Task 8.5 Final Calibration

Inputs
Calibration files.
Calibration software set-up
Preliminary calibration conclusions.

Processing
Our analysis indicated that, for Wellington, the best structure for HBW trips was simultaneous mode choice and distribution, while for all other purpose, pre-distribution mode choice was the correct structure (Figures 6.1 to 6.3 show the alternative model structures).

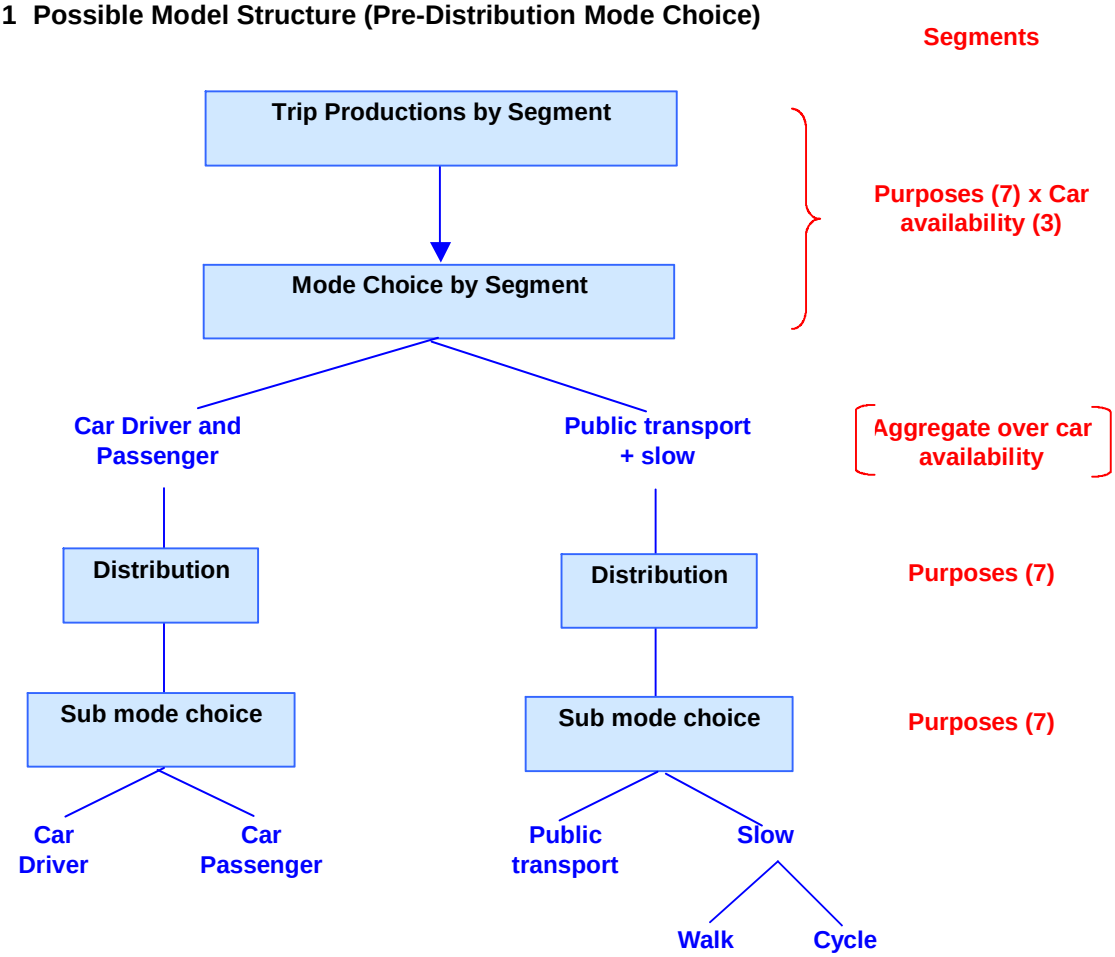
In the final calibration, the major new step was to introduce the slow modes into the model structure, as discussed in the appendix. We also included external trips.

