

## 09-150: Trip Table Estimation From Counts: Black Magic or Science

Topic Area: Travel Demand Modeling

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Abstract: A important tool for transportation planners is the ability to estimate trip tables of vehicles that, when assigned to a network, are consistent with observed counts. Such a tool allows the development of trip tables using readily available count data and requiring a limited schedule and resources, that can support project and other analysis when it is acceptable to assume that the vehicle trip tables will not change as a result of changes in the network.. The mathematical tools that can process counts into trip tables have been popularized as the ODME (Origin Destination Matrix Estimation) module in Caliper's TransCAD software or the ME (Matrix Estimation) module in Citliab's Cube software...However the background behind these tools is not widely understood. The ability to better understand and explain this process might lead to a wider acceptance by planners, policy officials, and the general public.

The objective of this paper is to discuss:

- The statistical background for the matrix estimation method and its similarity to real world examples.
- The derivation of the mathematics for the matrix estimation process and how its derivation is related to other commonly used travel demand model steps such as the gravity model for trip distribution and the logit model for mode choice ;;
- How the model should be applied in an iterative process with assignment, how the use of an existing table can improve the results, and how many counts are necessary to use the method, and.
- A discussion of how the method has been used in existing models.

Keywords: matrix estimation; counts; trip tables