NATIONAL TRANSPORT MODEL

Overview and Applications

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AECOM
ROD

Overview

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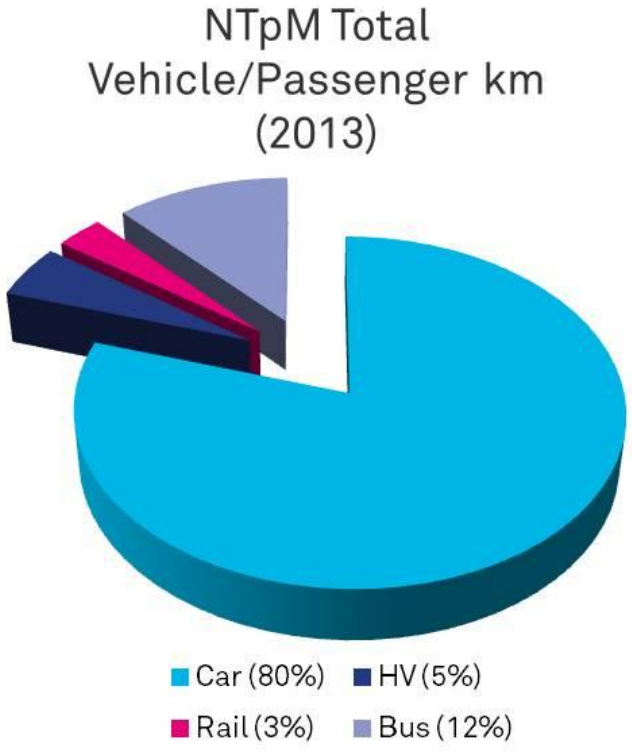
Overview

What is the National Transport Model?

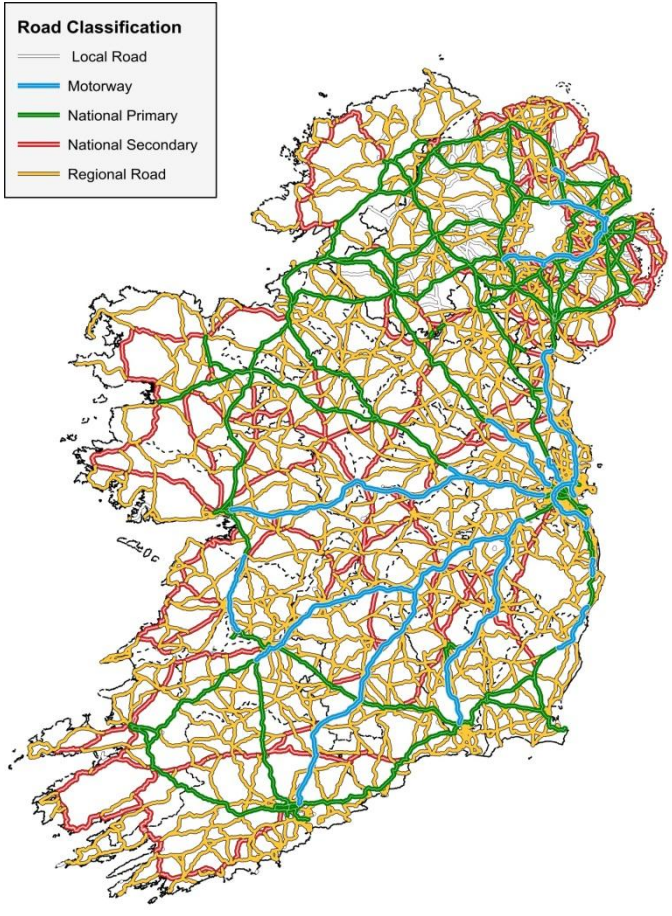
- A tool to forecast travel demand & patterns across Ireland
- Covers road and rail transport
- Focused on inter-urban and strategic trips
- Incorporates a view of the future



Overview

Why do we need a model?

- Robust method of testing national policies and programmes
- Provide a consistent base for the testing of national and major regional schemes
- Support the development of more local transport models



