



# Quantifying Local Transport Needs & Access Levels

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## Problem Statement

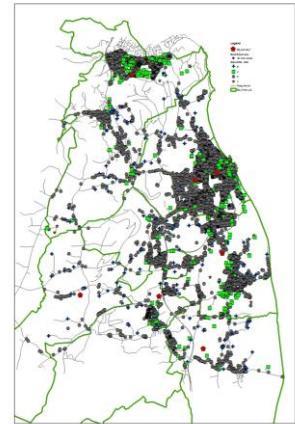
Using data from GeoDirectory and Census, define and quantify a measure of access to public transport in Ireland, more specifically in the Greystones area of Co. Wicklow, using established transport planning models in use in Australia and the United Kingdom.

## Data

Integrating data from a wide range of sources.

- GeoDirectory building data – 11,904 buildings
- Census 2006 – ED level – 38,368 people
- Local road network
- Pobal Deprivation Index
- Public transport network – Dublin Bus, Dart, Bus Eireann
- Public transport schedule

## Greystones, Co. Dublin



## Transport Needs Model

Statistical indicators of social disadvantage are weighted and combined to give an overall measure for transport need.

Originally based on Australian statistical data, mapped to Irish Census & deprivation index data and includes shortest path distance to Dublin City centre.

$$NS_{ED} = \sum_{i=1}^n \sum_{j=1}^m Z_{ij} * W_j$$

## Public Transport Accessibility Levels

Developed in the UK, used extensively for transport planning.

Measures the shortest path from a house to stop, measures the frequency of the transport mode.

Aggregated at house and ED level.

$$AI_x = \sum_x \sum_{y=1}^n \sum_{i=1}^n (EDFx, y, i)$$

$$ED_z = Median\{\sum_{z=1}^n \sum_{x=1}^m AIx, z\}$$

## Transport Needs with PTAL Level

Using the PTAL level for an ED as the accessibility indicator gives a measure of access to public transport as a mitigating factor for social disadvantage rather than a distance value. Those without access to transport are more likely to be socially disadvantaged.

Applied PTAL Impact metric

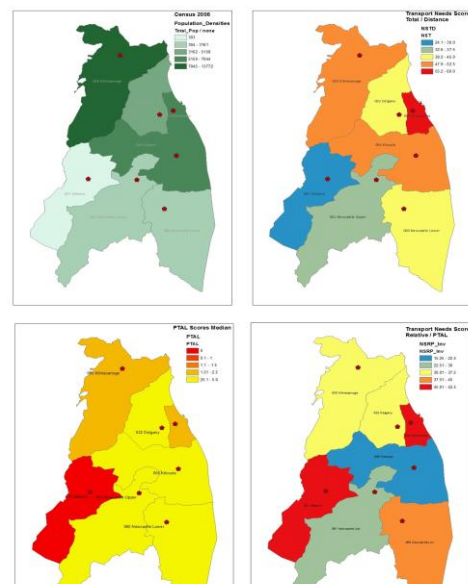
$$PTAL\_Impact_i = Max\{0, (50 - PTAL\_ED_i)\}$$

## Findings

Needs score using Total indicator values and distance is too highly correlated with population

Needs score using Relative indicator values appears to be a good measure of actual transport need.

## Results



## Conclusion

PTAL provides a good measure of access to public transport in Ireland but the route network data is currently not adequate to provide full coverage for a shortest path algorithm.

Transport Needs Model with PTAL impact indicator may be very useful in understanding the spatial distribution of transport needs across the country. This model could be used to develop the Pobal Accessibility Index.