



Working Report
M 0705

Nigel Halpern

**ACCESSIBILITY & SEASONALITY OF TOURISM
IN THE GEIRANGER/TROLLSTIGEN AREA**



**MØREFORSKING
Molde AS**

Nigel Halpern

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Geiranger/Trollstigen area**

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Short summary:

This report provides a written account of a study on the accessibility and seasonality of tourism in the Geiranger/Trollstigen area of Norway. The findings show how the Geiranger/Trollstigen area is one of the most important areas in Norway for nature-based tourism. It is estimated that over 550 000 visitors entered the Geiranger/Trollstigen area in 2006, generating over 350 million NOK in visitor expenditure. The demand for tourism is highly seasonal and the ability to generate additional demand during peak periods is limited by capacity constraints and concerns about social and environmental implications. The current season runs from around mid-May to mid-September. Lengthening the season would allow the area to generate additional demand, making use of existing resources. It is estimated that lengthening the season so that it runs from the start of May to the end of September would provide over 22 000 additional visitors and additional expenditure of almost 14 million NOK in 2008 compared to 2006. Estimates are also made for lengthening the season so that it runs from mid-April to mid-October. Lengthening the season in September and/or October should be possible because access to the area is generally available during these periods. Road access via Trollstigen and Geiranger-Langvatn is rarely available during the start of May or the end of April so this would affect any lengthening of the season into these periods. The report provides a number of recommendations for future work.

Preface

In November 2007, Møre and Romsdal County commissioned Møreforsking Molde AS to conduct a study on the accessibility and seasonality of tourism in the Geiranger/Trollstigen area. The study had two main objectives: (1) to investigate existing demand for tourism including the growth and nature of demand, the income generated by visitor expenditure, and the accessibility and seasonality of demand; (2) to estimate the impact of lengthening the season into the shoulder period including estimates of potential demand and visitor expenditure.

This report provides a written account of the study and its findings. The report consists of six chapters. Chapter 1 provides an introduction to the study. Chapter 2 provides an introduction to the study area. Chapter 3 investigates the growth and nature of existing demand. Chapter 4 investigates the direct economic impact of visitors in terms of visitor expenditure. Chapter 5 investigates the accessibility and seasonality of demand. Chapter 6 estimates the impact of lengthening the season into the shoulder period and provides estimates of potential demand and visitor expenditure. The main findings of the study are highlighted by an executive summary that is provided at the start of this report.

Nigel Halpern (Associate Professor at Molde University College) conducted the study and authored this report on behalf of Møreforsking Molde AS.



Nigel Halpern
Møreforsking Molde AS
Molde, 17 December 2007

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Executive summary

This study investigates the accessibility and seasonality of tourism in the Geiranger/Trollstigen area. The study has two main objectives:

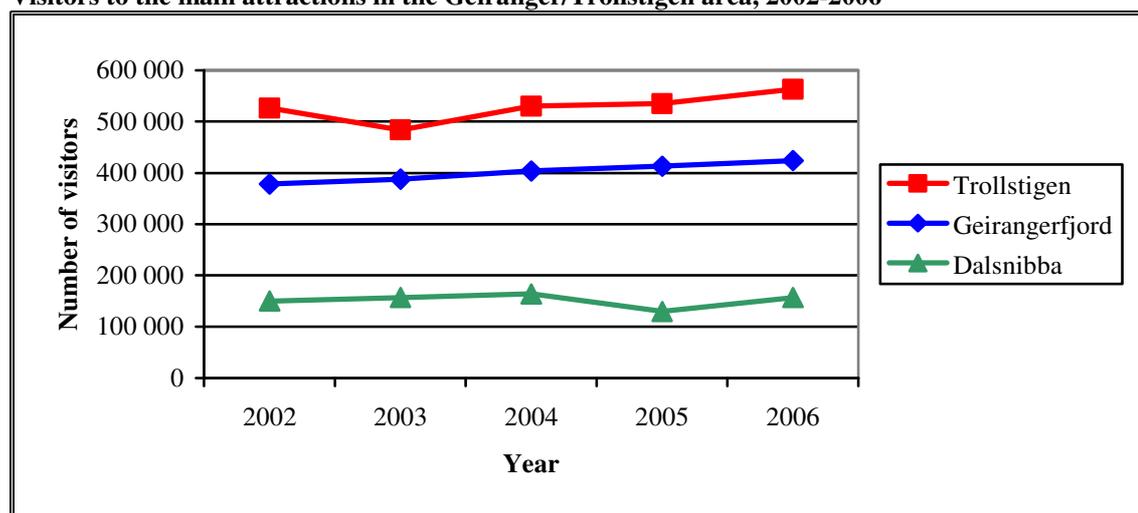
1. To investigate existing demand for tourism including the growth and nature of demand, the income generated by visitor expenditure, and the accessibility and seasonality of demand.
2. To estimate the impact of lengthening the season into the shoulder period including estimates of potential demand and visitor expenditure.

The details of the study are documented in this report and the main findings are highlighted by this executive summary.

Growth & nature of demand

The Geiranger/Trollstigen area is one of the most important areas in Norway for nature-based tourism. Three of the areas main attractions (Trollstigen, the Geirangerfjord and Dalsnibba) were ranked amongst the top 15 most visited nature-based attractions in Norway in 2006. Trollstigen attracted 563 331 visitors in 2006, the Geirangerfjord attracted 423 643 visitors and Dalsnibba attracted 156 778 visitors. Between 2005 and 2006, the three attractions experienced growth of 5.2%, 2.5% and 20.7% respectively. This compares favourably to an overall increase in visits to Norway of 1.5%. Growth has been sustained over the longer-term with average annual increases between 2002 and 2006 of 1.8% at Trollstigen, 3.0% at the Geirangerfjord and 1.1% at Dalsnibba.

Visitors to the main attractions in the Geiranger/Trollstigen area, 2002-2006

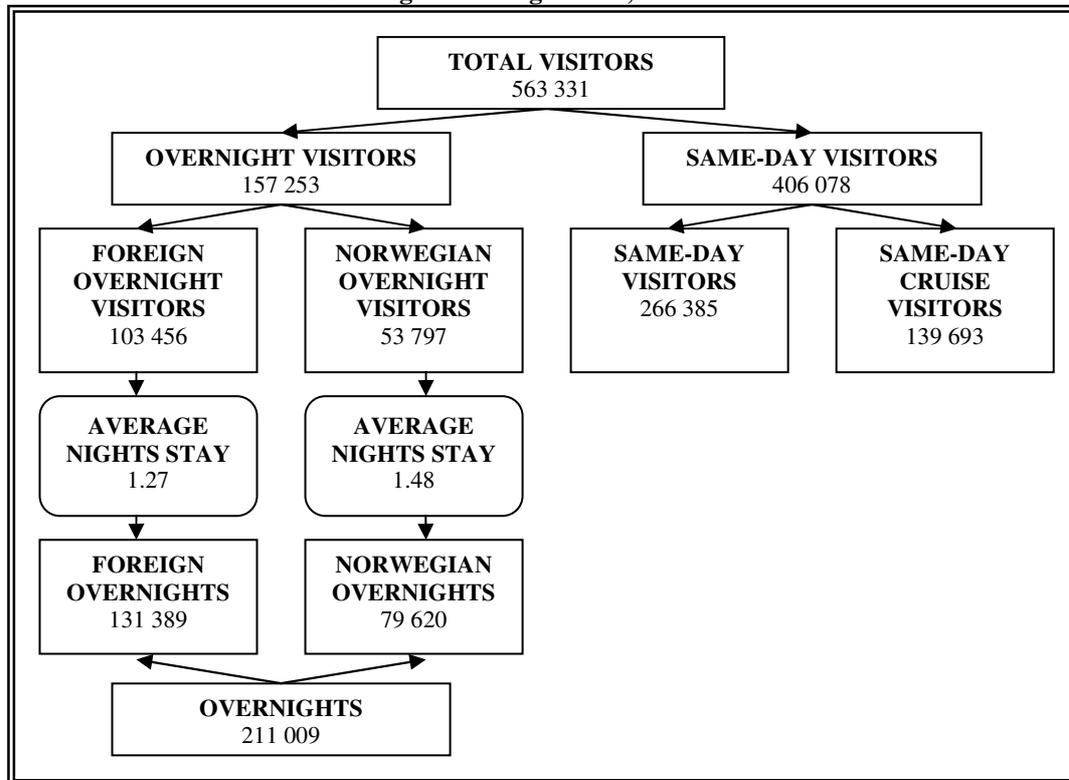


Data source: Statistics Norway (2002-2006)

This study estimates that 563 331 visitors entered the Geiranger/Trollstigen area in 2006 on the basis that this number visited at least one attraction (Trollstigen). It is estimated

that 47.3% of these visitors were same-day visitors, 27.9% stayed in the area overnight for an average of 1.36 nights, and 24.8% were same-day cruise visitors.

Demand for tourism in the Geiranger/Trollstigen area, 2006



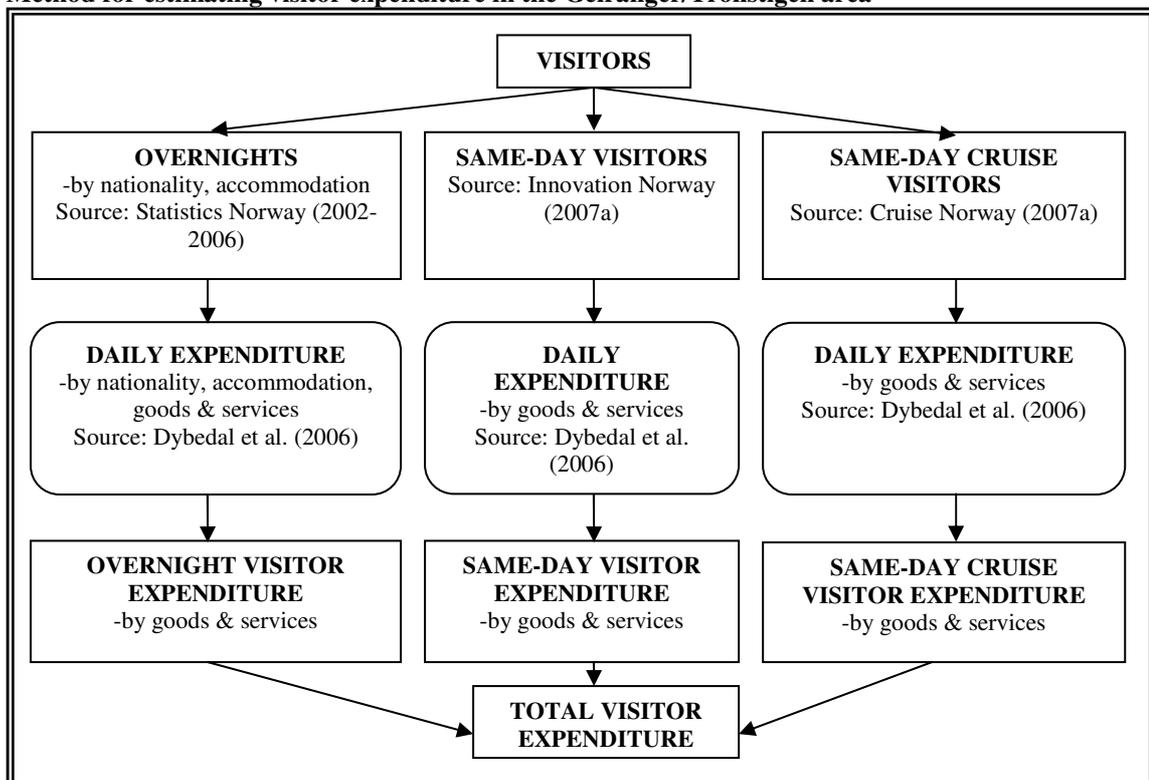
An analysis of overnights in the area in 2006 shows that 62.3% are foreign and 37.7% are Norwegian. The main foreign markets are from Germany (32.2% of all foreign overnights), Holland (13.9%), Japan (7.0%), Sweden (6.8%) and the UK (5.8%). Demand increased by an average of 0.8% between 2002 and 2006. The increase was 6.6% between 2005 and 2006. Demand from foreign overnights has increased at a much faster rate than demand from Norwegian overnights. Demand from foreign overnights increased by an average of 2.4% between 2002 and 2006 (increasing by 9.5% between 2005 and 2006). Demand from Norwegian overnights decreased by an average of 1.4% between 2002 and 2006 (increasing by 2.1% between 2005 and 2006).

Hotels contributed 48.6% of all overnights in 2006 compared to 30.5% from campsites (tents/caravans, campervans and season camps) and 20.9% from huts. Norwegians prefer to stay in hotels (58.8% of all Norwegian overnights). Foreigners prefer to stay in other accommodation including huts or campsites (57.4% of all foreign overnights). Preferences vary for each individual foreign market. For instance, 7.3% of Dutch overnights are in hotel accommodation compared to 99.4% of Japanese overnights. The majority of hotel overnights in 2006 were for holiday/leisure purposes and this is likely to be the same for overnights in huts and at campsites.

Visitor expenditure

A step-wise method was used to estimate visitor expenditure in the Geiranger/Trollstigen area.

Method for estimating visitor expenditure in the Geiranger/Trollstigen area



It is estimated that 351.3 million NOK was generated from visitor expenditure in the Geiranger/Trollstigen area in 2006. 45.2% of this expenditure is likely to be spent before travelling to the Geiranger/Trollstigen area (i.e. in pre-paid expenses) and 54.8% is likely to be spent in the area.

Estimated visitor expenditure in 2006 is based on an average daily expenditure of 733 NOK for overnight visitors, 476 NOK for same-day visitors and 500 NOK for same-day cruise visitors. It is estimated that 44.0% of visitor expenditure came from overnight visitors, 36.1% came from same-day visitors and 19.9% came from same-day cruise visitors. It is also estimated that 21.3% of visitor expenditure went on shopping (not including grocery shopping), 17.5% on food and drink, 15.7% on transport, 15.4% on accommodation, 14.9% on grocery shopping, 10.7% on activities/attractions/museums and 4.5% on other goods and services.

Expenditure of visitors in the Geiranger/Trollstigen area on different goods & services (NOK million), 2006

Goods & services	Overnight visitors	Same-day visitors	Same-day cruise visitors	Total
Accommodation	54.1	n/a	n/a	54.1
Food & drink	21.7	26.6	13.3	61.6
Grocery shopping	21.7	26.6	4.2	52.5
Other shopping	13.9	20.3	40.5	74.7
Transport	23.2	27.9	4.2	55.3
Activities/attractions/museums	13.9	20.3	3.5	37.7
Other	6.2	5.1	4.2	15.5
Total	154.7	126.8	69.9	351.3

Accessibility

Roads and ferries provide access to and within the Geiranger/Trollstigen area. Road access from the west is available all year but access from other directions is limited to certain times of the year. Access from the north is via Trollstigen. It normally opens in late-May and closes in late-October. The stretch of road between Geiranger and Langvatn provides access from the south and from the east. It normally opens in mid-May and closes in mid-November. Road closures normally coincide with the presence of snow.

Road access to the Geiranger/Trollstigen area, 1997-2007

Year	Trollstigen		Geiranger–Langvatn	
	Open	Closed	Open	Closed
1997	06 June	12 October	n/a	n/a
1998	15 May	15 October	n/a	n/a
1999	14 May	11 August	n/a	n/a
2000	26 May	21 August	n/a	n/a
2001	21 May	22 August	n/a	n/a
2002	23 May	16 September	n/a	30 October
2003	28 May	14 August	19 May	08 December
2004	29 May	11 October	30 April	12 November
2005	01 June	15 November	13 May	15 November
2006	23 May	27 October	13 May	10 November
2007	23 May	17 October	n/a	n/a

Data source: Statens vegvesen (unpublished)

There are four ferry routes in the Geiranger/Trollstigen area; two scheduled routes (Eidsdal-Linge and Stranda-Liabygda) and two tourist routes (Hellesylt-Geiranger and Valldal-Geiranger). The two scheduled routes are available all year but the frequency of the Eidsdal-Linge route is reduced between 31 May and 3 September. The two tourist routes provide frequencies of between two and eight trips a day. The Hellesylt-Geiranger route is available between 1 May and 30 September. The Valldal-Geiranger route is available between 22 June and 22 August.

In 2006, ferry routes in the area served 361 729 vehicles and 953 622 passengers. The busiest route was between Eidsdal and Linge, which served 181 080 vehicles and 463 827 passengers. This route is essential for those travelling between Geiranger and

Trollstigen. The route between Stranda and Liabygda served 152 524 vehicles and 318 479 passengers. Users of this route do not necessarily visit the Geiranger/Trollstigen area. The route between Hellesylt and Geiranger served 26 125 vehicles and 165 255 passengers. The route between Valldal and Geiranger served 2 000 vehicles and 6 061 passengers. The route between Valldal and Geiranger commenced operations in 2003.

Each of the ferry routes has experienced an increase in demand in recent years. The route between Valldal and Geiranger has experienced an average annual increase in vehicles of 22.6% between 2003 and 2006. Average annual increases of between 0.2% and 3.6% have been experienced on the other three routes between 2002 and 2006. On most of the routes, the number of boat trips has increased at a slower rate than the number of vehicles. This means that the number of vehicles left standing has increased and average annual increases between 2002 and 2006 were 21.3% (Eidsdal-Linge), 1.8% (Stranda-Liabygda) and 26.1% (Hellesylt-Geiranger). The number of vehicles left standing for the Valldal-Geiranger route between 2003 and 2006 is unchanged.

Performance of ferry routes in the Geiranger/Trollstigen area, 2006

Measurement	Scheduled routes		Tourist routes	
	Eidsdal-Linge	Stranda-Liabygda	Hellesylt-Geiranger	Valldal-Geiranger
PBE	217 629 (2.5%)	235 756 (1.6%)	38 388 (0.4%)	1 976 (23.0%)
Vehicles	181 080 (2.2%)	152 524 (3.6%)	26 125 (0.2%)	2 000 (22.6%)
Passengers	463 827 (1.5%)	318 479 (1.6%)	165 255 (1.0)	6 061 (25.5%)
Boat trips	17 872 (1.6%)	15 862 (-2.1%)	1 863 (4.5%)	213 (0.7%)
Vehicles left standing	15 867 (21.3%)	481 (1.8%)	1 322 (26.1%)	0 (0%)

Data source: Statens vegvesen (2002-2006)

Notes:

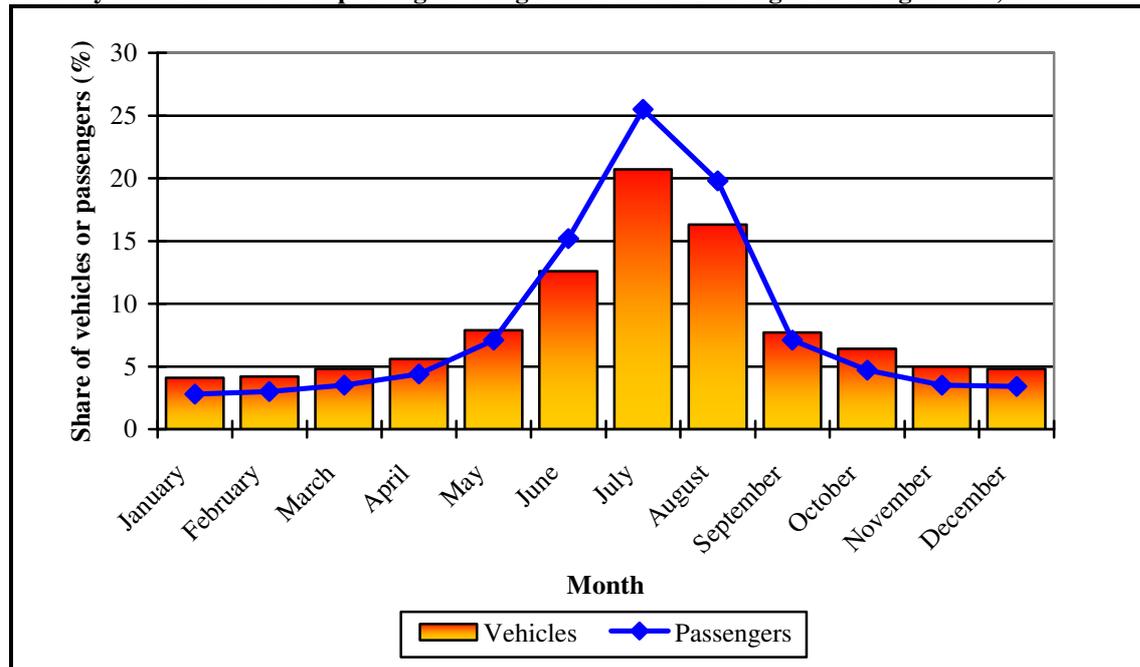
1. PBE measures vehicles according to their dimensions (length, width and weight). The larger and heavier the vehicle, the higher the numerical value that is assigned to it.
2. The figures in brackets represent the average annual change between 2002 and 2006 although for the Valldal-Geiranger route, it is for 2003 to 2006.

