Incident Management Modelling Using Microsimulation with Adaptive Signal Control

ITS Asia-Pacific
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Outline

Research Objectives

Background

Methodology

Conclusions

Further Work

Acknowledgements
Research Objectives

- PhD Research: Evaluate how various ITS treatments can detect and respond to traffic incidents
- This Presentation: Determine how adaptive signal control can be used as an incident management tool
Background

- Incident Management
  - Incident detection
  - Motorway/Arterial network

- ITS
  - SCATS
  - VMS
Background

- Microsimulation Modelling
  - Test bed for incidents
- Link to SCATS with FUSE
Methodology

- Wairau Model
Methodology

- Link to SCATS with FUSE
Methodology

- Incident Modelling
Methodology

- Scenarios
  - Base
  - Incident on Motorway
    - SCATS adapting as usual
    - SCATS with operator intervention
Methodology

- Taharoto diversion
Methodology

- Northcote diversion
Conclusions

Taharoto Diversion

<table>
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<th>Base</th>
<th>Incident SCATS as usual</th>
<th>Incident SCATS with intervention</th>
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<td>Travel Time (s)</td>
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<td>501</td>
<td>615</td>
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Legend:
- **SH1 NB**
- **Diversion**
Conclusions

Northcote Diversion

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- **Base**
- **Incident SCATS as usual**
- **Incident SCATS with intervention**

**Legend**
- SH1 NB
- Diversion
Conclusions

- SCATS adapting as usual
  - Adapts, but not quickly
  - Priority not given to diversion route
- SCATS operator intervention
  - Small improvement over SCATS as usual
Conclusions

- Diversions routes can be optimised with SCATS

- Spare capacity on arterial network will affect effectiveness of diversion
Further Work

- Data collection
- Expand Model
- Additional Incident Scenarios
- Additional ITS Treatments
- Incident Calibration
- Incident Detection
- Network reliability performance measures
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