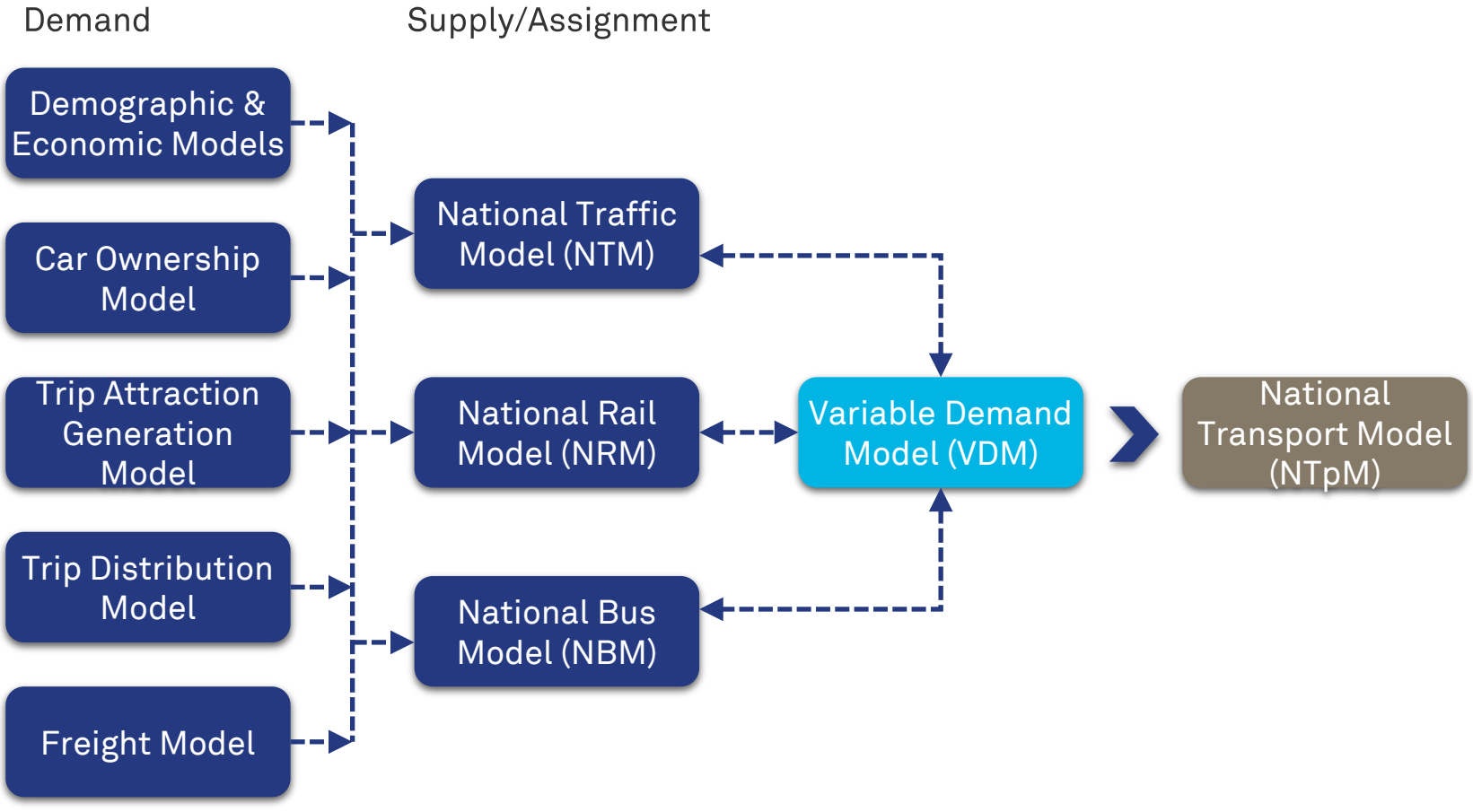
Overview

How does the model work?

- Reflects existing travel patterns
- Contains current and future planned transport networks (road and rail)
- Calculates cost of making trips both now and in the future

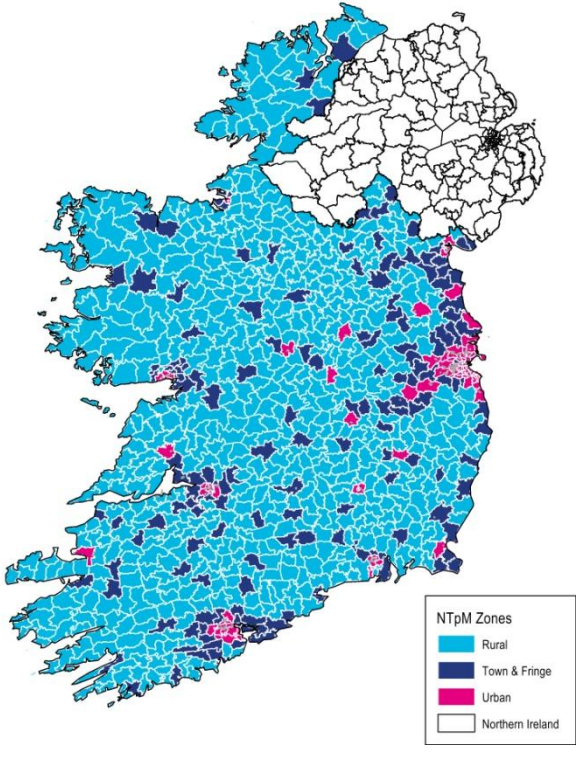
Structure

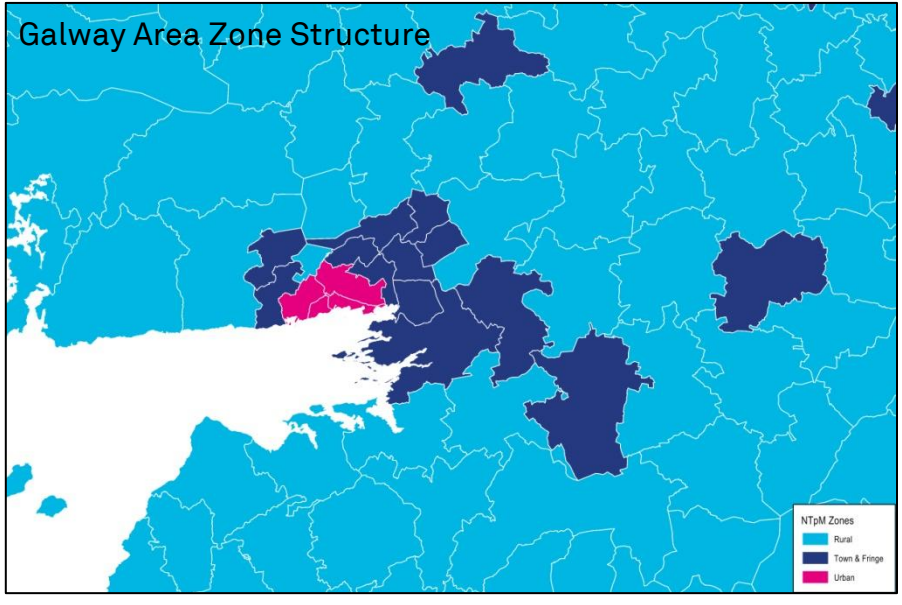
What are the building blocks of the model?



