Cycling: through a health department lens

19th October, 2017

Professor Chris Rissel
The University of Sydney
Physical Activity

Other possible health benefits:
- prostate Ca.
- lung disease
- breast cancer
- arthritis
- falls prevention

Mental health benefits

Diabetes
Colon cancer
Osteoporosis

BMI
BP
Cholesterol

Stroke, CVD

CHD

Health benefits of cycling
Cycling: win-win-win policy

- Evidence-based
- Cost-effective
- Feasible to implement now
- Acceptable to the community
- Equitable
- Sustainable
Why don’t most health departments invest in cycling?
Health system funding

- 98% = acute care and treatment

- 1.5% = public health (regulation and infectious disease control)

- <0.5% = health promotion and prevention (tobacco control, healthy eating, sexual health, encouraging physical activity, falls prevention etc)
Health sector: bicycles = injuries

- Presentations to Emergency Departments, GPs
- Cycling causes a cost to the system
- Therefore, prevent injuries

- **Not** exposure-based injury rates
Statistical analysis

For each participant:

• total time cycled; total distance cycled
• total time spent on each infrastructure type (calculated from % of time reported on each infrastructure x total time)
• total crash counts
• total crash-related injuries
• total crashes and injuries on each type of infrastructure
Cyclist demographics n= 2038

- 72.4% male
- Average age at baseline - 42.8 (s.d. 11.3) years
- University degree or higher – 73.0%
- Drivers licence – 96.8%
- Ready access to a car – 88.0%
- 83.3% more experienced cyclists (versus less experienced defined as novice or intermediate)
- 59.9% “mainly transport” cyclists, others “mainly recreational”

Exposure

25,971 days of cycling
32,676 hours
682,248 kms

Poulos RG, Hatfield J, Rissel C, Flack LK, Murphy S, Grzebieta R; McIntosh AS. An exposure based study of crash and injury rates in a cohort of cyclists in New South Wales, Australia. Accident Analysis & Prevention 2015; 78: 29-38.
Location

Region of cycling (hours)

Number of hours

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inner Sydney</td>
<td>16000</td>
</tr>
<tr>
<td>Outer Sydney</td>
<td>8000</td>
</tr>
<tr>
<td>Sydney surrounds</td>
<td>6000</td>
</tr>
<tr>
<td>Rest of NSW</td>
<td>1000</td>
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</tbody>
</table>
Mean weekly exposure in hours by cyclist characteristic

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>4.09</td>
</tr>
<tr>
<td>Males</td>
<td>4.33</td>
</tr>
<tr>
<td>Females</td>
<td>3.44</td>
</tr>
<tr>
<td>Transport</td>
<td>3.91</td>
</tr>
<tr>
<td>Recreational</td>
<td>4.36</td>
</tr>
<tr>
<td>Less experienced</td>
<td>3.14</td>
</tr>
<tr>
<td>More experienced</td>
<td>4.27</td>
</tr>
<tr>
<td>18-24 years</td>
<td>3.00</td>
</tr>
<tr>
<td>25-59 years</td>
<td>4.08</td>
</tr>
<tr>
<td>60+ years</td>
<td>4.53</td>
</tr>
</tbody>
</table>
## Crashes by type

<table>
<thead>
<tr>
<th>Type of crash</th>
<th>Count</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor vehicle</td>
<td>48</td>
<td>24.2%</td>
</tr>
<tr>
<td>Bike collision</td>
<td>16</td>
<td>8.1%</td>
</tr>
<tr>
<td>Pedestrian collision</td>
<td>10</td>
<td>5.1%</td>
</tr>
<tr>
<td>Animal collision</td>
<td>7</td>
<td>3.5%</td>
</tr>
<tr>
<td>Stationary object collision</td>
<td>13</td>
<td>6.6%</td>
</tr>
<tr>
<td>Other collision</td>
<td>6</td>
<td>3.0%</td>
</tr>
<tr>
<td>Fall</td>
<td>98</td>
<td>49.5%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>198</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
## Number of crashes by injury outcome