Cruise ships provide access to the area to same-day cruise visitors. The number of ship calls has increased from 132 in 2002 to 155 in 2006, representing an average annual increase of 4.4%. The number of same-day cruise visitors in 2006 was 139 693.

Seasonality of demand

Demand for access to the Geiranger/Trollstigen area is highly seasonal. An analysis of demand for ferry services in the area in 2006 shows that around a quarter of annual ferry traffic is in July and over half is during the main holiday period (between June and August). Over 90% of annual traffic on the two tourist routes is during the main holiday period.

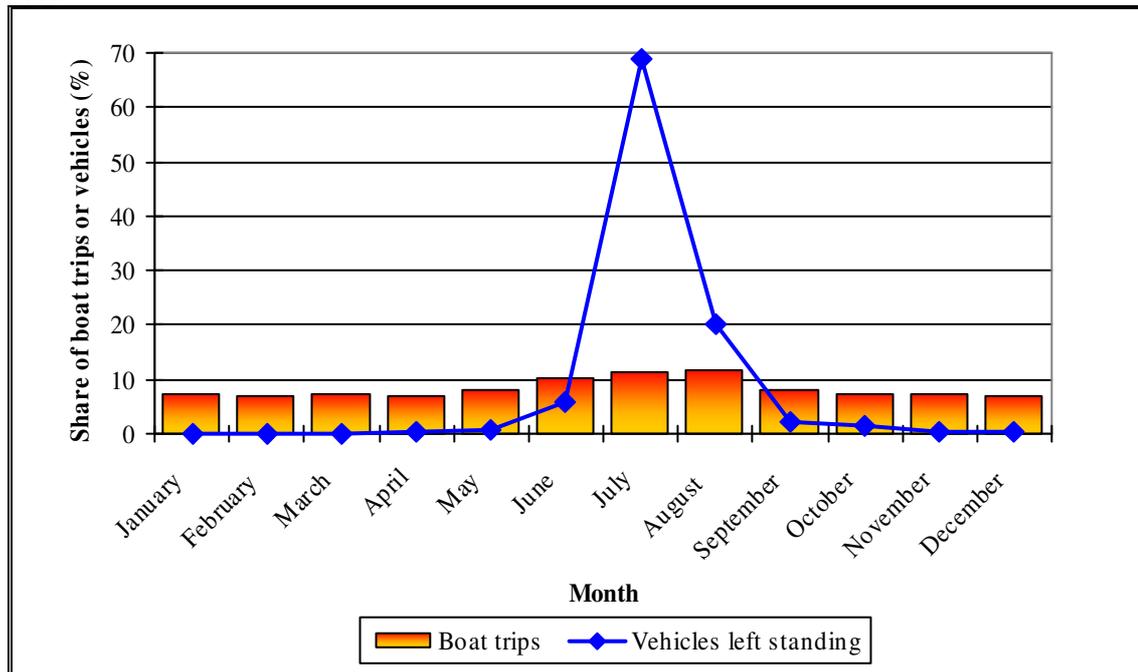
Monthly share of vehicles & passengers using ferries in the Geiranger/Trollstigen area, 2006



Data source: Statens vegvesen (2002-2006)

The supply of access to the area is also seasonal but the increase in supply during peak periods is not proportionate to the increase in demand. Only a third of all ferry boat trips took place during the main holiday period in 2006. On one of the routes (Stranda-Liabygda), the number of boat trips remained constant throughout the year. As a result, the number of vehicles left standing increases during the main holiday period to the extent that over 95% of the 17 670 vehicles left standing in 2006 was during the main holiday period.

Monthly share of boat trips & vehicles left standing for ferries in the Geiranger/Trollstigen area, 2006



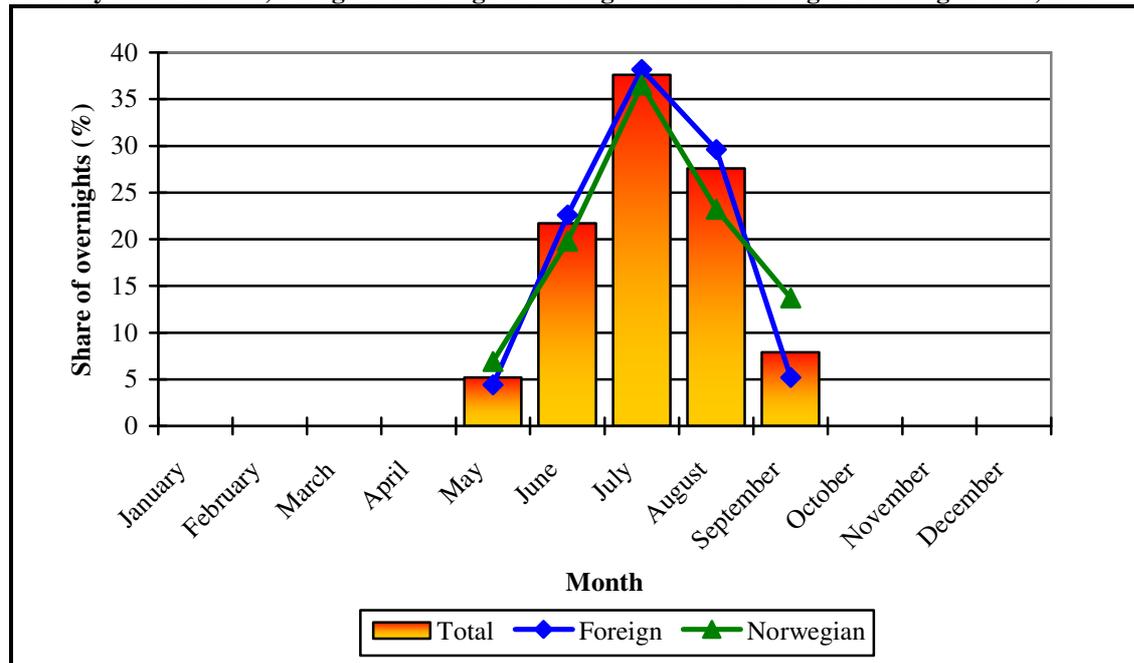
Data source: Statens vegvesen (2002-2006)

A similar situation is experienced with cruise ship access to the Geirangerfjord. There were 146 cruise ship calls in 2007, providing over 100 000 passengers¹. Over a third of the year's ship calls took place in July and almost 90% took place during the main holiday period. In addition, over 80% of all ship calls took place in the morning (between 0700 and 1159). Concerns about the amount of air and people pollution during peak periods has caused port authorities to consider restricting the number of ship calls and passengers in 2008 to no more than 2 ship calls and 5 000 passengers per day.

Seasonal demand for transport services in the area means that demand for other visitor services is also likely to be seasonal. An analysis of overnights in the area in 2006 shows how demand for accommodation is seasonal.

The Geiranger/Trollstigen area experienced 211 009 overnights between May and September 2006. 86.9% were during the main holiday period and 13.1% were during the shoulder period (between May and September). The busiest month was July, providing 37.6% of all overnights. The quietest month was May, providing 5.2% of all overnights. Foreign and Norwegian markets prefer to visit during the main holiday period however; the share of demand is greatest from foreign markets during the main holiday period and from Norwegian markets during the shoulder period. Each of the main foreign markets prefer to visit during the main holiday period but the markets with the highest share of overnights during the shoulder period are from Japan, the USA, the UK, Switzerland and Germany.

¹ The actual figure for 2007 is 100 202 but data on the number of passengers is missing for two ship calls.

Monthly share of total, foreign & Norwegian overnights in the Geiranger/Trollstigen area, 2006

Data source: Statistics Norway (2002-2006)

The greatest share of overnights at hotels, huts and campsites takes place during the main holiday period. The share of demand drops dramatically at huts and campsites during the shoulder period. Campsites experience as little as 2.4% of all campsite overnights in May and 1.2% in September. The decline is less dramatic at hotels where up to 14.2% of all hotel overnights are in September and 7.3% are in May. A large amount of hotel capacity in May and September is taken by people travelling for business or to attend a course/conference. However, most of the demand comes from people travelling for holiday/leisure purposes.

Many hotels are open throughout May and September and some open much earlier in the year and stay open a lot later. Despite this, capacity is reduced outside of the main holiday period. Bed capacity in 2006 was over 1 000 during the main holiday period. This was reduced to 832 in September and 765 in May. There are signs that hotels are reaching a shortage of capacity during peak periods with room occupancy as high as 84.9% in July 2006. Room occupancy is still fairly high in September (59.1%) but is as low as 29.7% in May. Hotel income is seasonal. Hotels in the Geiranger/Trollstigen area generated 12.1 million NOK in July 2006. Income generated in May was just 3.2 million NOK.

Impact of lengthening the season

Linear trendline estimates suggest that the number of visitors to the Geiranger/Trollstigen area will grow by 1.9% each year between 2006 and 2010. This would result in about 42 000 additional visitors by 2010. Data recently released for 2007 shows that the number of visitors in the area has already increased by 4.8% between 2006 and 2007, providing an additional 26 969 visitors.

Future growth in demand will put a great deal of pressure on existing capacity in the Geiranger/Trollstigen area, especially during the main holiday period. Increased numbers of vehicles left waiting for ferry services, restrictions imposed on cruise ship calls and passengers, and capacity constraints at hotels have already been identified and are likely to get worse as visitor numbers increase. These factors could have a negative effect on the visitor experience and on the competitiveness of the area.

It is difficult to justify further increases in capacity for peak periods because that capacity may only be used during the main holiday period (i.e. for just three months of the year). Instead, growth in demand should be targeted for the shoulder period. This would allow the area to generate additional demand whilst spreading it more evenly across the season. It would also help to generate additional income for the area and would allow for a more efficient use of existing capacity.

The current season runs from around mid-May to mid-September although there are inconsistencies between the opening and closing dates of different visitor services. Some visitor services are available before mid-May and after mid-September but other visitor services open after mid-May and close before mid-September. The inconsistent availability of visitor services during the shoulder period is likely to send a mixed message to potential visitors. It may affect their decision to visit the area. It may also have a negative effect on their experience if they visit the area and find that nothing is open. Any lengthening of the season would be determined by the availability of visitor services in the area because it is not worth targeting demand for a longer season if visitor services in the area are not available. It is likely that any lengthening of the season would benefit from a collaborative approach that involves all tourism stakeholders. This means that competing companies may benefit from working together rather than pursuing any individual agendas.

Two options for lengthening the season have been investigated by this study. The first option lengthens the season so that it runs from the start of May to the end of September. It is estimated that this would provide over 22 000 additional visitors and additional expenditure of about 13.9 million NOK in 2008 compared to 2006. The second option lengthens the season so that it runs from mid-April to mid-October. It is estimated that this would provide over 12 000 additional visitors and additional expenditure of about 7.6 million NOK in 2008 compared to 2006.

Lengthening the season in September and/or October should be possible because road access is generally available during these times. Road access via Trollstigen and Geiranger-Langvatn is rarely available during the start of May or the end of April so this would affect any lengthening of the season into these times. The viability of opening and maintaining road access during April and May would need to be discussed with Statens vegvesen.

Future work

Linear trendline estimates are used to forecast future demand for tourism in the Geiranger/Trollstigen area. The estimates use five years of past data (2002 to 2006) and are used by this study to forecast demand in 2008. Linear trendline estimates should

use a minimum of seven years of past data, which means that the findings of this study are fairly limited. A qualitative method such as a Delphi survey would have been more appropriate as a means of forecasting however, Delphi surveys typically take between 30 and 180 days to conduct. This is much longer than the time available for this study but future studies may be able to use a Delphi survey to forecast future demand in the area.

Potential demand and expenditure from lengthening the season has been estimated on the basis of demand from other areas (i.e. the Aurland/Lærdal area in Sogn and Fjordane) and on national estimates of expenditure (i.e. from TØI's national survey of foreign visitors in Norway). This approach does not take account of local factors specific to the Geiranger/Trollstigen area. A representative survey of visitors in the Geiranger/Trollstigen area would allow for a more accurate analysis of visitors to the area and their expenditure. It would also be useful to survey local businesses in order to estimate the wider economic impact of visitors to the area (i.e. in terms of sales, personal income, employment and value-added contributions). A survey of this nature could also be used to estimate the multiplier effect for the area using an input-output model such as PANDA. This would identify the indirect and induced effects of visitor expenditure on the area and would estimate how much of the expenditure is retained by the area and how much is leaked to other areas.

This study assumes that demand and expenditure will increase simply from lengthening the season. However, tourism planners will need to consider marketing and product development activities that coincide with, and are specifically tailored to, a lengthening of the season. This will help to achieve, and possibly exceed, the estimates of potential demand and expenditure in this study.

The importance of targeting different markets at different times of the season has been recognised by this study. Potential markets for the shoulder period may be very different to potential markets for the main holiday period and tourism planners will need to think carefully about which markets to target for which times of the season. Tourism planners should also think carefully about the tourism product and should consider offering different products for different markets at different times of the season. This study provides a few ideas as to the type of markets and products that could be targeted during the shoulder period but market research is needed before potential markets and products can be realistically identified and recommended.

1. Introduction

Tourism can be used as a tool for regional economic development, especially in peripheral areas that face the threat of declining economic activity, outward migration and the restructuring of primary industries such as agriculture, forestry and fishing (Briedenhann & Wickens, 2004). In such areas, tourism may be one of few development opportunities and can utilise natural resources that appeal to tourists such as wilderness landscapes, breathtaking scenery and a diversity of flora and fauna. The problem for many peripheral areas is that the demand for tourism is likely to be seasonal.

Seasonality in tourism is a well-documented phenomenon (e.g. see Baum & Lundtorp, 2001). It is normally described as a temporal imbalance that may be measured in terms of visitors to an area or attraction, visitor expenditure, employment or demand for transportation services (Butler, 1994). Temporal imbalance can be influenced by a number of factors such as:

- Climate (i.e. temperature and weather conditions).
- Permanent structural characteristics (i.e. islands and mountains).
- Holiday periods and calendar effects (i.e. school holidays, public holidays and national holidays such as Easter and Christmas).
- Social or business customs (i.e. religious observances, pilgrimages, conventions and government assemblies).
- Individual events (i.e. periodic or ad-hoc events such as sports events, conferences or festivals).

Cold-climate destinations are especially vulnerable to seasonality (Baum & Hagen, 1999). This is because acute climatic conditions and the presence of permanent structural characteristics such as mountains can combine to create competitive disadvantages that make them less attractive and accessible to tourists at certain times of the year. Such disadvantages are characteristic of the Geiranger/Trollstigen area of Norway where acute climate conditions and the presence of mountains combine to make the area less accessible to tourists during the winter months.

Seasonality can have a positive impact on a destination because it allows local communities and businesses to take a break and 're-charge their batteries' before the busy season starts again. Despite this, seasonality is normally considered to have a negative impact. It can result in an inefficient use of capacity because excessive capacity is needed to accommodate peak periods when demand is at its greatest and is left relatively empty outside of that period. Attracting investment for additional capacity can be difficult because of the short time available in which to generate a return on investment.

Seasonality can also result in a dependence on imported goods and services. Employment and tour operators may come from outside of the region due to shortages within the region itself. This provides a challenge in terms of finding the goods and

services to cater for demand but also results in economic leakages because those earning money from the tourism activity in an area, are based outside of that area.

Peripheral areas are likely to have small communities and delicate environments that can be engulfed by demand in peak periods. This creates adverse social and environmental consequences, especially in terms of people, noise and air pollution.

Tourism developers often aspire to overcome seasonality but becoming a twelve month destination may defy reality in some cases, especially at destinations that are affected by factors that are largely out of their control such as climate. More commonly, aspirations are aimed at lengthening the season by extending it into the shoulder period at either end of the season, making use of existing resources but possibly developing new products and/or targeting alternative markets. Encouraging a more even distribution of demand across the year can help to reduce some of the negative impacts of seasonality, especially the inefficient use of capacity. It can also have a positive economic impact on an area in terms of generating additional visitor expenditure, sales, personal income, employment and value added contributions. Obviously, any negative effects in terms of social and environmental impacts should also be considered when seeking to lengthen the season.

Creating a twelve month season in the Geiranger/Trollstigen area defies reality. However, lengthening the season into the shoulder period at either end of the existing season, making use of existing resources, is a possibility. This study aims to investigate the accessibility and seasonality of tourism in the Geiranger/Trollstigen area. The study has two main objectives:

1. To investigate existing demand for tourism including the growth and nature of demand, the income generated by visitor expenditure, and the accessibility and seasonality of demand.
2. To estimate the impact of lengthening the season into the shoulder period including estimates of potential demand and visitor expenditure.

This report provides a written account of the findings of the study. The report consists of six chapters. The first chapter has provided an introduction to the study. The second chapter provides an introduction to the study area. The third chapter investigates the growth and nature of existing demand. The fourth chapter investigates the direct economic impact of visitors in terms of visitor expenditure. The fifth chapter investigates the accessibility and seasonality of demand. The sixth chapter estimates the impact of lengthening the season into the shoulder period and provides estimates of potential demand and visitor expenditure.

2. The Geiranger/Trollstigen area

This chapter provides an introduction to the Geiranger/Trollstigen area. It briefly describes the location of the area and its main attractions.

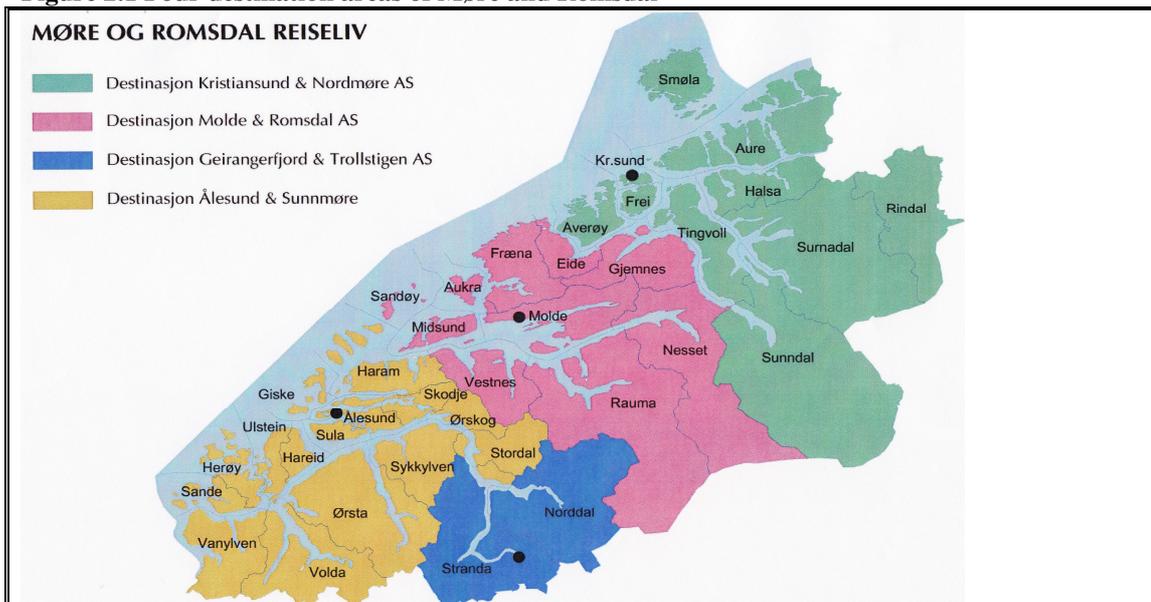
2.1 Location of the area

The Geiranger/Trollstigen area is located in the county of Møre and Romsdal. The area is part of the wider area that is known as Fjord Norway. Fjord Norway consists of four counties in the west of Norway (Møre and Romsdal, Sogn and Fjordane, Hordaland, and Rogaland). The Geiranger/Trollstigen area is one of four destination areas in Møre and Romsdal. The four areas are Destination Kristiansund and Nordmøre, Destination Molde and Romsdal, Destination Geiranger and Trollstigen, and Destination Ålesund and Sunnmøre. Each destination area is managed by its own company that has responsibility for aspects such as the provision of tourist information services, product development and marketing. There is then an umbrella organisation called Møre and Romsdal Tourism. This organisation includes the four destination areas, Fjord1 MRF, NHO Reiseliv, and Møre and Romsdal County. The four destination areas of Møre and Romsdal are shown in figure 2.1.



