

Communications on research aimed at improving transport conditions in cities, towns and other built-up areas

Summary report (entire project):

Study of the operation of new short-distance transport systems and of improved high-speed railways by simulation, including the establishment of bases for planning and decision-making

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About this study

The Federal Government supports the development and use of new transport systems for short-distance public transport. To be able to assess the use of track-bound, automatic systems, instrumentalities had to be created which make it possible to investigate these systems in complex networks for real areas and to assist in decision-making.

The core of the instrumentalities created is the simulation of the operation of new short-distance transport systems. This simulation is preceded by the calculation of the level of the demand for travel and by a preliminary dimensioning of the transport services provided. The simulation proper informs about the operating behaviour and the level of service achieved, so that the short-distance transport system can then be dimensioned. Scheduled service of automatic high-speed railways, on the one hand, and demand-actuated service of small cabins, on the other, are dealt with in separate models. The evaluation is carried out by means of a cost-effectiveness analysis which is supplemented by a procedure designed to assist in decision-making. The instrumentalities as a whole are structured as a system of mutually coordinated EDP programs.

Various kinds of short-distance public transport systems are investigated by means of this program system; their concepts are among the factors determining the choice of the area of application for each system. The study covers area-type transport development by a feeder mode, axial transport development by a high-speed mode, and the development of a town's transport by means of a single-mode transport system.

Finally, alternative operational designs of the individual short-distance transport systems are evaluated on a comparative basis. This study is not intended to provide a comparison of different short-distance transport systems and it could not do so, because of the initial situation which varies from case to case.

In submitting this report, we want to express our gratitude to all those who have contributed to the study, i. e.

- the „Committee supervising and attending to the project“: gentlemen of the Federal Ministries of Transport, of Regional Planning, Building and Urban Development, and of Research and Technology;
- the advisors: Mr. Brand, Dr. Frederich, Prof. Dr. Girmau, Messrs. Hußmann and Jähnichen, Prof. Dr. Leonhard, Messrs. Marten, Mies, Scheucken, Schmidt and Schuler, Prof. Dr. Schweizer, Messrs. Waibel, Weigelt and Westphal;
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As far as the summary of this report is concerned the project manager was Mr. Dübbers.

Important explanations

Short-distance public transport system is the totality of all facilities used for the provision of public transport service in a region. Where just one part of it, consisting of one mode only, is concerned, the term is preceded by "single-mode".

Lines of a short-distance public transport system as used here are designated separately according to direction and opposite direction. Entire round trips are therefore given two numbers.

Traffic periods and their significant hour are

peak	7.00— 8.00 hours
off-peak	13.00—14.00 hours
late evening	21.00—22.00 hours.

Daily values are related to the **average workday** (Monday—Friday; year/310) or, normally, to the **average weekday** (workday, Saturday, Sunday; year/365).

Carryings (boarders) are broken down, according to their access, into **directly boarding** passengers and passengers **inter-changing** from feeder systems. **Transferring** passengers are those who change the line within the short-distance public transport system under consideration.

Transport (distance, time, speed) relates to the time spent on the short-distance public transport system from boarding till alighting, including any transfer times.

Journey time = transport time + waiting time.

Departure, arrival and travel times according to timetable are related to the operation and generally do not correspond to the published timetable.

Time reserve is generally determined as 5 % of the minimum travel time.

Quality of transport (QT) /19/ is the ratio of the seats provided to vehicle occupancy. In operation, minimum standards must be maintained which are set for the significant cross-section in terms of average values over 10 minute periods.

Costs have been uniformly established at the level of 1977. The interest rate has been assumed as 6 %. The determination of quantities is based on route layouts at the scale of 1: 10 000 or 1:5 000.

Basic concept is the original design for the operation of a public short-distance transport system from which all **variants** have been directly derived.

Synthetic short-distance public transport systems indicate that a manufacturer's concept does not exist for the basic concept in question or that the basic concept may be different from the manufacturer's concept.

VÖV = Verband öffentlicher Verkehrsbetriebe — Association of Public Transport Undertakings.

B. Application of the instrumentalities to the study of automatic single-mode short-distance public transport systems

3. Transport development of an urban quarter including a high-speed railway link (Hamburg-Nord)

3.0 Hamburg planning region

The study area is located north of the Hamburg city centre (Hmb Mitte) (cf. Fig. 3.0-1); it is bounded in the north by the border of the land (Federal State), in the east by Fuhlsbüttel Airport, in the south

by the U1, U2 and U3 metropolitan railway lines, and in the west by the Hamburg-Flensburg motorway.