The other emphasis in the final calibration was tuning the fit of the models in the study area, focusing on the geographical fit and whether we needed to segment the model parameters by geographical area. We looked at known modelling issues, such as:

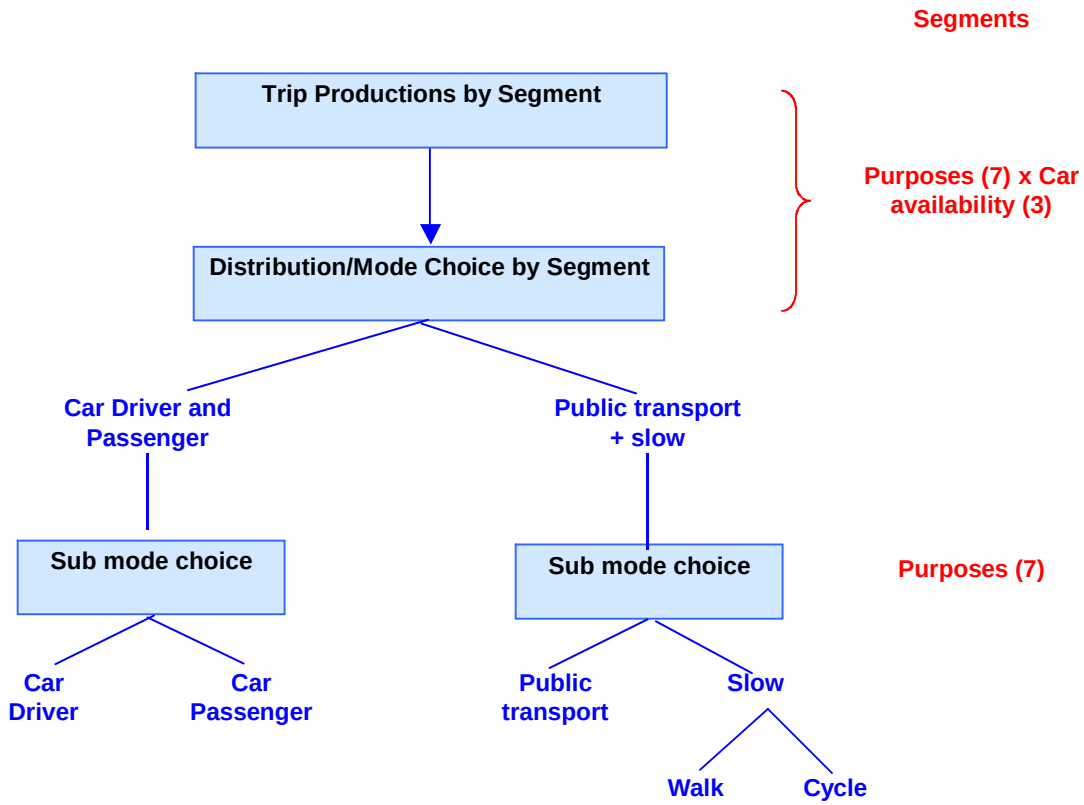
- the performance for CBD trips, counter-peak direction trips for HBW and intrazonal or intradistrict trips;
- for the distribution model, we checked average trip lengths/costs by sector and the distributions by sub-area in case we were getting things wrong in some places;
- where there were key screenlines across which we needed to get the traffic flow correct, then we structured the trip matrix to identify the screenline crossing flows.

Outputs
Final model.
Report.

