

education of transit planners. In these economic hard times, however, the concern is to reduce costs. The planning resources needed to consider these kinds of system changes often do not exist. Why do we need to do planning when we have to cut back? is the concern of the budget maker. So much of the implementation of these systems will involve the foresight of investing in this type of planning, which is much like convincing the farmer not to eat the seed corn in times of famine.

8. Hohenlohekreis is apparently demonstrating one example of the "try it, you'll like it" approach to transportation. The Germans have established a small project that emphasizes software rather than hardware or large capital-intensive answers to problems. This demonstration, the battery-powered standard bus, the Duo-bus, and the O-bahn concept all indicate the Germans' feeling that you should begin small and change or adopt other systems or ideas should the demonstration prove impractical.

The Hohenlohekreis demonstration is a significant contribution to the rural public transit experience. The lessons to be learned in this demonstration should be a good lesson in times of increasing

governmental costs, skyrocketing fuel prices, and the resultant demands for reducing costs through innovation, coordination, integration, and combination of public services.

ACKNOWLEDGMENT

I wish to thank Richard P. Braun (1) and Robert Howdek (2) for assistance in preparing this paper. Appreciation is also expressed to Horst Krautter and August Gustke, the project sponsors in Stuttgart, as well as the German Marshall Fund for making the trip possible.

REFERENCES

1. R.P. Braun. Lessons to be Learned for the United States from a Rural Public Transportation Demonstration in Germany. Minnesota Department of Transportation, St. Paul, Urban Transportation Abroad, Vol. 3, No. 4, Winter 1980.
2. R. Howdek. Report on Baden-Wuerttemberg: Minnesota Technical Exchange. Minnesota Department of Transportation, St. Paul, Feb. 1981.

Abridgment

# Swiss Postal Passenger Service

DAVID L. GENTON AND G. RATHEY

Solutions for public transportation in less populated regions are considered with respect to (a) region size and topography, (b) the national political structure of the country, and (c) population density and standard of living. The Swiss transportation system is characterized by a very wide range of transportation opportunities, operational factors, and financial aspects. The postal passenger service is the result of a long-term evolution that attempts to offer a satisfactory response to mail and passenger transportation needs in rural resorts. This response emphasizes efficiency for both the users and the collectivities. The organization of the service, the network structure, service quality, tariffs, and the financial situation of the companies involved are analyzed. Long-term experience has resulted in the following measures: (a) adaptation to a diffused demand with the highest possible flexibility and spirit of creativity, (b) integration of the transportation operations of all private and public companies in order to take advantage of their common resources, and (c) sharing the responsibility between regional and local authorities in order to ensure a budgetary balance between the operating companies.

This paper discusses some general aspects of land use and transportation systems, public transportation policies in rural and mountain areas, some characteristics of the Swiss postal passenger service (PTT), and some lessons to be learned from past experiences. The scope of the paper is limited to Switzerland.

LAND USE AND TRANSPORTATION SYSTEMS

The topography of Switzerland is characterized by two mountain ranges, the Jura and the Alps, bordering a plateau. The Jura Mountains are approximately 3300 ft in altitude; numerous Alpine summits are above 13 000 ft. The average altitude of the plateau varies between 1300 and 1600 ft. The Alpine area is cut by numerous longitudinal and transversal valleys.

The following comparative data on population den-

sity and employment for Switzerland and the state of California provide a context for the issues discussed in this paper:

Item	Switzerland	California
Inhabitants (000 000s)	19.2	6.3
Area (miles <sup>2</sup> )	158 700	15 900
Population density (inhabitants/mile <sup>2</sup> )	120	400
Employment (% of inhabitants)	42.4	46.8

A fundamental objective of land use policy in Switzerland is to reinforce the decentralized structure in order to ameliorate living conditions, especially in regions that suffer regional disparities (especially the mountain regions). Such disparities are the cause of migrations from economically weak regions into developed areas.

When the net population remains constant, the attraction of population centers causes a migration from other areas. Among the measures implemented to combat such a trend are the efforts of federal and local authorities to increase accessibility to small or medium-sized urban centers in areas of low population density.

Switzerland, which is located in the heart of Europe, benefits from very heavy tourist traffic, either in transit or terminating in plain or mountain resorts.

Management of the transportation system is strongly influenced by the federal structure of the Swiss Confederation. The 23 cantons and their numerous towns and cities have great political and financial power. Moreover, financial resources per capita are of the same order of magnitude at the

federal, canton, and local levels. This explains, in part, the structure of the transportation system and the fairly large independence of its various components.