<table>
<thead>
<tr>
<th>Crashes by injury outcome</th>
<th>Count</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No injury</td>
<td>97</td>
<td>49.0%</td>
</tr>
<tr>
<td>Self treated injury</td>
<td>85</td>
<td>42.9%</td>
</tr>
<tr>
<td>Medically attended injuries (GP/Emergency Dept)</td>
<td>16</td>
<td>8.1%</td>
</tr>
<tr>
<td>One or more nights in hospital</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>198</td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

**Self treated injuries:**
- grazes
- bruising, minor lacerations
- muscle strains

**Medically attended injuries:**
- contusions
- lacerations requiring cleaning or suturing
- sprains
- fracture (hand, finger) or dislocations (finger)
- concussion
- injuries requiring investigation to exclude fracture or head injury

<table>
<thead>
<tr>
<th>Reported to police</th>
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<tbody>
<tr>
<td>2</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td><strong>7</strong></td>
</tr>
</tbody>
</table>
### Rates per 1000 hours travelled

<table>
<thead>
<tr>
<th>Rate</th>
<th>Estimate</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crash rate</td>
<td>6.06</td>
<td>5.52 - 6.65</td>
</tr>
<tr>
<td>All injury rate</td>
<td>3.09</td>
<td>2.79 - 3.43</td>
</tr>
<tr>
<td>Medically attended injury rate</td>
<td>0.49</td>
<td>0.43 – 0.56</td>
</tr>
</tbody>
</table>
Our research compared with other research?

<table>
<thead>
<tr>
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<th>Rate per million kms</th>
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<tr>
<td></td>
<td>Crashes</td>
</tr>
<tr>
<td><strong>Safer Cycling study</strong></td>
<td>290 (264-319)</td>
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## Our research compared with other research?

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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crashes</td>
<td>All injuries</td>
<td>Injuries more serious than bruise or cramp</td>
<td>Injuries requiring medical attention</td>
</tr>
<tr>
<td><strong>Safer Cycling study</strong></td>
<td>290 (264-319)</td>
<td>148 (133-164)</td>
<td>23 (20-27)</td>
<td></td>
</tr>
<tr>
<td>Ottawa-Carleton*</td>
<td>127.7</td>
<td>76</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>(Aultman-Hall et al, 1998)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Toronto*</td>
<td>211</td>
<td>116</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>(Aultman-Hall et al, 1999)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portland*</td>
<td>93.2 (80.8-105.6) *</td>
<td></td>
<td>24.2 (18.0-31.7) *</td>
<td></td>
</tr>
<tr>
<td>(Hoffman et al, 2010)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium*</td>
<td>47 (36-59)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(de Guess, 2013)</td>
<td></td>
<td></td>
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<tr>
<td>Belgium</td>
<td>148</td>
<td>115</td>
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* Commuter cyclists only  
+ converted from rate per 100,000 miles
Characteristics of a Health Department

Just like any other big organisation

• Staff have similar health profiles to public
• Car-centric focus
• Management does not understand active travel and cycling
  - travel plans
  - workplace health programs
    (same battles with Finance)
What is a travel plan?

• Strategy to organise more efficient transport to destinations like hospitals.

• Widely applied in schools, universities, hospitals and workplaces.

• Use a mix of infrastructure, policy and behavioural solutions.

• Change the culture of an organisation

http://youtu.be/lwOZy977PNY
Options

• Parking management plan.
• Journey planning in staff induction/for new staff.
• End of trip facilities – secure bike storage, bike racks, lockers and showers.
• Bicycle loan schemes, and buddying up experienced riders.
• Maps of walking, cycling and public transport routes.
• Walking, public transport, cycling and car pooling share programs.

Explore your staff travel
CHOICES.
**Travel plan results**

### Change in travel mode

<table>
<thead>
<tr>
<th>Year</th>
<th>Driving</th>
<th>Active Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>84.5</td>
<td>15.5</td>
</tr>
<tr>
<td>2012</td>
<td>79.7*</td>
<td>20.3</td>
</tr>
<tr>
<td>2013</td>
<td>79.6*</td>
<td>20.4</td>
</tr>
</tbody>
</table>

*Chi-squared test of the difference of two proportions with 2 degrees of freedom

Explore your staff travel

**CHOICES.**

- Public Transport
- Step by Step
- 10 Cycle to Work
- Carpool spaces
Get Healthy at Work

www.gethealthyatwork.com.au
http://youtu.be/zAi9UE74fPA
Get Healthy at Work content focus

