

Summary:

Construction of basis OD matrices for 1999 freight flows between municipalities in Norway

Basis origin-destination (OD) matrices for freight transport constitute a convenient grouping of information that can be used directly in statistical analysis and as input in freight transport models. The objective of this report is to describe how data from production and commodity statistics for the 435 Norwegian municipalities and the Norwegian foreign trade statistics was used to construct basis OD matrices for freight transport between all pairs of municipalities. OD matrices were constructed for 11 commodity groups that together cover all freight transport along road, by train and by boat. The main challenge of this task was to construct a model that can be used with these statistics for representation of the logistic pathway. A model was built where the basic principle is to balance data for transport in, out and within the municipalities such that the tonnes sent equals the tonnes received (i.e., mass balance). Doubly constrained gravity models were implemented with the balanced data and additional count statistic data to put constraints on the OD pattern at 15x15 aggregate zoning level. The gravity model was applied for generation of OD-patterns for the commodity groups, where the cost elements of the gravity models were adjusted to improve the resulting transport distance distribution in coherence with the counts statistics data. The balanced OD matrices were subsequently evaluation by comparison with OD patterns at 39x39 aggregate zoning level based on the count statistics.