



Background and Purpose

ical element of productivity in the port system is the **predictability and reliability** of journey times. When an expected incident disrupts journeys, the total time has a **disproportionate** impact on people's lives.

f the most **disruptive and unpredictable** events that can have a major impact on the operation of the road network is a serious crash.

and Transport and Flow partnered to conduct a pilot study to investigate the cost of network delays caused by crashes.

The Social Cost of Crashes

social cost" of crashes in MBCM includes elements such as loss of life and life expectancy, loss of output due to temporary incapacitation, medical costs, and vehicle damage costs. **But it does not currently include any costs arising from the disruption caused on the road network due to crashes.**

fect that time spent in unexpected delays is valued at a much higher rate than normal travel time, an **"unexpected delay" multiplier of 3.2** was used, as recommended in TA RR 670.

calculated the value of the unexpected delays and congestion **with and without** the multiplier applied to the congestion component.

Crash 1

- Serious injury crash
- 2 pm on a weekday on the motorway (SH1)
- 2 lanes were closed for about 4 hours
- Delays lasted up to 6 hours
- Up to **22,000 vehicles** were affected
- Average delay about 40 minutes per vehicle
- About **16,000 vehicle-hours** of extra delay
- These maps demonstrate the build-up and decay in congestion

14:00



15:00



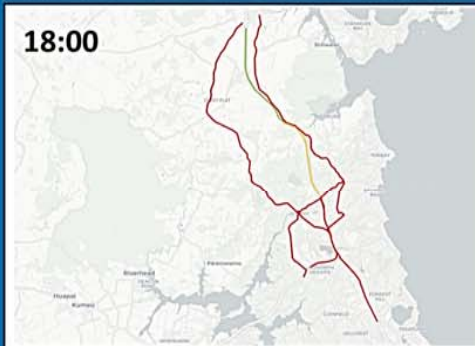
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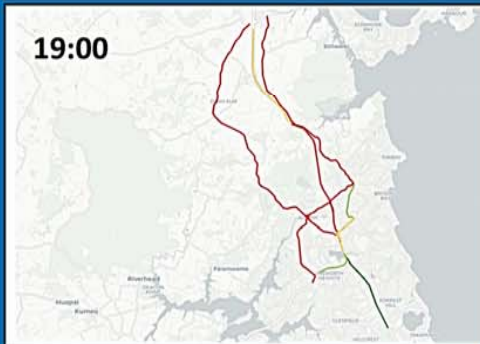
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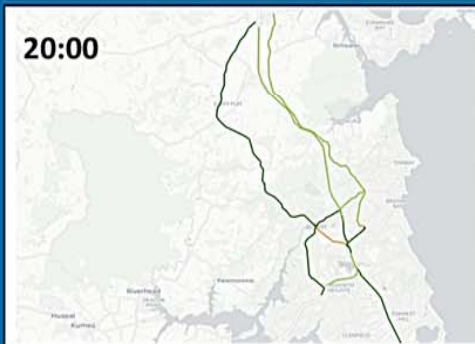
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20:00



What we did

We examined 4 crashes, reflecting different types and severities of crashes, on different road types.

We compared travel times with typical conditions to identify changes after the crash.

We identified those links where **all three of these conditions** were met:

1. Probable causal link to the crash
2. Clear sustained delays
3. Delay beyond day-to-day variation

For three of the crashes, in urban areas, the availability of alternative routes meant that the delay due to the crashes was moderate, estimated at between **60 and 180 vehicle-hours**.

One crash was far more disruptive...

What do you think the estimated cost of the delays due to Crash 1 is?

Write it here



Summary

This study has shown a **very large variation** in the delay due to crashes, which is **not determined by the crash severity alone**.

There can be **very large delay costs** attributable to crashes, which could make a **substantial difference to the economic analysis** of safety and road upgrade projects.

A larger research project would enable a more robust conclusion, which could lead to a **significant change in how crash costs are calculated** across New Zealand, with the inclusion of unexpected delay costs.

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