Source: Destination Geirangerfjord and Trollstigen (2007a)

Figure 2.1 Four destination areas of Møre and Romsdal



Source: Møre & Romsdal Fylke (2007a)

The Geiranger/Trollstigen area reaches from Trollstigen in the north to Geiranger, Dalsnibba and Langevatn (in the direction of Grotli) in the south. The location of Trollstigen, Geiranger and Dalsnibba can be seen on the map in figure 2.2.

Figure 2.2 Map of the Geiranger/Trollstigen area and surrounding areas



Source: Statens vegvesen (2007)

2.2 Main attractions of the area

The Geiranger/Trollstigen area plays host to three main nature-based attractions; the Geirangerfjord and Dalsnibba viewpoint, which are located in the municipality of Stranda and Trollstigen, which lies on the municipal boundary between Rauma and Norddal.

2.2.1 The Geirangerfjord and Dalsnibba

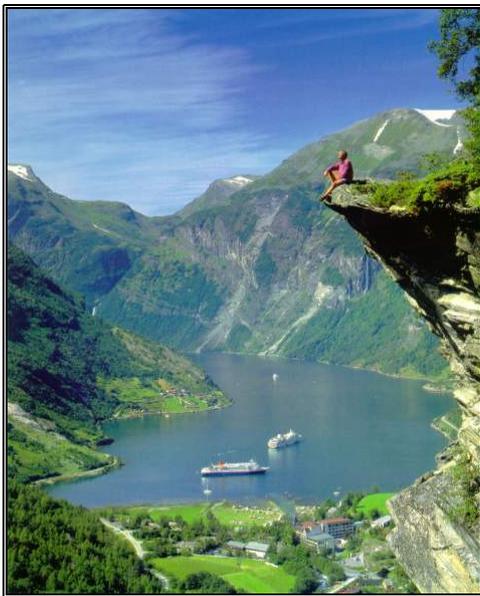
The West Norwegian Fjords is an area that includes the Nærøyfjord in Sognefjord and the Geirangerfjord in Møre and Romsdal.

The West Norwegian Fjords were included on the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage List on 14th July 2005² and were voted the best preserved World Heritage Site by National Geographic Traveler (National Geographic Traveler, 2006). They were also voted the best destination in the world in terms of cultural, environmental and aesthetic integrity by National Geographic Traveler (National Geographic Traveler, 2004).

Norwegian Fjords

"This place is wonderful: living traditional culture, wonderful landscape, not crowded. I am very happy with how this destination is managed. Excellent environmental quality, local people involved in a very smooth way." —Panelist Eduardo Nycander, Rainforest Expeditions

Source: National Geographic Traveler (2004)



Source: Norwegian Adventures (2007)

The Geirangerfjord is formed in the shape of an S and stretches 20 kilometres between Hellesylt and Geiranger. It is sometimes referred to as The Pearl of the Fjords and has waterfalls with names such as the Seven Sisters, the Suitor and the Bride's Veil. The waterfalls launch water from almost vertical mountainsides, creating veils of mist and a display of rainbows over the fjord.

At the top of the steep cliffs are a number of deserted alpine and fjord farms such as Skageflå, Knivsflå, Blomberg, Matvik and Syltevik. The farms bear witness to the areas history and add to the cultural experience of visitors to the fjord. At its deepest, the fjord is almost 260 metres, and the mountains that surround it reach up to over 1 600 metres above the waters of the fjord.

The village of Geiranger is located at the end of the Geirangerfjord. Most of the local conveniences for the Geiranger/Trollstigen area are located in the village that has a population of about 250 inhabitants (Stranda Municipality, 2007) including a range of accommodation, shops and grocery stores, bars, restaurants and cafes, and tourist services such as the Geiranger Fjord Centre, which provides basic information about the World Heritage Site.

The Dalsnibba viewpoint is located in the Geirangerfjord area. It is 1 500 metres above sea level and provides a view of the Geirangerfjord and the surrounding mountains. The Geirangerfjord area is popular with walkers and offers excellent opportunities for hiking. A number of tour companies offer a range of land-based and water-based activities in the area such as a limousine cruise, fishing trips and treasure hunts, fjord sightseeing, rafting and kayaking. The Geirangerfjord is a well established destination

² See <http://whc.unesco.org/en/list> for the full UNESCO World Heritage List.

for cruise ships and attracted 155 cruise ships during the 2006 summer season (Cruise Norway, 2007a).

2.2.2 Trollstigen

In contrast to the Geirangerfjord, which is a remarkable creation of Mother Nature, Trollstigen is a remarkable creation of man. Trollstigen, which translates as The Troll's Road in English, is a road that consists of a sequence of 11 bends that snake and climb their way up and along steep mountainsides, passing Stigfossen, a waterfall encircled by mountains that reach 1 600 metres above sea level. The road was opened in 1936 by King Haakon VII, who at the opening ceremony gave the road the name Trollstigvegen.



Source: Visit Åndalsnes (2007)

The road represents incredible engineering and construction skills that made use of the simplest of tools from the 1930's. The road is narrow with a gradient of 9%, but passing pockets have been incorporated and traffic normally flows without problem. At its highest point, the road is 852 metres above sea level.

3. Growth & nature of existing demand

This chapter investigates the growth and nature of existing demand for tourism in the Geiranger/Trollstigen area. It briefly mentions some methodological issues before providing an analysis of visitor numbers.

3.1 Methodology

According to the United Nations World Tourism Organisation (UNWTO), “tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes” (UNWTO, 2007). This concept can be applied to different forms of tourism, depending on whether a person is travelling to, from or within a country. This study is concerned with inbound tourism to the Geiranger/Trollstigen area and includes all domestic and foreign travellers received by the destination.

Travellers engaged in tourism are described as visitors and can be defined as overnight visitors or same-day visitors. The former is commonly referred to as a tourist. Overnight and same-day visitors can be measured according to the number of arrivals at a frontier or a specific place such as a tourist attraction. Overnight visitors can also be measured according to the number of arrivals at a frontier or a specific place or according to the number of nights stayed in hotels and other establishments. Table 3.1 provides a summary of the different measurements that can be used to quantify tourism demand.

Table 3.1 Measurements used to quantify tourism demand

Measurement	Term	Source
Overnight visitors (tourists)	Arrivals	Frontiers or at a specific place Hotels & other establishments -excludes private accommodation -arrivals are counted in every new accommodation visited
	Nights	Hotels & other establishments -excludes private accommodation -arrivals are counted in every new accommodation visited
Same-day visitors	Arrivals	Frontiers or at a specific place

Source: adapted from UNWTO (2007)

The following two sources of data are available on tourism in the Geiranger/Trollstigen area and are used by this study to analyse the growth and nature of existing demand:

1. Number of visitors at each of the main attractions in the Geiranger/Trollstigen area (Trollstigen, the Geirangerfjord and Dalsnibba).

This data is gathered by Destination Geirangerfjord and Trollstigen. It is created using a combination of ticket sales and visitor counts at each attraction between 1 May and 31

August. Innovation Norway uses this data to compile a list of the most visited nature-based attractions in Norway (e.g. see Innovation 2007a). The list has been published annually since 2002. Data is only provided on the annual number of visitors and readers should be aware of the limitations that this has. It does not say anything about the visitor (i.e. their nationality or purpose of trip). It does not distinguish between overnight and same-day visitors. It records each visit to one or more of the attractions so visitors can be counted more than once. It does not distinguish between residents and non-residents so a local resident can be counted as a visitor. Differences exist in the method of measurement used at each individual attraction.

2. Number of overnights at hotels and other establishments in the Geiranger/Trollstigen area.

This data is available from Statistics Norway (2002-2006) and is available on an annual basis since 2002. Data is provided for the Geiranger/Trollstigen area and includes the number of overnights by main markets and type of accommodation. Data on purpose of trip is available but only for overnights in hotels. Data is not available on the number of overnight visitors, only the number of overnights. However, data is available on the average length of stay of guests in hotels so it is possible to estimate the number of overnight visitors by dividing the number of overnights by the average length of stay. Data collection is limited to reporting establishments and may not include all overnights in the area.

3.2 Number of visitors

Table 3.2 lists the top 15 most visited nature-based attractions in Norway in 2005 and 2006.

Each of the main attractions in the Geiranger/Trollstigen area features in the top 15. Each of the main attractions has experienced growth in the number of visitors between 2005 and 2006 and has improved upon their 2005 ranking in 2006. Trollstigen attracted the most visitors of the three attractions in 2006 with 563 331 visitors (an increase of 5.2% on the previous year). The Geirangerfjord attracted 423 643 visitors in 2006 (an increase of 2.5% on the previous year) and Dalsnibba attracted 156 778 visitors (an increase of 20.7% on the previous year).

5 of the attractions listed in table 3.2 are located in Møre and Romsdal. This includes the three Geiranger/Trollstigen attractions, Atlanterhavsveien and Fjellstua Aksla. 14 of the attractions are located in Fjord Norway. Future national tourist road – "De blå fjella" is located in the county of Hedmark and is the only nature-based attraction in the top 15 that is not located in Fjord Norway. The concentration of Norway's most visited nature-based attractions in Fjord Norway and Møre and Romsdal emphasises the range of products available for this type of tourism.

Table 3.2 15 most visited nature-based attractions in Norway, 2005-2006

Rank		Attraction	County	Number of visitors		% change 05/06
2006	2005			2005	2006	
1	1	Vøringsfossen, Eidfjord	Hordaland	655,000	655,000	0.0
2	2	Trollstigen, near Åndalsnes	Møre & Romsdal	535,250	563,331	5.2
3	4	Kjosfossen near Flåmsbanen	Sogn & Fjordane	408,750	457,400	11.9
4	3	Geirangerfjorden, Geiranger	Møre & Romsdal	413,350	423,643	2.5
5	5	Låtefossen, Odda/Hardanger	Hordaland	400,000	420,000	5.0
6	7	Steinsdalsfossen, Norheimsund	Hordaland	280,000	300,000	7.1
7	8	Nærøyfjorden, Aurland	Sogn & Fjordane	273,790	297,038	8.5
8	11	Briksdalsbreen, Olden	Sogn & Fjordane	260,000	280,000	7.7
9	10	Sognefjellsvegen, Oppland*	Sogn & Fjordane	258,480	253,953	-1.8
10	12	Atlanterhavsveien, Averøy	Møre & Romsdal	215,620	237,316	10.1
11	13	Fjellstua Aksla, Ålesund	Møre & Romsdal	191,500	200,550	4.7
12	14	Bøyabreen, Fjærland	Sogn & Fjordane	180,000	180,000	0.0
13	15	Dalsnibba, near Geiranger	Møre & Romsdal	129,890	156,778	20.7
14	16	"De blå fjella", Rondane*	Hedmark	105,000	120,780	15.0
15	18	Lysefjorden boat trip, near Stavanger	Rogaland	81,560	101,133	24.0
Top 15 Total				3,798,690	4,646,922	22.3

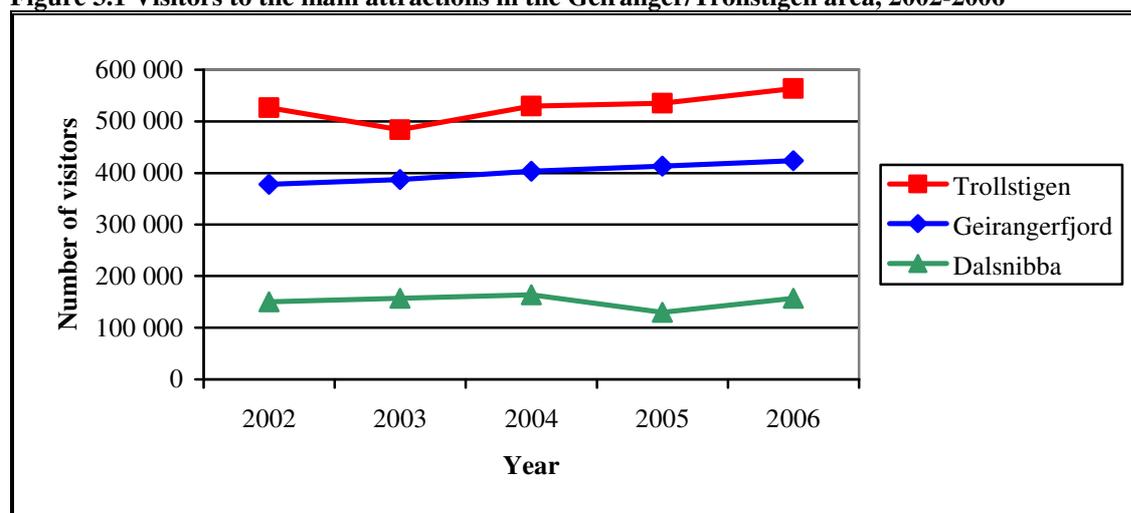
Data source: Innovation Norway (2007a)

*Current or future national tourist road

Promoting opportunities for 'activities and experiences in nature' would appear to be a good strategy for the Geiranger/Trollstigen area but also for Møre and Romsdal and Fjord Norway on the basis that demand for the top 15 most visited nature-based attractions increased by 22.3% between 2005 and 2006. This compares to an increase in visits to Norway of 1.5% over the same period³.

Visitor numbers at each of the attractions have increased between 2002 and 2006 (see figure 3.1). The largest average annual increase has been at the Geirangerfjord (3.0%, representing 11 411 additional visitors). Trollstigen has experienced an average annual increase of 1.8%, representing 9 283 additional visitors. Dalsnibba has experienced an average annual increase of 1.1%, representing 1 695 additional visitors.

³ This figure is based on the combined increase of holiday and leisure trips taken by Norwegians in Norway and holiday and leisure arrivals from foreign markets. The former grew from 11,810,000 in 2005 to 11,940,000 in 2006. The latter grew from 2,913,000 in 2005 to 3,004,000 in 2006. The combined increase is from 14,723,000 in 2005 to 14,944,000 in 2006 (Innovation Norway, 2007b).

Figure 3.1 Visitors to the main attractions in the Geiranger/Trollstigen area, 2002-2006

Data source: Statistics Norway (2002-2006)

This study estimates that 563 331 visitors entered the Geiranger/Trollstigen area in 2006 on the basis that this number visited at least one attraction (Trollstigen).

3.3 Number of overnights

Table 3.3 shows the number of overnights in Norway, Fjord Norway, and Møre and Romsdal between 2005 and 2006. Strong growth in overnights has been experienced by each area. Norway experienced a 4.7% increase, Fjord Norway 10.2% and Møre and Romsdal 8.3%. The higher rates of growth in Fjord Norway and Møre and Romsdal compared to Norway emphasise the growing interest in these areas for tourism.

Table 3.3 Overnights in Norway, Fjord Norway and Møre and Romsdal, 2005-2006

Area	2005 (% share)	2006 (% share)	% change 05/06
Norway	25 946 303 (100)	27 164 889 (100)	4.7
Fjord Norway	6 029 880 (100)	6 646 545 (100)	10.2
-Hordaland	2 273 906 (37.7)	2 384 020 (35.9)	4.8
-Rogaland	1 383 807 (22.9)	1 673 861 (25.2)	21.0
-Møre and Romsdal	1 200 036 (19.9)	1 299 910 (19.6)	8.3
-Sogn and Fjordane	1 172 131 (19.4)	1 288 754 (19.4)	9.9
Møre and Romsdal	1 200 036 (100)	1 299 910 (100)	8.3
-Ålesund/Sunnmøre	325 821 (27.2)	377 411 (29.0)	15.8
-Molde/Romsdal	359 743 (30.0)	367 607 (28.3)	2.2
-Kristiansund/Nordmøre	247 931 (20.7)	266 389 (20.5)	7.4
-Geiranger/Trollstigen	197 986 (16.5)	211 009 (16.2)	6.6
-Other	68 555 (5.7)	77 494 (6.0)	13.0

Data source: Statistics Norway (2002-2006)

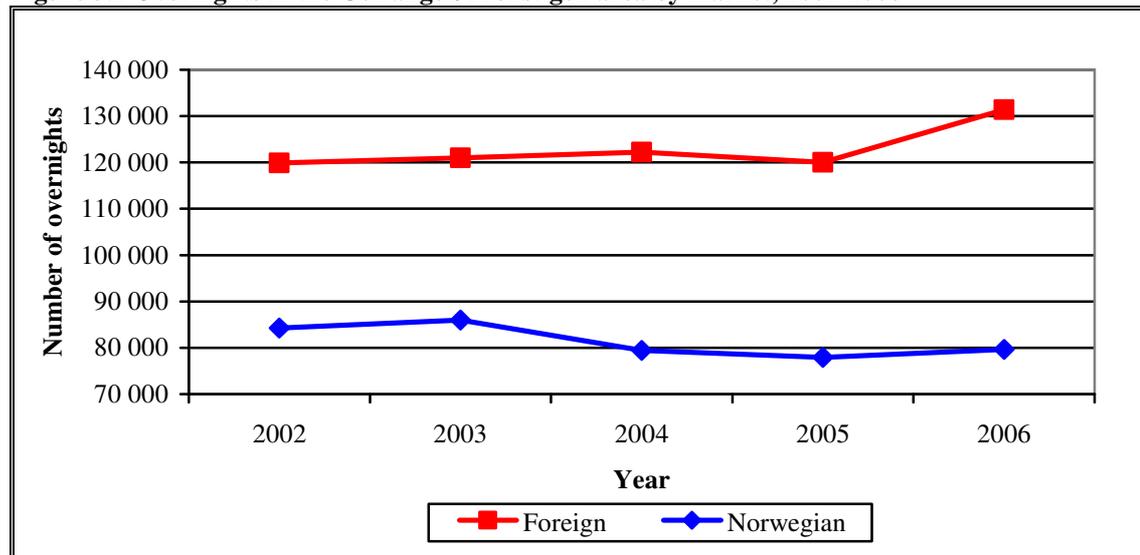
The Geiranger/Trollstigen area experienced a 6.6% increase between 2005 and 2006 but its share of overnights in Møre and Romsdal decreased from 16.5% to 16.2%. Recent growth of 6.6% has not been sustained over the longer period with the total number of overnights experiencing an average annual increase of just 0.8% between 2002 and 2006 (see table 3.4).

