

## **VERA data maintenance programs**

The new VERA procedure records the current partial trip and examines the origin and destination stops of the overall trip. The possibility of getting off at an earlier or later stop is simulated by IJP, restricted by the obligatory conditions of the partial trip in question.

Programs are available for managing basic, survey, counting and trip data, as are programs for listing and checking survey and counting data.

The listing and checking programs perform a thorough plausibility check. Relevant secondary information such as tickets, purpose of trip, route with 1<sup>st</sup> class, vehicle types, vehicle combinations (trains), timetable and network are checked.

Attention is paid to the following criteria, among other things:

The entire route is stored with times from the timetable, and all known network information relating to transfers is taken into consideration.

Ratio of straight line between origin and destination stop of overall trip to route option length of trip.

Transportation speeds

Transportation times

Ratio of required waiting times during transfers to subsequent trips.

Multiple use of links and stops

Survey data is compared to the counting results as preparation for projection.

The plausibility of the seat group coding and adherence to specifications is checked.

Projection to an average week day, Saturday or Sunday and assignment to the network are carried out taking various factors into consideration, such as:

Balancing of survey data with counter data

Projection of surveyed parts of vehicle type, taking combination changes into consideration

Random sample projection

Weighting of several survey days for individual routes

Weighting to average annual values (ticket-related)

Weighting of different days, e.g. Saturday (ticket-related)

Weighting of source and destination points and source and destination routes

Weighting of individual flows

Trip-specific factors

Partial surveys can also be simulated in this traffic assignment

Evaluation programs

Carried persons / kilometres per person

Origin / destination relationships

Route usage

Stop usage

System users / system performance

Travel distances / travel times

Route-specific revenue calculation

Interactive graphics

Various evaluations can be performed on the basis of the traffic assignment results.

In all evaluation programs, the relationships that are being examined can be restricted to flexibly definable, travelled physical parts of the network (effect areas). This definition can be carried out for links and trips if necessary.

Tickets, purpose of travel or any grouping thereof, origin and destination areas, travel time and flow clusters can be used as filters for all evaluation programs.

The evaluation stages are available in Windows NT in an integrated program. The different graphic and list-oriented evaluations can be called up and printed for the developed data selections by simply changing the display context.

#### Carried persons / kilometres per person

The number of carried persons, kilometres per person and average distance on the individual routes, company branches, operators and totals are calculated and displayed in the form of a list. The evaluation is carried out for specific tickets with a facility for creating totals via tariff structures (group of tickets) or according to reason for travel, and a facility for creating totals in accordance with travel purpose groups. The classes can be shown separately if required. Trips within the selected area of activity are shown.

Annual, monthly and daily values are calculated.

#### Origin / destination relationships

The relationships between individual stops, flexibly definable stop groups or flexibly defined origin/destination groups can be evaluated. The origin/destination load, the transfer frequency and the number of kilometres per person are calculated for both directions. Totals are calculated for each origin and destination.

Trips within the selected area of activity and same origin/destination groups are calculated.

#### Route usage

The load (number of carried persons) is calculated for each route. The individual load proportions are differentiated according to number of persons entering and exiting and through-travellers at the individual stops and the link load between the stops. The result (optional) can be a list containing the stop order or a graphic display (Postscript).

A specified route option can be used as an illustration for summarising parallel routes on the same route, the same operating branch or all routes.

#### Stop usage

Stop usage is calculated. The load caused by the number of persons entering, exiting and transferring can be listed in detail or as a summary for each stop. All transfer relationships at the affected stop can be listed with comprehensive details, including information concerning pedestrian transfers.

#### System users / system performance

The loads and performance of traffic systems (individual routes, operating branches or any grouping thereof or freely definable operators can be used in this instance) and the relationships occurring between these systems due to transfers are calculated and displayed in list format.

#### Travel distances / travel times

##### Travel distances

Travel distance distribution can be calculated in accordance with definable distance classes. The individual and accumulated values are listed (absolute and relative).

##### Travel times

A travel time distribution can be listed.

## Route-specific revenue calculation

A program for calculating the route-specific revenue has been written for the VVS and the SBB. The revenue for an operator's individual routes can be calculated individually or with transfer relationships to other routes belonging to the same operator or a different operator on the basis of the tariff model, the tickets that are used, the calculated number of kilometres per person and the known income distribution.

## Interactive graphics

The results of a traffic assignment can be graphically displayed as a network or stop usage plan and printed using Postscript printers or plotters. Various parameters are available for controlling the display, such as:

Network sections, output scales

Output formats

Load scales

Lettering levels

Means of transport, overlaps, total calculations

All of the above filters

Several levels for taking effect areas into consideration

Flow cluster with multi-level definition options for link selection