Task 8c   External Model

Scope

Introduction

The study area is the area within which all travel will be represented (the area of the HTS) and is bounded by:

- Waiwera, ALPURT B2, SH17, Coatsville, Riverhead, and Waimaukau in the north, and

- Hingaia Rd bridge, Pukekohe, SH1 (Bombay to Ramarama), the Papakura boundary, west of Clevedon, and Maraetai in the south.

Outside the study area and within the region (plus Pokeno and Tuakau), there will be a coarser zoning system. For this (external) area, travel by mode to/from/through[1] the study area will be represented. There is specific interest in the travel between the study area and some key towns (zones) in the external area (e.g. Helensville and Warkworth).

Trips to/from places <u>outside</u> the Auckland Region will be modelled using simplified procedures.

Travel entirely within the external area will not be represented.

Survey Data

The survey programme involves:

- most surveys being inside the study area (including the HTS);

- OD surveys on the study area boundary intercepting road and public transport trips;

- addresses outside the study area obtained in the surveys will be coded to the external zones.

The model will thus include matrices by mode of travel to and from the study area and networks providing for these journeys.

External Trips within the Region

The Demand Model comprises trip ends, mode choice, distribution and time-of-day choice. In principle, any segmentation by VOT that occurs for internal trips will be applied to the external model. The exception may be trips by persons resident outside the study area for which only the intercept survey data, with less detailed information, are available.

Growth

Because we represent only those trips generated by residents of the external zones which are attracted to the Auckland study area (and vice versa for Auckland residents trips to the external zones), the trip end models are not strictly of relevance. We therefore have the choice of using some broad indicators of development (population, employment) or simply using the trip end models to achieve the same end. As not all the data needed may be available for the external zones, the feasibility of this will be reviewed – it is largely an issue of the interface with ASP3.

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1 Note: these need to be identified early on. It may be most convenient to deal with these using the simpler external to the region processes.

Whichever approach is adopted, it is likely that there will be additional economic and accessibility influences on travel growth and we shall seek evidence for this from historic counts. It is likely that some additional factors will need to be included in the growth model to allow for this[2].

A further refinement may also be possible for HBW travel, which would seek to reflect the effects on trips between the study and external areas of changes in the balance of employment and workforce inside and outside the study area[3].

Mode Choice and Distribution

The external data/zones will be included in the calibration of the distribution/mode choice models. Distribution will be constrained to trips between the study area and the external area but, for these journeys, mode choice will be under no constraint. Insofar as the data supports it, the estimation procedures will be sensitive to the mode choices made to/from the external areas and will reproduce the mode shares.

Time-of-Day Choice

These will simply follow the approaches developed for the study area. If there is any complication, it is that the definition of the peak becomes ambiguous for long journeys which are on the outer reaches of the network.

Networks and Assignment

Skeletal transport networks will connect the external zones to the study area. Because travel data for the external area will be (mainly) limited to travel to and from Auckland, not all traffic on the road network will be represented, and link speeds will consequently be fixed and insensitive to traffic volume changes[4].

The assignment procedures will otherwise not differ from those used in the internal area.

Trips External to the Region

The various surveys (household and roadside study area cordon[5]) will intercept travel to destinations outside the region, which will be coded to a community level. For modelling purposes these trips will be allocated to region boundary crossing links (i.e. regional cordon zones) and in forecasting an average regional growth factor applied.

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2 In principle, these might take the form of mode-specific income/GDP and accessibility elasticities but the feasibility of this will depend on the historic traffic and public passenger data, and there is therefore some doubt about how much can be achieved.

3 For example, an increased concentration of employment in the study area might be expected to lead to more in-commuting.

4 In forecasting this will not prevent the testing of scenarios in which changes to external link speeds are input to the model.

5 It is expected that there will be little or no public transport travel, but the procedure will be designed to include such trips if necessary.

Task 10.1　　Specification of Additional Factors

Scope

This task develops the specification for additional factors for future travel between the external area and the study area - there may be economic, accessibility and workforce/employment balance changes which influence travel growth more than the growth in population and employment themselves.

Inputs

External Cordon Survey database

Historic and 2006 count data

Historic and 2006 employment and population data

Processing

Using the above data determine whether there is evidence for additional growth factors

If this is the case, develop these factors and the overall approach for implementing them

Outputs

Additional factors and procedure for implementing them

Note

Task 10.2   Matrices and Growth Factors for Trips External to the Region

Scope

This task develops the base year matrices for trips external to the region that cross the study area boundaries and the growth factors that are applied to these trips to produce the future year matrices.

Inputs

External Cordon Survey database

Historic and 2006 count data

Processing

For the base year matrices:

- extract from the survey data the matrices of vehicle trips that cross the regional boundaries and pass through the external cordon points.

For the growth factors determine, for each external cordon site, modelled time period and direction:

- the traffic that enters/exits the region at each crossing point;
- annual growth factors using the historic count data;
- the future year matrices by applying the growth factors.

Outputs

Growth factors

Note