# Updating the TII National Transport Model and its Application in Planning the Network

TII National Roads Conference 2018

NTpM Update
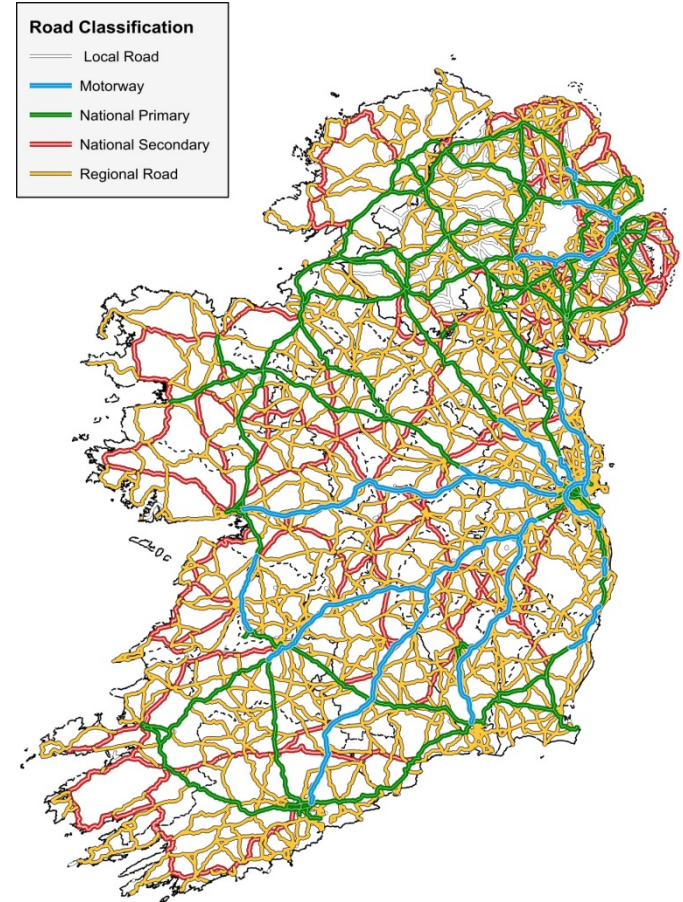
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# National Transport Model
## Overview

## NTpM Overview

- Transport model covering Road and Rail Transport

- Focused on inter-urban and strategic trips

- Ability to forecast strategic travel patterns across Ireland

- Flexibility to assess various views of the future

**Road Classification**

- Local Road
- Motorway
- National Primary
- National Secondary
- Regional Road

# National Transport Model - Update
## Introduction

## NTpM Update

- First developed in 2008 – Last updated in 2013

- Full update undertaken every 5 years (following the publication of Census Results)

- 2016 POWSCAR Database (Origin-Destination Journey to Work and Education by mode)

- Various Input Data (Freight, TII TMU, Irish Rail, Inter Urban Bus etc.)



NTpM Zones
- Rural
- Town & Fringe
- Urban
- Northern Ireland
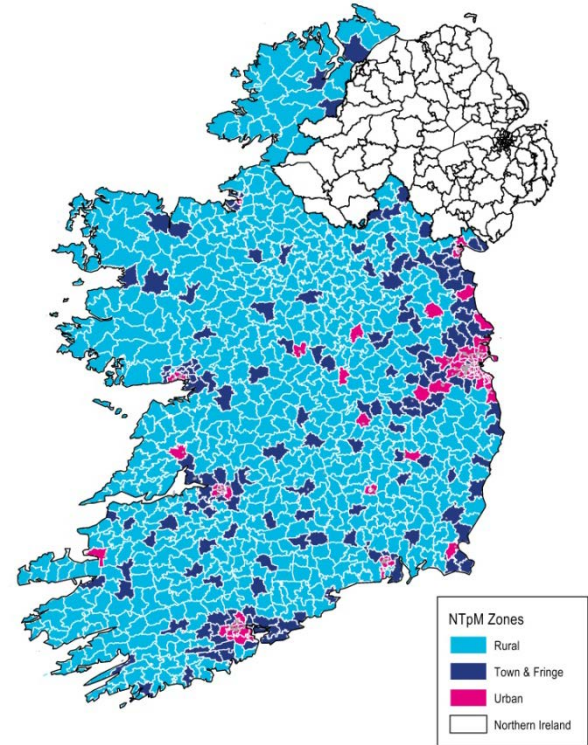
# National Transport Modelling Update
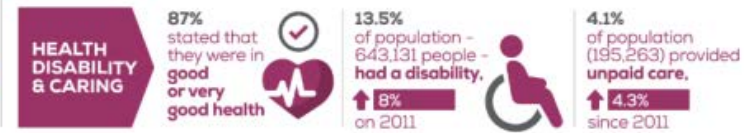## Transport Demand Changes 2011 - 2016

