

**MCL TECHNICAL NOTE 7/2011  
PROJECTIONS AND ESTIMATES OF CONCESSIONARY TRAVEL  
REIMBURSEMENT COSTS**



## **Introduction**

MCL adopts two separate processes, serving two distinct purposes:

- Projection of current, full year costs as data for the current year comes in each quarter (“Projections”)
- Estimation of future year costs for budget preparation purposes (“Estimates”)

The processes are different in each case. However, the fundamental components of the projections or estimates are the same:

- Average fares that would be paid for concessionary journeys
- The number of concessionary trips that will be made

## **Projections**

Projections of the eventual out-turn for the year are based on quarterly data. As each quarter’s data comes in, we need to “synthesise” the remaining quarters. The projections therefore need to rely on either a synthesised quarterly profile or, better still, one based on previous trends.

If we are using a trend-based quarterly profile for concessionary trips we have to recognise that it will reflect both seasonal trends and general growth. There is no adequate data or method to enable us to identify the separate impacts of seasonal trends and growth. What we can do is to adjust the trend-based profile to take account of any anomalies it may reflect. For example a bad winter, a good summer, the timing of Easter and/or the impact of other factors (eg strikes, major events, etc). We do not attempt to build in projected weather forecasts but simply try to “normalise” trend information to remove the impact of these factors. This is not an exact science.

Likewise for fares. As measured, average fare values reflect fares increases imposed by bus operators but they also reflect variations in the lengths of journeys. Again there is a seasonal impact in the latter. During the summer months people tend to make longer “days out” journeys whereas in the winter months journeys are more limited to local activities. The quarterly trend-based profile for fares reflects these impacts but again there is no adequate data or method to enable us to identify the separate impacts of operator-lead fares increases and the variation in journey lengths. We therefore adopt a similar approach to that for the quarterly trip profile.

For both trips and fares our model enables us to apply an over-riding growth adjustment. For example, we can adjust to reflect a lower or higher overall growth for the year, relative to the growth implied in the quarterly trip profile. If the data is available (and usually it is not), this adjustment can be applied in respect of particular quarters. Normally it is applied as an overall adjustment to each quarter.

We can make a similar adjustment in respect of fares if, for example, an operator indicates that he intends to apply a significantly higher increase in fares for the year in question, relative to the previous year or in some cases recently where an operator has advised that his fares will be frozen.

The data upon which our model is based is at operator level. The model calculates a trend-based trip and fares profile for each operator. Although this level of disaggregation causes some problems (eg a seasonal operator or a situation where from one year to another there is a major change in the services provided), it offers reasonable accuracy.

In respect of trips however, the inputs available to us on which to base any growth adjustments are not generally available at operator level. These inputs mostly have a geographic base. To attempt to develop a matrix to link individual operators to a geographic framework for this purpose would lead to significant inaccuracies. The model therefore calculates an average, area-wide growth factor based on a coarse district level analysis of growth factors where this information is available (see under Estimates below). This factor is then applied in respect of all operators. The aggregate result of this approach is reasonably accurate but there may be variations at the operator level and, at this level, the model output is only indicative.

Projections are calculated as follows, drawing increasingly upon out-turn data as the year progresses:

Start of year	Quarterly projections based on latest estimates for year apportioned using trend-based profiles
After Q1 out-turn data is available	Q1 will be included as out-turn, Q2, Q3 and Q4 will be synthesised using the trend-based profiles but applied to an updated estimate based on Q1 out-turn data
After Q2 out-turn data is available	Q1 and Q2 will be included as out-turn, Q3 and Q4 will be synthesised using the trend-based profiles but applied to an updated estimate based on Q1 and Q2 out-turn data
After Q3 out-turn data is available	Q1, Q2 and Q3 will be included as out-turn, Q4 will be synthesised using the trend-based profiles but applied to an updated estimate based on Q1, Q2 and Q3 out-turn data
After Q4 out-turn data is available	We know the exact out-turn position

## Estimates

The estimation process is focussed on producing a forecast estimate for the year ahead. Quarterly variations are not relevant and the model is concerned with year-on-year changes.

Depending on when an estimate is produced, we will use the most recent projection for the current year as a base and then apply growth factors in respect of trips and an estimated fares increase.

### Trip Growth:

Trip growth can be influenced by many factors including:

- a) Demographic changes (ONS mid-year estimates for eligible population or equivalent local data);
- b) Changes in eligibility, trends in the take-up of Passes and the proximity to limiting take-up levels;
- c) The impact of public transport service improvement projects, significant new registrations and service reductions;
- d) Environmental awareness/culture;
- e) Major land-use changes (new developments, changed uses, new attractors, etc);
- f) The state of the economy<sup>1</sup>;
- g) Private motoring costs (eg fuel price increases);
- h) Congestion levels;
- i) The impact of parking and/or traffic reduction schemes;
- j) Other relevant factors including long-term elasticity changes.

There are a number of recognised relationships between a number of these factors and their impact on trip numbers (eg elasticity in relation to public transport service levels for which TRL Report 593 is an important reference). In other cases there is insufficient research upon which to base reliable estimates. Nevertheless, it is possible to establish a reasonable estimate of growth in the knowledge of changes in these various factors.

Hence each year we request inputs from the local authorities and transport operators who will be aware of forthcoming changes in most of these factors. These inputs, where available, are used in conjunction with trend information to determine growth factors at district level where this is appropriate. An average factor is then calculated, weighted by the number of concessionary journeys boarding in each

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<sup>1</sup> The need to travel derives from another purpose (shopping, entertainment, access to health care, etc) and the economy will impact on many of these purposes, increasing or depressing the need to travel.

district. This factor is then applied in respect of each operator, although if the operating territory of a large operator is co-terminus with one or more districts the district level factors can be used in place of the area-wide average.

### Fares Increases

A similar approach is taken with fares. Operators are asked to submit information regarding their anticipated additional yield from planned fares increases. We also monitor industry cost inflation which is the primary driver of fare levels. From these inputs we derive a fares increase factor for each operator. If no information is supplied by the operator we normally revert to a default based on the historic, regional cost inflation index published by CPT.

### Preparation of Estimates

Typically we will produce the first estimates for the coming year in the autumn of the current year. These will be based on the projected out-turn for the current year which will, in turn, be based on Q1 out-turn data for that year.

An updated estimate will be produced towards the end of the current year, using the Q2 out-turn based projection for that year.

Working estimates will be produced towards the end of the current year and these will use the Q3 out-turn based projection for that year.