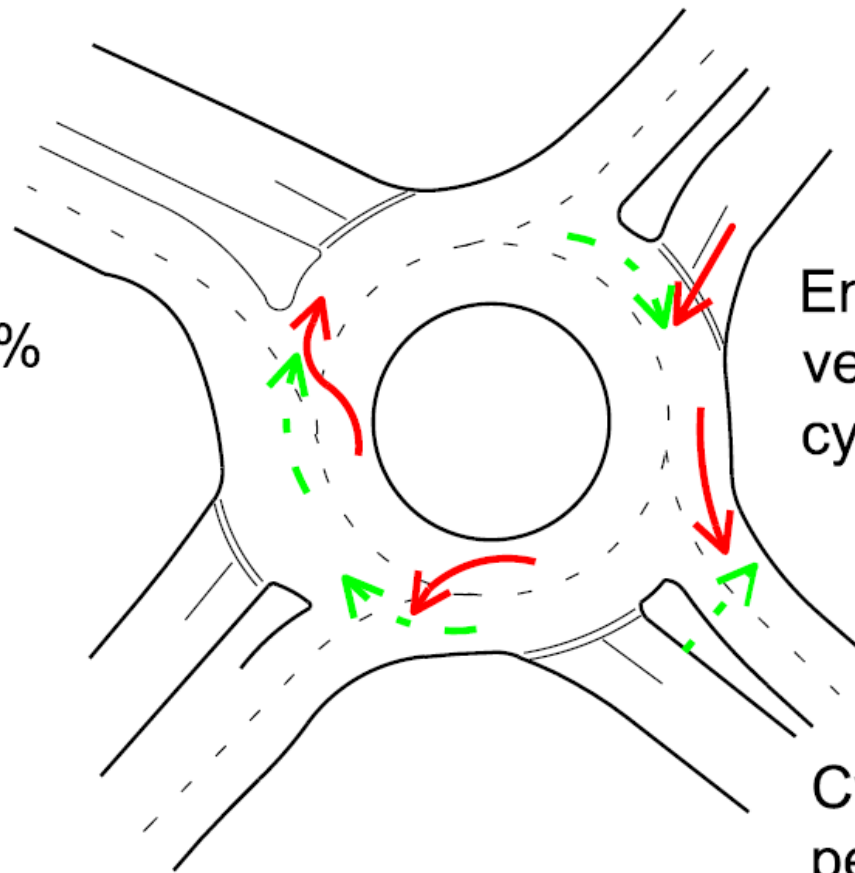


# Crash analysis

Other types 5%

Sideswipe on  
roundabout 10%

Entering motor  
vehicles vs. circulating  
cyclists 68%



Exiting motor  
vehicles vs.  
circulating cyclists 9%

Cyclist crossing as  
pedestrian 8%



# Crash analysis cont'd

- Operating speeds and crash rates (for all users) are related
  - If we reduce speeds sufficiently, the discussion about cycle lanes would be moot
- Increasing roundabout size and speed = cyclists increasingly struggle to cope



# Lateral tracking

- One of the measures of effectiveness
- 1183 measurements of cyclists proceeding straight ahead
  - How cyclists track through roundabouts varies hugely between sites (median distance 34%-78% at different roundabouts)
  - Where bicycle lanes are present, only a minority use them (10%-42%)



