MEDIA RELEASE
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Groundbreaking Study Reveals Power of Connected Data to Transform Australian Transport Management

A new national research collaboration led by ITS Australia and the University of Melbourne has revealed how integrating connected vehicle data, AI, and telematics can dramatically improve road safety, reduce congestion, and cut emissions across Australian transport networks.

Released today, the report *Integrated Connected Data for Safer, More Efficient Transport Management* presents the outcomes of a multi-agency project supported by the iMOVE Cooperative Research Centre, in partnership with Department of Transport and Main Roads Queensland, Transport for NSW, Department of Transport and Planning Victoria, Transport Main Roads Western Australia, as well as the Transport Accident Commission.

> This is a landmark project for Australia's transport sector. The findings prove that connected data can deliver real-time insights that help traffic managers make safer, smarter and more sustainable decisions," said **Silje Troseth**, President of ITS Australia.

The project examined how real-time connected vehicle and bicycle data, combined with traditional traffic inputs and advanced modelling tools, can be used to predict road conflicts, optimise signal timing, improve cyclist safety, and provide accurate emissions estimates.

Key findings include:

- AI models using connected vehicle data significantly reduced delays and congestion at intersections.
- Cyclist data from See.Sense sensors identified crash risk hotspots, surface issues, and signal delays impacting vulnerable road users.
- Vehicle trajectory analysis provided a far more accurate understanding of emissions than traditional modelling demonstrating the benefits of traffic smoothing and electric vehicle uptake.
- A dynamic dashboard now enables transport professionals to visualise speed reliability and traffic performance using just 2% sample data.

Emily Bobis, Co-founder of Compass IoT, added:

> "This work shows the enormous value of public-private collaboration to unlock connected data and drive real-world transport improvements."

ITS Australia and the University of Melbourne is now calling on interested partners to trial the tools and models developed through the project, including AI-based conflict detection, dynamic emissions mapping, and multimodal signal optimisation.

> “By investing in integrated data systems today, Australia can create safer streets, reduce emissions, and prepare for a more connected, automated transport future,” said Troseth.

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Driver behaviour and safer streets

1

Distinct Driving Styles: The study identified 16 distinct driving scenarios based on vehicle type, time of day, and traffic signal status.

2

Green Signal Phases: Most vehicles maintained speeds between 50% and 70% of the speed limit, while a small percentage of drivers exceeded speed limits, particularly among passenger cars.

3

Red Signal Phases: A small but notable number of passenger cars crossed intersections illegally during red signals, while commercial vehicle drivers followed traffic rules more consistently.

4

Yellow Signal Phases: Most drivers stopped at yellow signals, but a subset, mainly passenger car drivers during rush hours, crossed at high speeds.

5

Driving Style Variability: Commercial vehicle drivers exhibited greater caution, while passenger car drivers displayed a wider range of behaviours.

6

Rush Hour and Vehicle Type Effects: Rush hour conditions and vehicle types significantly influenced driving styles, with passenger cars engaging in riskier behaviours more frequently during peak hours.

7

Intersection Safety and Efficiency: Understanding these driving patterns is essential for developing strategies that enhance safety and efficiency at intersections.

This study provides a comprehensive understanding of intersection driving behaviours, offering actionable insights to improve urban traffic management and road safety.

How cycling data made an impact

Bicycle safety and risk identification

Cycling safety is often compromised at busy intersections and high-traffic areas.

Key findings included:

- **Crash risks at intersections**
  59% of bicycle-involved crashes occurred at intersections.
- **Harsh braking and swerving hotspots**
  See.Sense data was a strong indicator of potential crash sites, effectively identifying hotspots for improvement.
- **Surface quality insights**
  See.Sense data highlighted poor road surfaces, identifying locations needing maintenance to prevent incidents.

Bicycle flow efficiency

Delays and slow speeds are a common challenge for cyclists, particularly in urban centres.

The data from See.Sense showed:

- **Longer delays at major intersections**, especially where car-prioritised signals dominate.
- **Better performance on dedicated bike paths**, which allowed higher speeds and smoother journeys.
- **Cyclist profiles identified through machine learning**, revealing patterns across commuter, leisure, and delayed cyclist groups.

Project partners