## Changes Impacting Transport Demand (Census 2011 – 2016)

- **Population** increase from 4.59m to 4.76m (3.7%)

- **Unemployment** decrease from 15% to 8.9% (-6.1%)

- No. of **Private Cars** increased from 1.89m to 2.03m (7.4%)

- Irish **Rail Passengers** increased from 37.4m to 42.8m (14.4%)

- **Port Tonnages** increased from 45.1m to 50.7m (10.8%)



An Phríomh-Oifig Staidrimh
Central Statistics Office

**CENSUS** 2016 SUMMARY RESULTS - PART 2

census 2016 RESULTS www.cso.ie

2,006,641 PEOPLE AT WORK

Females 929,967 ↑ 9%  Males 1,076,674 ↑ 12.8%

79 UNEMPLOYMENT BLACKSPOTS
18 in Limerick
9 in Waterford

545,507 RETIRED PEOPLE ↑ 19.2%
457,394 in 2011

**WHERE WE WORK**
+25,647 Health & Social Work
+21,877 Computer + Related Activities
-5,991 Public Administration & Defence
-5,361 Banking

1.88 million COMMUTING TO WORK ↑ 10.7%
174,569 USED PUBLIC TRANSPORT ↑ 21%
1,152,361 DROVE CAR ↑ 8%
56,837 CYCLED ↑ 42.8%
GETTING TO WORK

**HEALTH DISABILITY & CARING**
87% stated that they were in good or very good health ↑ 8% on 2011
13.5% of population - 643,131 people - had a disability ↑ 8%
4.1% of population (195,263) provided unpaid care ↑ 4.3% since 2011

# NTpM Update
# Enhancements

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# National Transport Model - Update
## Enhancements

## Model Enhancements

- Additional TMUs in Operation (40+)
  - Refinement of Speed-Flow Curves

- Journey Time – Google API

- National Household Travel Survey
  - Collaboration with the NTA

- Inclusion of Special Zones
  - Ports/Airport

- Future Scenarios
  - NPF / Current Trends / Technology



TMU Locations
by Road Type
- Motorways
- NP Dual Carriageways
- NP Single Carriageways & Regional
- National Secondary
- Urban Routes

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community.

