Encouraging E-bike use: the need for regulatory reform in Australia

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Outline

- Study Objectives
- E-bikes: A Primer
- Results from an initial E-Bike Field Study
- E-Bike Regulation
- Research Directions and Conclusions
Study Objectives

• investigate the current situation relating to power assisted bicycles in Australia and comparable overseas countries,

• explore the issues of relevance to the framing of regulations covering these vehicles, and

• identify any actions needed to enable these vehicles to make a larger contribution to the urban transport task
E-bikes: A Primer

• ‘E-Bike’ is a general term for electric bicycles which provide power assistance to the rider
  – May be either ‘power assisted’ or ‘powered’
• E-bikes have the potential to
  – provide mobility and health benefits for older or disabled Australians, and
  – substitute for car trips
E-bike markets

- Retirees (55 plus) – recreation/mobility/transport
- Disabled – recreation/mobility/transport
- Ineligible or who have lost their license for road violations – transport
- Commuters - transport
- Recreational market specifically tourism - alternative to walking within parks and around local tourist venues
- Hirers - as optional hire for those renting motor homes or boats, used by the hirer to travel short distance, whilst on holiday
- Youths (14-20) - as recreational vehicles and transport (mainly scooters).
An Initial E-Bike Field Study

- An initial field study was used to explore health issues related to Power Assisted E-bike use
- Rider was equipped with GPS (to provide location and speed data) and heart rate data loggers
  - Completed the same trip on a conventional bike, E-bike and car
Heart rate by bicycle versus car

Heart Rate versus Time

Heart Rate (bpm)

HR bpm Conventional
HR bpm PAB
HR bpm car

Time
Time in heart rate zones for car versus bike

![Heart Rate zones bar chart](chart)

- **Conventional Bicycle**:
  - Above max
  - Above target
  - In target
  - Below target
  - Below min

- **Power Assisted Bicycle**:
  - Above max
  - Above target
  - In target
  - Below target
  - Below min

- **Car**:
  - Above max
  - Above target
  - In target
  - Below target
  - Below min
E-Bike Regulation

• In Australia, the Australian Vehicle Standards (1999) regulate the supply of vehicles into the Australian market
  – those standards do not apply to “a vehicle propelled by a motor with a maximum power output of not over 200 watts”.
• In Victoria, vehicles with a motor of less than 200W are classified as a bicycle
  – subject to bicycle regulations: does not need to be registered nor the rider licensed and no distinction is drawn between a PB and a PAB
• Different regulations apply in different states
• In Europe, Canada and the USA more generous power limits apply
  – Evidence that restricts the supply into the Australian market
E-Bike Regulation - issues

- **200 W limit**
  - largely historic, not necessarily reflecting user needs
  - Difficult to enforce
- **Regulations based on defining technologies (e.g. power assisted bicycles, scooters) have difficulty accommodating technological innovation**
Regulatory challenges
Regulatory challenges
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Research Direction 1: Developing a research base for regulatory reform

• Develop a performance based standard as a basis for regulation of powered personal mobility devices in different application contexts:
  – On road
  – Off road (shared use paths)
  – Footpaths
  – Private Property

• Current research is exploring the performance envelope for human powered bicycles
  – Initial focus is on speed
Research Direction 2: Autonomous E-Bike

- Weight is a problem for many electric vehicles
  - Much less of an issue for E-bikes
- Development of a ‘green’ E-bike based on solar energy could have environmental advantages over charging batteries from brown coal generated electricity
Conclusions

• **E-bikes have a potential role to play in development of a sustainable transport system**

• **Regulations governing powered personal mobility devices need to be reviewed**
  – research is needed to frame a performance-based standards approach

• **Autonomous solar powered E-bikes could offer environmental advantages**