The 1848 Federal Constitution recognizes the authority of the cantons in building and maintaining the road network. The rapid development of motorized transportation after World War II was responsible for the introduction of new articles in the Constitution that allowed the development of a large network of national roads. Even though two-thirds of the country is mountains, the total length of the road network is large. As the table below indicates, network density is remarkable, even in regions of low population:

Government Level	Length (miles)	Density (miles/mile) <sup>2</sup>
National	680	0.04
Canton	12 000	0.75
Local	27 000	1.70
Total	39 600	2.50

In comparison, road-network density in the United States is approximately 1.1 mile/mile<sup>2</sup>.

**PUBLIC GROUND TRANSPORTATION**

The various networks of public transportation are either administered by the federal government (Swiss Federal Railways and automobile services of the PTT) or by contracting companies that hold concessions under public or private shareholding arrangements (see Table 1).

Legal Basis

Regular passenger transportation by contractors is based on Article 36 of the Federal Constitution as well as on various laws and federal regulations. These basic laws stipulate that professional passenger transportation, either regular or occasional (special), falls exclusively under the authority of the Confederation. Nevertheless, the Confederation does not exercise this right itself; according to the law that regulates the postal services (Postal

Table 1. Swiss public ground transportation system in 1978.

Type of Network	Length (miles)	No. of Companies	Annual Ridership (000 000s)
General traffic railways	3100	60	300
Mountain railways	510	280	110
City and suburban transportation	1300	21	700
PTT	4800	1	60
Company buses and coaches	2050	170	50

Regale), this right is assigned to the PTT. However, the Confederation can grant concessions to third parties. These concessions can be granted either for the regular operation of lines (type 1) or for special services such as transportation "on request", e.g., of workers or schoolchildren (type 2).

The main obligations of a type 1 contractor are (a) to operate and to transport, (b) to establish a timetable and submit it for approval, (c) to produce tables of fares that are accepted by the Confederation, and (d) to follow social regulations.

Contracting Companies Operating Bus Lines

Except for those companies operating bus lines that cross the border between Switzerland and neighboring countries, it is possible to group the contracting companies involved in road transportation according to the regulations that pertain to the attribution of concessions (see Figure 1). For instance, the regular operation of bus lines of type 1 concessions, which has been granted by the Federal Department of Transportation, Communications, and Energy, is organized as follows:

1. Postal lines are operated by the PTT or by private contractors under its supervision.
2. Town, suburban, or regional bus lines are operated by holders of concessions. These concessionaries can be either private companies or public institutions.
3. Bus lines that replace railway lines or bus lines operated by railway companies are either self-operated or operated by private road companies or the PTT.

This great variety of regulations for regular passenger and professional road transportation has been substantially influenced by the past evolution of legislation as well as by the evolution of the transportation system. During the second half of the 19th century and the beginning of this century, the railways grew rapidly. This growth resulted in a crisis for postal traffic carried by stagecoaches, especially on lines that previously carried heavy traffic. The development of the road network and of motor vehicles, in turn, hurt the railway lines. Regions that had low equipment density suffered most. These were regulated by PTT contractors or by holders of concessions according to the particular conditions of the region.

**TODAY'S POSTAL PASSENGER SERVICE**

General Organization

The two groups of activities of the Federal Post,

Figure 1. Public road transportation concessions and operators.

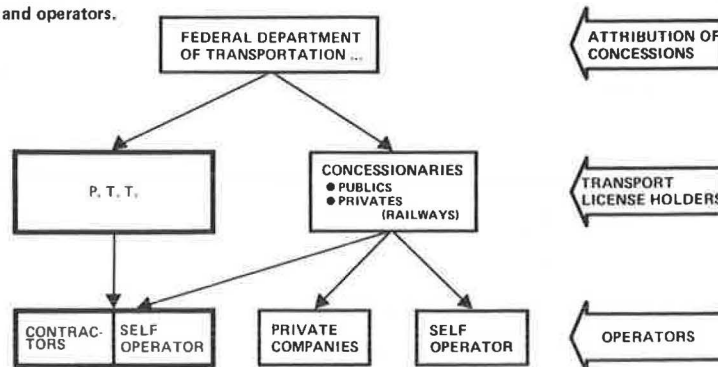


Figure 2. Spatial organization of PTT.