The airport, the Niendorfer Gehege forest and the northern by-pass freight railway line divide the study area into a southern region,

which is a mixed type of development and belongs to the city centre and a northern region, which has the character of a residential neighbourhood and, correspondingly, a more widely dispersed development.

At the time of the investigation no data pertaining to the study area were available, as they are needed for the transport forecast program. Therefore, a separate transport forecast calculation had to be prepared on the basis of structural data for the entire Hamburg area, using information supplied by the Statistisches Landesamt (Hamburg Statistical Office).



Fig. 3.0-1:
Hamburg and the study area

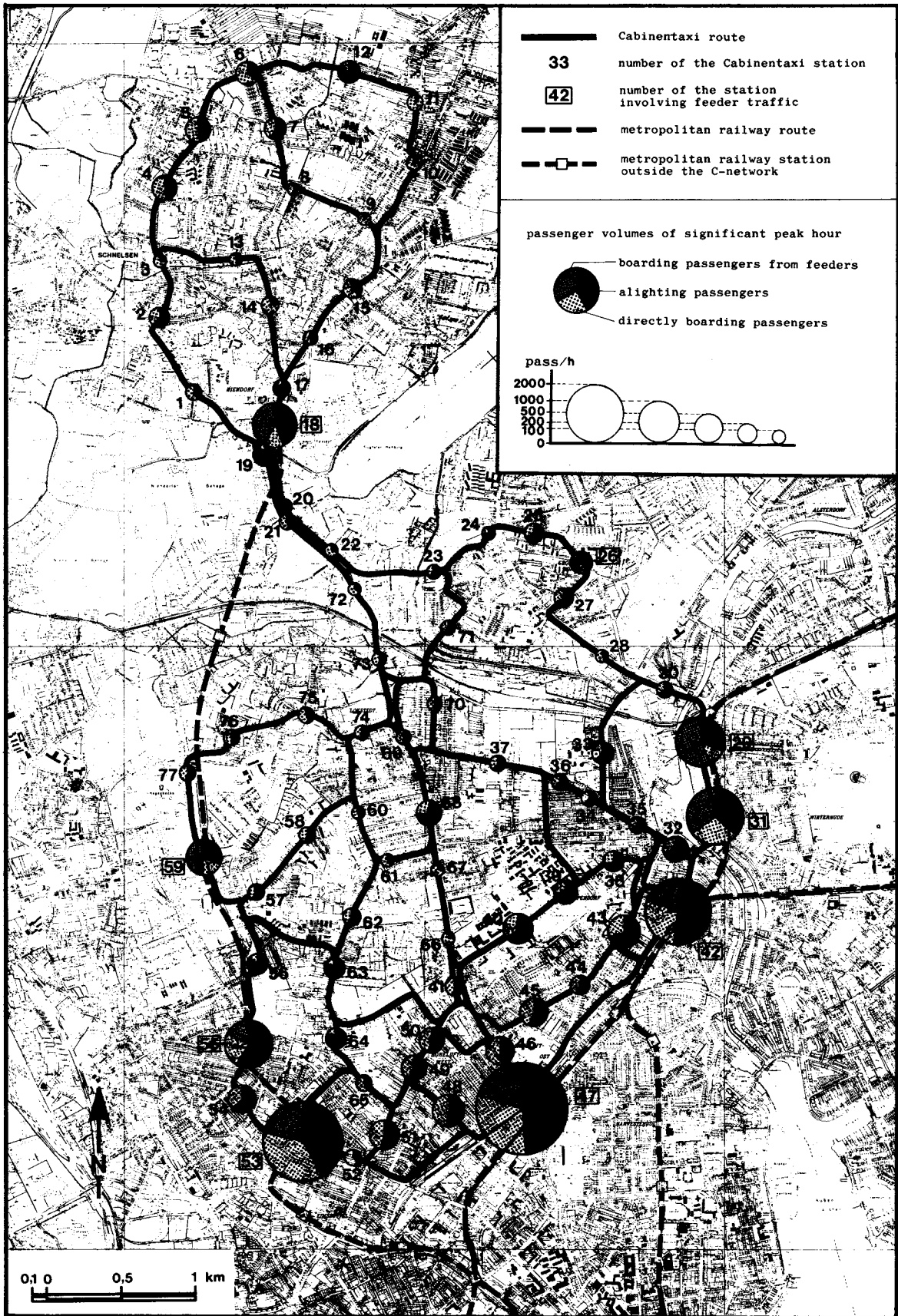


Fig. 3.1.1-1: Network and passenger volume during the significant peak hour