Structure

Representing Travel Patterns Using Zones

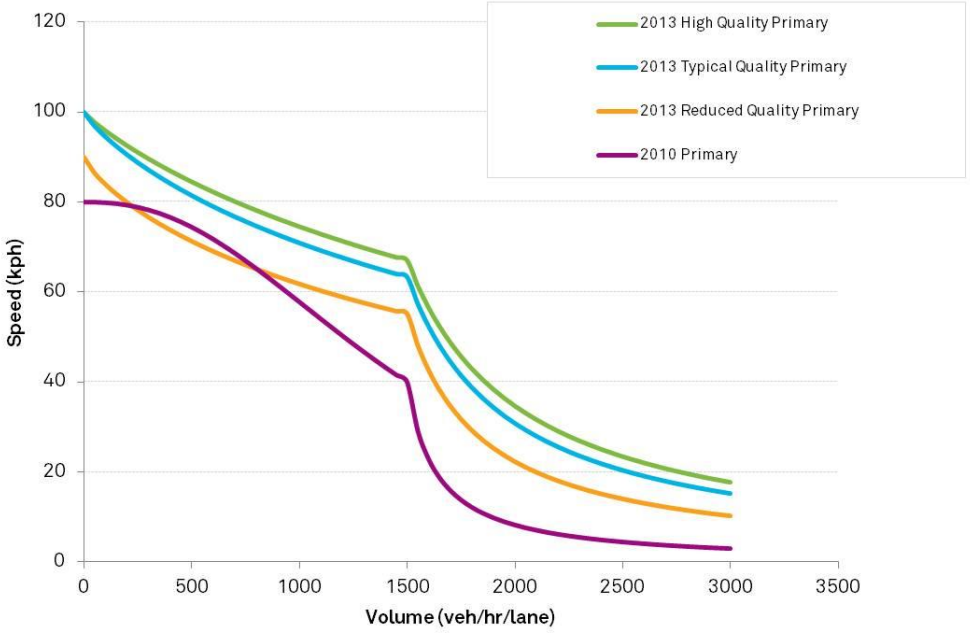




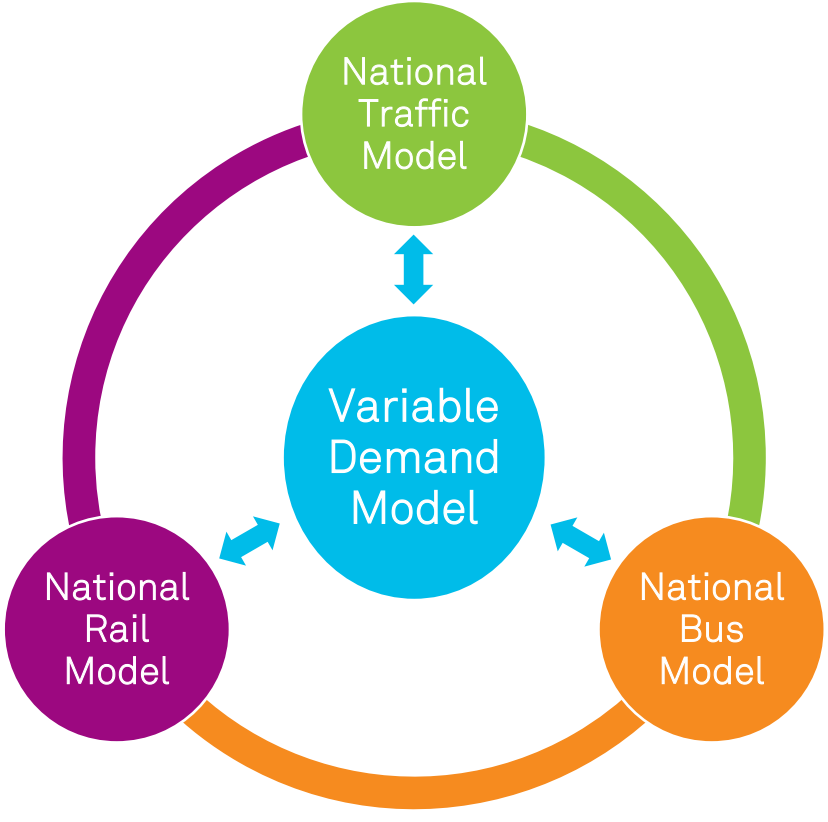
Building Blocks
National Traffic Model

- Some headline network statistics
  - 897km motorway
  - 298km dual carriageway
  - 4,110km single carriageway

- Ability to reflect route choice
  - Distance
  - Travel Time
  - Cost



Building Blocks
Variable Demand Model



APPLICATIONS

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Applications
Overview

Current Applications

- Project Appraisal
- Strategic Studies
- Demand Management
- Road Charging

Future Applications

- NTpM ‘Light Touch’
- TEN-T Analysis

Possible Applications

- Incident Management
- Event Planning
- Environmental

CURRENT APPLICATIONS

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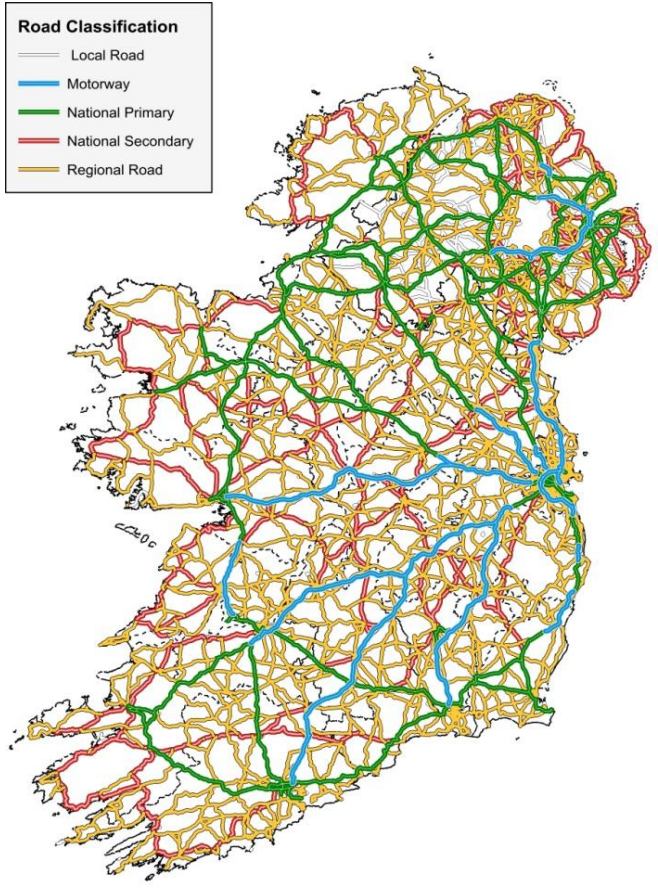
Applications
Current Applications