Table 3.4 Overnights in the Geiranger/Trollstigen area by market, 2002-2006

Market	2002	2003	2004	2005	2006	% share 06	% average annual change 02/06	% change 05/06
Total	204 159	206 966	201 672	197 986	211 009	100	0.8	6.6
Norway	84 278	85 990	79 473	77 957	79 620	37.7	-1.4	2.1
Foreign	119 881	120 976	122 198	120 029	131 389	62.3	2.4	9.5
-Germany	40 065	42 237	38 271	39 006	42 364	32.2	1.4	8.6
-Holland	12 486	18 080	18 164	17 628	18 269	13.9	11.6	3.6
-Japan	8 879	5 459	8 928	9 737	9 212	7.0	0.9	-5.4
-Sweden	8 656	8 822	7 681	8 144	8 951	6.8	0.9	9.9
-UK	6 560	6 107	6 831	5 970	7 607	5.8	4.0	27.4
-USA	8 630	6 203	7 343	6 055	4 879	3.7	-10.9	-19.4
-Denmark	4 611	4 521	4 418	4 791	4 787	3.6	1.0	-0.1
-France	4 618	4 755	4 860	3 506	4 360	3.3	-1.4	24.4
-Spain	1 951	1 778	2 337	3 721	4 220	3.2	29.1	13.4
-Italy	1 756	2 320	2 317	1 810	2 336	1.8	8.3	29.1
-Finland	1 834	1 651	1 404	1 327	1 620	1.2	-2.9	22.1
-Switzerland	1 393	1 445	1 425	1 177	1 333	1.0	-1.1	13.3
-Other	18 442	17 598	18 219	17 157	21 451	16.5	4.1	25.0

Data source: Statistics Norway (2002-2006)

Growth in the number of overnights has fluctuated between 2002 and 2006. Fluctuations have been experienced from Norwegian and foreign markets but foreign markets tend to be more resilient. Growth in the number of foreign overnights was particularly strong between 2005 and 2006 with an increase of 9.5%. The relative stability and recent growth in foreign markets compared to the Norwegian market is illustrated in figure 3.2.

Figure 3.2 Overnights in the Geiranger/Trollstigen area by market, 2002-2006

Data source: Statistics Norway (2002-2006)

In terms of foreign markets, strong growth was experienced from Italy, Britain, France and Finland between 2005 and 2006 with increases of over 20% for each market

however; each of these markets, especially Italy and Finland, had a relatively modest number of overnights in the base year of 2002.

In 2006, Germany provided the largest share of foreign overnights (32.2%), followed by Holland (13.9%), Japan (7.0%), Sweden (6.8%) and the UK (5.8%). Collectively, the top 5 markets provided 65.7% of all foreign overnights. The remaining foreign markets each provided a share of 3.7% or less.

Germany is clearly the most important market for foreign overnights. Spain has provided the most consistent source of growth between 2002 and 2006 with an average annual increase of 29.1%. Holland and Italy have also demonstrated high average annual increases of 11.6% and 8.3% respectively.

Table 3.5 shows the number of overnights in the Geiranger/Trollstigen area between 2002 and 2006 by accommodation. Overnights in campervans experienced the strongest growth between 2002 and 2006 with an average annual increase of 4.8%. Tents/caravans experienced an average annual increase of 3.1%, and hotels 2.3%. Huts and season camps experienced average annual decreases of 2.5% and 7.3% respectively. Between 2005 and 2006, the strongest growth was in hotels with an increase of 10.3%. Huts experienced an increase of 8.7%, tents/caravans 10.9% and campervans 13.4%. Season camps experienced a decrease of 37.6%.

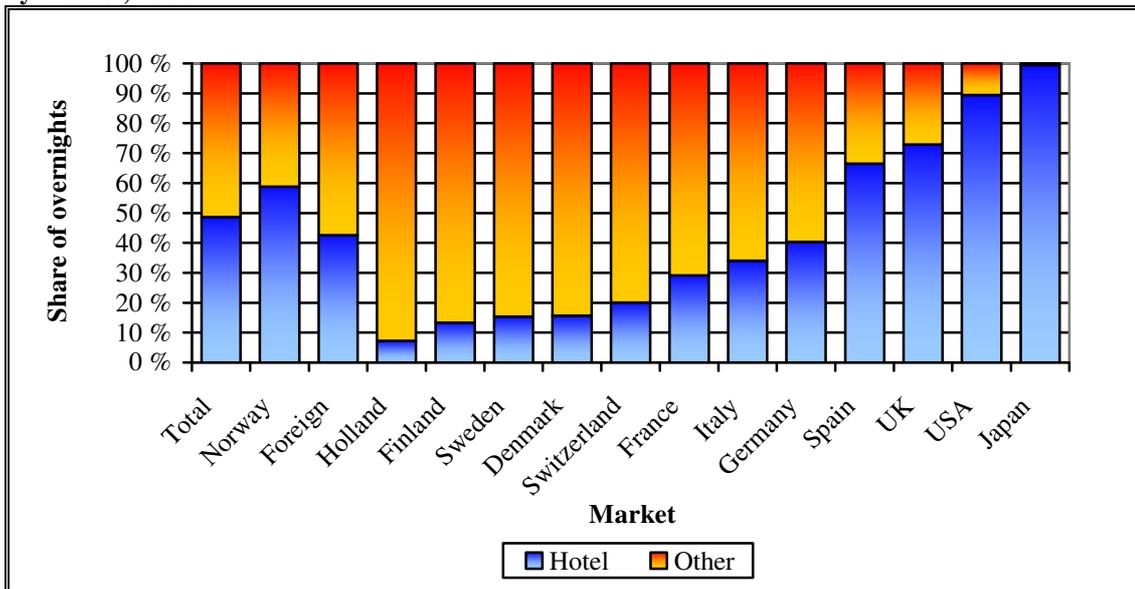
Table 3.5 Overnights in the Geiranger/Trollstigen area by accommodation, 2002-2006

Accommodation	2002	2003	2004	2005	2006	% share 06	% average annual change 02/06	% change 05/06
Hotel	94 066	88 794	96 223	93 147	102 759	48.6	2,3	10,3
Hut	49 005	49 428	41 710	40 498	44 014	20.9	-2,5	8,7
Tent/caravan	28 430	32 093	30 965	28 832	31 977	15.2	3,1	10,9
Campervan	18 859	20 479	21 539	19 838	22 487	10.7	4,8	13,4
Season camp	13 799	16 172	11 235	15 671	9 772	4.6	-7,3	-37,6
Total	204 159	206 966	201 672	197 986	211 009	100	0,8	6,6

Data source: Statistics Norway (2002-2006)

Hotels are the largest provider of overnights in the area with 48.6% of all overnights in 2006. This is followed by huts with 20.9%, tents/caravans with 15.2%, campervans with 10.7% and season camps with 4.6%. Differences exist by market and this is illustrated by figure 3.3, which shows the share of overnights in hotels versus other accommodation by market in 2006.

Figure 3.3 Share of overnights in hotel and other accommodation in the Geiranger/Trollstigen area by market, 2006



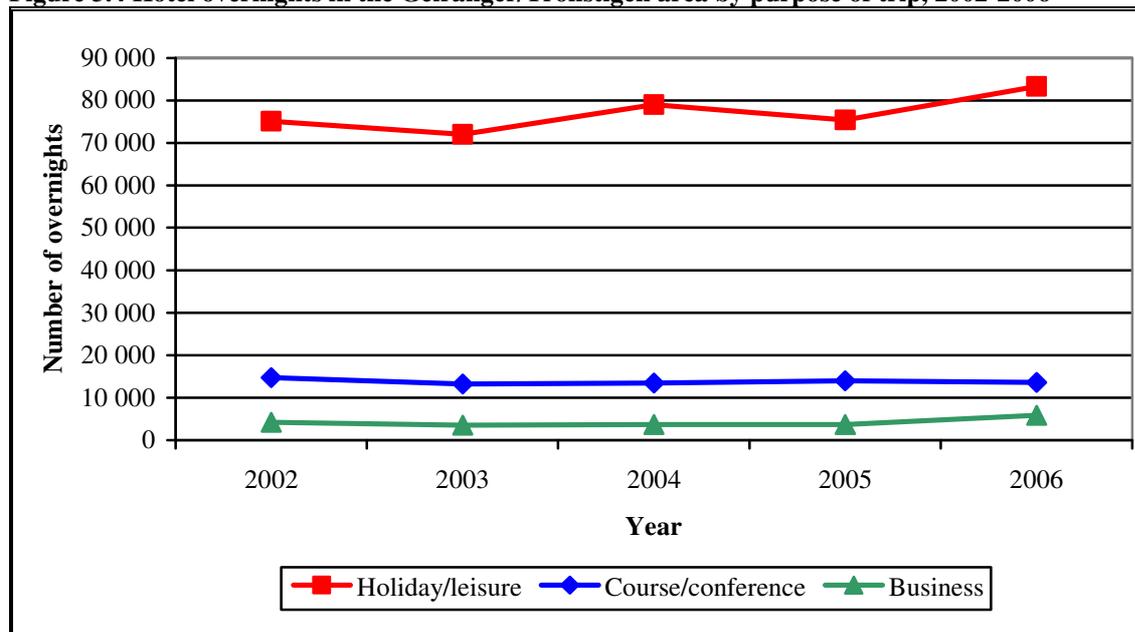
Data source: Statistics Norway (2002-2006)

The share of overnights at hotels versus other accommodation is fairly even. The majority of Norwegian overnights are in hotels (roughly 60%) whilst it is the other way around for foreign markets (roughly 40%).

Overnights from countries separated from continental Europe by water (i.e. the UK, the USA and Japan) have a relatively high share of overnights in hotels with shares of over 70% for the UK, almost 90% for the USA and almost 100% for Japan. Spain, which is a long way from Norway by land, is another market that has a high share of overnights in hotels with a share of almost 70%. Countries that are fairly close to Norway by land (i.e. Holland, Finland, Sweden and Denmark) have a relatively small share of overnights in hotels with shares of less than 20%. These markets are likely to visit Norway by car, often with a caravan or campervan and stay on campsites rather than in hotels. Markets from Switzerland, France, Italy and Germany also have a smaller share of overnights in hotels although in the case of Germany, the share is about 40%.

Overnights by purpose of trip are shown in figure 3.4⁴.

⁴ Readers should note that data is only available for hotels. Only 48.6% of overnights were in hotels in 2006 so this means that over half of all overnights are excluded from the analysis.

Figure 3.4 Hotel overnights in the Geiranger/Trollstigen area by purpose of trip, 2002-2006

Data source: Statistics Norway (2002-2006)

Holiday/leisure visitors provided the largest number of overnights in hotels in 2006 with 83 330 overnights (81.1% of all overnights). 13 577 overnights were for course/conference purposes (13.2%) and 5 852 overnights were for business purposes (5.7%). 51.4% of overnights were in other accommodation in 2006 (i.e. huts, tents/caravans, campervans and season camps). It is likely that the vast majority of these overnights were for holiday/leisure purposes. This would mean that the share of overnights for holiday/leisure purposes in the Geiranger/Trollstigen area is much higher than the 81.1% in hotels.

Overnights for business purposes have experienced the strongest growth between 2002 and 2006 with an average annual increase of 9.7%. This is followed by holiday/leisure with an increase of 2.7% and course/conference with a decrease of 2.0%. A similar pattern of growth has been experienced between 2005 and 2006 with an increase of 58.2% for business, an increase of 10.5% for holiday/leisure and a decrease of 3.0% for course/conference. It must be noted that the figure for business in the base year of 2002 is low in comparison to holiday/leisure.

3.4 Same-day and overnight visitors

Table 3.6 shows the average nights stay for Norwegian and foreign markets in hotels in the Geiranger/Trollstigen area between 2005 and 2006.

Table 3.6 Average nights stay in hotels in the Geiranger/Trollstigen area, 2005-2006

Market	2005	2006	% change 05/06
Norwegian	1.38	1.48	7.3
Foreign	1.21	1.27	5.0
Total	1.28	1.36	6.3

Data source: Statistics Norway (2002-2006)

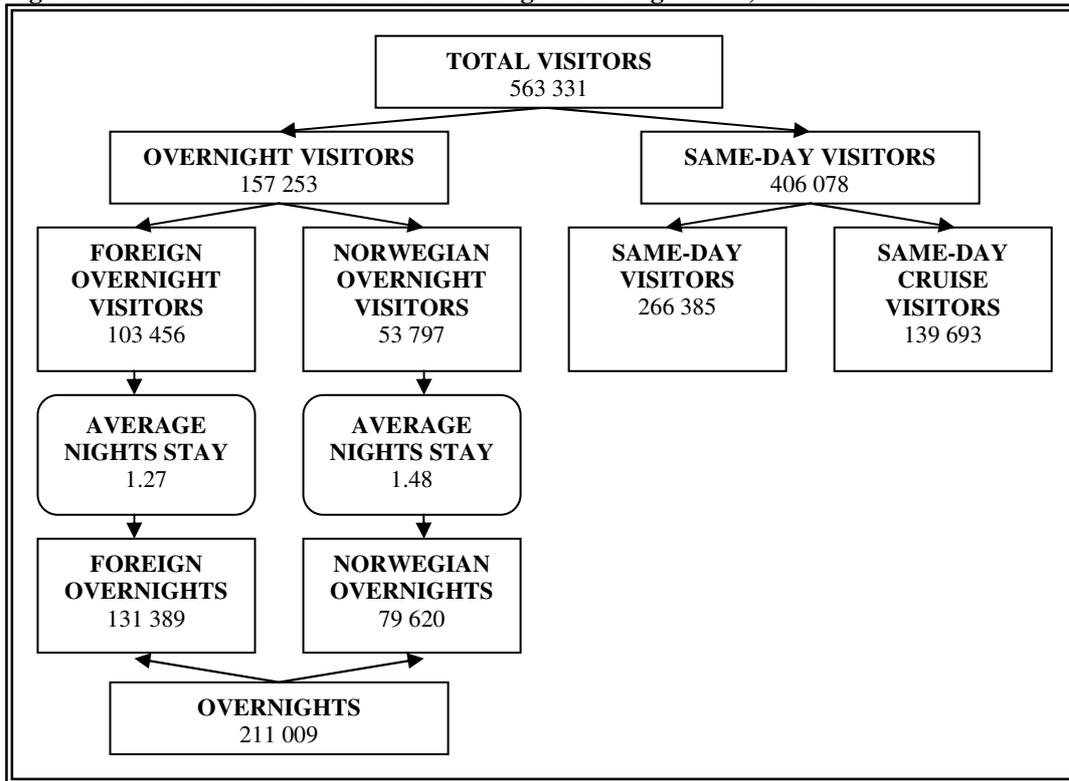
Data on the average nights stay is only available for hotel overnights. Although not ideal, it can be assumed that the average nights stay for visitors in other accommodation is the same as it is for hotels. This then allows an estimation of the total number of overnight visitors (as opposed to overnights) to be made. It also allows for an estimation of the number of same-day visitors to be made. This is achieved by subtracting the number of overnight visitors from the number of visitors.

There were 211 009 overnights in 2006 (131 389 foreign and 79 620 Norwegian). The 131 389 foreign overnights stayed for an average 1.27 nights, which means that there were 103 456 foreign overnight visitors (131 389 / 1.27). The 79 620 Norwegian overnights stayed for an average 1.48 nights, which means that there were 53 797 Norwegian overnight visitors (79 620 / 1.48). This means that the number of overnight visitors was 157 253 (103 456 + 53 797). It also means that of the 563 331 visitors to the Geiranger/Trollstigen area in 2006, roughly 157 253 were overnight visitors and 406 078 were same-day visitors.

The Geirangerfjord is a popular destination for cruise ships that visit the area for a number of hours before continuing their journey to other destinations outside of the Geiranger/Trollstigen area. The passengers of cruise ships can be termed as same-day cruise visitors and are recognised by the UNWTO (2007) as a separate category to same-day visitors for the purposes of data collection. According to Cruise Norway (2007a), the Geirangerfjord attracted 139 693 same-day cruise visitors in 2006. This means that of the 406 078 same-day visitors, up to 139 693 could have been same-day cruise visitors and 266 385 same-day visitors.

Figure 3.5 provides a summary of the demand for tourism in the Geiranger/Trollstigen area according to the main measurements provided in table 3.1.

Figure 3.5 Demand for tourism in the Geiranger/Trollstigen area, 2006



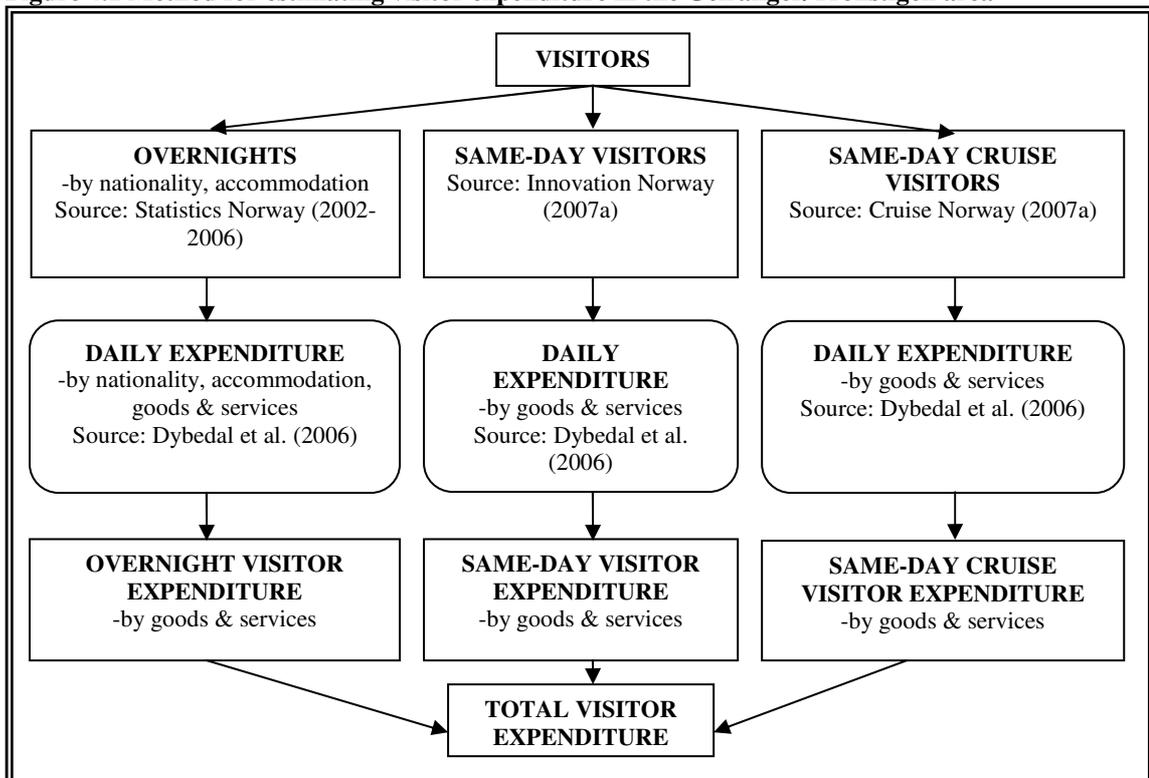
4. Direct economic impact of visitors

This chapter aims to estimate the direct economic impact of visitors to the Geiranger/Trollstigen area. It briefly mentions some methodological issues before providing individual estimates of expenditure for overnight visitors, same-day visitors and same-day cruise visitors.

4.1 Methodology

The amount of money spent on goods and services by visitors to an area represents a direct economic impact on that area. This study uses a step-wise method to estimate the direct economic impact of visitors to the Geiranger/Trollstigen area. The step-wise method is a top-down approach that is often used by countries as part of their tourism satellite accounting system. It is normally based on a combination of visitor statistics and survey data on average length of stay per visit and the daily level of expenditure. Depending on the level of information available, it can be used to estimate visitor expenditure according to a range of indicators such as nationality, accommodation and purpose of trip. It can also be used to estimate relative expenditure on different goods and services. A summary of the method used in this study is illustrated in figure 4.1.

Figure 4.1 Method for estimating visitor expenditure in the Geiranger/Trollstigen area



Data on the number of visitors to the Geiranger/Trollstigen area has already been presented in Chapter 3. Sources of data include Statistics Norway (2002-2006) for data

on overnights, Innovation Norway (2007a) for data on same-day visitors, and Cruise Norway (2007a) for data on same-day cruise visitors. Data on overnights includes information on the number of overnights by nationality and accommodation. Data on same-day visitors and same-day cruise visitors only includes information on the total number of visitors.

