Task 7.4 Trip Attraction Statistical Analysis

Inputs
Estimation file.

Processing
Software: SYSTAT.

Models will be zonal attractions expressed as a linear function of planning variables plus a contribution from zone types either as a segmentation or as additional variables. Typically the variables will be:

- HBW: employment
- HBED: schoolplaces
- HBSh: retail employment, other employment and population
- HBSo: as HBSh
- NHBO: almost anything
- BU: employment by type

Calibration:

- it may be sensible to use aggregate geographical areas rather than zones, perhaps 30 or 60 areas (review) because sparse data implies that individual zonal attraction estimates are subject to large errors (sampling errors)
- the calibration process is regression of observed attractions against planning data, but this is a tortuous process:
  - the statistical measures are unreliable and biased for this sort of data, so care should be exercised in choosing the explanatory variables;
  - it is always worth graphing the relationships before accepting the models;
  - it is always worth looking at residuals and removing outliers before firming up on a model; significant outliers should be specifically studied for special zonal characteristics;
  - if observed values cover a very wide range, it is often useful to estimate models for sub-ranges (eg <10,000 trips, >10,000 trips);
  - produce correlation matrices: be very wary about high correlations between the explanatory variables (which means that the statistics may not be able to distinguish between 2 or 3 explanatory variables) so it must rest on the analyst's judgement;
- check that the estimated total attractions are in an appropriate relationship to the productions;
- analyse models for geographical bias/fit based on some predefined geographic aggregations and/or the sector aggregations; incorporate any geographic k-factors;
- produce range of model calibration fit statistics (eg R^2, T-statistics, figures showing predicted vs observed trip attractions at zonal level and for sector aggregations);
- report.

Outputs
Trip attraction models.
Report.