Project Appraisal

- Local Area Models
  - Starting Point Only
  - Basic Network/Zones
  - Demand Data
  - Used by various consultants
- Refinement Required
  - Local Traffic Survey Data
  - Network Refinement

Applications
Current Applications



Variable Demand Model

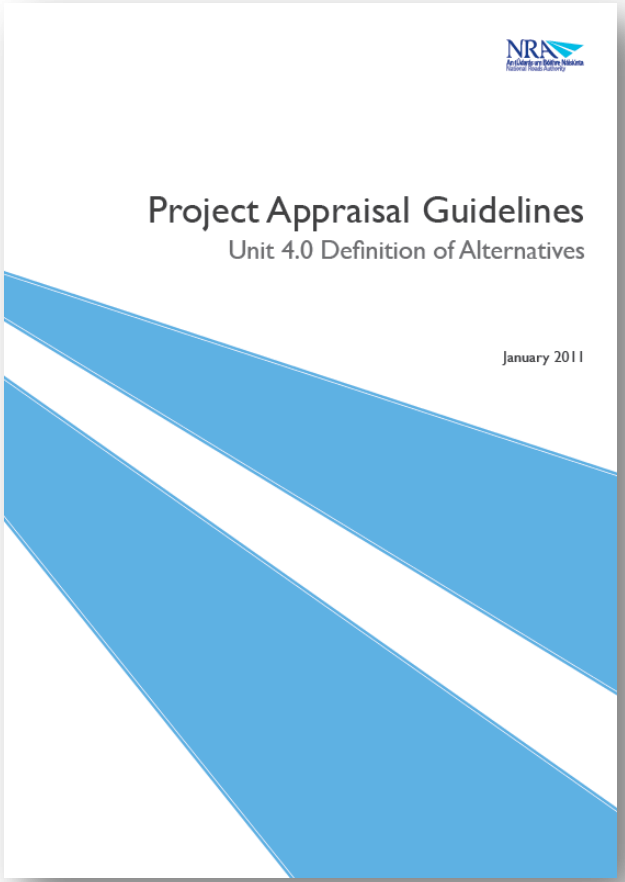
- Operates at a National Level
- Full cost of trip required
  - e.g. Dublin to Galway
- Required when:
  - Significant change in travel cost
  - Dense urban areas
  - Competing modes

Applications
Current Applications

Growth Forecasts
- Provides growth factors up to 2050
- Each zone in model
- Provides consistency

NRA Project Appraisal Guidelines
- Transport Modelling
- Traffic Forecasting
- Cost Benefit Analysis

http://www.nra.ie/policy-publications/project-appraisal-guideli/



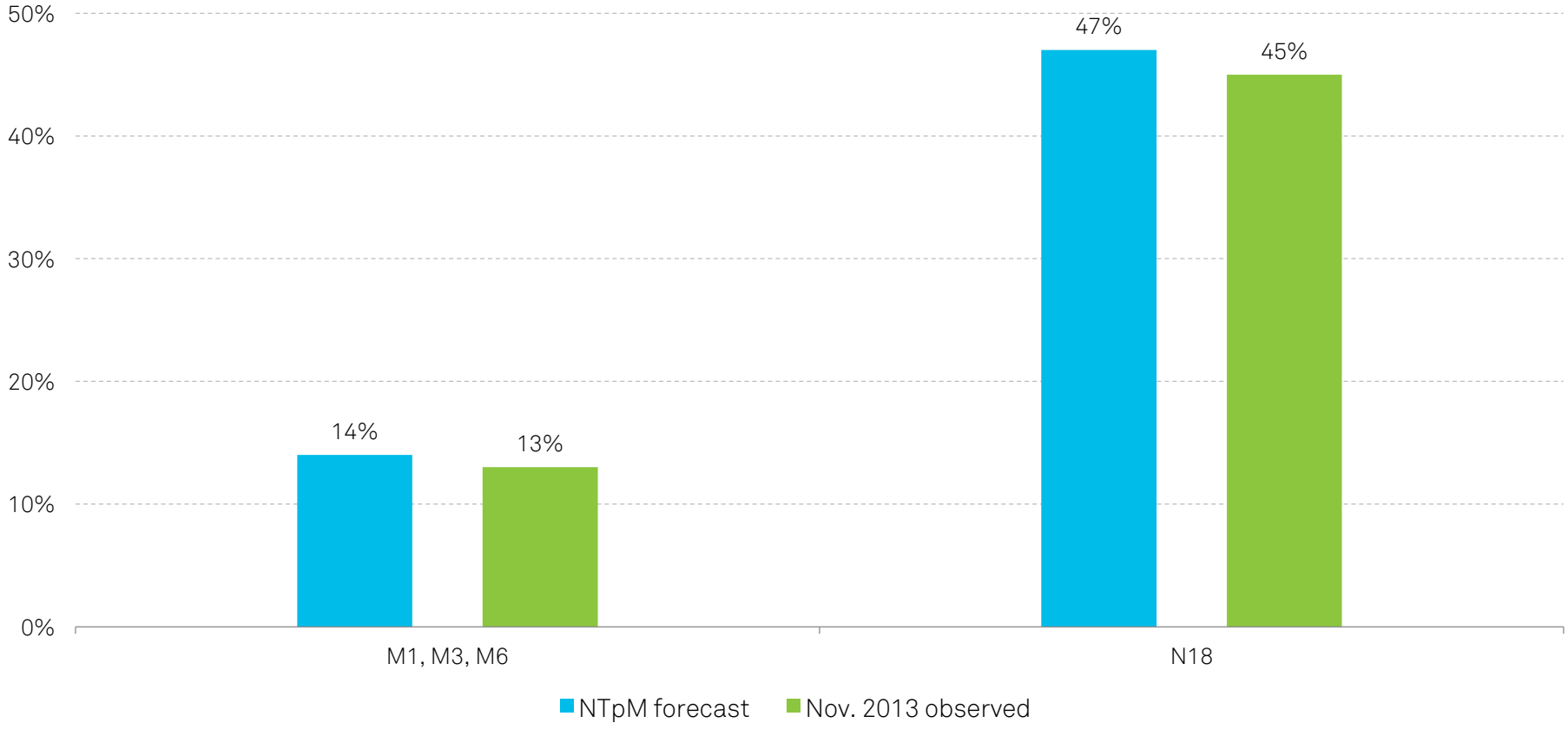
Applications
Current Applications

Current Applications

- Strategic Studies
  - N4-N7 Roads Study
  - M1/N2/M3 and Slane
  - Limerick Traffic Management
  - M50/N11 Corridor Study
- Road Charging Studies
  - M1 Drogheda
  - November 2013 Toll Holiday