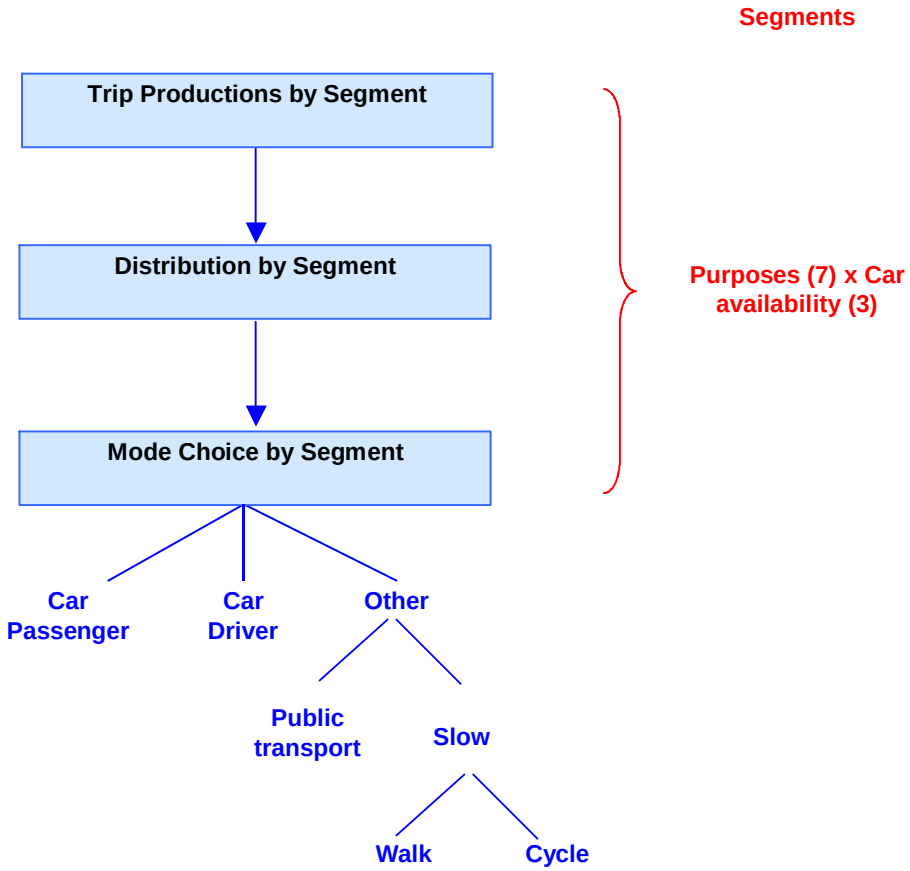
■ **Figure 6.1 Possible Model Structure (Pre-Distribution Mode Choice)**



■ **Figure 6.2 Possible Model Structure (Simultaneous Distribution and Mode Choice)**



■ **Figure 6.3 Possible Model Structure (Post Distribution Mode Choice)**



Appendix Incorporating Slow Modes

The treatment of slow modes cannot be precise in a strategic model where most such trips are intrazonal, because:

- intrazonal times are arbitrary;
- for short distance interzonal trips the public transport times are dominated by centroid connector access times;
- the proportions of slow mode trips will be an unpredictable and variable function of the size and context of the zone.

Preliminary tables for HBW trips show that intrazonal trips comprise:

- 8% of all trips,
- 18% of cycle trips
- 18% of walk trips
- 9% of car trips
- and there are no intrazonal public transport trips.

Only 3% of walk trips are longer than 5kms, while 55% of cycle trips are longer than 5kms.

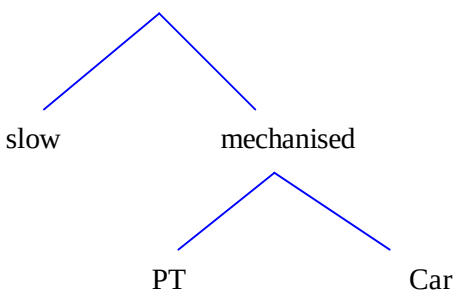
Modelling Option 1

For a pre-distribution mode choice model (Figure 6.1), the easiest treatment would be to eliminate slow mode trips at the production mode choice stage. This would involve adding slow modes to the production mode choice model and estimating a slow mode modal constant for each zone. This also has the enormous advantage that the preliminary model calibrations which we have carried out to date are all valid.

It would not however provide a slow mode trip matrix nor would it be sensitive to walk/cycle policies. But it would predict changes in slow mode trips as a result of car and PT strategies, but we were concerned that the response would not be reasonable - because slow modes serve only the shortest trips it could be too sensitive to strategies affecting longer trips, which cannot be distinguished in this approach.

This might be managed by applying a smaller scaling parameter to the walk mode (effectively putting it at a higher hierarchical level than the car/PT choice – see the figure below). However, we would not be able to estimate the scaling parameter – it would be a guess and it was not quite clear how to do this convincingly.

- **Modified production mode choice model structure**



Modelling Option 2

The second option would be to follow the Figure 6-1 strategy (as that developed for London in 2001). In this structure, slow modes were combined with PT, but we also considered combining slow modes with car as an alternative option.

Conclusions

We tested modelling option 2 without success. The logsum costs passed up to the distribution model were of such a form that they undermined the distribution model calibrations. We attribute this problem to the unreliability of the cost/distance data for slow modes in strategic models with relatively large zones.

As a result we calibrated the distribution models on the car and public transport costs (as appropriate) but we included the slow mode trips in either the car or public transport trip matrices, based on an analysis of the degree of competition between the slow modes and these two alternatives. Subsequently, we used mode share factors as a function of distance to extract the slow mode trips.