# National Transport Model- Update
## Enhancements

## TII Traffic Monitoring Units

- Over 300 TII TMUs in Operation

- Wide geographical coverage

- Additional 40+ TMUs in place since 2013

- Used on an annual basis to inform the TII National Roads Indicators Report
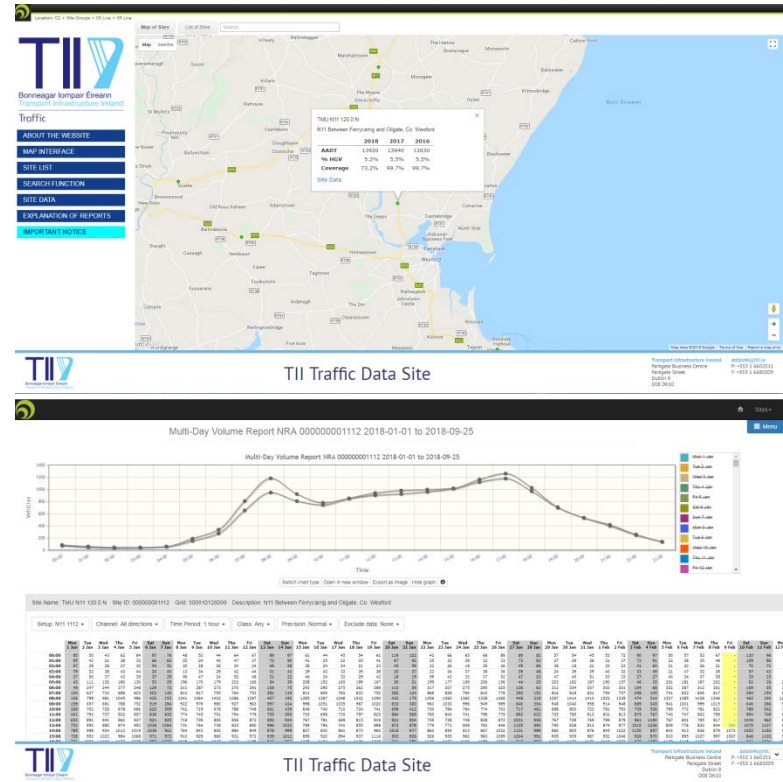
# National Transport Model - Update
## Enhancements

## Journey Time Data

Google Maps Distance Matrix

- Journey Times and Distance Data
- Application Programming Interface (API)

Example

- Irish Motorways
- AM Peak Average Speed



Motorway
Average Speed (kmph) - AM

| | |
|---|---|
| | ≤ 20 |
| | 21 - 40 |
| | 41 - 60 |
| | 61 - 80 |
| | 81 - 90 |
| | 91 - 100 |
| | ≥ 101 |
| ● | Census 2016 - Settlements 10,000+ |
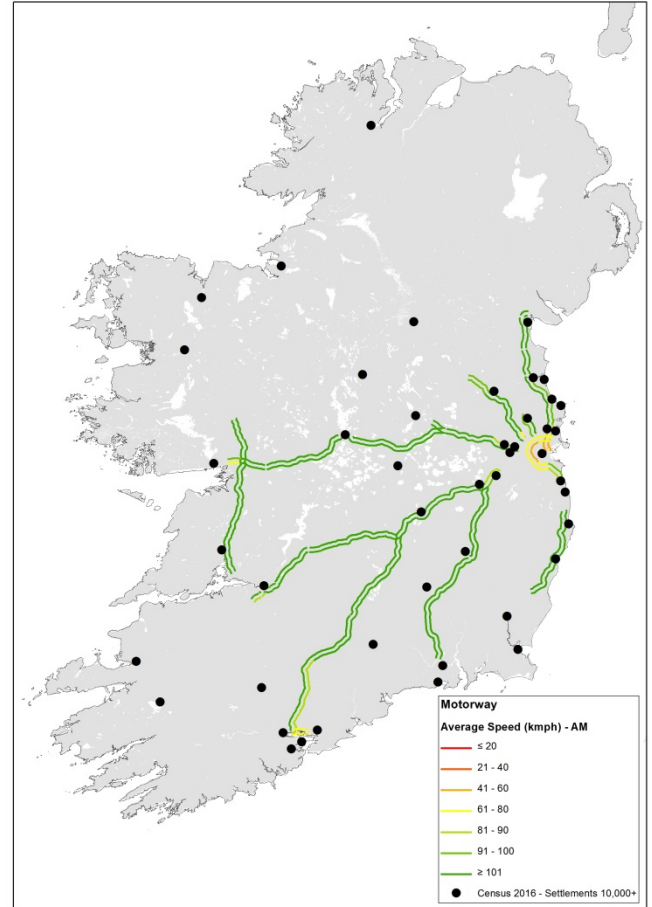
# National Transport Model - Update
Enhancements