Survey data is not available on the daily level of expenditure of visitors to the Geiranger/Trollstigen area. Instead, data produced by the Norwegian Transport Economics Institute (TØI) is used. The data is from TØI's national survey of foreign visitors in Norway (see Dybedal et al., 2006). The survey was conducted in 2005 and the results are based on responses from a representative sample of foreign visitors travelling in Norway in 2005. Separate surveys were conducted for the summer and winter season and this study uses the results from the summer season, which are based on foreign visitors travelling in 2 264 cars and 787 persons that had stayed overnight and left Norway by air, rail or bus.

TØI's national survey included a separate survey of foreign cruise ship passengers going ashore in Norway in 2005. The results are based on responses from 972 cruise ship passengers in Oslo, Bergen and Tromsø.

TØI's national survey provides information on the expenditure of foreign overnight and same-day cruise visitors according to nationality and main type of accommodation used during their stay⁵. It also provides information on expenditure on the following goods and services:

- Accommodation (for overnight visitors only).
- Food and drink.
- Grocery shopping.
- Other shopping.
- Transport.
- Activities (termed as attractions/museums for same-day cruise visitors).
- Other.

There are a number of limitations in applying the findings of TØI's national survey to this study. The two main limitations are that:

1. TØI's national survey only provides information on foreign visitors in Norway. It does not include information on Norwegian visitors in Norway and this data is not available from other sources.
2. TØI's national survey provides information on foreign overnight and same-day cruise visitors but not on same-day visitors. This data is not available from other sources.

⁵ Figures have been adjusted for inflation in order to create figures for 2006. Inflation in Norway averaged 2.1% between 2005 and 2006 (EconStats, 2007).

4.2 Estimated visitor expenditure

4.2.1 Expenditure of overnight visitors

TØI's national survey found that foreign overnight visitors in Norway spend an average 733 NOK per day. 331 NOK is spent before travelling to Norway (in prepaid expenses) and 402 NOK is spent in Norway. Differences exist depending upon whether visitors travel by car or by air. Average daily expenditure by car is 504 NOK whilst by air it is 1 134 NOK. Differences also exist depending upon the main type of accommodation used. Average daily expenditure by car is 1 094 NOK for those staying in a hotel compared to 353 NOK for those staying with friends and relatives. The extent to which figures vary is shown in table 4.1.

Table 4.1 Average daily expenditure per foreign overnight visitor in Norway by mode of travel and main accommodation (NOK)

Main accommodation	Travel by car	Travel by air
Hotel	1 094	1 477
Hut	557	n/a
Campsite	418	n/a
Friends & relatives	353	539
Total	504	1 134

Data source: Dybedal et al. (2006)

Differences in average daily expenditure also exist for individual foreign markets (see table 4.2). Italians have the highest average daily expenditure (1 625 NOK) whilst Swedes have the lowest (394 NOK).

Table 4.2 Average daily expenditure per foreign overnight visitor in Norway that travelled by car or air, by market (NOK)

Market	Prepaid	Spent in Norway	Total
Total	331	402	733
-Germany	396	352	748
-Holland	314	335	649
-Japan	n/a	n/a	n/a
-Sweden	76	318	394
-UK	570	518	1 088
-USA	479	681	1 160
-Denmark	226	359	585
-France	164	405	569
-Spain	n/a	n/a	n/a
-Italy	885	740	1 625
-Finland	137	478	615
-Switzerland/Austria	314	339	653
-Other	324	391	715

Data source: Dybedal et al. (2006)

This study uses the average daily expenditure of 733 NOK to estimate the expenditure of overnight visitors to the Geiranger/Trollstigen area in 2006. This is not ideal because overnight visitors in the Geiranger/Trollstigen area may not be representative of the sample of respondents in TØI's national survey. In addition, TØI's national survey was

on foreign overnight visitors in Norway and this study is on foreign and Norwegian overnight visitors. Dybedal (2006a; 2006b) suggests that the average daily expenditure from TØI's national survey can be used to estimate expenditure from both foreign and Norwegian overnight visitors in different parts of Norway. In the absence of survey data that is specific to the Geiranger/Trollstigen area, this study also uses the average daily expenditure from TØI's national survey.

The Geiranger/Trollstigen area had 211 009 overnights in 2006. An average daily expenditure of 733 NOK would result in the generation of 154 669 597 NOK from overnight visitors (211 009 x 733). 69 843 979 NOK is likely to be spent before travelling to Norway (211 009 x 331) and 84 825 618 NOK is likely to be spent in the Geiranger/Trollstigen area (211 009 x 402).

TØI's national survey provides the share of expenditure of foreign overnight visitors on different goods and services (see table 4.3).

Table 4.3 Share of expenditure of foreign overnight visitors in Norway on different goods and services (%)

Goods & services	Travel by car				Travel by air	
	Hotel	Hut	Campsite	Friends & relatives	Hotel	Friends & relatives
Accommodation	36	39	22	20	35	11
Food & drink	21	12	12	15	21	17
Grocery shopping	12	13	17	16	8	20
Other shopping	9	9	9	21	13	22
Transport	11	16	22	13	13	14
Activities	9	8	11	11	8	9
Other	2	3	7	3	2	6
Total	100	100	100	100	100	100

Data source: Dybedal et al. (2006)

The shares of expenditure in table 4.3 are provided according to mode of travel and main type of accommodation used. TØI's national survey does not provide shares of expenditure for the whole sample of respondents. The author has used the figures in table 4.3 to create estimated shares of expenditure on the different goods and services that can be applied to all overnight visitors in the Geiranger/Trollstigen area, irrespective of their mode of travel and main type of accommodation used. Table 4.4 applies the estimated shares of expenditure to the expenditure of overnight visitors in the Geiranger/Trollstigen area in order to show where the distribution of expenditure might go.

Table 4.4 Expenditure of overnight visitors in the Geiranger/Trollstigen area on different goods and services

Goods & services	%	Total (NOK)
Accommodation	35	54 134 359
Food & drink	14	21 653 744
Grocery shopping	14	21 653 744
Other shopping	9	13 920 264
Transport	15	23 200 440
Activities	9	13 920 264
Other	4	6 186 782
Total	100	154 669 597

4.2.2 Expenditure of same-day visitors

The Geiranger/Trollstigen area had 266 385 same-day visitors in 2006. The average daily expenditure of overnight visitors (i.e. 733 NOK) can be used but 35% of expenditure needs to be deducted because it is for accommodation and same-day visitors do not use accommodation. This provides an average daily expenditure of 476 NOK (733×0.35). This provides a total expenditure of 126 799 260 from same-day visitors ($266\,385 \times 476$).

Table 4.5 applies the shares of expenditure for different goods and services to the expenditure of same-day visitors in order to show where the distribution of expenditure might go. The calculations assume that the share of expenditure on goods and services is the same for same-day visitors as for overnight visitors. The 35% that would have been assigned to accommodation for overnight visitors has been shared evenly between the remaining categories of goods and services. This is not ideal because it assumes that same-day visitors have the same levels of expenditure on different goods and services as overnight visitors. In reality, the share of expenditure on different goods and services may be very different for same-day versus overnight visitors.

Table 4.5 Expenditure of same-day visitors in the Geiranger/Trollstigen area on different goods and services

Goods & services	%	Total (NOK)
Accommodation	n/a	n/a
Food & drink	21	26 627 845
Grocery shopping	21	26 627 845
Other shopping	16	20 287 882
Transport	22	27 895 837
Activities	16	20 287 882
Other	4	5 071 969
Total	100	126 799 260

4.2.3 Expenditure of same-day cruise visitors

TØI's national survey found an average daily expenditure of 840 NOK for foreign cruise passengers in Norway with average expenditures of 963 NOK for passengers in Oslo, 725 NOK in Bergen and 683 NOK in Tromsø.

The lower value for Tromsø could be because of a lower average length of stay and/or because Tromsø is smaller and that there is less to do, see and spend money on in Tromsø compared to Bergen and Oslo. The Geiranger/Trollstigen area is much smaller than Tromsø so it could be assumed that expenditure will be less. The Geiranger/Trollstigen area had 139 693 same-day cruise visitors in 2006 and if they only spent an average of 500 NOK per person, this would generate 69 846 500 NOK (139 693 x 500).

TØI's national survey provides the shares of expenditure on different goods and services for same-day cruise visitors and these are applied to the expenditure of same-day cruise visitors in the Geiranger/Trollstigen area in order to show where the distribution of expenditure might go (see table 4.6).

Table 4.6 Expenditure of same-day cruise visitors in the Geiranger/Trollstigen area on different goods and services

Goods & services	%	Total (NOK)
Food & drink	19	13 270 835
Grocery shopping	6	4 190 790
Other shopping	58	40 510 970
Transport	6	4 190 790
Attractions/museums	5	3 492 325
Other	6	4 190 790
Total	100	69 846 500

4.2.4 Summary of visitor expenditure

This study estimates that visitors to the Geiranger/Trollstigen area spent 351 315 357 NOK in 2006 (154 669 597 NOK from overnight visitors, 126 799 260 NOK from same-day visitors and 69 846 500 NOK from same-day cruise visitors). Table 4.7 shows where the distribution of expenditure might go.

Table 4.7 Expenditure of visitors in the Geiranger/Trollstigen area on different goods and services (NOK)

Goods & services	Overnight visitors	Same-day visitors	Same-day cruise visitors	Total
Accommodation	54 134 359	n/a	n/a	54 134 359
Food & drink	21 653 744	26 627 845	13 270 835	61 552 424
Grocery shopping	21 653 744	26 627 845	4 190 790	52 472 379
Other shopping	13 920 264	20 287 882	40 510 970	74 719 116
Transport	23 200 440	27 895 837	4 190 790	55 287 067
Activities/attractions /museums	13 920 264	20 287 882	3 492 325	37 700 471
Other	6 186 782	5 071 969	4 190 790	15 449 541
Total	154 669 597	126 799 260	69 846 500	351 315 357

It is difficult to assess the accuracy of the estimates provided by this study. However, evidence from expenditure on some goods and services suggests that they are fairly accurate. Consider the following evidence:

1. Expenditure on accommodation.

Data available from Statistics Norway (2002-2006) shows that hotels in the Geiranger/Trollstigen area earned an income of 39 157 000 NOK in 2006. Hut and campsite accommodation provided 51.4% of all overnights in the Geiranger/Trollstigen area in 2006 but are likely to earn less than half as much income per overnight as hotels, which means that they may well earn an income of about 14 977 359 NOK, which is the current gap between estimated expenditure on accommodation in this study (54 134 359 NOK) and actual income earned by hotels in the Geiranger/Trollstigen area (39 157 000 NOK).

2. Expenditure on transport.

211 009 overnights, 266 385 same-day visitors and 139 693 same-day cruise visitors generated an estimated 55 287 067 NOK in expenditure on transport in the Geiranger/Trollstigen area in 2006. This is equivalent to an average daily expenditure of 90 NOK per person (55 287 067 / 617 087). The following data is provided on traffic using the Eidsdal-Linge ferry route in 2006 (Statens vegvesen, 2002-2006):

- Vehicles with a driver: 181 080.
- Additional adults: 204 452.
- Additional children: 78 295.

In 2006, the Eidsdal-Linge ferry charged 22 NOK for each adult, 11 NOK for each child and 52 NOK for all vehicles under six metres long with a driver. Vehicles under six metres long represented 87.3% of all vehicles using the route in 2006 (5.3% were motorcycles which were charged 37 NOK each and the remaining 7.4% were vehicles over six metres long, which were charged between 131-500 NOK each). Discounts are available but assuming that vehicles on average, were charged as being less than six metres long, the route is likely to have generated 14 775 349 NOK in ticket sales (204 452 x 22, 78 295 x 11 and 181 080 x 52). This is one of four ferry routes in the area. The route between Stranda and Liabygda charges the same as the Eidsdal-Linge route and has a similar level of demand. The tourist routes between Geiranger-Hellesylt and Geiranger-Vallidal have a much lower level of demand but charge more with one-way fares of up to 300 NOK per vehicle under six metres long, 160 NOK per adult and 80 NOK per child. Ticket sales for the four ferry routes and expenditure on other transport companies in the area such as Fjord1 Buss Møre, Eidsdal Taxi and Limousine West means that the actual expenditure of visitors to the Geiranger/Trollstigen area on transport is likely to be as much, if not greater than, the 55 287 067 NOK that has been estimated by this study.

4.3 Other economic impacts

Visitor expenditure can have a subsequent direct economic impact on four main areas:

- Sales (of businesses in the area).
- Personal income (including wages and salaries, proprietor's income and employee benefits).

- Employment (full-time, part-time and seasonal jobs).
- Value added contributions (personal income plus rents and profits and business taxes).

A survey of businesses would be needed in order to estimate the direct economic impact of tourism on other areas and the remit of this study does not extend further than providing an estimate of visitor expenditure. It would be interesting to conduct a survey of businesses and this would be relatively easy to do given the small nature of the study area and its economic activity. It would help to validate or contradict the findings of this study in terms of visitor expenditure and the share of expenditure on different goods and services.

Another area worth mentioning is the multiplier effect. Direct economic impacts are a consequence of expenditure on tourism-specific goods and services and this expenditure can encourage indirect and induced economic impacts. These impacts are estimated using the multiplier effect, which measures changes in the economic activity of an area that result from the re-circulation of money spent by visitors in the local economy. Indirect impacts are the changes in sales, personal income, employment and value added contributions of backward linked industries that supply goods and services to those that directly serve the visitor (i.e. laundry and catering services for hotels). Induced impacts are the changes in economic activity resulting from the spending of household income that has been earned as a direct or indirect effect of visitor spend (i.e. hotel, laundry and catering services personnel that live in the area may spend their income on goods and services such as housing, groceries and clothing).

The multiplier effect captures the impact that rounds of re-spending of the initial visitor spend has on an area. Some of the initial spend and subsequent rounds of re-spending will be retained by the area and some will be lost on imports. For instance, a local hotel that is part of a national or international chain of hotels may transmit its profits to a non-local head office. This would mean that the income earned in one area is lost to another area (this is known as leakage). An area with a tourism income multiplier of 1.5 would imply that every 1 000 NOK of visitor expenditure would translate into an economic benefit of 1 500 NOK to the area (an additional 500 NOK). The multiplier can be applied to other areas of economic activity such as employment and the multiplier can represent indirect and/or induced effects.

Multipliers are not available for the Geiranger/Trollstigen area and can not be estimated without extensive survey work and the use of economic modelling such as an input-output model or a computable general equilibrium model. TØI uses an input-output model called PANDA to estimate the multiplier effect of tourist expenditure on total production in a number of regions in Norway including Finnmark, Troms, Nordland and Nord-Trøndelag (Dybedal, 2003); Buskerud, Telemark and Vestfold (Dybedal, 2005); Aust-Agder and Vest-Agder (Dybedal, 2006a); and Hedmark and Oppland (Dybedal, 2006b). The multipliers include both indirect and induced effects and range from 1.2 to 1.5. For instance, Oppland has a multiplier of 1.43. This means that as tourist expenditure in Oppland increases by 1, the total production increase will be 1.43.

5. Accessibility & seasonality of demand

This chapter investigates the accessibility and seasonality of demand for tourism in the Geiranger/Trollstigen area. It briefly mentions some methodological issues before investigating the accessibility and seasonality of demand.

5.1 Methodology

5.1.1 Accessibility

Accessibility of the Geiranger/Trollstigen area is investigated by assessing the main modes of transport used by visitors to access and travel within the destination. Air travel can provide access to the country or region but this study focuses on access to the destination itself where two main modes of transport are used; land-based and water-based. In particular, this study reports on access by road, ferry and cruise ship.

Information from Statens vegvesen (unpublished), is used to investigate road access in the area but the author has not been able to access information on the number of vehicles travelling in and around the area. Estimates of this are made using data on the number of vehicles using ferry services in the area.

Data on ferry services is published by Statens vegvesen (2002-2006) and is available on a monthly and annual basis since 2002. Data is provided for each route on the number of vehicles, passengers, boat trips and vehicles left standing (i.e. vehicles that are not able to get on the next available ferry). A measurement called PBE is also provided. PBE measures vehicles according to their dimensions (length, width and weight). The larger and heavier the vehicle, the higher the numerical value that is assigned to it. This provides a more appropriate measure of usage because it measures the amount of ferry capacity that is used by each vehicle as opposed to the number of vehicles.

Data on cruise ship movements in the Geirangerfjord is available from Cruise Norway (2007a). This includes information on the number of ship calls and passengers on an annual basis since 2002. A detailed breakdown of ship calls in 2007 has been published by Destination Geirangerfjord and Trollstigen (2007b). This provides information on ship calls by date of arrival, time of arrival and departure and the number of passengers.

5.1.2 Seasonality

Seasonality of demand for transport services in the Geiranger/Trollstigen area is investigated using the data published by Statens vegvesen (2002-2006) for the ferry routes and Destination Geirangerfjord and Trollstigen (2007b) for cruise ship calls and passengers.

Seasonality of demand for tourism is investigated using published data on overnights in the Geiranger/Trollstigen area. This data is published by Statistics Norway (2002-2006) and provides monthly data for 2006 on overnight stays by market, accommodation and

purpose of trip. Statistics Norway (2002-2006) also publishes monthly data on hotels in 2006 in terms of capacity, occupancy and income. Information of the seasonality of demand from same-day cruise visitors is gained from the detailed breakdown of ship calls and passengers in 2007 that has been published by Destination Geirangerfjord and Trollstigen (2007b). The author has not been able to access monthly data on the number of same-day visitors so it is not possible to investigate the seasonality of demand from same-day visitors. This is a major limitation considering that this group provided at least 266 385 visitors in 2006 (i.e. 47.3% of all visitors to the Geiranger/Trollstigen area). The analysis of demand for ferry routes provides some idea as to the seasonality of demand from same-day visitors because a large proportion of same-day visitors are likely to use one or more of the ferries during their visit. However, data on ferry usage does not distinguish between overnight visitors, same-day cruise visitors and same-day visitors.

5.2 Accessibility

5.2.1 Road and ferry access

The village of Geiranger and the viewpoint at Dalsnibba can be accessed by road 63 from the east from Otta via road 15 from Grotli and subsequently Oslo. Oslo is about 450 kilometres away from Geiranger. Road 63 also provides access from the west, from Ålesund via road 650. Ålesund is about 100 kilometres away from Geiranger and is where the nearest airport is located; Ålesund Airport Vigra. The airport provides scheduled domestic services to airports in Oslo, Bergen, Trondheim and Stavanger where onward connections from a range of international destinations can be made. The airport also has a direct scheduled service from London Gatwick Airport and offers facilities and services for international charter carriers.

From the north, Trollstigen, on road 63 from Åndalsnes, is the gateway to Geiranger. Åndalsnes is about 85 kilometres away from Geiranger and Molde is about 55 kilometres away from Åndalsnes. The shortest route to Molde includes a ferry journey between Sølsnes and Åfarnes, which operates all year round. Molde Airport Årø is located in Molde and provides scheduled domestic services to airports in Oslo, Bergen, Trondheim and Kristiansund where onward connections from a range of international destinations can be made. The airport also offers facilities and services for international charter carriers.

The roads that provide access to the Geiranger/Trollstigen area are maintained by Statens vegvesen. Road 63 and 650 from Ålesund is open all year round but access from other roads is limited outside of the main holiday period. Road 63 (Geiranger-Langvatn) in the direction of Otta and subsequently Oslo is closed during the winter. It usually opens in mid-May and closes when the snows arrive, usually in mid-November. Trollstigen, on road 63 from Åndalsnes is restricted to vehicles under 12.5 metres long all year round. The road usually opens in late-May and closes when the snows arrive, usually in late-October. Improvements have been made in access to Trollstigen in recent years and various projects along the route have been completed, including improved viewing and picnic areas. Trollstigen is currently seeking status as a national tourist road.

Table 5.1 lists the opening and closing dates of Trollstigen and Geiranger-Langvatn since 1997. Dates for the later are only available from October 2002 to November 2006.