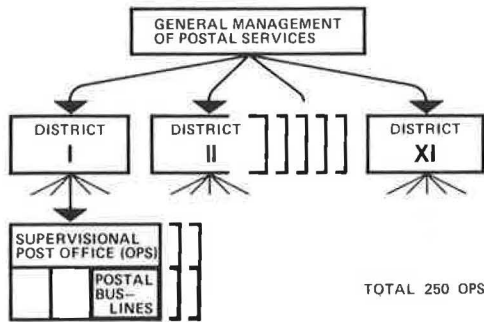
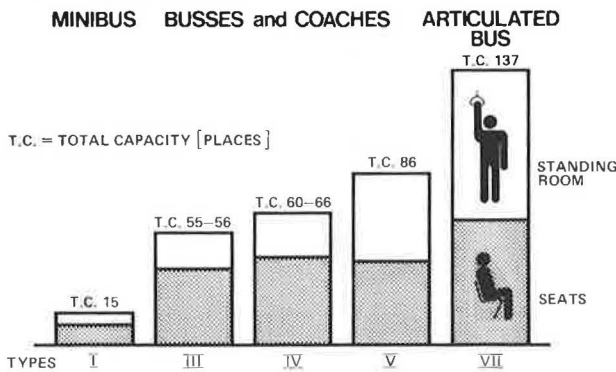


Figure 3. Capacity of PTT buses and coaches.



for which the Post is granted a monopoly by federal legislation, are

1. The postal services, including (a) delivery of letters and parcels, (b) movement of money, and (c) transportation by car; and
2. The telecommunication services, including (a) operation of telephone and telegraph services, (b) processing of teleinformation, and (c) operation of radio and television.

One objective of the operation of these public services is the efficient use of personnel, buildings, equipment, vehicles, workshops, and other resources. The passenger postal services are thus integrated in the overall organization of the postal service. Such an integration evidently does not facilitate the calculation of costs and the pricing of a passenger trip.

Geographic Organization of PTT

The regional administration of the PTT is entrusted to 28 post offices in important population centers. These supervisory post offices (OPS) administer regular self-operated lines (Regie), regular lines operated by contractors, connections by messengers, and special trips.

The regular self-operated lines (Regie) are those operated by the PTT with its own vehicles and staff. The regular lines operated by contractors are those operated by the PTT but with vehicles and personnel from contractors. These contractor personnel are remunerated according to their operating expenses (kilometers-vehicles). The connections by messengers (in very small numbers) refer to passenger transportation performed by a postman in thinly populated areas. The postman uses his own vehicle and the service is performed either on de-

mand or regularly. The postman is then indemnified for the trips supplied on routes with very little traffic. Special trips concern the transportation of personnel of firms, schoolchildren, tourists, and the like. These trips can be made with vehicles assigned to regular lines, at times outside of the regular schedule. Bus transportation of schoolchildren is often organized separately. It is usually handled by school groups, with or without the cooperation of the PTT. Sometimes computer models aid in the organization.

The spatial organization of the PTT is shown in Figure 2.

Networks, Lines, and Terminals

At the end of 1980, the network of PTT postal lines comprised 613 lines with a total length of 4800 miles and 6500 stations. One-third of this network was operated by the PTT itself.

Vehicles

The range of the PTT vehicles includes (a) buses or coaches used both for long-distance runs and on mountain lines and (b) buses of different capacities and some articulated buses adapted to requirements in the plain for suburban traffic.

The constant effort of standardization of the PTT stimulated by the directives of the IUPT International Union of Public Transport resulted in seven types of vehicles. Their total capacity (standing and seating) varies between 15 and 137 places (see Figure 3). These vehicles are adapted to transporting mail and luggage. When the volume of the cargo is too great, either trailer or light trucks are used.

The 560 vehicles used by the PTT for passenger transportation are housed in the PTT garages with the other 9800 vehicles used by the postal services. This leads to efficient use of staff in dealing with operation and maintenance.

Schedules and Quality of Service

In the beginning, the schedules of passenger postal services were established primarily according to the mail requirements and passengers had to adapt to the contingencies of postal deliveries. But this means of passenger transportation has been constantly improved. The schedules now offer more possibilities for connections in order to meet passenger needs.

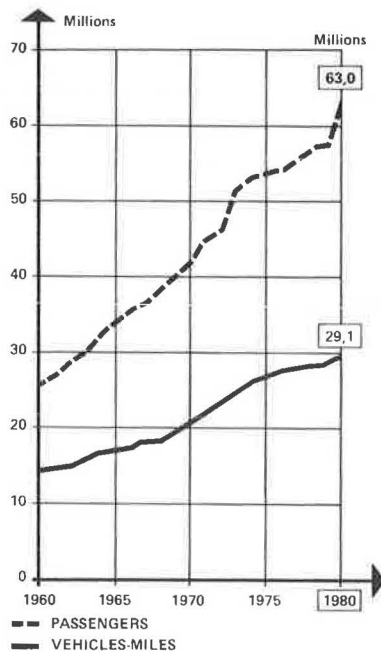
In the most remote regions, the number of daily runs has been increased to 6. In the more populated regions, this number can reach 16 runs/day. Extra runs are made during peak hours. The schedules are adapted to those of the railways, to daily and seasonal variations, and to passenger requirements. Moreover, they are planned to suit the needs of employees, workers, and schoolchildren. A great effort is made to respect the schedules, to provide punctual service, and to improve average speed and comfort, in spite of the great variations of demand and the disturbances caused by operating on non-dedicated roads.