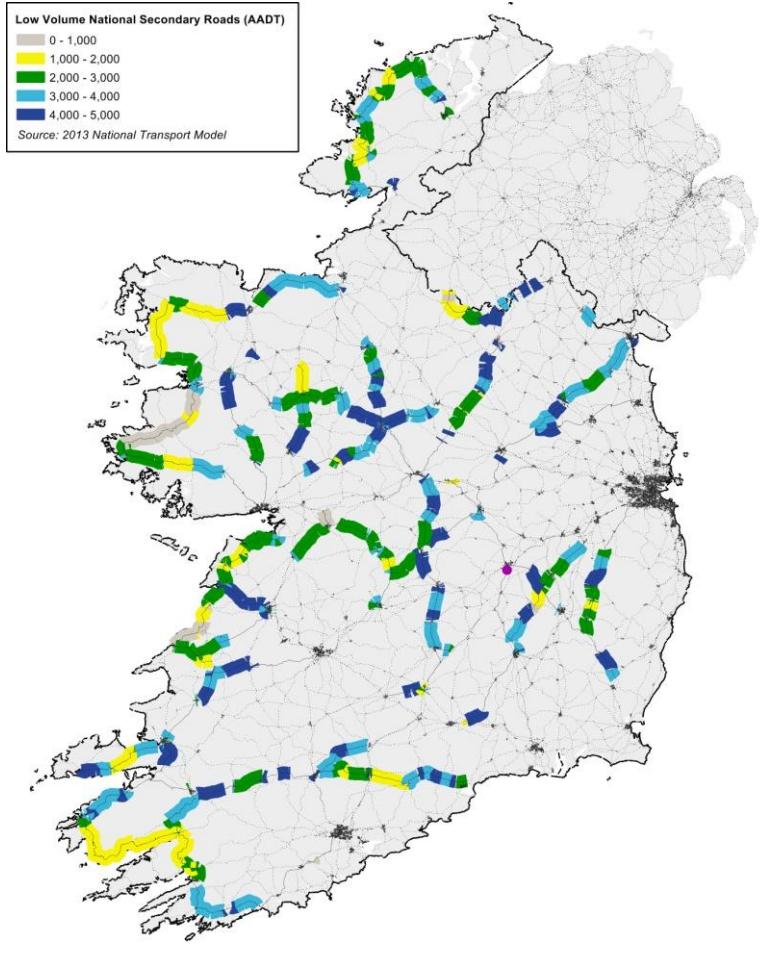
HGV Toll free November forecasts

Increase in HGV traffic through tolls - Modelled vs. Actual



Applications
Current Applications

- Identification of low volume national secondary roads (Type 3 single carriageway design)

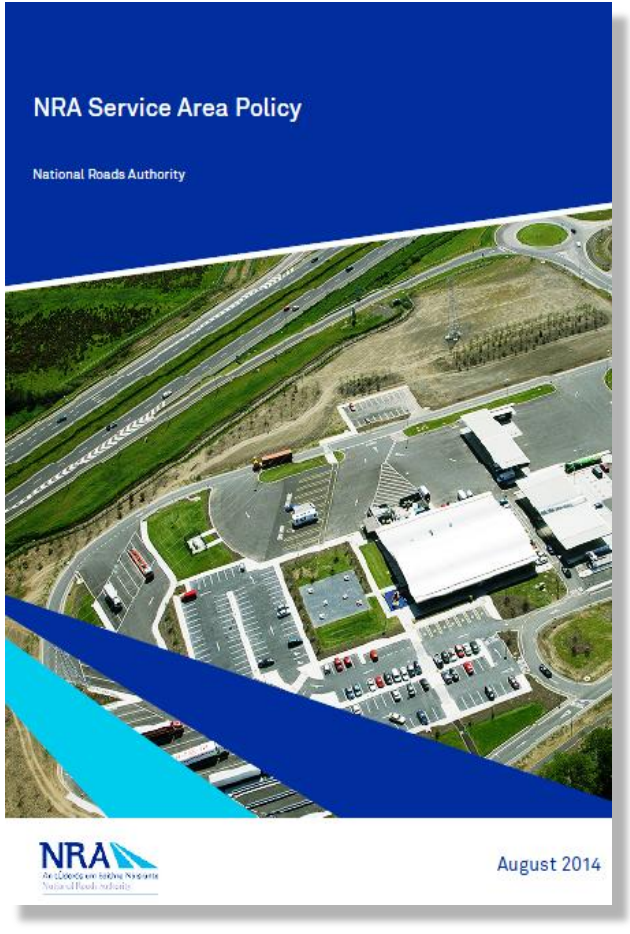


Applications
Current Applications

Demand Management

- M50
  - Demand Management Study
  - Condition of An Bord Pleanála
- NTpM Application
  - Fiscal Element of Strategy
  - Variable Demand Model
- Used with
  - NTA GDA Model
  - Adjusted Demand Matrices