Table 5.1 Road access to the Geiranger/Trollstigen area, 1997-2007

Year	Trollstigen		Geiranger-Langvatn	
	Open	Closed	Open	Closed
1997	06 June	12 October	n/a	n/a
1998	15 May	15 October	n/a	n/a
1999	14 May	11 August	n/a	n/a
2000	26 May	21 August	n/a	n/a
2001	21 May	22 August	n/a	n/a
2002	23 May	16 September	n/a	30 October
2003	28 May	14 August	19 May	08 December
2004	29 May	11 October	30 April	12 November
2005	01 June	15 November	13 May	15 November
2006	23 May	27 October	13 May	10 November
2007	23 May	17 October	n/a	n/a

Data source: Statens vegvesen (unpublished)

The easiest access from the southwest (i.e. from Bergen, which is about 350 kilometres away from Geiranger) is via the ferry from Hellesylt. Fjord1 MRF operates the route as a tourist route between Hellesylt and Geiranger from 1 May to 30 September. Fjord1 MRF also operates a tourist route between Valldal and Geiranger from 22 June to 22 August. The tourist routes generally offer a low frequency of trips. In 2007, the Hellesylt-Geiranger route operated eight times a day between 1 June and 2 September and four times a day in May and September. The Valldal-Geiranger route operated twice a day between 22 June and 22 August.

Access to and around the Geiranger/Trollstigen area is largely dependent on the ferry route that is operated by Fjord1 MRF between Eidsdal and Linge. The 10-minute route is open all year round but is less frequent between 3 September and 31 May. Fjord1 MRF operates a fourth route in the Geiranger/Trollstigen area. The route connects Stranda and Liabygda and operates with the same frequency all year round.

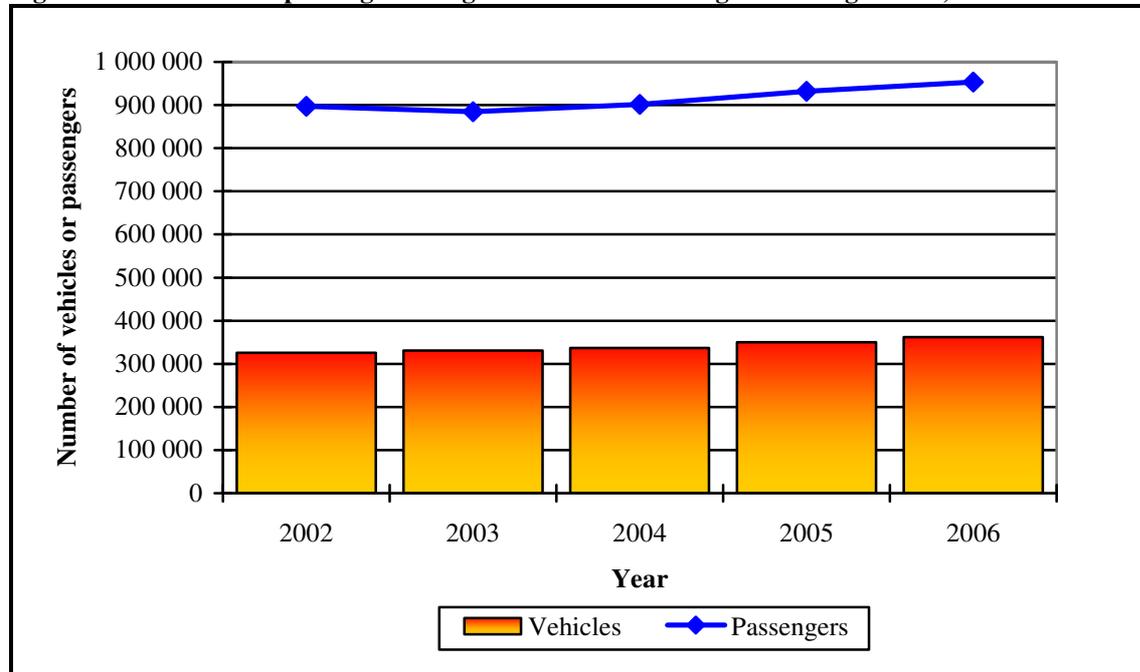
The main attractions in the Geiranger/Trollstigen area can be accessed without using any of the ferry routes however; most visitors will need to use at least one of the four routes during their visit, especially if they want to move between Geiranger and Trollstigen. This means that the routes are essential to the movement of people to/from and within the area. An analysis of the demand for ferry routes gives some idea as to the amount of people and vehicles moving around the area and the efficiency of that movement.

Figure 5.1 shows the number of vehicles and passengers⁶ using the four ferry routes in the Geiranger/Trollstigen area between 2002 and 2006. The number of vehicles has increased from 325 911 to 361 729 with an average annual increase of 2.8% and an additional 35 818 vehicles. Between 2005 and 2006, the number of vehicles increased by 3.3%, representing an additional 11 679 vehicles. Similar growth has been experienced in the number of passengers using the routes. The number of passengers

⁶ The number of passengers includes the driver of each vehicle and any accompanying adults and children.

has increased from 896 889 to 953 622 between 2002 and 2006 with an average annual increase of 1.6% and an additional 56 733 passengers. Between 2005 and 2006, the number of passengers increased by 2.4%, representing an additional 21 861 passengers.

Figure 5.1 Vehicles and passengers using ferries in the Geiranger/Trollstigen area, 2002-2006

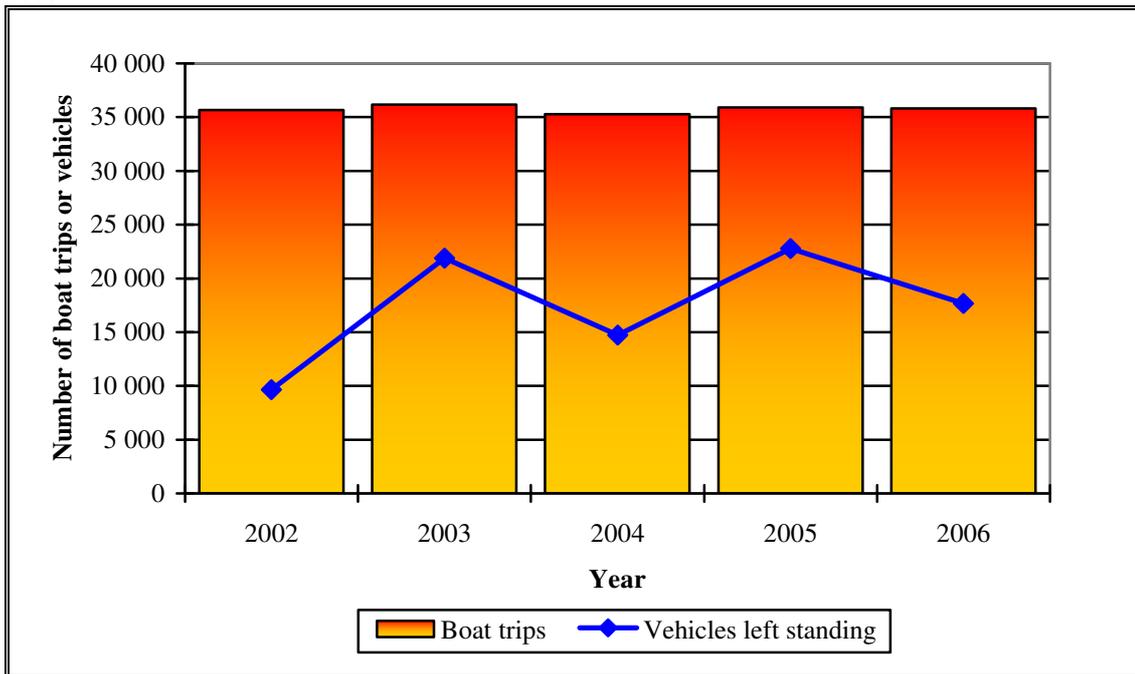


Data source: Statens vegvesen (2002-2006)

The data provided in figure 5.1 supports the findings of Chapter 3 that showed how the number of visitors to the Geiranger/Trollstigen area is increasing. It is interesting to note that the number of passengers using the routes declined by 1.4% between 2002 and 2003, representing 12 696 less passengers. This is despite an increase in the number of vehicles and the introduction of the new tourist route between Valldal and Geiranger, which commenced operations in 2003. The loss in passengers but not in vehicles could have been because of a reduction in foot passengers but it also coincides with a reduction in the number of passengers per vehicle. In 2002, there was an average 2.8 passengers per vehicle. This dropped to 2.7 in 2003 and remained at 2.7 until 2006 when it dropped to 2.6.

Increasing vehicle and passenger numbers put pressure on Fjord1 MRF who need to develop schedules that maximise economic performance and provide an appropriate balance between supply and demand. The provision of too much capacity is likely to result in poor financial performance whilst the provision of too little capacity is likely to mean that ferry users are left waiting. The latter is likely to have a negative effect on the visitor experience and over the longer term; this could be detrimental to visitor numbers in the area. The balance between supply and demand for the four ferry routes in the Geiranger/Trollstigen area between 2002 and 2006 can be investigated by comparing the number of boat trips with the number of vehicles left standing (see figure 5.2).

Figure 5.2 Boat trips and vehicles left standing for ferries in the Geiranger/Trollstigen area, 2002-2006



Data source: Statens vegvesen (2002-2006)

The number of boat trips and vehicles left standing fluctuates on an annual basis. This emphasises the difficulties faced by Fjord1 MRF in trying to match supply and demand each year and it is interesting to note the positive correlation between boat trips and vehicles left standing (i.e. as the number of boat trips increase so too does the number of vehicles left standing). One might expect these two factors to have a negative correlation (i.e. the number of vehicles left standing declines as the number of boat trips increases) however, this is not the case. The positive correlation may be because Fjord1 MRF adds frequency when the number of vehicles left standing is high and reduces frequency when the number of vehicles left standing is low. This responsive approach is different to a proactive approach whereby frequency is used to prevent vehicles from being left standing.

Between 2002 and 2006, the number of boat trips has increased from 35 661 to 35 810. This is an increase of just 149 boat trips and includes the introduction of the Valldal-Geiranger service in 2003, which had 213 boat trips in 2006. The increase of 149 boat trips represents an average annual increase of just 0.1%. This is despite an average annual increase of 2.8% in the number of vehicles and 1.6% in the number of passengers. As a result, the number of vehicles left standing has increased from 9 659 to 17 670. This means that an additional 8 011 vehicles are left standing, representing an average annual increase of 20.7%. The 17 670 vehicles left standing in 2006 was a 22.5% improvement on 2005, which had 22 787 vehicles left standing. However, the decrease in 2006 has not made up for the general increase since 2002.

Supply and demand varies for each route and table 5.2 provides a summary of performance for each route in 2006.

Table 5.2 Performance of ferry routes in the Geiranger/Trollstigen area, 2006

Measurement	Scheduled routes		Tourist routes	
	Eidsdal-Linge	Stranda-Liabygda	Hellesylt-Geiranger	Valldal-Geiranger
PBE	217 629 (2.5%)	235 756 (1.6%)	38 388 (0.4%)	1 976 (23.0%)
Vehicles	181 080 (2.2%)	152 524 (3.6%)	26 125 (0.2%)	2 000 (22.6%)
Passengers	463 827 (1.5%)	318 479 (1.6%)	165 255 (1.0)	6 061 (25.5%)
Boat trips	17 872 (1.6%)	15 862 (-2.1%)	1 863 (4.5%)	213 (0.7%)
Vehicles left standing	15 867 (21.3%)	481 (1.8%)	1 322 (26.1%)	0 (0%)

Data source: Statens vegvesen (2002-2006)

Note: the figures in brackets represent the average annual change between 2002 and 2006 although for the Valldal-Geiranger route, it is for 2003 to 2006.

The busiest route in terms of the number of vehicles and passengers is the Eidsdal-Linge route. This route is vital to the movement of vehicles and people between Geiranger and Trollstigen. 181 080 vehicles and 463 827 passengers used the route in 2006 and it is likely that most of the vehicles and passengers used the route to travel between Geiranger and Trollstigen. Some users could have been travelling via the 650 to Ålesund in which case, they might only have passed one attraction. Also, visitors to Trollstigen can access the attraction from Åndalsnes and not visit Geiranger or use the route between Eidsdal and Linge. Despite this, the figures give a strong indication as to the number of vehicles and people in the area. The number of passengers on the Eidsdal-Linge route (463 827) provides a fairly accurate reflection of the visitor numbers for the area (i.e. 423 643 at Geiranger and 563 331 at Trollstigen).

In addition to being the busiest of the four routes, the Eidsdal-Linge route is also the most congested with 15 867 vehicles left standing in 2006. The average annual increase in the number of vehicles left standing between 2002 and 2006 was 21.3%. The Hellesylt-Geiranger route is also congested and is experiencing the greatest average annual increase in the number of vehicles left standing (26.1%). The long-term increase in the number of vehicles left standing on both routes is cause for concern. Three of the routes (Eidsdal-Linge, Stranda-Liabygda and Valldal-Geiranger) have experienced larger average annual increases in the number of vehicles and passengers compared to boat trips and if this trend continues, it is likely to contribute to further congestion in the future.

According to PBE, the Stranda-Liabygda route is the busiest. This means that the route is used by a greater number of larger and heavier vehicles than the Eidsdal-Linge route. It is possible that larger vehicles such as those transporting goods prefer to use the Stranda-Liabygda route, which is less congested and allows vehicles travelling along road 60 and 650 to by-pass Geiranger altogether. This assumption is supported by table 5.3, which shows the average daily traffic on each route according to vehicle length.

2.6% of the average daily traffic on the Stranda-Liabygda route is over 14 metres in length compared to only 0.2% on the Eidsdal-Linge route. As would be expected, the tourist routes have very few large vehicles using their services. The Valldal-Geiranger route has no vehicles over six metres long and the Hellesylt-Geiranger route has no vehicles over 12 metres long. The long vehicles that do use the Hellesylt-Geiranger

route are likely to be cars towing caravans, campervans, mini-buses or tour coaches as opposed to freight lorries.

Table 5.3 Average daily traffic on ferry routes in the Geiranger/Trollstigen area, 2006

Vehicle length (metres)	Scheduled routes		Tourist routes	
	Eidsdal-Linge	Stranda-Liabygda	Hellesylt-Geiranger	Valldal-Geiranger
Motorcycle	26 (5.3%)	7 (1.7%)	12 (7.0)	2 (9.1%)
Less than/equal to 6	433 (92.7%)	366 (89.2%)	135 (86.0%)	20 (100.0%)
6.01-7.00	11 (95.0%)	4 (90.2%)	2 (87.1%)	0
7.01-8.00	4 (95.8%)	4 (91.2%)	0 (87.1%)	0
8.01-10.00	6 (97.0%)	8 (93.1%)	1 (87.7%)	0
10.01-12.00	12 (99.4%)	5 (94.3%)	21 (100.0%)	0
12.01-14.00	2 (99.8%)	0 (94.3%)	0	0
14.01-17.00	0 (99.8%)	13 (97.4%)	0	0
17.01-19.00	1 (100.0%)	11 (100.0%)	0	0
Total	495	418	171	22

Data source: Statens vegvesen (2002-2006)

Note: the figures in brackets represent the cumulative proportion of all vehicles on each route.

5.2.2 Cruise ship access

Cruise ships provide access to the Geiranger/Trollstigen area and ships call into the Geirangerfjord, anchoring in Geiranger and/or Hellesylt. Passengers are then transported ashore by tenders. The number of cruise ship calls has increased from 132 in 2002 to 155 in 2006, representing an average annual increase of 4.4% and an additional 23 ships (see table 5.4).

Table 5.4 Cruise ship calls and passengers in the Geirangerfjord, 2002-2006

Measurement	2002	2003	2004	2005	2006
Number of calls	132	150	160	165	155
Number of passengers	n/a	n/a	116 000	130 000	139 693

Data source: Cruise Norway (2007a)

Between 2005 and 2006, the number of calls decreased by 6.1% representing 10 less calls. Despite this, the number of passengers increased by 7.5% with an additional 9 693 passengers. This means that there has been a strong increase in the number of passengers per ship. Data on the number of passengers is only available from 2004. There has been an average annual increase of 20.4% between 2004 and 2006, representing an additional 23 693 passengers.

Information on cruise ships visiting the Geirangerfjord in 2007 is provided in table 5.5. The arrival/departure time of each ship (in the column labelled 'stay') shows that cruise ship passengers are same-day visitors as opposed to overnight visitors. Only one ship, the Deutschland stayed in the area overnight. It stayed from 2230 to 2400 on 9 June and 0000 to 1700 on 10 June.

Data is not available of the number of cruise ship passengers by market. However, most of the cruise ships visiting the area are owned and operated by one of the three main

cruise companies; the Carnival Group (which owns brands such as AIDA, Carnival, Costa, Cunard, Holland America, P&O, Princess, Seabourn, Swan Hellenic and Windstar), Royal Caribbean Cruises (which owns brands such as Celebrity Cruises, Royal Caribbean International and Pullmantur Cruises) and the Star Cruises Group (which owns brands such as Norwegian Cruise Line, NCL America, Orient Lines and Star Cruises). Most of the ships listed in table 5.5 belong to one of the three main cruise companies that offered 79.1% of global cruise passenger capacity in 2005 (Intel, 2005). The main markets of these companies are from the USA, the UK and Germany so it is likely that most of the cruise ship passengers visiting the Geiranger/Trollstigen area are from these markets. Howarth Consulting/TØI (2006) found that of the 206 000 cruise ship passengers in Oslo in 2006, 26% were from the USA, 22% were from the UK, 18% were from Germany and 33% were from other countries. The profile of cruise ship passengers in the Geiranger/Trollstigen area is likely to be fairly similar as many of the ships visiting the area will have come from or be going to Oslo.

The number of calls in 2007 is slightly lower than in 2006 (146 compared to 155), representing 9 less calls and a decrease of 6.2%. The number of passengers in 2007 is also lower than in 2006 (100 202 compared to 139 693), representing 39 491 less passengers and a decrease of 39.4% although it must be noted that passenger data in table 5.5 is missing for 2 calls (Lone Range and MS Nordnorge). It is likely that the number of calls and passengers will be reduced further in 2008 as port authorities seek to limit the number of cruise ship calls and passengers in the area to no more than 2 ships and 5 000 passengers per day (Cruise Norway, 2007b). This is in response to concerns about the amount of air and people pollution generated by ships during peak periods. Port Authorities in the area hope that any decrease in the number of calls and passengers during peak periods will be compensated for by the trend towards a longer season, which will help to spread the number of cruise ship visits more evenly across the season.

