Transportation Big Data Analytics

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Big Data Reality

• Data supply and demand rising!

• New providers/services in the market

• Education gap –
  People want the value from IT and data (Big Data),
  challenge to bridge knowledge gaps

• Continuing technology shift

Traffic Tube Counts
fixed point data

Smart Devices
continuous flow data

The Cloud
Unstructured

Structured

Core Transport Domain Data
“what we know”, controlled, designed fit-for-purpose

Supplementary Transport Domain Data
often “what we don’t know”, associated, relatable, adjusted-for-purpose

Reliability??

• Asset Registers
• Asset Use Sensors
• Incident, Safety Records
• Licensing, Registration

• Social, Behavioural
• Economics
• New Technologies
• Environment, Weather
Analytics Journey

Ref: [http://www.rosebt.com/blog/descriptive-diagnostic-predictive-prescriptive-analytics](http://www.rosebt.com/blog/descriptive-diagnostic-predictive-prescriptive-analytics)
• We venture into the unknown, at high risk, high reward ("big data mining")

• This is a discovery activity, where we could succeed

• Be thoughtful, cautious and pragmatic with trends and signals
Focused principally on linking structured datasets:

- Travel Time
- Traffic Volume
- Asset Capacity

Use of agile traffic models of Auckland Motorways

Real-time analysis of the network demonstrating impacts of the Waterview Connection (including the business case)
Waterview Tunnel cuts travel time on Auckland motorways, says Simon Bridges

Auckland’s Waterview Tunnel has cut travel demand on State Highway 1 in the city by about 7 per cent, officials say.

There has been a corresponding increase on SH20 and SH16 and the redistribution “is resulting in a more efficient motorway system with around 8500 fewer hours each day of total travel time on the motorways alone”, Transport Minister Simon Bridges said.

“Around 60,000 vehicles are using the Waterview Connection each day, with more than 2 million vehicles now having travelled through the twin tunnels between the suburbs of Owairaka and Waterview,” Bridges said.

High volume of data leads to greater reliability
Example: Old Mangere Bridge
Other Notable Projects

• **Auckland Council; NZ Infrastructure Data Standards**

• **Choice App;** Smart Mobility app, real-time travel options

• **Modelling;** Road Asset Deterioration, Transport, Traffic

• **Bus Travel Time Reliability;** predictable journeys

• **Integrated Data Infrastructure (IDI)**
Transport Analytics

How we typically work now

- **Descriptive** - What happened?
- **Diagnostic** - Why did it happen?

Insight and Foresight - Huge Potential for NZ Transport

- **Predictive** - What will happen?
  e.g. use of statistical models to enhance precision.
- **Prescriptive** - How can we make it happen?
  e.g. strategic planning with strong Predictive analytics
Conclusions

Big Data investment:

• New Zealand has only started to realise value.
• Be clear on your requirements.
• Set a starting position on what you are looking for.
• Align your initiative to standards, where possible.

Big Data can become your most valuable IT investment:

• Define your analytics journey
Questions?

Transport Knowledge Hub
DATA

To join, please email
knowledgehub@transport.govt.nz

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Purpose

• Connecting data people with data people

• A community of people who work with transport data and information.

• We provide a forum for sharing knowledge and experience and work together to improve our access to transport data.
Capability

• Grow the capability of subject matter experts to put people and systems in place to share and make best use of transport data

• To help develop initiatives that actively align with and support NZ Transport investment objectives.
Membership

• The hub is open to anyone interested in transport-related data and information.

• To join, please email knowledgehub@transport.govt.nz

• Launch event in early 2018