Task 13.4 Tuning/Correcting the Models

Hopefully the stepwise process of checking the models will have thrown up coding errors and such like and these will have been corrected as we go[1]. At the end of the process we might expect to have identified:

- in the trip ends and the preceding sub-models, we may have identified and noted a few specific biases/errors introduced in the fully-synthetic process;
- in the first step of the distribution/mode choice (DMS) validation we will have been able to determine whether these errors have significantly undermined the performance of the matrix generating sub-models; as the other inputs (the networks) have not been changed at this step, the fully-synthetic trip ends are the only cause of new errors; at this point we should therefore be able to have a clear perspective on whether these preceding errors have a sufficiently significant impact on the matrices as to be worth correcting, although we should only action corrections if we can see that these identified errors have contributed to significant errors in the independent validations;
- the time period validation will add to this picture for the time period matrices;
- the second step of the DMS and time period validations and the generalised cost validation will then tell us how the combination of the synthetic matrices and the demand/supply iteration process cause the model to 'drift' from the observed matrices and the initial generalised costs; in the worst case this could imply that the DMS calibrations were biased by using inappropriate road speeds (for example, this would be the case if the 'drift' caused car trip lengths to change significantly or PT mode shares to shift significantly;
- the independent data validations would identify the quality of the model fit, and it should be possible to infer by how much the issues identified above would contribute to their solution; at this point there will be other problems: major misfits to screenlines, over or under estimation of demands which are not attributable to the errors identified in preceding steps;
- finally, the sensitivity tests may show up problems in model sensitivities;
- given all of this information, we shall need to decide on our strategy for model tuning, which may include:
  - determining some overall matrix adjustment factors to match the counts (or a matrix estimation process);
  - network tuning;
  - including addition locational adjustment factors in some sub-models;
  - re-estimating some of the sub-models (this would potentially be a major task) on revised network data;
  - once the corrections have been made, the model running/validation process should be repeated.

[1] Generally – we need to be careful as it could be a very inefficient process requiring lots of repeat model runs, in which case it would be better to accumulate corrections before re-running.