Table 5.5 Cruise ships visiting the Geirangerfjord, 2007

No.	Date	Ship	Stay	Pax	No.	Date	Ship	Stay	Pax
1	09/05	Albatross	0800-1300	800	74	11/07	Princess Danae	0900-1730	500
2	15/05	Ocean Nova	1630-2030	90	75	11/07	Costa Atlantica	1000-1900	2 680
3	21/05	Maxim Gorky	0800-1300	600	76	12/07	Adriana	1200-2000	260
4	22/05	Arielle	1100-1800	1 500	77	13/07	Amadea	0800-1300	618
5	23/05	AIDAvita	1000-2000	1 266	78	13/07	Arielle	1200-1830	1 500
6	24/05	Saga Ruby	0900-1700	732	79	13/07	Albatros	1300-1800	800
7	24/05	MSC Opera	0900-1800	1 100	80	13/07	Vistamar	1000-2100	330
8	27/05	Maxim Gorkiy	1400-1800	600	81	14/07	Maxim Gorkiy	1300-1730	600
9	29/05	Ocean Nova	1000-1400	280	82	16/07	Saga Ruby	1000-1600	732
10	30/05	Thomson Spirit	1100-1900	1 400	83	17/07	Polar Pioneer	2000-2359	61
11	30/05	Astoria	1130-1800	90	84	17/07	Thomson Spirit	1200-1900	1 400
12	31/05	Discovery	1130-1800	750	85	17/07	Le Diamant	1300-1900	200
13	01/06	Saga Rugby	1000-1800	732	86	18/07	Dalmacija	1000-1700	280
14	02/06	AIDAvita	1000-2000	1 266	87	18/07	Veendam	0700-1700	1 266
15	03/06	Albatross	0800-1300	800	88	18/07	Costa Magica	1000-1800	3 470
16	03/06	Ocean Majesty	1000-1800	515	89	19/07	Grand Princess	0800-1800	3 100
17	03/06	Funchal	1000-1900	500	90	19/07	MSC Opera	1100-1800	1 100
18	03/06	Alexander v. Humbolt	1100-1900	440	91	20/07	Lone Range	0800-2000	n/a
19	05/06	Costa Atlantica	0800-1800	2 680	92	20/07	Saga Rose	0900-1700	500
20	06/06	Costa Magica	1000-1800	3 470	93	21/07	Astor	1200-1830	590
21	06/06	Dalmacija	0930-1900	280	94	24/07	AIDAvita	1000-2000	1 266
22	07/06	MSC Opera	1100-1800	900	95	24/07	Costa Classica	1200-1800	1 680
23	07/06	Rhapsody	1100-1800	520	96	25/07	Paloma	1000-1700	350
24	09/06	Deutschland	2230-2400	520	97	26/07	Delphin Voyager	1100-1800	650
25	10/06	Deutschland	0000-1700	520	98	27/07	Arielle	0700-1300	1 500
26	10/06	Oriana	0800-1900	1 850	99	27/07	Queen Elisabeth 2	1000-1800	1 750
27	12/06	AIDAvita	1000-2000	1 266	100	27/07	Delphin	0900-1800	550
28	12/06	Costa Classica	1200-1800	1 680	101	27/07	Columbus	1000-1800	420
29	14/06	Delphin	1100-1800	550	102	28/07	Spirit of Adventure	1000-1600	350
30	15/06	Amadea	0800-1300	618	103	28/07	Silver Wind	0800-1330	315
31	17/06	Vistamar	0930-1900	330	104	28/07	Adriana	1000-1600	260
32	17/06	Hanseatic	1000-1800	184	105	28/07	Clipper Adventure	0900-1400	122
33	19/06	Astor	0730-1800	590	106	29/07	Astoria	0700-1300	516
34	19/06	Dalmacija	0800-1900	280	107	29/07	Prinsedam	0900-1700	794
35	19/06	Queen Elisabeth 2	1000-1800	1 750	108	30/07	Amadea	0800-1300	618
36	20/06	Costa Magica	1000-1800	3 470	109	30/07	Maxim Gorkiy	1300-1800	600
37	20/06	Astoria	1200-1830	516	110	30/07	Marco Polo	1000-1800	800
38	20/06	Rotterdam VI	0900-1700	1 590	111	31/07	Ocean Majesty	1000-1800	515
39	21/06	Funchal	1000-1800	500	112	01/08	Dalmacija	0730-1300	280
40	21/06	MSC Opera	1100-1800	1 100	113	01/08	Arielle	1130-1800	1 500
41	21/06	Queen Mary 2	1000-1800	3 108	114	01/08	Costa Magica	1000-1800	3 470
42	21/06	Columbus	1300-1900	420	115	02/08	MSC Opera	1100-1800	1 100
43	22/06	Delphin Voyager	1100-1800	650	116	03/08	Columbus	1100-1700	420
44	22/06	Saga Rose	1200-1800	500	117	05/08	Costa Atlantica	0800-1800	2 680
45	22/06	Adriana	1300-2000	260	118	07/08	Ocean Majesty	1000-2359	515
46	23/06	Costa Atlantica	0800-1600	2 680	119	07/08	AIDAvita	1000-2000	1 266
47	24/06	Princess Danae	1000-1800	500	120	07/08	MS Europa	1100-1800	400
48	25/06	Seven Seas Navigator	1000-1500	722	121	07/08	Thomson Spirit	1000-1700	1 400
49	26/06	Maxim Gorkiy	0800-1300	600	122	09/08	Astoria	0730-1800	516
50	26/06	Grand Princess	1000-1800	3 100	123	10/08	Silver Wind	1100-1900	315
51	26/06	AIDAvita	1000-2000	1 266	124	11/08	Delphin Voyager	1200-1800	650
52	26/06	Delphin	0800-1600	550	125	15/08	Costa Magica	1000-1800	3 470
53	26/06	Albatros	1300-1800	800	126	16/08	Amadea	0800-1300	618
54	27/06	Thomson Spirit	0800-1700	1 400	127	16/08	Costa Atlantica	0800-1800	2 680
55	27/06	Queen Elisabeth 2	1000-1800	1 750	128	16/08	Albatros	1300-1800	800
56	27/06	Arielle	1200-1830	1 500	129	16/08	MSC Opera	1100-1800	1 100
57	28/06	Costa Atlantica	1000-1800	2 680	130	17/08	Astor	0730-1800	590
58	29/06	Chrystal Symphony	1000-1700	975	131	21/08	AIDAvita	1000-2000	1 266

Table 5.5 Cruise ships visiting the Geirangerfjord, 2007 (continued)

No.	Date	Ship	Stay	Pax	No.	Date	Ship	Stay	Pax
59	29/06	Rhapsody	1100-1800	900	132	22/08	Maxim Gorkiy	0900-1300	600
60	02/07	Costa Classica	1200-1800	1 680	133	23/08	Arielle	1130-1800	1 500
61	04/07	Astoria	0700-1300	516	134	24/08	Astor	0730-1800	590
62	04/07	Funchal	1000-1900	400	135	25/08	Dalmacija	1100-2100	280
63	04/07	Costa Magica	1000-1800	3 470	136	29/08	Costa Magica	1000-1800	3 470
64	05/07	Dalmacija	0900-1900	280	137	30/08	Astoria	1130-1800	516
65	05/07	MSC Opera	1100-1800	1 100	138	30/08	Amadea	1300-1800	618
66	05/07	Astor	1200-1830	590	139	30/08	MSC Opera	1100-1800	1 100
67	07/07	Princess Danae	1100-1830	500	140	31/08	MS Europa	1100-1900	400
68	07/07	Marco Polo	0800-1800	800	141	31/08	MS Nordnorge	1600-1930	n/a
69	09/07	Adriana	1000-1600	260	142	01/09	Clipper Adventurer	0900-1200	122
70	09/07	Delphine Voyager	1100-1800	650	143	02/09	Albatros	0900-1300	800
71	09/07	Columbus	1000-1800	423	144	05/09	Grand Princess	0800-1800	3 100
72	10/07	Delphin	0900-1800	550	145	07/09	Ocean Majesty	1000-1800	515
73	10/07	AIDAvita	1000-2000	1 266	146	26/09	Amadea	0800-1300	618

Data source: Destination Geirangerfjord and Trollstigen (2007b)

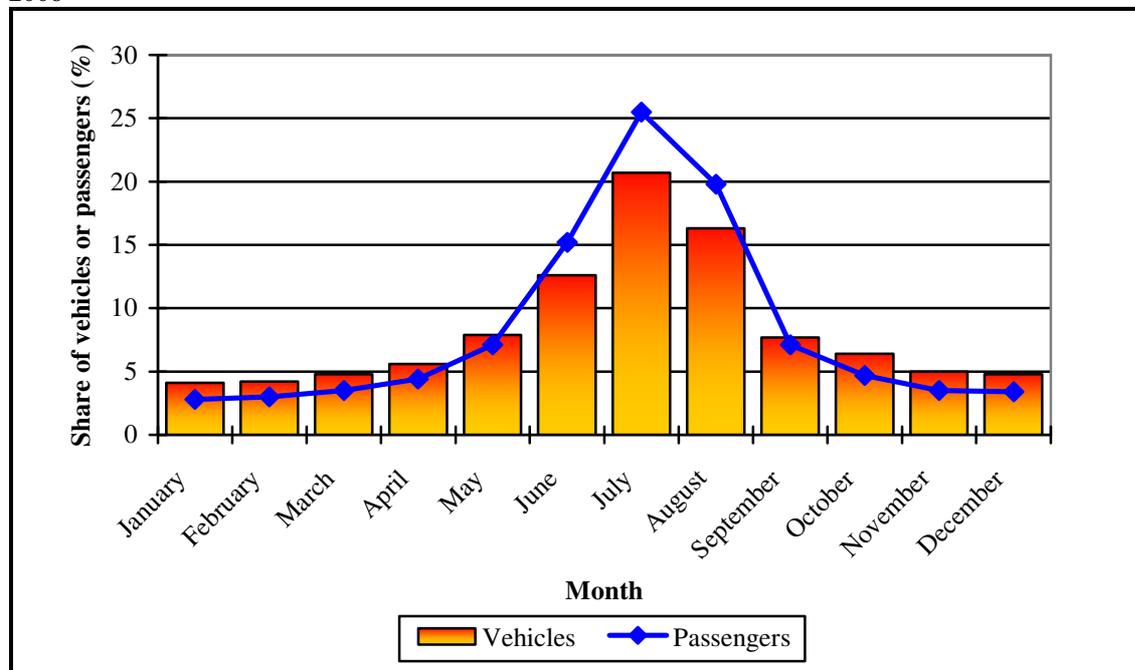
Note: No. is an abbreviation for number; pax is an abbreviation for passengers.

5.3 Seasonality

5.3.1 Seasonality of transport

Figure 5.3 shows the share of vehicles and passengers using the four ferry routes in the Geiranger/Trollstigen area in 2006 by month.

Figure 5.3 Monthly share of vehicles and passengers using ferries in the Geiranger/Trollstigen area, 2006



Data source: Statens vegvesen (2002-2006)

The four routes carried a total of 361 729 vehicles and 953 390 passengers in 2006. Demand is at its greatest during July when the ferries serve 20.7% of their annual

number of vehicles and 25.5% of their annual number of passengers. These figures increase to 49.6% and 60.5% respectively if the three summer months of June, July and August are combined. January is the quietest month, when the ferries serve just 4.1% of their annual number of vehicles and 2.8% of their annual number of passengers.

Although not shown in figure 5.3, it is interesting to note that the average number of passengers per vehicle is also seasonal. The average is as high as 3.2 during June, July and August and as low as 1.8 in January. The concentration of demand from families and groups of people travelling in tour coaches during the main holiday period is likely to contribute to seasonal variations. Outside of the main holiday period, there is likely to be a higher share of people travelling alone or in small groups either as tourists, local residents or workers.

Table 5.6 shows the number of vehicles and passengers carried in 2006 by each of the four ferry routes and the share of vehicles and passengers carried each month.

In line with figure 5.3, demand for each of the four routes peaks in July. Demand is concentrated in June, July and August. Demand is at its lowest in January. The two scheduled routes operate all year round but demand is concentrated in June, July and August. This is especially the case for the Eidsdal-Linge route that provides access to visitors travelling between Geiranger and Trollstigen. The Stranda-Liabygda route is less seasonal compared to the other three routes and as was mentioned in section 5.2.1, is likely to have a higher share of users transporting goods and seeking to by-pass the Geiranger/Trollstigen area.

The two tourist routes are the most seasonal. This is because the routes are only available on a seasonal basis, operating from May to September (between Hellesylt and Geiranger) and June to August (between Valldal and Geiranger).

Table 5.6 Monthly share of passengers and vehicles using ferries in the Geiranger/Trollstigen area, 2006

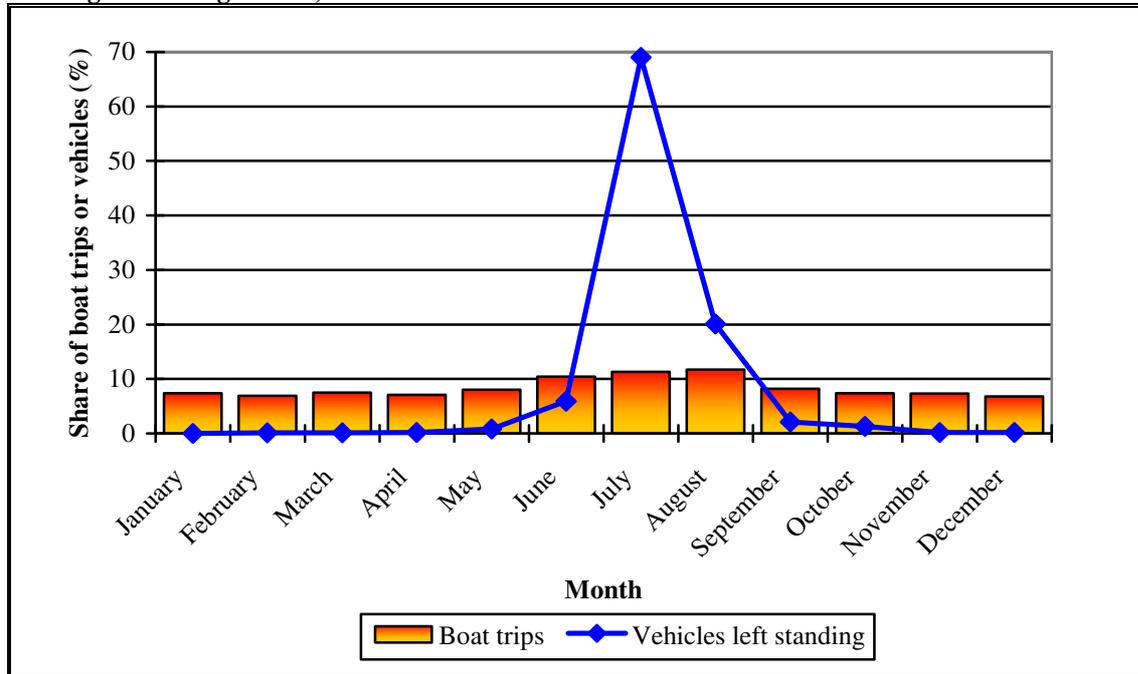
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Vehicles													
E-L	3,6	3,6	4,2	4,8	6,9	13,8	23,9	17,6	7,4	5,9	4,4	4,0	181 080
S-L	5,5	5,7	6,4	7,6	9,8	9,8	13,4	11,9	8,5	8,2	6,7	6,5	152 524
H-G	0,0	0,0	0,0	0,0	4,5	19,8	38,3	32,0	5,4	0,0	0,0	0,0	26 125
V-G	0,0	0,0	0,0	0,0	0,0	16,2	55,0	28,9	0,0	0,0	0,0	0,0	2 000
All	4,1	4,2	4,8	5,6	7,9	12,6	20,7	16,3	7,7	6,4	5,0	4,8	361 729
Passengers													
E-L	2,3	2,4	3,0	3,9	6,6	15,8	28,3	20,6	6,7	4,4	3,1	2,9	463 827
S-L	5,0	5,5	6,2	7,6	9,5	10,2	15,5	13,0	8,3	7,4	5,9	5,9	318 429
H-G	0,0	0,0	0,0	0,0	4,5	23,1	35,8	30,5	6,1	0,0	0,0	0,0	165 073
V-G	0,0	0,0	0,0	0,0	0,0	17,3	52,0	30,7	0,0	0,0	0,0	0,0	6 061
All	2,8	3,0	3,5	4,4	7,1	15,2	25,5	19,8	7,1	4,7	3,5	3,4	953 390

Data source: Statens vegvesen (2002-2006)

Note: E-L, S-L, H-G and V-G are abbreviations for each of the four ferry routes (Eidsdal-Linge, Stranda-Liabygda, Hellesylt-Geiranger and Valldal-Geiranger); All includes all four ferry routes.

Figure 5.4 shows the share of boat trips and vehicles left standing for the four ferry routes in the Geiranger/Trollstigen area in 2006 by month.

Figure 5.4 Monthly share of boat trips and vehicles left standing for ferries in the Geiranger/Trollstigen area, 2006



Data source: Statens vegvesen (2002-2006)

In 2006, there were a total of 35 810 boat trips and 17 670 vehicles left standing. The majority of vehicles left standing (69.0%) were in July when as figure 5.3 has shown, roughly a quarter of the years vehicles and passengers used the ferries. June and August are also busy months and this leads to high levels of vehicles left standing (20.1% in August and 5.9% in June). The share of boat trips does not change much each month and the higher number of boat trips between May and September compared to the rest of the year is due to the fact that the two tourist routes only operate in the summer. The Stranda-Liabygda route offers the same frequency all year round and the Eidsdal-Linge route operates a slightly reduced frequency between September and May.

The monthly figures for each route are provided in table 5.7. The data emphasises the seasonal provision of the two tourist routes and the year round provision of the two scheduled routes. The data also shows the concentration of vehicles left standing during the main holiday period, and especially during July. In the case of the Eidsdal-Linge route, 70.6% of all vehicles left standing are in July.

Table 5.7 Monthly share of boat trips and vehicles left standing for ferries in the Geiranger/Trollstigen area, 2006

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Boat trips													
E-L	7,0	6,7	7,2	7,2	7,6	11,2	11,5	12,6	7,8	7,5	7,0	6,8	17 872
S-L	8,8	8,1	8,9	8,0	8,6	7,7	8,5	8,6	8,4	8,3	8,5	7,7	15 862
H-G	0,0	0,0	0,0	0,0	8,5	22,7	29,6	28,7	10,6	0,0	0,0	0,0	1 863
V-G	0,0	0,0	0,0	0,0	0,0	27,2	46,9	25,8	0,0	0,0	0,0	0,0	213
All	7,4	6,9	7,5	7,1	8,0	10,4	11,3	11,7	8,2	7,4	7,3	6,8	35 810
Vehicles left standing													
E-L	0,0	0,0	0,2	0,1	0,3	5,8	70,6	19,4	2,0	1,2	0,2	0,2	15 867
S-L	0,6	2,5	0,0	2,9	19,8	21,6	28,5	6,7	8,9	7,3	0,2	1,0	481
H-G	0,0	0,0	0,0	0,0	0,0	0,7	65,1	34,3	0,0	0,0	0,0	0,0	1 322
V-G	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0
All	0,0	0,1	0,1	0,2	0,8	5,9	69,0	20,1	2,1	1,3	0,2	0,2	17 670

Data source: Statens vegvesen (2002-2006)

Note: E-L, S-L, H-G and V-G are abbreviations for each of the four ferry routes (Eidsdal-Linge, Stranda-Liabygda, Hellesylt-Geiranger and Valldal-Geiranger); All includes all four ferry routes.

Cruise ship calls are seasonal and display similar seasonal variations to ferry traffic. Table 5.8 shows the number of calls to the Geirangerfjord in 2007 by month. It also provides information of the time of arrival, average stay and average number of passengers by month. Cruise ships only call into the area between May and September.

July was the busiest month with 50 of the 146 cruise ship calls (34.2%). June was the next busiest with 47 (32.2%) and August with 30 (20.6%). 127 (87.0%) calls occurred during the main holiday period. 19 calls (13.0%) occurred during the shoulder period.

119 (81.5%) of the 146 ship calls took place in the morning between 0700 and 1159, 24 (16.4%) took place between 1200 and 1659, 1 call (0.7%) took place between 1700 and 2159 and 2 (1.4%) took place between 2200 and 0659. Calls during the morning provide passengers with the day to explore the area. The average length of stay is 7.5 hours so this provides plenty of time for passengers to disembark, walk around the local area and/or go on a local excursion before rejoining the ship for departure. Those that arrive between 1200 and 1659 still have plenty of time before it gets dark and most of those that arrive after 1700 stay long enough for their passengers to explore the area. The two calls between 2200-0659 were from the Deutschland. The ship stayed from 2200 to 2400 on 9 June and from 0000 to 1700 on 10 June.

