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Impact of airports on regional accessibility and social development

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ABSTRACT

This study compares the impact that two airports in Norway have on regional accessibility and social development. One of the airports is a small-sized airport that serves a relatively remote region and has direct air services to other regions in Norway but not to the capital city of Oslo or to destinations abroad. The other is a medium-sized airport that serves a relatively accessible region and has direct air services to the capital city of Oslo and to a number of destinations in Norway and abroad. The study compares opinions of residents that live in the respective regions and is based on the findings of a postal survey that was completed by over 2000 residents. The Independent Samples *t*-test is used to investigate the significance of any differences in opinion. Significant differences were found to reflect the size and scope of services available at the airports and specific characteristics of the regions that they serve. Residents in the more remote region have a significantly higher frequency of travel by air to destinations in Norway but a significantly lower frequency of travel by air to destinations abroad. Trip frequency for holidays is significantly higher in the region that has an airport with direct international air services while trip frequency to access health services is significantly higher in the region that has limited local health services. The airport is significantly more important for resident location and retention in the remoter region.

1. Introduction

The framework for airport impact analysis typically features four main types of impact (York Aviation, 2004): (1) direct impacts relating to the operation of the airport itself; (2) indirect impacts relating to the operations of suppliers in the area; (3) induced impacts relating to the activity generated by the direct and indirect operations; (4) catalytic impacts relating to the wider role of the airport on regional development.

Previous studies tend to focus on the first three types of impact (e.g. see Hakfoort et al., 2001). This is because they are relatively easy to measure and quantify (e.g. by conducting a survey of airports and their suppliers). Catalytic impacts are more difficult to measure and quantify because it is not easy to isolate the impact of the airport from other factors. Ironically, catalytic impacts represent the most important function of an airport (York Aviation, 2004) and literature often calls for a better understanding of them.

Bråthen (2003) reveals cases for airport closure in Norway when considered from a purely economic point of view but makes it clear that regional development issues also need to be addressed when conducting such an analysis, recommending that more information is needed on the catalytic impact of airports. Lian et al. (2005) investigate the economic impact of air transport in Norway and conclude that one of the main challenges for the future is to document the catalytic impacts. Bråthen et al. (2006) provide a case study on the impact that Molde Airport in Norway has on businesses in the surrounding area. The study concludes that catalytic impacts may be significant and that more research is needed. Lian et al. (2007) investigate the economic and environmental impact of air transport in Norway. Catalytic impacts are investigated as part of the study and are highlighted using case studies on Stavanger Airport and Mehamn Airport. The case studies are based on surveys of local businesses and residents. Samples in both case studies are somewhat limited.

The catalytic impact of airports and of air transport in general has been investigated by a number of studies in Europe (e.g. Bandstein et al., 2009; Kupfer and Lagneaux, 2009; Oxford Economic Forecasting, 2006; Cooper and Smith, 2005; Gloersen, 2005; York Aviation, 2005, 2004; York Consulting, 2000; ACI-Europe, 1998; Robertson, 1995). These studies, along with the previously mentioned studies in Norway generally find that airports have two main types of catalytic impact: (1) impacts relating to regional economic competitiveness as a result of an airports ability to promote export activities including tourism, enhance business operations and productivity, and influence company location and investment decisions; (2) impacts relating to regional accessibility and social development as a result of an airports ability to secure access for regions, provide residents with opportunities to travel (e.g. for

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work or leisure, to maintain contact with friends or relatives or to access services such as health and education), and influence resident location and retention.

This study is interested in impacts relating to regional accessibility and social development. In particular, the study focuses on the opinions of residents. Resident opinions are important given that they are the main beneficiary of their local airport, along with trade and industry. Despite this, literature on the catalytic impact of airports tends to focus on impacts relating to regional economic competitiveness as opposed to regional accessibility and social development. Similarly, the findings of previous studies tend to be based on the opinions of businesses as opposed to residents.

Previous studies suggest that impacts are likely to vary between airports and regions (e.g. see Bråthen et al., 2006) and this article provides a comparative case study on two airports serving different regions in Norway. The comparative case study is based on a survey of residents in the different regions and seeks to compare resident use of their local airport and the extent to which residents believe that their local airport contributes to regional accessibility and social development. This article provides a written account of the study. Section 2 provides background to the study including Norwegian context and a review of literature that forms the basis for the study. Section 3 considers methodological issues relating to the case study, survey and sampling. Section 4 provides the findings of the study. Section 5 provides a conclusion including a summary of the main findings, study limitations and recommendations for future research.