Applications
Current Applications



Service Area Policy

- Identify approximate locations for new Service & Rest Areas

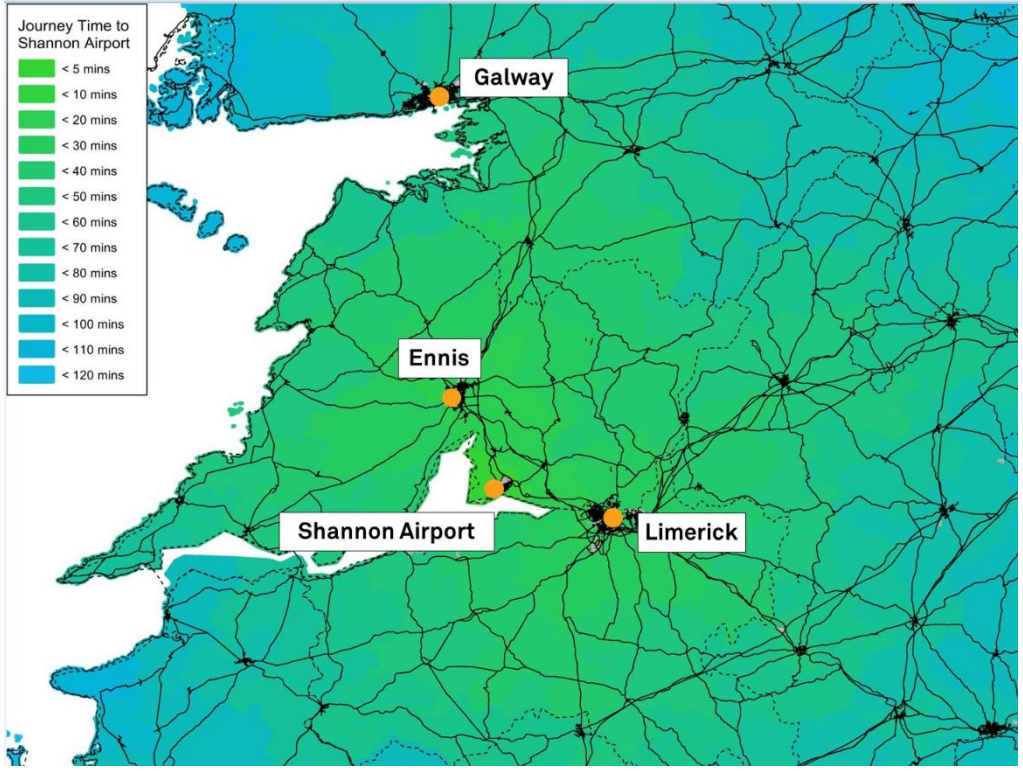
- Data from NTpM used to inform the study
  - Traffic Volumes (AADT)
  - Percentage HCV
  - Trip Length Distribution

www.nra.ie/policy-publications/service-areas/

Applications
Current Applications

- Transport Research Information Notes (TRIN)
  - Various Notes
  - Accessibility and Economic Potential

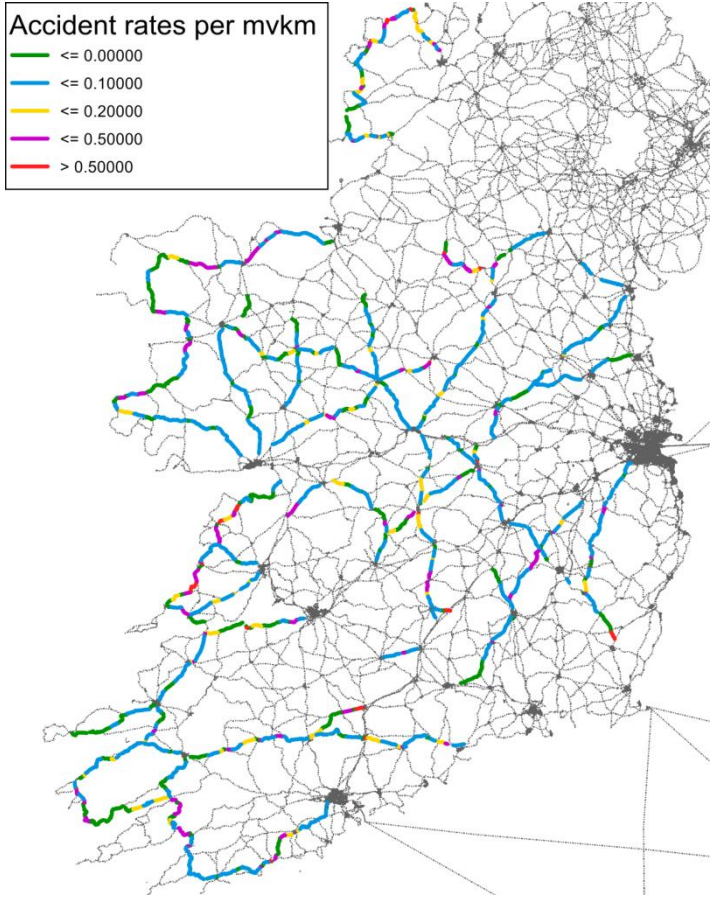
ww.nra.ie/policy-publications/transport-research-and-in/



Applications
Current Applications

DTTAS Speed Limit Reduction Impacts

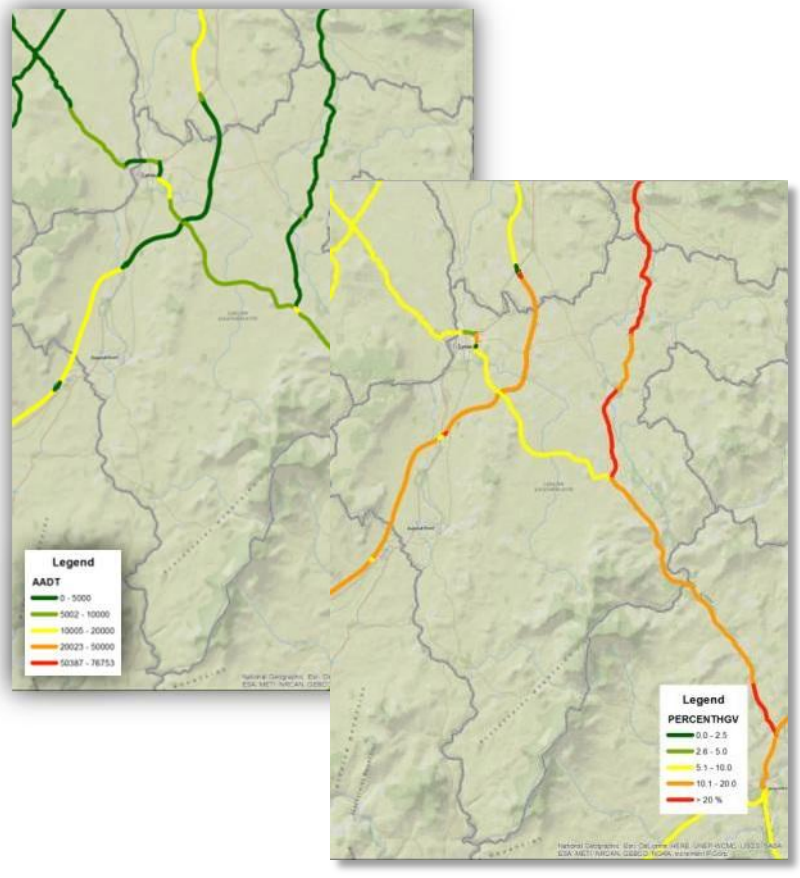
- Nat. Secondary Road
  - 100kph → 80kph
- NTpM was used to assess
  - Population of road users impacted by reductions
  - Journey Time Dis-Benefits
  - Safety Impacts



