

Task 2.11 Commercial Vehicle (CV) Modelling Specification

Overall Structure

The approach will be based on applying growth factors to a current year CV matrix.

The 2001 CV matrix (for medium and heavy CVs) will be developed from a number of data sources using matrix estimation techniques:

- ❑ the matrix from the present (old) model,
- ❑ classified counts for 1996 and a sample for 2002,
- ❑ additional classified cordon counts at major CV generators.

Growth factors will be developed from a trip end model consistent with a number of studies, replacing the present trip end model which is less than convincing. Such models reflect changes in the distribution of population and employment but not the wider economic and logistics trends. At present it is unclear what evidence can be found for these trends, but part of the project will be to seek such information. We have information on the national vehicle stock as a starter, but we need to establish historic trends, if not for Wellington then for other interurban and urban contexts in NZ.

Base Year Model

CVs (excluding vans and utes):

- ❑ take current WTSM matrix as 'prior'; add external survey CV trips;
- ❑ assemble screenline classified count data and counts for specific generators,
- ❑ use matrix estimation to improve fit.

Vans and utes:

Query what data we will have.

Forecasts

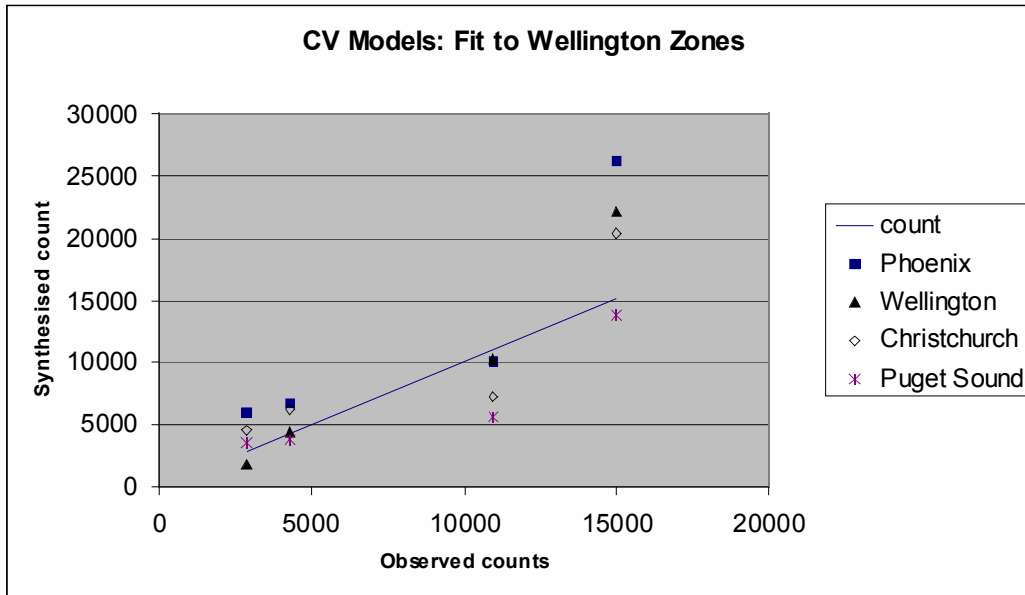
CVs (excluding vans and utes)

The figure below is a re-analysis of information presented in a Transfund NZ research report on Commercial Vehicle Usage and Forecasting. It shows four models, including the present Wellington model, which appear to fit equally well four Wellington zones for which trip generation data was collected/available.

The table below compares the 3 models which are most mutually consistent and intuitive, with high trip rates for those types of employment likely to be major CV generators, lower trip rates for other employment categories and low trip rates for residential areas. The present Wellington model does not reflect these features and seems unconvincing (but I note that there is some ambiguity about the meaning and scope of each employment category in each model).

Given the reported unreliability of the Wellington data and models, I would feel more comfortable in adopting for the computation of growth factors, an inferred set of trip rates drawn from other studies, as they seem to be reasonably compatible regarding the relative influence of the different parameters.

It would also be very helpful to find historic evidence of the growth in commercial vehicle travel in Wellington. Perhaps also vehicle fleet data?



Parameter	Values			Implied Relative Trip Rate
	Phoenix	Christchurch	Puget Sound	
Retail employment	1.21	1.45-1.56	0.76	High
Manufacturing employment	1.28	0.38-0.68	0.79	Medium/High
Transport & communications	1.28		0.79	High
Community & services employment	0.51	0.14-0.34	0.33	Low
Agriculture, mining & construction	1.57	-	-	Insufficient evidence
Households	0.39	0.11-0.2	0.19-0.32	Very Low

Vans and utes

Forecasting options appear to be:

- using some variant of the CV formula (some of the international papers give comparative formulae for different vehicle categories),
- and perhaps also including an economic growth term (cf the UK approach).

It would again be helpful to obtain data on growth – conceivably base this on the vehicle fleet?

General Growth Trends

As the following graph of NZ trends shows, the commercial vehicle fleet has grown as rapidly as the car fleet, much more rapidly than either GDP or population (and therefore, we may presume, employment). The suggestion is therefore that simply forecasting growth on the basis of employment may underestimate the growth in truck travel.

Comparative Trends Indexed to 1970

