

Task 3.1.3 Validation of the Land Use Model Projections

Objectives

We shall shortly be commissioning new planning projections. This paper sets out the requirements for validating the forecasts of the model. There are two aspects:

- an analysis of the forecasts trends from 1996 to 2021 for reasonableness and consistency;
- an analysis of the forecast trends from 1996 to 2001 against the 2001 census outcome.

Data Requirements for 1996-2021 Validation

Data

It would be convenient if the data were in spreadsheet form to facilitate later manipulation. Data are required in various dimensions:

- by zone and by territorial local authority area (TLA);
- for 1996, 2001 2006, 2011 & 2016 (assuming these years are available);
- for the three alternative future scenarios;
- data items required are:
 - total population;
 - population by age group (broadly compatible with the new model requirements - a grouping to the nearest 5 years would be ok);
 - workforce (by place of residence), if conveniently available;
 - total households (and, by inference, household size);
 - households by category (as required by the current model);
 - total enrolments;
 - enrolments by primary, secondary and tertiary categories;
 - total employment (by workplace);
 - employment by industry sector grouping.

In order to reduce the data requirement, the table below indicates the different data combinations which would be most useful.

Analysis

The expected analyses of the above data would be as follows:

- at an aggregate TLA level:
 - comparison of total population forecasts and population by age group with Statistics NZ projections: *to establish consistency and identify the implications of the migration assumptions;*
 - comparison of regional employment trend with external controls: *to confirm consistency;*
 - trends in household size, *to verify reasonableness of household formation model;*

- trends in overall activity rates (workforce/population), *to verify reasonableness of workforce projections;*
 - trends in the ratios of enrolments by category to the population in the relevant age groups, *to verify reasonableness of enrolment projections;*
 - relative trends in workforce and employment for the 3 scenarios, *to verify consistency;*
 - trends in employment by sector, *to check reasonableness;*
 - trends in households by category, *to check reasonableness;*
- at a zonal level:
- scatter plot and map % changes in zonal values for each item: *will be used to identify and check outliers and to explore geographic consistency;*
 - scatter plots and map % changes in family size and activity rates: *will be used to identify and check outliers and to explore geographic consistency;*
 - establish maximum zonal population growth rates permitted by land capacity, and compare with population projections: *to establish the nature of the impacts of this constraint.*

Suggested Data Organisation

Data Item	By TLA	By Zone	For Central Scenario	For 3 Scenarios	For 1996 and 2016	For 1996, 2001, 2006, 2010, 2016
<i>Aggregate analysis of 5 year trends for 3 scenarios</i>						
Total population	X			X		X
Total households	X			X		X
Workforce	X			X		X
Total enrolments	X			X		X
Total employment	X			X		X
<i>Zonal analysis for central scenario over 20 years</i>						
Total population		X	X		X	
Total households		X	X		X	
Workforce		X	X		X	
Total enrolments		X	X		X	
Total employment		X	X		X	
<i>Aggregate analysis by category for central scenario over 20 years</i>						
Population by age	X		X		X	
Workforce by age	X		X		X	
Households by category	X		X		X	
Enrolments by category	X		X		X	
Employment by sector	X		X		X	

Data Requirements for 1996-2001 Validation

The 2001 evaluation of 1996 projections will need to be carried out at area unit level (AU) as well as by TLA. It will take an overview of the level of deviation across area units rather than focusing on individual area units. The emphasis will be on identifying broad parameters of deviations between projected and actual for settlement types (eg. inner high density residential CBD, inner urban residential, established residential, greenfield residential) as a preliminary input into the 2001 update

The first tasks would be to produce statistics for the main data items as shown in the table below, the main intention being to identify how the predicted growth rates for each item in each TLA compares with the outcomes. For population it would be no doubt useful to evaluate the Statistics NZ projections too. The focus of the analysis will be on issues identified in the initial review.

Data Organisation

Data Item	By AU	By TLA	For 1996 and 2001
Migration by age	X	X	X
Population by age	X	X	X
Households by category	X	X	X
Workforce	X	X	X
Enrolments by category	X	X	X
Employment by sector	X	X	X