## Zone Structure

Refinement of Zone Structure

- Isolation of Special Zones
- Flexibility to assess future growth scenarios
- Refinement of Zones along the M50
- Compatibility with NTA Regional Models
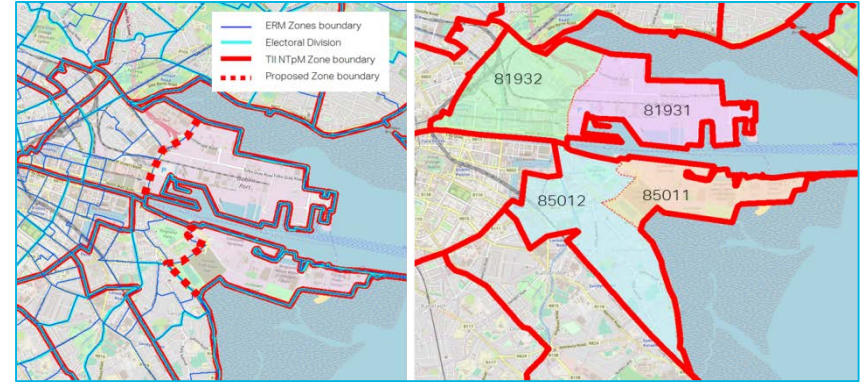


Special Zones Examples

- Ports – Dublin, Cork, Foynes, Waterford, Rosslare
- Airports – Dublin, Cork Airport, Shannon, Knock

# National Transport Model - Update
## Enhancements

## Flexibility to Assess Various Future Scenarios

National Planning Framework

- 50% population growth in Metropolitan Areas of Dublin, Cork, Limerick, Galway and Waterford

Current Trends

- Continuation of dominance of Dublin Region
- Urban sprawl

Technology Impacts

- CAV / CITS / Electrification of Fleet
- Increase or decrease of traffic on the National Roads network



Population based on Census 2016 data

Legend
Population 2016
- Up to 2,000
- 2,001 - 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 30,000
- Above 30,000
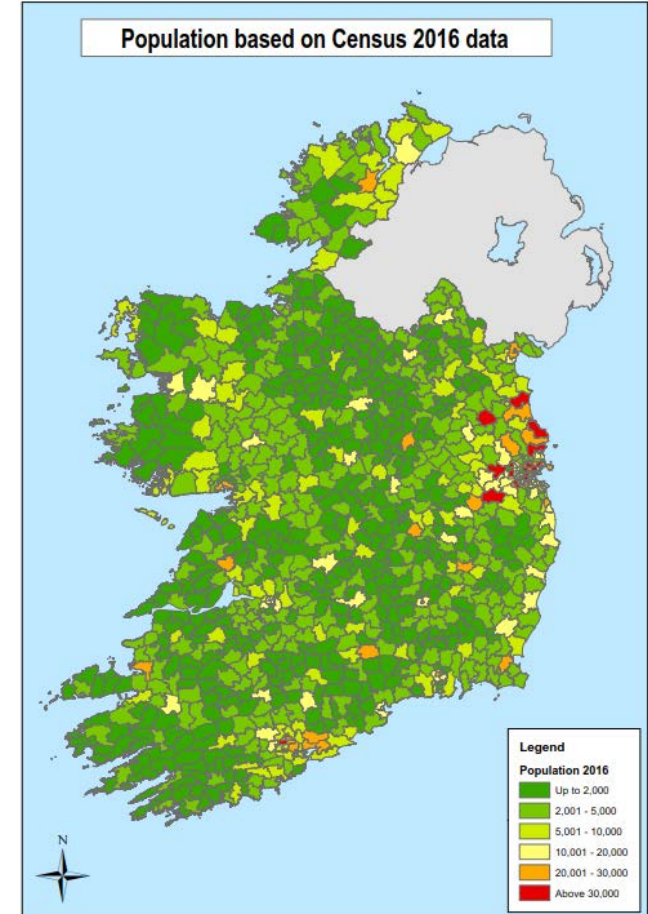
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# National Transport Model
## Current Applications


Demand Management


Local Area Models


Traffic Indices


Agglomeration


Data Sharing


Corridor Studies


Project Appraisal Guidelines


Transport Research


Indicators Report


National Roads Policy

NTpM Application
Example – NR2040

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