

**Summary:**

# **The central places and the location of the service industries – effects of improved road network and mobility**

## **New roads and increased mobility – regional effects**

The idea in this project has been to measure the regional effects caused by new roads and high car ownership through an analysis of the interrelationship between changes in the transport sector and changes in the urban hierarchy.

During the last 30-40 years it has been a considerably growth in car ownership in Norway. In the same period the road network has expanded with lots of new roads, bridges and tunnels, and a generally higher road standard. The result has probably been a change in the reach of the service industries and as a consequence changes in the central place system. At the same time towns and cities probably have been effected by changes within the service industries (e g shopping malls) and changes in the settlement patterns.

The project has focused on two main questions:

1. What changes have occurred in the central place system and in the location of the service industries since 1970?
2. To which extent have improved roads and increased mobility contributed to these changes?

Building new roads in the districts has been a central aspect of the regional policy and transport policy in Norway. Despite this fact, few Norwegian studies on regional effects of this strategy have been published in later years. Several American studies have shown that new highways have been beneficial to the areas they passes through. At the same time this has been a disadvantage for the surrounding districts. For that reason it is still uncertainty whether the total regional impact of new roads is positive or negative. In addition it is difficult to separate the impacts of new roads from the effects of other phenomena which are correlated with regional development.

According to regional economic theories, improved accessibility between cities will disturb their economic balance and thus favour places that can offer the most competitive shops and services. Normally this will be the largest city/town in the area. On the other hand, according to other theories, a town may strengthen its competitiveness through local investments (e.g. building shopping centres).

## **Methods and data**

The report cover Norwegian towns and cities with more than 1 000 inhabitants (with some exceptions to give all municipalities at least one representative). For each town/city we have used information for the years 1972 and 1999/2000 on the number of inhabitants, number of different types of service industries, turnover in the commodity trade, settlement in the area surrounding the town/city (within 45 minutes drive in 1972 and 2000), and distance to other towns and cities (within 45 minutes drive).

The information is based on data from different registers, databases, and GIS-analysis. The knowledge of the service towns in 1972 is based on the report “Central place system in Norway” (Fossan 1975).

For analysing the connection between changes in the transport system and changes in the central place system, we have developed a special potential model based on the central place theory.

## **Changes in the central place system**

We have used two indicators to measure the changes. The first one measures the development from 1972 to 1999/2000 in the number of types of services in each town. The other indicator measures the development in turnover in commodity trade from 1972 to 2000.

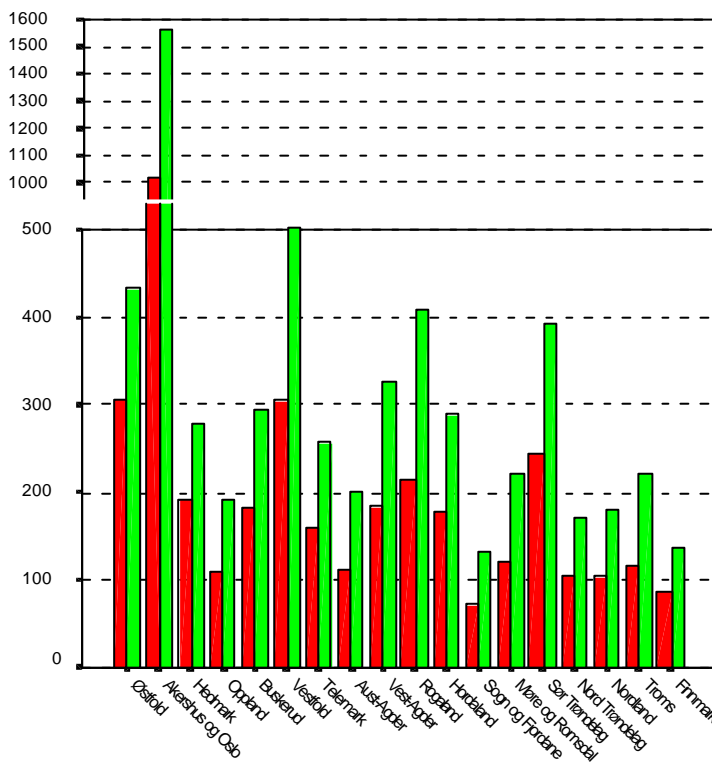
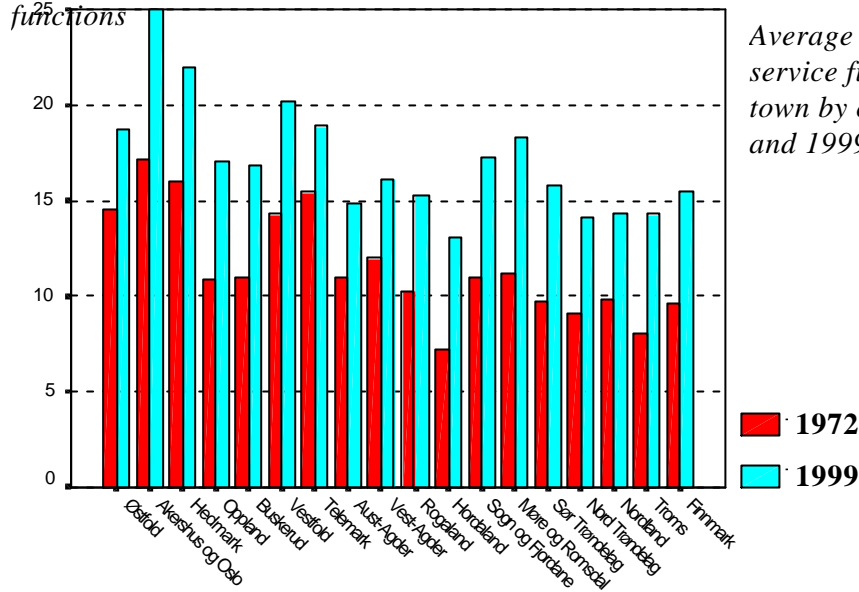
Although some services as post offices and banks have been closed down in many small towns, it has generally been a considerable growth in services during the last 30 years. Today most of the towns have more functions than 30 years ago. Most of the towns and cities have also experienced growth in the turnover in the commodity trade.