Applications
Current Applications

NRA Asset Management System

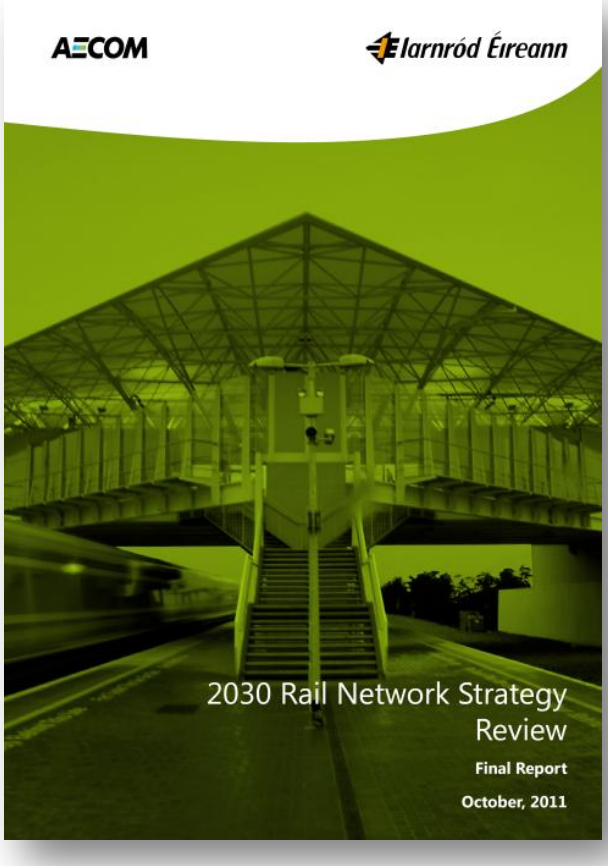
- Interoperability with Asset Management System
  - NRA GIS network link
  - Pavement Management System
  - Evaluation of Maintenance Needs



Applications
Current Applications

Data Sharing

- HGV user charging
- Data sharing with other agencies
  - DTTAS (SFILT)
  - Central Bank
  - Irish Rail
  - CSO Transport Indicators Group



Applications
Current Applications

Data Sharing

Applications
Current Applications

NRA Indicators Report

- Data provided from the NTpM;
  - AADT
  - LOS
  - Trip Duration
  - Trip Distance
  - National Road Vehicle kilometres

Applications
Current Applications

Planning Applications

- Planning Applications
  - Traffic Impact Assessment
  - Strategic Impacts
  - Consultation with Local Authorities

Noise Mapping

- Noise Mapping Models
  - Traffic Volume Data

FUTURE APPLICATIONS

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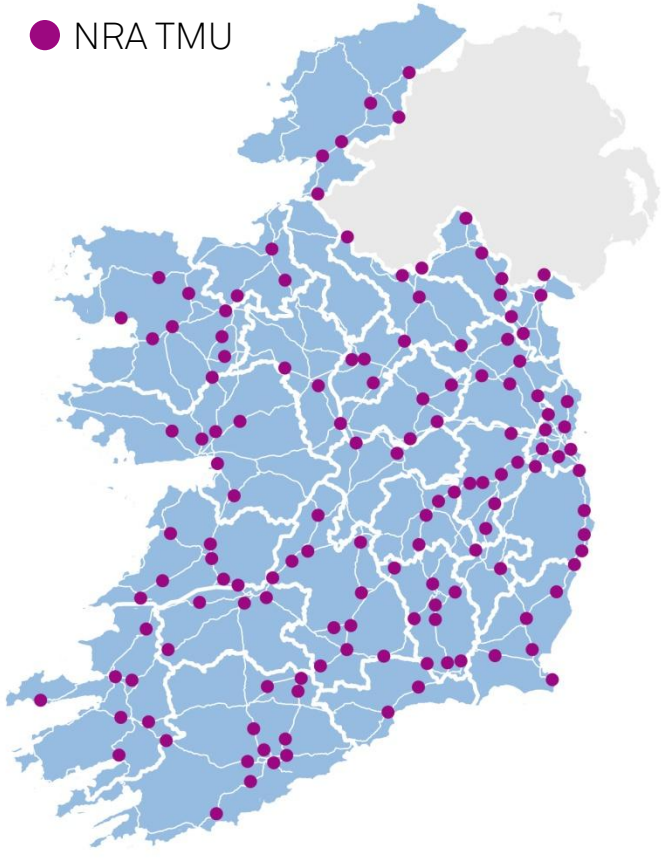
Applications
Future Application

NTpM 'Light Touch' Update

- Annual estimation of demand
  - Traffic data from NRA TMUs
  - Annual Rail Data
  - Aggregate Bus Data
- Application
  - Used to estimate total kilometres
  - Used to inform NRA Asset Management System

