

Cycling in a Northern Country

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Finland is one of the northernmost countries in the world. Despite the climate, Finland may be called a country of cycling. The number of bicycles per capita in Finland is the third highest in the world, exceeded only by the number in the Netherlands and in Denmark. The high automobile density (440 cars per 1,000 residents) has not limited the number of bicycles. There are numerous cycling roads in Finland, totaling about 8000 km including approximately 1,300 underpasses and about 400 overpasses. The construction of roads for pedestrian and bicycle traffic in general was begun in the 1970s. Thereafter, the numbers of cyclists and pedestrians killed in traffic annually has been reduced by more than half. To further improve cycling conditions in the future, accident statistics should be transformed on the basis of hospitalization statistics, and methods for better counting of pedestrian and bicycle traffic should be developed and implemented.

In northern countries, the use of bicycles for commuting as well as for exercise is usually considered a summer preoccupation feasible on a large scale. Finland is an example of a country in which, despite the short summer and cool or cold weather in winter (Figure 1), cycling is a relatively popular sport and much has been done to promote it.

However, not enough is generally known about the positive aspects of cycling and therefore much can still be done to increase its popularity. Negative aspects to such an increase would be few.

VOLUME OF CYCLING IN FINLAND

In Finland, the volume of cycling can be evaluated on the basis of the number of bicycles and survey research. Of the world's almost 1 billion bicycles, 3.2 million (0.4 percent) are in Finland (1). In relation to population, Finland has the third largest number of bicycles in the world, surpassed only by the number in the Netherlands and in Denmark. Because the population of Finland is 5 million, in theory a bicycle is available to every person able to ride one.

The significance of bicycle travel is indicated by the following statistics (2):

- The number of trips made by bicycle in Finland is over 12 percent of all trips made in Finland,
- The time consumed in bicycle travel represents 9 percent of all time used in personal transport, and
- The number of traveled kilometers in cycling (number of persons) is 3 percent of all personal transport.

A closer investigation of the status of pedestrian and bicycle traffic would require the development of appropriate mea-

suring devices for the counting of pedestrians and cyclists. This investigation would be required to determine possible accident risks and the overall significance of the need for roads for pedestrian and bicycle traffic.

PEDESTRIAN AND BICYCLE TRAFFIC ACCIDENTS

In Finland, 1972 was the worst year in history for traffic safety (Figure 2). At that time, nearly 1,200 persons died in traffic. Over 600 of the fatalities were pedestrians or cyclists. Of the pedestrian and bicycle traffic fatalities, over half were pedestrians, about one-third were cyclists, and the remainder were drivers of mopeds (Figure 3)(3).

During the 1970s, Finland improved traffic safety to the extent that in the 1980s the number of fatalities was less than half of the peak figures. Pedestrian and bicycle traffic fatalities fell to even less than half of their peaks. Development similar to Finland's occurred in many other industrial countries as well, but Finland's development was perhaps the most rapid.

On roads maintained by the government, fatalities in pedestrian and bicycle traffic fell to as much as one-third of their peaks. The most important reasons for this development were the implementation of automobile speed limits on all roads and the rapid construction of roads for pedestrian and bicycle traffic. At present, the portion of pedestrian and bicycle traffic fatalities of all traffic fatalities has stabilized at approximately 30 percent (3).

In a northern country like Finland, icy conditions in winter present a special problem for pedestrian and bicycle traffic. According to a Swedish study, pedestrian accidents caused by icy conditions (including falls by single pedestrians) accounted for 70 percent of all days in the hospital or away

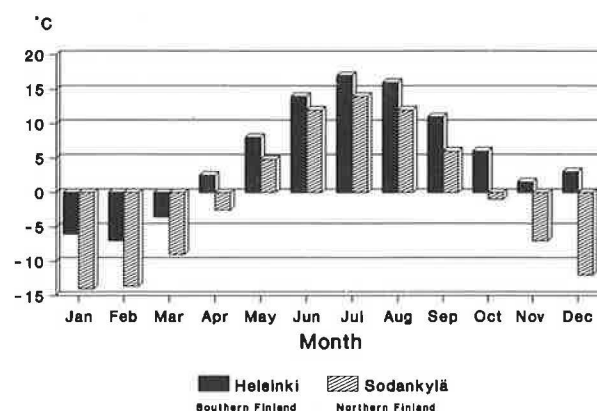


FIGURE 1 Average monthly temperatures in Finland, 1881 to 1980.

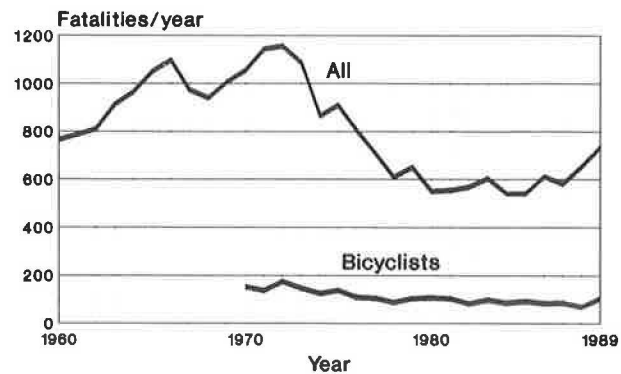


FIGURE 2 Traffic fatalities in Finland, 1970 to 1989.