Both indicators reveal uneven distribution of the growth. The result is a total rearranging of the central place hierarchy, mainly at the lower levels. Cities with more than 10 000 inhabitants have mainly kept their position in the hierarchy, although many of them have increased their turnover in commodity trade. In relative terms however, the increase has been small.

We have found increasing concentration of trade to the towns and cities with more than 10 000 inhabitants, while the trade in some smaller towns (less than 5 000 inhabitants) have stagnated or declined. At the same time we have found that some of the biggest cities have lost turnover to their suburbs, partly as a result from changes in the settlement patterns, but more likely as a result of shopping malls in the suburbs. In all areas we have observed that decline in one town is compensated by growth in one of the nearest towns.

On the whole we can describe the development as a transition from local to regional markets where higher mobility and increased accessibility have made the surrounding districts an important part of the market area for the services in the city.

Number of functions



### Increased mobility, new roads and the central place system

One of the main purposes of this project has been to unveil what effect new roads and increased mobility has for the changes of the urban hierarchy. Our hypothesis has been that high accessibility by car and high mobility, have been the conditions and a self standing driving force for changes in the central place system for the past 30 years.

To analyse the connections between changes in the transport system and development in the urban system, it is as mentioned before, developed a potential model based on the central place theory. The model estimates potential changes in the cities' market areas due to increased mobility, changes in the population (in cities and the areas around), increased accessibility and new services.

<b>Increased mobility</b>	?	Changes in the market area	↗	
<b>Settlement changes</b>	?	Changes in the market area	?	<b>Changes in the commodity trade</b> (dependent variable)
<b>Increased accessibility</b>	?	Changes in the market area	?	
<b>New services</b>	?	Changes in the market area	↗	

*Outline of potential model.*

The analysis confirm that all these factors have had importance for development of trade in cities and therefore for the urban hierarchy. Seen together, the four variables “explain” more than 90 percent of the variation in development of trade in cities. In the calculations the outermost limit for the market area around each city is a 45 minutes drive by car.

When all cities are considered together, improved road accessibility is the factor which has had the greatest importance for development in the cities' trade. This is particularly the case for cities with more than 10 000 inhabitants. For cities with less inhabitants, new services (such as shopping malls) is the most important factor. This has especially been the case for the smallest towns (less than 2 000 inhabitants). The contribution to city development by mobility, new roads and development of services, have been either positive or negative depending on competition between cities, the population density of the areas around the cities etc.

All together, the results confirm our hypothesis of the impact of high accessibility by car and high mobility. The results do also correspond with the results from the mentioned American reports and with the relevant regional economic theories. All together this gives a documentation of the importance of transport for the development of central place system.