Next CSO Census – Full Update of NTpM

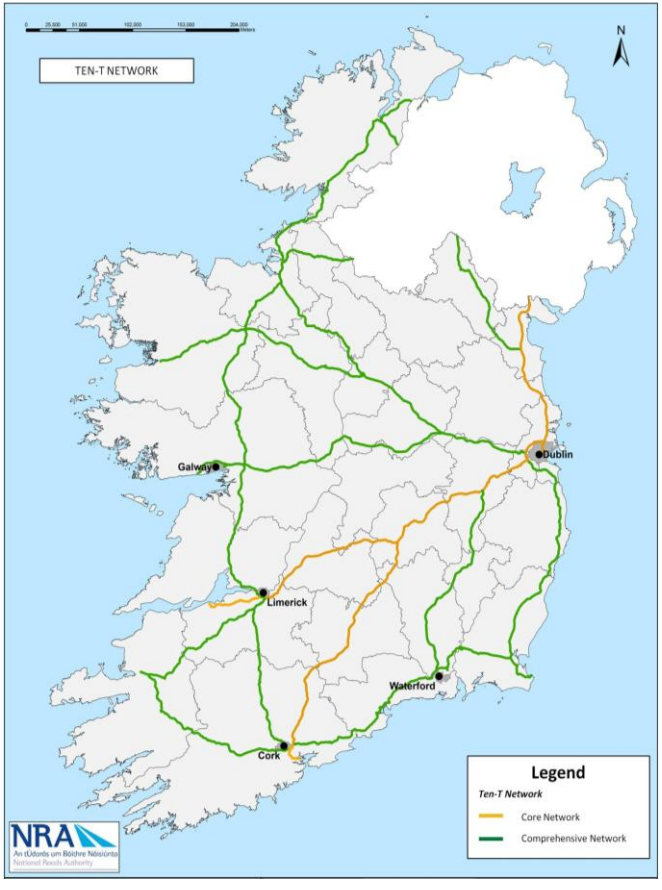


Applications
Future Application

TEN-T Network Analysis

- Trans-European Transport Network
  - EU Regulation
  - Road/Rail/Water/Air

- Road Network
  - 2030 Core Network
  - 2050 Comprehensive Network
  - Particular Standard



POSSIBLE APPLICATIONS

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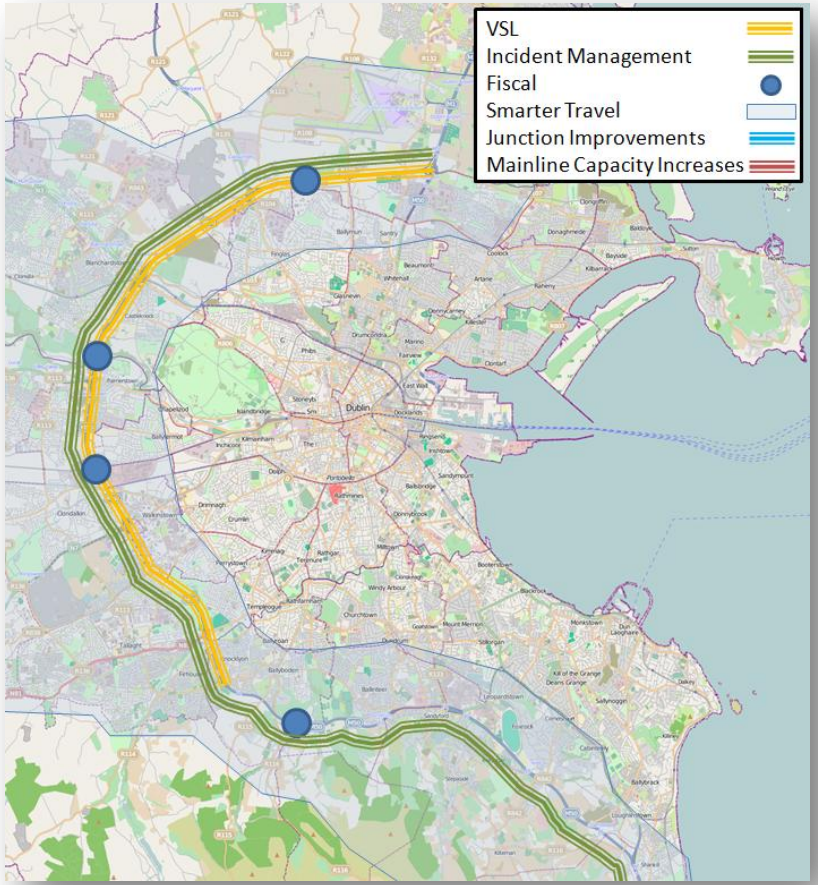
Applications
Possible Applications



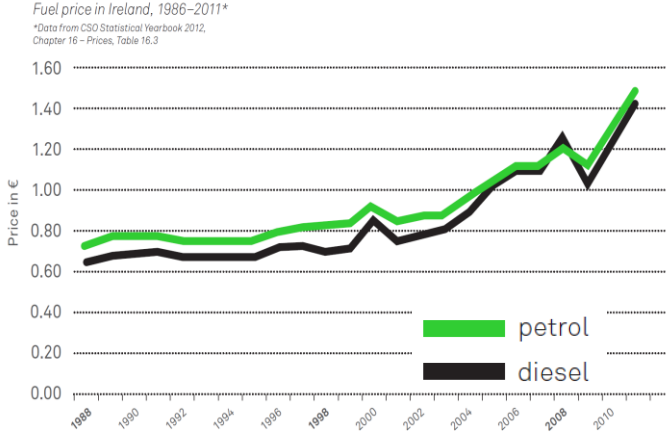
Possible Future Applications

- ITS Strategy
- Incident Management
- Major Event Planning
- Incorporation of Bluetooth site data
- Liaison with MMaRC Contractors
- Maintenance / Renewal Strategies

Applications
Possible Applications

Possible Future Applications

- Responses to changes in fuel prices
- Impacts of electric vehicle usage
- Forecasting PPP Subsidies



Possible Future Applications

- Environmental
  - Emissions models
  - ‘National Air Quality Model’
- Communication
  - Data dissemination
  - Academic research

Thank You

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