Developed in partnership between NSW Health and SafeWork NSW

Six health focus areas:

- Healthy eating
- Healthy weight
- Physical activity
- Active travel
- Smoking
- Harmful alcohol consumption
Workplace Health Program

Evidence based model for creating a healthy work environment that supports workers to reduce their risk of lifestyle-related chronic disease

Confidential service for individual workers to understand their risk of developing type 2 diabetes and heart disease

Register with Get Healthy at Work to use the Active Travel resources including the Workplace Travel Planning Guide, Worker Travel Survey and Travel Plan Template
National Partnership Agreement for Preventive Health (NPAPFH) 2011-2014

- Commonwealth - $$$millions for prevention
- Statewide programs at scale
  - Healthy Worker Initiative
  - Healthy Children Initiative

- Stopped by then Prime Minister Tony Abbott
Premier’s Priority (2015):
to reduce overweight and obesity rates of children by 5% over 10 years
Although the NSW child overweight and obesity rate has stabilised, the target is very challenging.

Target: Reduce overweight and obesity rates of children from 21.5 per cent in 2014 to 16.5 per cent (a decrease of 5 percentage points) over the 10 year period to 2025.

This is equivalent to a 25 per cent relative reduction in the prevalence of childhood overweight and obesity in NSW.

**Childhood overweight and obesity (COO) NSW trend (1985 – 2015)**

Levels stabilising

**Rate of overweight and obesity in NSW children TARGET MEASURE**

Our current approach

- The NSW Healthy Eating Active Living Strategy 2013-2018

STRATEGIC DIRECTIONS

1. Environments to support healthy eating and active living

2. State-wide healthy eating and active living support programs

3. Healthy eating and active living advice as part of routine service delivery

4. Education and information to enable informed, healthy choices
Our current approach – food and built environment

- Revise and enhance NSW healthy food and drink policies and nutrition guidelines
- Healthy food provision in government settings
- Healthy government advertising
- Healthy built environment guidelines
- Support Local Councils to promote healthy eating and active living
- Support Transport for NSW implement walking and cycling strategies
- Regional approach in local health districts
Incidental exercise and healthy food availability influences chronic disease risk

Average time spent walking for transport

Diabetes odds ratio

Source: Household Travel Survey
Sydney Transport and Health Study

- New bike path
- Two areas of inner Sydney
- On-line questionnaires plus 7 day travel diary at baseline, 12 and 24 months
- Bike counts at 2 intersections
New bicycle path
Advantages of being a Premier’s priority

• High level interest in what we’re doing
• Very strong leadership – Premier (PIU/DPC)
• Strong Ministry of Health leadership – good policy framework and management structure
• Local Health District infrastructure for implementation
Challenges to being a Premier’s priority

• High level interest in what we’re doing
• Very ambitious target – needs **BOLD** interventions
• Different priorities of other Govt agencies
• Partnerships are important
  – corporate/NGO
• Resources (Ministry, grants, LHDs)
Health in All Policies

• Health in All Policies is a collaborative approach to public policies across sectors that systematically takes into account the health implications of decisions, seeks synergies, and avoids harmful health impacts in order to improve population health and health equity.
Critiques of HiAP

• “All talk and little action” (Graves and Bialystok, 2011)
• HiAPs can be limited by being short term, not sustainable
• No framework for evaluation
• Statement of Support from 15 organisations
• What the NSW Government is doing
• Benefits of active travel
• List of Strategies
Children's Active Travel

What is Active Travel

Active travel means walking, cycling, scooting, skateboarding or any similar transport.
Our current approach

- Primary school program
- Reach: 84% of all NSW primary schools
- Impact: 76% have adopted 70% practices
<table>
<thead>
<tr>
<th>Primary Schools Program Practice</th>
<th>Practice Achieved (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Practice 11.</strong> The school promotes Active Travel</td>
<td>35.18%</td>
</tr>
</tbody>
</table>

Source: PHIMS, 03/10/2017
Conclusions

• Cycling has a ‘dangerous’ image problem
• Health Departments are just like any large organisation
• Health data are valuable
• Must have evidence based programs/policies ready to go
• No right approach – depends on the decision makers
Questions?

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