Analyse relaties tussen objectieve en subjectieve verkeersgegevens

Joost Verdiesen

Graduation Date:
22 December 2006

Graduation committee:
Martin van Maarseveen
Bas Tutert

Organisation:
UT

In transport studies much transport models are used. The conventional models result in objective traffic data, such as traffic flows and occupancies, but does not give information about the traffic liveableness. To be able to pronounce concerning traffic liveableness with the assistance of a transport model, knowledge about the relations between objective and subjective traffic data must be acquired. With the knowledge of these relations it is possible to connect a traffic liveableness indicator to a transport model in the future and so create a outline of the traffic liveableness in subjective sense. At district level a forecast can be done concerning the traffic liveableness, which can be used as a policy support. At higher scale levels (city and municipality) such an indicator can be used for benchmarking. This research focuses at finding relations between objective and subjective travel data and the purpose is to put out feelers for several possible relations.

For the objective traffic data the Mobility Research the Netherlands and the National Road Database has been primarily used. The subjective movement data are primary extracted from the Liveableness and Safety inquiry. Beside the objective and subjective movement data also socio-economic data are taken along, extracted from the Key Statistics Districts and Neighbourhoods database.

First of all a list of indicators was established with which the objective and subjective traffic situations have been assessed. On the basis of a literature study to indicators which are used in previous research and an inventory of the available data bases, eventually a list with indicators has been determined.

Next an analysis at municipality level has been carried out. Eventually eleven municipalities were willing to supply the required data. The aim of this analysis at municipality level is a first get insight in the consistency between several indicators. The findings are used as an input for the further analyses. To directly get a clear view of the possible consistency between the indicators a correlation analysis has been carried out. The result of this, the correlation matrix, reflects the degree of correlation between the several indicators. It becomes clear that concerning the traffic liveableness mainly the component drive too fast and satisfaction with regard to the parking facilities in the neighbourhood show the most significant correlations with the remaining indicators. The outliers can possibly be explained by the differences in scope of the rural area. Because of this an analysis at town level has been carried out next.

The analysis at town level is applied in a the same manner as the analysis at municipality level. However at the most of the cities some districts will drop out, because of that they belong to the rural area. From the correlation analysis becomes clear that generally less significant correlations at town level are present than at municipality level. The remained correlations are however generally stronger than at municipality level. This is possibly a consequence of the purchase of the disturbance which was caused by the outside area. Nevertheless it still seems that the traffic liveableness cannot be declared by the list of indicators. For this reason has been chosen for a further analysis at district level.

The analysis at district level has been carried out on the basis of a number of aggregations of districts. With the use of aggregations of districts the problem of a too small sample is tackled. The aggregation of the districts has been done on basis of living environment. Six living environments are distinguished:

- Centre-urban (urban grade 1);
- Outside-centre (urban grade 1);
- (outside) centre-urban (remaining);
- Green-urban;
- Centre rural;
- Rural living.

Eventually twelve district aggregations have arisen which have been analysed again using a correlation analysis. In general it seems that at district level still less significant correlations are presented in comparison to municipality and town level.

The correlation matrices show that when the scale level becomes lower, less significant correlations are observed. The expectation was that by descending in scale level, more or in any case stronger relations could be seen. The cause of this, is not clear. Possibly that the restricted number of data points plays a role. Also another aggregation of the districts will possibly have produced (more) stronger correlations.

Nevertheless there are some indicators which are notable slightly in mainly the analyses on municipalities and town level. They fall on because they show than the other indicators significant correlations more with the movement quality of life indicators. It concerns the following indicators:

- Car displacement speed;
- Surroundings address density;
- Accessibility index;
- Intersection density;
- Capacity of the road network.

At the end a simple regression model has been established, using multiple regression on the basis of two of these indicators which empirically produced the highest coefficient of determination (r^2). With this model a forecast of the traffic liveableness of an area can be given. Then this model has been calculated for control with a case study on the basis of the municipality Enschede. The difference between the predicted and the ‘real’ value of the traffic liveableness is only 1.6%.

There can be concluded that the model with regard to the traffic liveableness (on basis of the component drive too fast) gives a reasonable forecast for the municipality Enschede.

Given the results of the research it can concluded that it is difficult to extract the traffic liveableness as a whole from (a combination of) the indicators which have been applied. Furthermore we can conclude that most of the responders base there traffic liveableness on speed. The car displacement speed shows clearly the most significant correlations with the different traffic liveableness indicators.