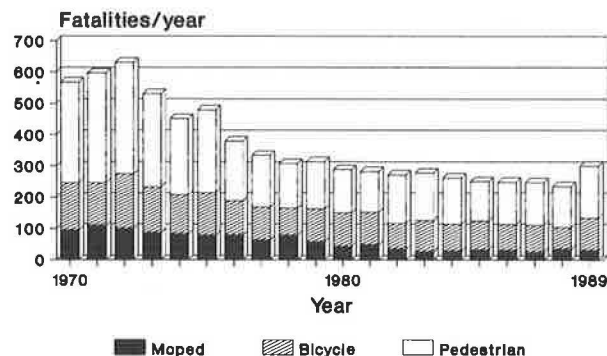


FIGURE 3 Bicycle, moped, and pedestrian fatalities in Finland, 1970 to 1989.

from work. The corresponding proportion for bicyclists was 20 percent. The largest group of injured pedestrians was elderly persons and the largest group of bicyclists was young bicyclists (4). In response to icy conditions, car traffic routes are given priority over pedestrian and bicycle traffic routes. Statistics on pedestrian and bicycle traffic accidents will be deficient as long as hospitalization data are not used to define the number of pedestrian and cyclist accidents. The experience in Nordic countries is that perhaps only 20 percent of cycling accidents are recorded in the statistics taken from police reports. In Finland, the equivalent figure for all personal injuries is approximately 60 percent (5).

It has been calculated that building roads for pedestrian and bicycle traffic in Finland has prevented accidents involving personal injury on government roads that cost 0.5 to 1 million marks. The figure is quite high but represents only 30 to 50 percent of the expense required for construction of freeways to prevent personal injury. These calculations are based on the service life of 30 years for pedestrian and bicycle roads and on the expected decrease in accidents on roads that are planned to be equipped with a separate pedestrian and bicycle road. For municipal road networks, the cost-benefit relationship of pedestrian and bicycle traffic routes is much more advantageous than for state roads.

CONSTRUCTION OF PEDESTRIAN AND BICYCLE TRAFFIC ROADS

In Finland, construction to meet the needs of pedestrian and bicycle traffic began in earnest in the 1970s. The stimulus was

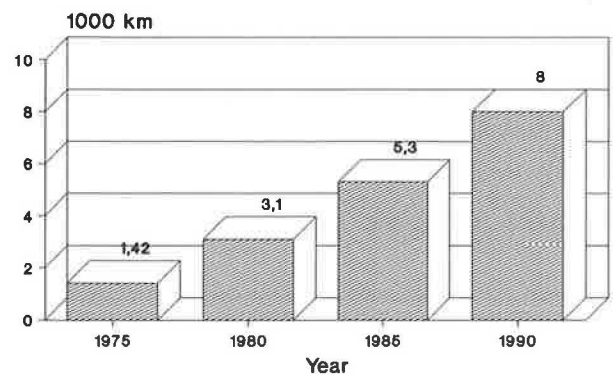


FIGURE 4 Length of bicycle and pedestrian roads in Finland, 1975 to 1990.

the sharp increase in pedestrian and cyclist fatalities. The length of these roads has developed as shown in Figure 4.

Roads for most pedestrian and bicycle traffic are in built-up areas, but an estimated 2000 km is along state roads outside built-up areas.

In the state budget, construction of routes for pedestrian and bicycle traffic accounts for 3 to 4 percent of the entire annual budget of the road administration. With this amount (almost 200 million marks), about 200 km of new pedestrian and bicycle traffic routes is constructed annually.

THE FUTURE

Cycling and pedestrian and bicycle traffic in general will become increasingly significant in the future. Of all the forms of ground transport, bicycles use the least energy per journey, and energy is expended beneficially for travel and for improving the physical condition of the traveler. Cycling is also a pollution-free form of transport. There are no exhaust gases, and the manufacture of a bicycle requires only 1/70 of the natural resources required for the manufacture of an automobile.

The construction of new routes for pedestrian and bicycle traffic in the future will not be as much for safety considerations as in the past. As roads are built in the most dangerous places, the number of roads for pedestrian and bicycle traffic needed for safety reasons will decrease unless there is an increase in the present level of pedestrian and bicycle traffic. Besides safety, there are other reasons for pedestrian and bicycle roads. In the future, more emphasis must be placed on better service for pedestrian and bicycle traffic by building more comprehensive pedestrian and bicycle traffic networks and improving the quality of routes in summer and especially in winter.

The growth of cycling requires changes in prevailing practices in addition to new route networks and improvement in the quality of old networks. Changes are required to improve safety by better determination of the number of accidents, to develop the needed network of pedestrian and bicycle roads by knowledge of the traffic volumes of pedestrians and bicyclists, and to enhance pedestrian and bicycle traffic by more positive attitudes of employers. Specifically, these changes would include the following:

1. The determination of pedestrian and bicycle traffic statistics must be changed so that they are based on hospitalization data;

2. Pedestrian and bicycle traffic recording equipment must be developed so that it is operational and used in a manner similar to automobile traffic recording devices; and

3. Employers should encourage commuting by bicycle by arranging shower facilities and permitting employees to shower upon arrival at work.

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