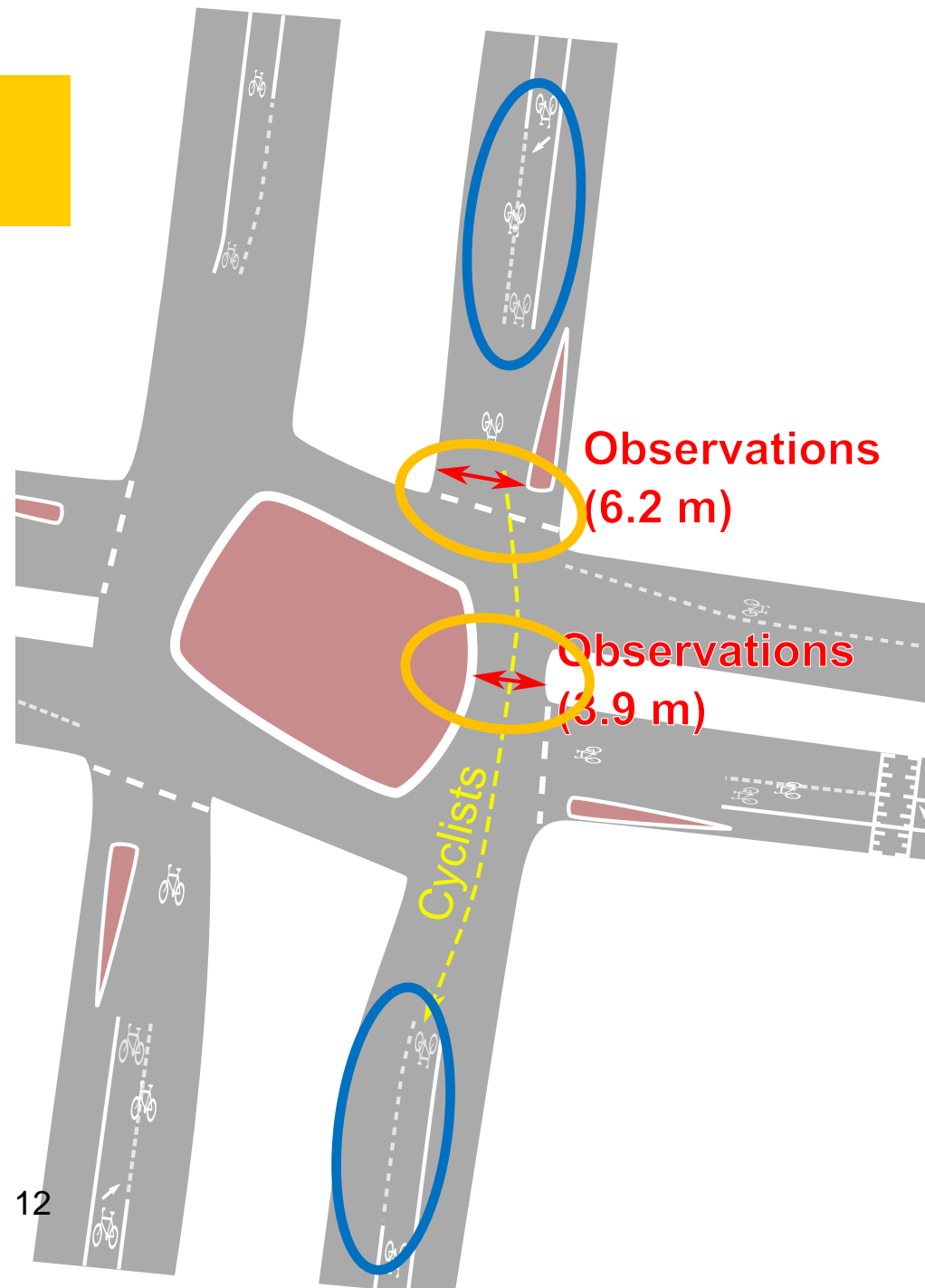
# Lateral tracking – before / after

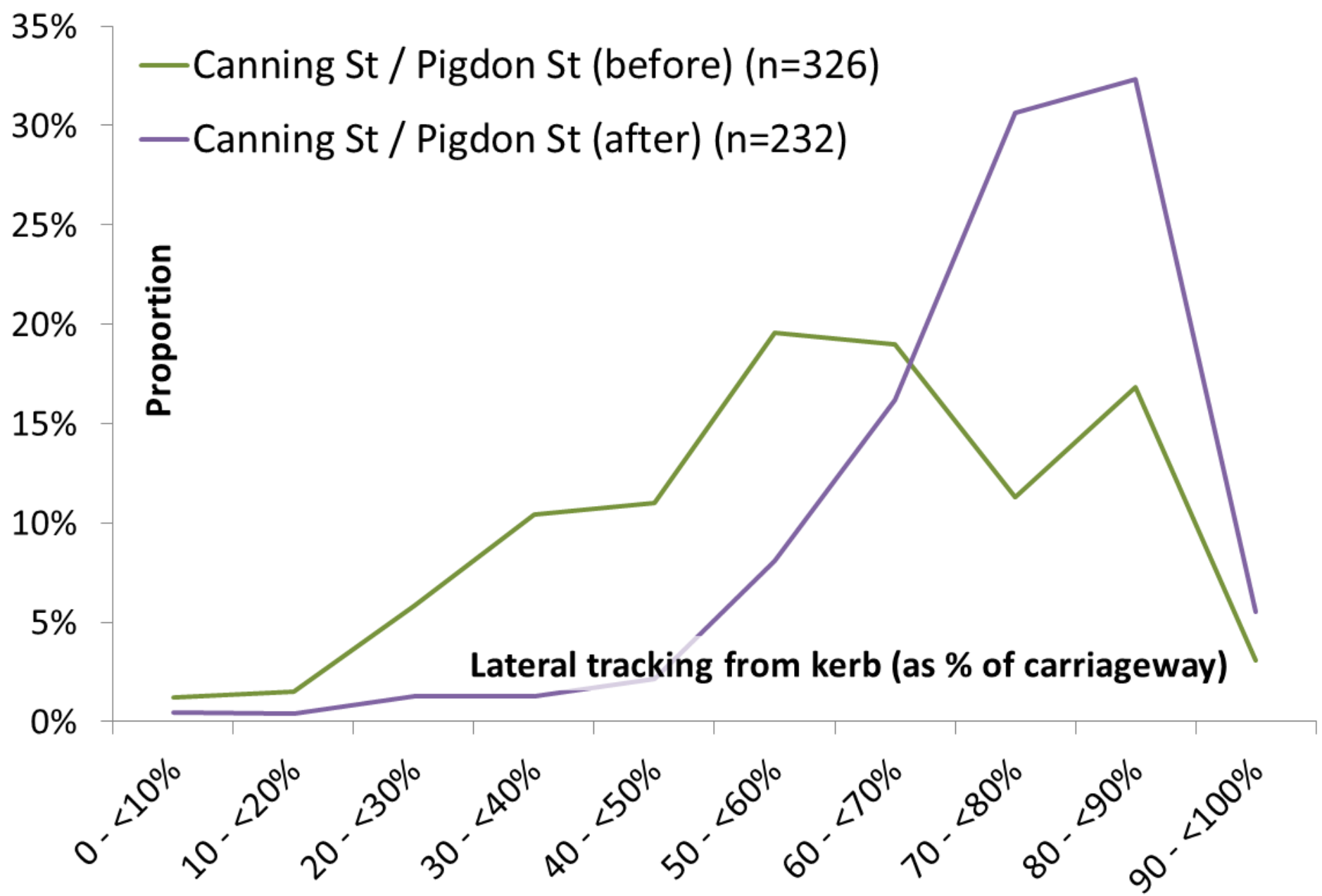
- Before / after study at one site shows significant change in lateral tracking:
  - Truncation of bicycle lane from limit line
  - 10 m before
  - 20 m after



# Lateral tracking

- Truncation of bicycle lane from holding line
  - before 10 m
  - after 20 m





# Recommendation – geometry

- Achieve equitable speeds between cyclists and motorists  
(equitable = cyclists and drivers travelling at similar speeds)
  - Vertical deflection
  - Horizontal deflection
  - Restrict visibility
  - Consider radial design philosophy  
(Europe → lower speeds)



# Recommendation – lane sharing

- Where equitable speeds are achieved, encourage lane sharing
  - Shared lane markings
  - Advanced stop boxes
  - Truncated bicycle lanes



# Recommendation – no bicycle lanes

- Avoid bicycle lanes at low speed roundabouts
  - Strong evidence that cycling to the left within roundabouts is detrimental to safety
  - Aim should be to achieve equitable speeds that enables lane sharing
  - Truncate cycle lanes on roundabout approaches (around 20 m behind hold line)





# Recommendation – bike paths

- Where equitable speeds cannot be achieved, consider bike paths
  - Need to provide good LOS even during peak traffic times
  - Could be at grade or grade separation
  - Likely that some cyclists will still use circulating lanes, so design should allow for this



# Recommendation – bicycle lanes (?)

- Are there options at higher speed roundabouts?
  - Where off-road provision not viable
  - Where off-road provision has poor LOS
  - Lane sharing not acceptable to many cyclists where speeds are high
  - Use cycle lanes with ‘reinforcement’ (colour, audio-tactile lines, physical separators)
  - Paucity of evidence for this (either pos or neg)



# Most important learning

- Negotiation speed is the crucial issue
  - Increases safety for every roundabout user
- Radial (European) design philosophy is based on speed reduction
- When speeds are low, the question of bicycle lanes doesn't arise
  - Lane sharing is possible



# Project status

- Draft report has been out for stakeholder consultation
- Publication planned for 2013



# Discussion & thank you

- Questions please
- Thank you for listening
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