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Summary:

Effects of Urban Sprawl on Car Ownership and Use

A study of Oslo and Bergen commuting regions

Introduction

During recent decades urban growth and sprawl has caused increased traffic with resulting congestion and environmental problems. The purpose of this project is to *determine the effects of urban sprawl on car ownership and use* in the commuting regions around the two largest cities in Norway: Oslo and Bergen. Several case studies give insights regarding consequences on transport of localisation of industry, housing and services. This study, however, focuses on effects at the macro level.

Analyses are performed at the census district level (1400 districts in Oslo region and 700 in Bergen region). The main data source is register data on population, car ownership, income, etc. GIS has been used to calculate distances and indicators of accessibility to public transport.

Road building and population spread

The capacity and standard of the main road network have increased considerably in the period 1980–96 in the urban areas of both Oslo and Bergen. The effect on congestion has been more distinct in Bergen than Oslo. Both cities have employed toll rings to finance the road investments.

In the period 1980 to 1996 the population growth was substantial in both regions. Further, for the period as a whole the outer areas experienced a stronger growth than central areas. In the eighties this suburbanisation trend was strong, while a reurbanisation appeared in the nineties, especially in Oslo.

Population sprawl had a small effect

Car ownership increases with distance from city center. In particular inner parts, fewer than 5 km from the city center, have low car ownership. Distances driven per car also increase with distance from city center, but the spatial variation is smaller.

Based on these relationships, effects of changed population distribution on car ownership and distances driven is simulated (the effects of population growth itself is not included). The main effect is on car ownership. Simulations of effects on distances driven indicate more modest effects. Due to a greater urban spread, the

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effects are larger in Bergen than in Oslo. In Bergen the effects were 4 % on both car ownership and traffic. In Oslo corresponding value is approximately 2 %.

Spread of work places more important

Growth in income and population are of course important factors that are not included in the calculations. Further: cohort effects in car use and functional spread of the city region also contribute to more urban traffic. However, another geographical "spread factor" must also be taken into account: the spread of jobs.

During the period 1980–1996 the central areas in Oslo have stagnated, while new jobs appeared in outer parts of Oslo and in the neighbouring municipalities near the motorways and the ring road system. While only one in four drive cars to work in central parts of Oslo, about 60 % drive cars to work at other locations.

Again, a rough simulation shows that the spread effects account for a 7 % increase in the share going by car to work. Including an increase of 21 % in new jobs in the same period, the total increase of people driving to work is 30 % in the period 1980–1996.

About half of all journeys are related to going to and from work. The spread of work places is thus more important than the spread of population or housing. Still, spread effects are relatively small compared to the 24 % increase in car ownership in the region and the 60 % increase in car traffic cross the city border of Oslo.

More emphasis should therefore be put on location of jobs rather than housing. An integrated land use and parking policy, like the ABC-policy in the Netherlands, should, as a consequence, be applied in order to reduce urban car travel. However, housing location policies combined with efficient public transport might still be important measures in order to keep a real choice in transport mode, or to support other measures like road pricing in the effort to reduce urban car traffic.