View from a bike
- improving safety for on-road cyclists
PhD research summary
Amy Gillett Foundation

• inspired by the life of Amy Gillett
• aim to reduce cyclist death and injury
• relationship between cyclists and motorists
Aim:

To identify ways to improve safety for on-road cyclists
Cycling participation is increasing

- ~ 10% of Australians
- 4th most popular physical activity (1. walking, 2. aerobics/fitness, 3. swimming) (ERASS, 2008)
- over a million bikes sold each year
- more bikes sold than cars (Cycling Promotion Fund, 2009)

Victoria
- commuter cyclists = 9% of all morning traffic into Melbourne CBD (City of Melbourne, 2008)

Source: ERASS 2001-2009
Cyclist collisions – Australia

Sources: Australian Government, Road Deaths Australia: 2007 Statistical Summary, Road Safety Report No. 1, August 2008

Deaths of cyclists due to road crashes

- Over 60% of crashes, cyclist was ‘responsible’ for the action that precipitated the crash

- In a third of crashes either the driver or the cyclist failed to observed each other

Australian Bureau of Statistics, 2006
Factors in cyclist fatalities – Australia

- vehicle is involved, adult cyclist, male
- low speed zones (under 60km/h), at intersections
- warmer weather (Feb, March), day light, clear conditions
- infrastructure: cyclists/drivers feel safer
  - inconsistent and discontinues
Safe system framework

SAFE SYSTEM
(aims to reduce the number of crashes, and should a crash occurs reduce the severity of injury by the management of crash forces to survivable levels through the interaction of safer speeds, safer roads and roadsides and safer vehicles.)

- safer users
  - comply with speed limits
  - comply with road rules
  - wearing seatbelts/helmets
  - not affected by alcohol, drugs or fatigue

- safer roads and roadsides
  - speed limits to match infrastructure
  - roads and roadsides designed to highest safety standards practicable

- safer vehicles
  - vehicles manufactured featuring high standard safety features

Understand crashes and risks

Education and information supporting road users

Admittance to system (driver licensing)

Enforcement of road rules
Research questions

1. What specific types of cyclist and driver unsafe behaviours can be identified?

2. Are unsafe behaviours particular to specific subgroups of cyclists/drivers?

3. How do attitudes and perceptions towards cycling/cyclists influence safety?

4. What other factors contribute to safe/unsafe interactions between cyclist and drivers?
Commuter cyclists

- Diverse – gender, clothing, bike type
- Predictable times of day, high volume for stat. analysis
- High traffic times = more likely to interact with vehicles
- Adult riders – covert obs, cognition/bike handling
Research design

Stage 1
Observational study

→

Stage 2
Naturalistic cycling study

→

Stage 3
Online survey
Observational study

Sites: 16 signalised intersection across metro Melb (matched pairs: 8 AM, 8 PM)

Footage
• filmed 18 hours per site
  (Modified Lund Conflict Ob’n Technique)

• 3 hours over 6 days
  (7-10am or 4-7pm)

• Filming completed, 288 hours
  (Mar 08 – Mar 10)
Six elements for cyclists at an intersection

Site locations

1. Left
2. Centre
3. Continuous
Specific unsafe behaviour - riding through red lights

n = 4,225

6.9% rode through red lights

Predictive factors
- direction of travel (left turn = 28.3 times straight)
- gender (males 40% more likely than females)

Deterrent
- others – cyclists or drivers

Bike type, clothing = not statistically sig.
Specific unsafe behaviour  
- infrastructure at intersections

54 hours of footage at 6 intersections, n = 2,670 cyclists, 1,243 vehicles

Bike storage boxes
- cyclists = more compliant than drivers both left and centre box sites  
  (stat sig.)

Continuous
- both highly compliant (drivers 97.7%, cyclists 95.4%)

Implications
- cyclist use suggests = safe space, not acknowledged by drivers
- insufficient driver awareness/information
Limitations

- Observations = too limited
  - No mid-block information
  - Limited cycling facilities – esp bike lanes

- Selected intersections may not be representative of all intersections – even of same type

- Head checks unclear, still no new insights into cyclist looking behaviour
Research design

Stage 1
Observational study

Stage 2
Naturalistic cycling study

Stage 3
Online survey
Research design

- Helmet mounted camera (head checks)
- 12 hours over 4 weeks
- Baseline survey, weekly updates, exit interview
- \( n = 35 \), 420 hours footage
Initial review

Review completed = 37%
54 events = 2 collisions, 6 near-collisions, 46 incidents

Estimate for all participants = 120-140 events

Variables include

- Fault
- Behavioural
  - Pre-event: safe/unsafe, legal/illegal, cyclist head check
  - Post-event: maintained control, cyclist/driver reactions
- Environment
  - Time, speed zone, traffic control, relation to junction, no. lanes, traffic flow
  - Cycling facilities: present/absent, cyclist used (yes/no)
- Vehicle
  - Type, indicator use prior to turn
Preliminary review

• Constant head checks – high situational awareness

• Avoidance/defensive cycling

• Lots of scribbling – on footpath/through parks, esp at squeeze points

• Head shakes = disapproval
Research design

Stage 1
Observational study

Stage 2
Naturalistic cycling study

Stage 3
Online survey
- For drivers and cyclists
- Questions raised from literature review, observational study and naturalistic study
  - attitudes
  - behaviours
  - knowledge
  - experiences on the road
  - demographics
Preliminary findings – all respondents

- n = 2490
- cyclists = 2000, drivers = 490
  - Half understood rules re bike lane
  - Half agree drivers don’t look for cyclists

Involved in a collision when riding
  - Almost half of all cyclists
  - More than half had been injured
  - Driver was responsible in most crashes
Next steps

• Finalise thesis
  – finalise analysis – online survey
  – writing up thesis chapters

• repeat naturalistic cycling study
  – In ACT with GPS/speed monitors