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Minimizing errors in travel demand O-D matrices developed using origin – destination survey data

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O-D Matrices developed based on road side origin – destination surveys are used as the basic information for estimating travel demand between different transport zones. As planning and development of future transport infrastructure and services depend on the demand estimates derived from O-D data, it is important to understand the possible errors that may have been included in the origin – destination matrices.

There will be no errors if the entire population of trips could be surveyed between each of the transport zone. However, due to practical limitations; financial, time and resource constraints, only a sample of vehicles are surveyed at selected survey locations. It is important to select the sufficient number of survey locations so that any trips between a given pair of transport zones are not omitted. Due to the insufficient number of survey locations or due to smaller sample size and method of sample selection it is possible to under estimate certain trips and over estimate certain other trips.

A methodology to determine the preferred number of survey locations is presented. When all preferred locations could not be surveyed, a method to identify the best way to distribute the given number of survey locations such that errors can be minimized is also presented. When preparing the final O-D matrix for the entire region, it is necessary to make appropriate adjustment for possible multiple counting at different survey locations. An algorithm to identify the multiple counting locations and ways to handle errors due to sample size are proposed.

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