2. Background

Norway provides an excellent example of the impact that airports have on regional accessibility and social development. The country extends 1752 km and has the greatest length of any country in Europe. It has a surface area of 305,470 km^2 and 4.8 million inhabitants. With 16 inhabitants per square kilometre, Norway has the second lowest population density in Europe after Iceland. Almost 0.6 million inhabitants live in the capital city of Oslo. Many regions are sparsely populated, while settlements are small (Statistics Norway, 2010a,b).

The size and length of the country, with sparsely populated settlements from north to south, provides some idea as to the challenges faced in terms of accessibility. The challenges are further exacerbated by the topography and climate of the country. A vast majority of the country is defined as mountainous (e.g. see Nordregio, 2004). The country also has long fjords, especially on the west coast. Almost one third of the country is located north of the Arctic Circle meaning that it experiences a harsh arctic climate, especially during winter when snow and icy conditions, combined with mountainous terrain, can hinder travel by land and limit access to certain parts of the country.

Due partly to the low population density, mountainous terrain, long coastline and arctic climate, Norway's land-based transport system is relatively undeveloped, especially outside of the main towns. Rail infrastructure is limited to a conventional mainline network of long-haul routes from Oslo heading west to Stavanger and Bergen, and north to Åndalsnes, Trondheim and Bodø. The only high-speed line is the Gardermoen Line, connecting the city of Oslo to Oslo Gardermoen Airport. Norway has 93,347 km of public roads including just 344 km of motorway (Statistics Norway, 2010c). The most important routes are the E6 that goes from north to south and the E39 that follows the west coast. The Coastal Express ferry operates daily scheduled services from Bergen on the west coast to Kirkenes in the far north. The southbound service calls at 34 ports and takes 5 days. The northbound service calls at 34 ports and takes 6 days.

Norway does however have relatively good infrastructure for air services. 52 airports provided commercial passenger movements in Norway in 2009 and the country is served by a good network of domestic connections (see Fig. 1). International connections are available from all of the large-sized airports and a number of medium-sized airports. Norway has the second highest density of commercial airports in Europe with 11 airports per million inhabitants. Iceland has the highest density with 39 airports per million inhabitants and Sweden has the third highest with 5 airports per million inhabitants (Fewings, 2010).

Access to a local airport is good in Norway. Two thirds of the population is within 1 h travel time by road from its nearest airport. Access is particularly good in western and northern parts of Norway where over two thirds of the population is within 30 min from its nearest airport (Lian et al., 2005). The airports secure access from the regions to other parts of Norway and beyond. For instance, air access means that almost all of the population is able to travel to the capital city of Oslo and back on the same day (Lian et al., 2007). Access to an airport is important given that there are few alternatives to air travel available in Norway, especially for longer journeys. 92% of the air transport share of total passenger kilometres in Norway has no realistic alternative (Lian et al., 2007).

There are a number of social development opportunities that are enhanced by the availability of air travel in Norway, especially visiting friends and relatives, taking holidays, attending courses/conferences/exhibitions, travelling to/from the workplace, and conducting business (Denstadli et al., 2008). Over 21 million trips for tourism were taken by Norwegians in 2009 and air travel is the second most important mode of transport for tourism after the personal or hire car with one third of all trips (Statistics Norway, 2010d).

Air travel is important for those needing to access basic services such as health and education. According to Avinor (2010a), the country's airports supported 30,000 air ambulance movements in 2009; approximately 30% of all movements took place at the small airports in Fig. 1. 400,000 patients are transported on scheduled flights each year. Air travel is also important for the mobility of otherwise less mobile people. More than 250,000 journeys were made by unaccompanied minors, the elderly and disabled persons in 2009.

The national average for trips taken by air by Norwegians in 2009 on scheduled flights is 3.9. This increases to 6.3 in Northern Norway (Denstadli and Rideng, 2010). Air travel frequency in Norway is found to vary for domestic versus international trips. Residents in Northern Norway have a higher frequency of travel on domestic services (5.4 compared to a national average of 2.3) but a lower frequency of travel on international services (0.9 compared to a national average of 1.6). The higher frequency for domestic travel may be a consequence of the greater distances between centres of social and economic activity in Northern Norway and the relatively weak alternatives for travel. Residents may therefore be more dependent on air travel for work or to access basic services such as health and education. Air travel is particularly important for the health sector in Northern Norway. Medical trips account for 13% of all air travel in Northern Norway, increasing to 20% on the route between the main towns of Bodø and Tromsø (Lian et al., 2005). The lower frequency for international travel may be a consequence of the higher travel time or cost involved in gaining access to direct international services that are scarcer from airports in Northern Norway.

Use of air services is recognised as a good way of indicating the importance of air transport in different regions (Lian, 2010). However, opinions are also important. SQW (2002) investigate the social benefits of a new direct air service between Inverness Airport in the Highlands and Islands of Scotland and London Luton