Fares

In 1849, the Swiss Parliament focused on a uniform fare policy for the whole country. This uniformity still exists.

The postal service applies a sliding-scale tariff; i.e., the price per passenger mile decreases with distance. There is a tariff for lines on the plain (ordinary fares), a tariff for mountain lines (increased fares), and a tariff for natives in moun-

Figure 4. Evolution of operating allowance and traffic.



tain regions. But, because of the social character of this type of transportation, the PTT fares have not been determined only on an economic basis. The holders of concessions can, however, freely determine their fares according to their operating costs.

The Confederation tries to decrease regional disparities by, among other means, decreasing the disparity in the fares between passenger services and the Swiss Federal Railways. It covers losses at its own expense and thus favors the mountain regions.

Finally, a very important factor is the issuance of special transportation tickets, the offering of excursion packages, and other activities designed to promote tourism.

#### Evolution of Demand

Improved road networks, more suitable schedules, more frequent runs, increased comfort, and more attractive fares resulted in a spectacular increase in the demand for services. A comparison between the progression of vehicles miles offered and that of passengers carried (see Figure 4) shows that, in spite of the considerable increase in the use of private automobiles, the PPT has benefited from the increased mobility of the nation. In the course of the past 20 years, the number of passengers on the postal service has more than doubled, reaching 63 million in 1980.

#### Financial Situation of Contracting Companies

The financial situation of the Swiss operators for public transportation has rapidly deteriorated in the course of the past few years. The essential reason for this deterioration is the rapid increase in the gap between costs and receipts. Especially important are increases in the costs of personnel, energy, and money.

Receipts cover, on the average, only 60 percent of the costs for the PTT. This percentage varies largely from one region to another and depends, in particular, on population density and employment. This deficit is not similar to the deficit of an industrial enterprise. It can be covered only to a very small extent by increased fares, by improvement in the management of the enterprise, and by the can-

cellation of allowances. The existing situation plays a very important social role.

The deficit of the PTT is completely covered by the profitability of PTT telecommunications. The deficits of the holders of concessions, however, are subsidized by the Confederation, the cantons, and the local communities.

The Confederation indemnifies the contractors for general economic allowances, mainly concerning fare-related concessions, the fares having been imposed on the contractors by the Confederation. The subsidy allocation for cantons and local communities takes into account specific economic situations.

#### CONCLUSIONS

One might learn a few lessons from the many years of experience of a small country that, without natural resources other than the beauty of its landscape, has an extremely high gross national product (\$11 500 per capita in comparison with \$8300 per capita in the United States). The legal basis dating from the middle of the 19th century and arrangements adopted by the authorities ensure good public transportation in rural as well as in mountain areas. It is deemed essential, even at the price of often large public contributions, to reduce regional disparities and to restrain rural migration. Therefore, it appears useful to promote mobility, to provide accessibility to employment centers, to offer professional training, and to further the exchange of ideas.

A public transportation system in regions of low population density must be conceived so as to realize a spatial and temporal distribution of very flexible means that should be strictly adapted to requirements. It is advisable, therefore, to integrate all passenger transportation operations, both public and private, and to use, with the greatest flexibility, all resources of personnel, buildings, equipment, and vehicles. Measures must be undertaken not only for regular and special passenger transportation but also for the transportation of mail and goods and other needs that may arise.

As the receipts from passenger transportation cover only a part of the costs, public collectivities must, according to legislation, subsidize the deficits. For instance, it is justified that contractors be released of general economic allowances and be repaid for costs resulting from social tariffs. But it is also essential that local communities assume the financial responsibility, within their resources, toward the realization of a budgetary balance of public contractors.

It is necessary to adapt transportation services to the country and to the way of life of its inhabitants. The more diffuse the demand, the more flexible the organization should be. This is an important characteristic of public transportation. The increase in demand for postal passenger transportation is larger than the increase in its supply. Such a fact confirms the efficiency of the management.

However, supporters of market economy often recommend a separation of the federal postal services as well as the restitution to the private sector of some of its services. On the other hand, the supporters of increased interventionism would like to see all the operations of regular passenger transportation assumed by the collectivity. It seems preferable to distribute the various tasks of public transportation between private and public sectors at the regional level, the local level, or even, as is the case for postal passenger transportation services, at the level of the operation of regular lines.