Table 5.8 Cruise ships visiting the Geirangerfjord by month, 2007

Month	Time of arrival				Total	Average stay (hrs)	Average passengers
	0700-1159	1200-1659	1700-2159	2200-0659			
May	10	2	0	0	12	6.3	767
June	38	7	0	2	47	8.0	1 104
July	38	11	1	0	50	7.4	903
August	26	4	0	0	30	7.7	1 176
September	7	0	0	0	7	6.0	922
Total	119	24	1	2	146	7.5	1 013

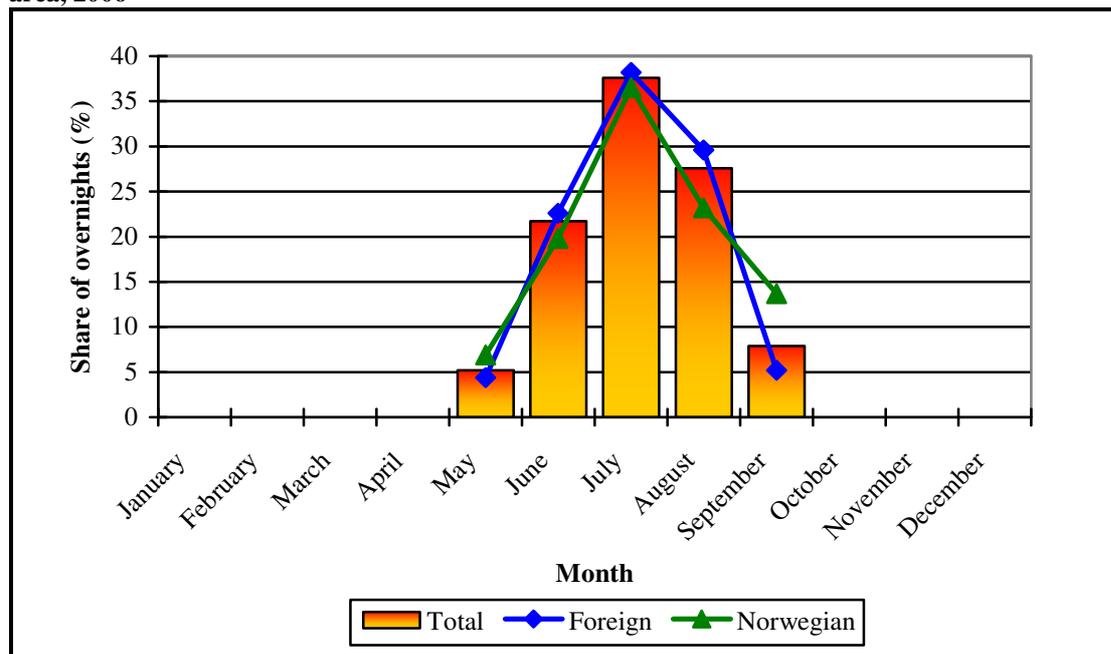
Notes:

1. Passenger numbers were not available for two ship calls (Lone Range and MS Nordnorge). These calls have not been included in the calculations for average passenger numbers.
2. Average stay is 7.5 hours. The mode stay is 8 hours and the median stay is 7 hours.

5.3.2 Seasonality of overnights

Figure 5.5 shows the share of total, foreign and Norwegian overnights in the Geiranger/Trollstigen area in 2006 by month.

Figure 5.5 Monthly share of total, foreign and Norwegian overnights in the Geiranger/Trollstigen area, 2006



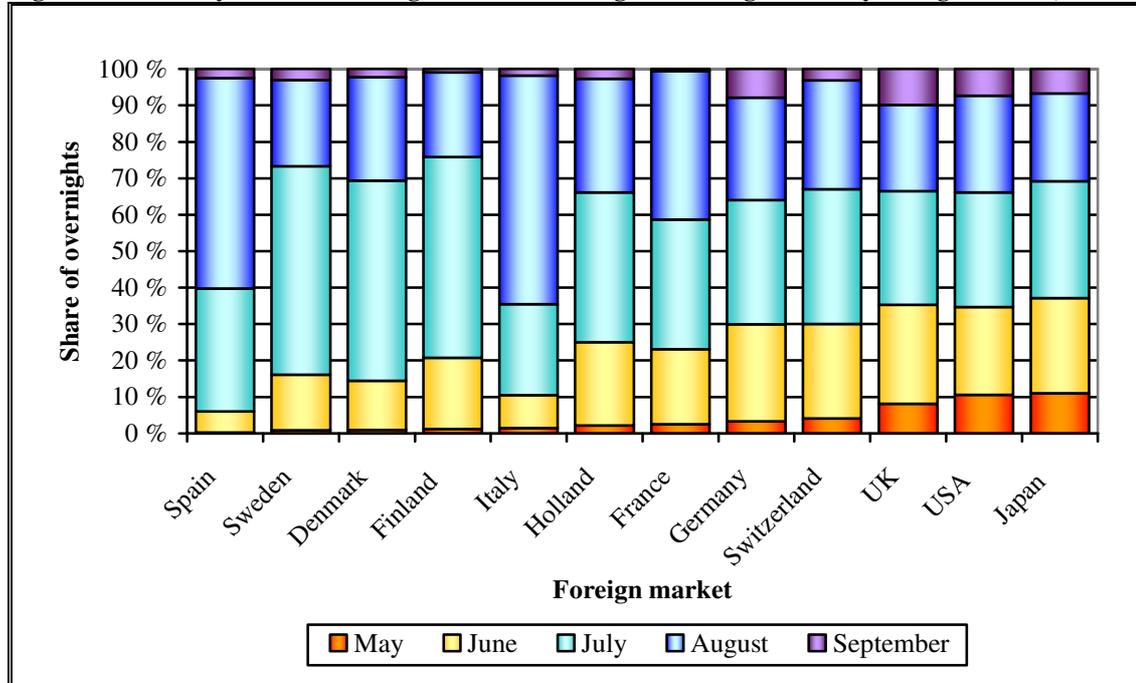
Data source: Statistics Norway (2002-2006)

211 009 overnights were experienced between May and September 2006. The busiest month was July with 37.6% of all overnights followed by August with 27.6% and June with 21.7%. This follows the pattern of demand for the ferries. The quietest months are September with 7.9% and May with 5.2%.

The seasonal pattern of demand is the same when main markets (foreign and Norwegian) are considered. July is the busiest month, followed by August, June, September and May. The main difference between the two markets is that foreign markets have a

higher share of overnights compared to the Norwegian market during the main holiday period and a smaller share of overnights compared to the Norwegian market during the shoulder period. Seasonal differences also exist between individual foreign markets (see figure 5.6).

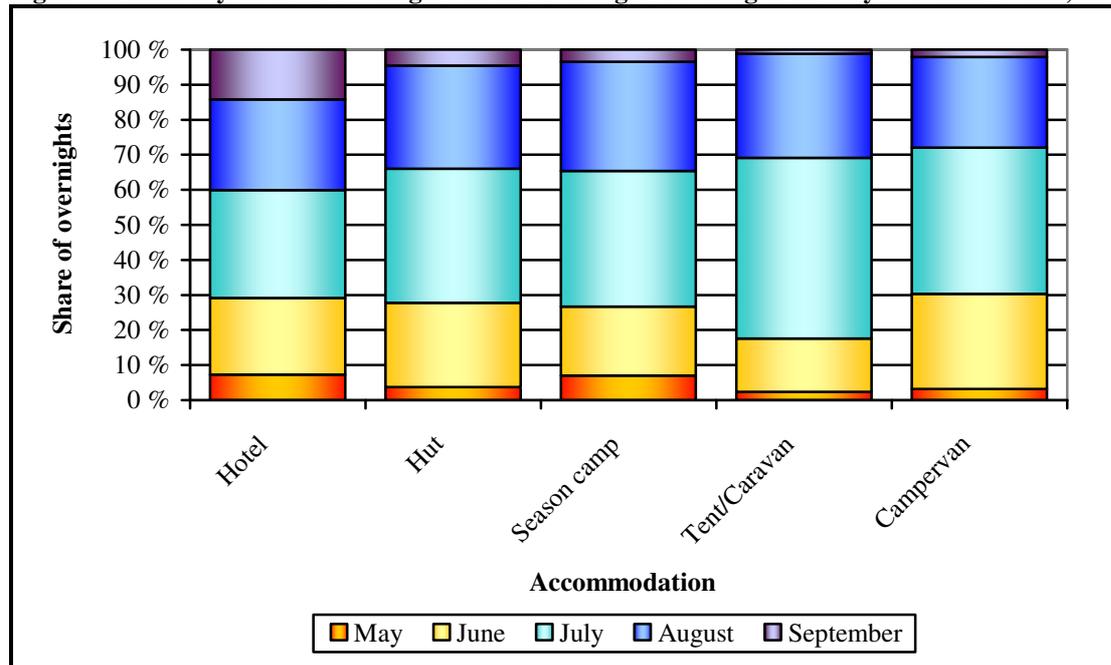
Figure 5.6 Monthly share of overnights in the Geiranger/Trollstigen area by foreign market, 2006



Data source: Statistics Norway (2002-2006)

Demand from each market is concentrated during the main holiday period but differences exist for each market. For instance, 27.2% of the UK market stayed in the area in June compared to 5.7% of the Spanish market. 57.2% of the Swedish market stayed in the area in July compared to 25% of the Italian market. 62.8% of the Italian market stayed in the area in August compared to 23.2% of the Finnish market. The markets with the highest share of overnights during the shoulder months are Japan, the USA, the UK, Switzerland and Germany (in May) and the UK, Germany, the USA, Japan and Switzerland (in September). The markets with the lowest share of overnights during the shoulder period are Spain, Sweden, Denmark, Finland and Italy (in May) and France, Finland, Italy, Denmark and Spain (in September).

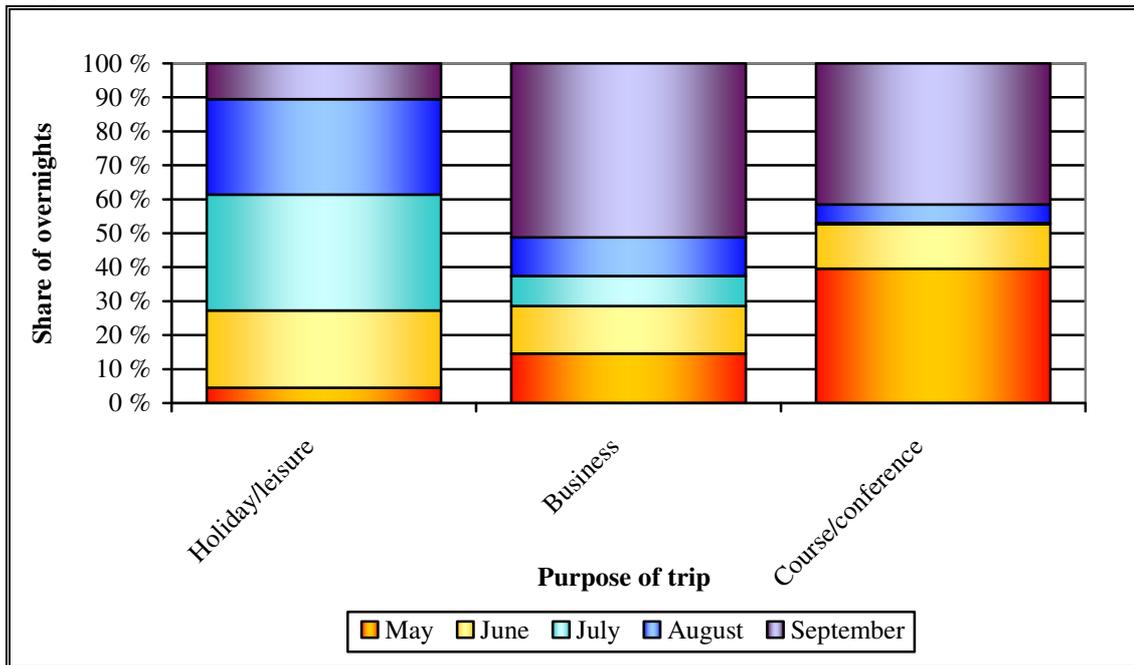
Of all accommodation used in the Geiranger/Trollstigen area in 2006, hotels were the least affected by seasonality (see figure 5.7). The share of overnights in hotels is concentrated during the main holiday period and especially in July however, the differences between each month are fairly small (21.8% in June, 30.8% in July and 25.9% in August). The share of overnights in hotels does drop in May and September with 7.3% in May and 14.2% in September. In comparison, the share of overnights at campsites drops dramatically. For instance, the share of overnights in tent/caravan accommodation is only 2.4% in May and 1.2% in September. This rises to 51.5% in July.

Figure 5.7 Monthly share of overnights in the Geiranger/Trollstigen area by accommodation, 2006

Data source: Statistics Norway (2002-2006)

Holiday/leisure travel dominates the main holiday period in hotels (see figure 5.8)⁷. 85% of all holiday/leisure overnights take place during these months (34.1% in July, 28.1% in August and 22.8% in September). Only 10.5% take place in September and 4.5% in May. Hotels are likely to have a lot of spare capacity in May and September and this means that they are able to accommodate travellers for business or to attend courses/conferences. These markets tend to prefer the quieter shoulder period. September is a popular time for business travellers (51.2% of all business overnights take place in September). Courses/conferences are popular in May and September (41.5% of all course/conference overnights take place in September and 39.6% take place in May).

⁷ This data is only provided for overnights in hotel accommodation and not in huts or on campsites. The data therefore only represents about half of all overnights in the Geiranger/Trollstigen area in 2006.

Figure 5.8 Monthly share of hotel overnights in the Geiranger/Trollstigen area by purpose of trip, 2006

Data source: Statistics Norway (2002-2006)

The seasonality of capacity, occupancy and income at hotels in the Geiranger/Trollstigen area is shown in table 5.9.

Table 5.9 Performance of hotels in the Geiranger/Trollstigen area by month, 2006

	May	June	July	August	September
Capacity					
Room capacity	412	532	531	532	444
Room nights available	12 759	15 960	16 461	16 492	13 326
Bed capacity	765	1 005	1 003	1 005	832
Occupancy					
Overnights	6 174	18 362	25 994	21 858	11 933
Average nights stay (Norwegians)	1.35	1.46	1.27	1.3	1.48
Average nights stay (foreigners)	1.35	1.42	1.18	1.25	1.26
Room nights sold	3 789	10 788	13 972	12 116	7 878
Room occupancy (%)	29.7	67.6	84.9	73.5	59.1
Bed occupancy (%)	26.0	60.9	83.6	70.2	47.8
Income (NOK)					
Income per overnight	525	473	463	448	453
Income per available room night	254	544	732	593	405
Income per sold room night	855	805	862	808	686
Income per guest	709	676	559	566	625
Total income (1 000 NOK)	3 239	8 680	12 048	9 787	5 403
Number of reporting hotels	7	8	8	8	8

Data source: Statistics Norway (2002-2006)

Hotel capacity is lower during the shoulder period compared to the main holiday period (i.e. over 1 000 beds are available each month during the main holiday period compared to 765 beds in May and 832 beds in September). Demand is concentrated during the main holiday period with July providing the greatest number of overnights (25 994 overnights contributing 30.8% of all overnights). September and May are the quietest months with 11 933 overnights (14.2%) in September and 6 174 overnights (7.3%) in May. Bed occupancy is as high as 83.6% in July and as low as 26.0% in May. The situation in September is not as severe as in May with a bed occupancy rate of 47.8%.

Income generation follows the seasonal pattern of occupancy at hotels with the majority of income being earned during the main holiday period. A total of 39 157 000 NOK was earned by hotels in 2006 and 30 515 000 NOK (78.0% of the total) was earned during the main holiday period. June contributed 22.2% of the total, July 30.8% and August 25.0%. September contributes an income of 5 403 000 NOK (13.7% of the total) and May contributes 3 239 000 NOK (8.3%).

6. Impact of lengthening the season

This chapter investigates the impact of lengthening the season in the Geiranger/Trollstigen area. It briefly mentions some methodological issues before assessing potential demand for a longer season and its economic impact in terms of additional expenditure from visitors.

6.1 Methodology

Future visitor numbers to the Geiranger/Trollstigen area are forecast in order to show whether they are expected to increase, stay the same, or decline. Annual visitor numbers are known for each of the main attractions in the Geiranger/Trollstigen area between 2002 and 2006. This data is provided in Chapter 3 and is available from Statistics Norway (2002-2006). Linear trendline estimates are then used to predict demand up to and including 2010 for each attraction. A straight line, known as the line of best fit is drawn through time series data (i.e. the number of visitors each year between 2002 and 2006) using the least squares method. The least squares method minimises vertical deviations between the line and the time series data therefore assuming that visitor numbers change by a constant amount each year. The constant amount can then be used to predict visitor numbers for future years.

Linear trendline estimates should use a minimum of seven years of past data and should not normally forecast a longer period than about half the number of past years for which data is available. Readers should be aware of this when interpreting the findings. A qualitative method such as a Delphi survey would have been more appropriate as a means of forecasting in this study however, Delphi surveys typically take between 30 and 180 days to conduct. This is much longer than the time available for this study.

After providing estimates for future demand, potential demand for a longer season in the Geiranger/Trollstigen area is estimated. The current season lasts from between May and September however; a number of visitor services in the Geiranger/Trollstigen area are not available for the whole of May and September. Potential demand is estimated for a lengthened season that runs from the start of May to the end of September 2008.

Opportunities may exist to lengthen the season further (i.e. into April and/or October). Demand is estimated for one additional month in 2008. The additional month could be half of April and half of October or the whole of April or the whole of October.

Estimates of potential demand are made on the basis of demand in other areas including Norway, regions of Fjord Norway, and destination areas in Møre and Romsdal. A particular focus will be on the Aurland/Lærdal area of Sogn and Fjordane in Fjord Norway. The Aurland/Lærdal area offers a very similar product to the Geiranger/Trollstigen area and is possibly the nearest competitor. Data available from Statistics Norway (2002-2006) on overnights in each area will be analysed. Data is not available for same-day visitors or same-day cruise visitors so assumptions are made on the basis of findings for overnights.

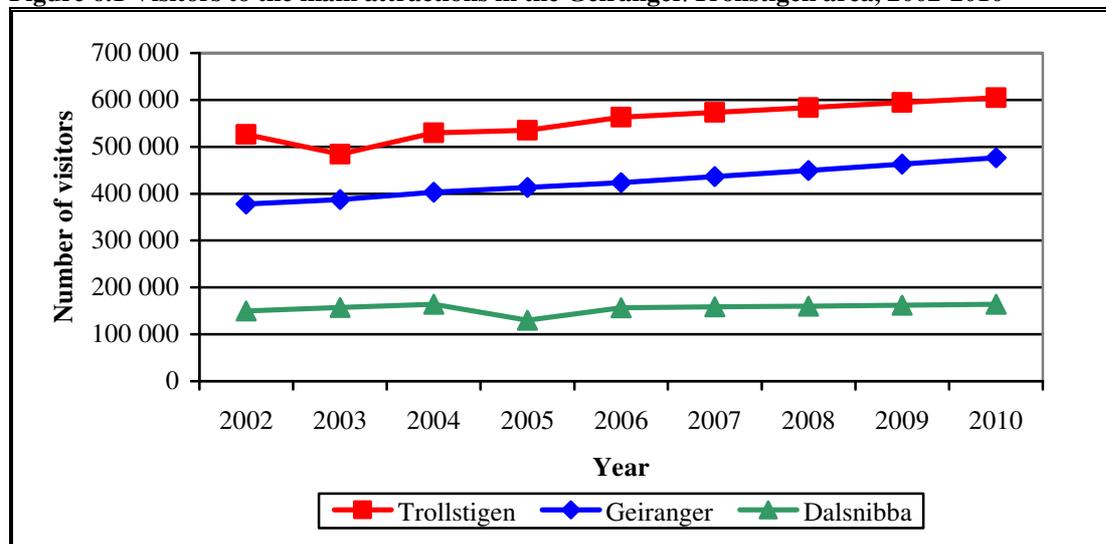
Additional visitor expenditure that is likely to be generated from future and potential demand is estimated using data from TØI's national survey of foreign visitors in Norway. This data is provided in Chapter 4. Estimates are made for 2008 but use 2006 prices. Estimates would need to be adjusted for future levels of inflation in order to create 2008 prices.

6.2 Potential demand

6.2.1 Future visitors to the Geiranger/Trollstigen area

Figure 6.1 shows the growth in visitors at Trollstigen, Geiranger and Dalsnibba between 2002 and 2006. It also provides linear trendline estimates for 2007 to 2010.

Figure 6.1 Visitors to the main attractions in the Geiranger/Trollstigen area, 2002-2010



Data source: Statistics Norway (2002-2006); Linear trendline estimates (2007-2010)

Linear trendline estimates predict that between 2006 and 2010, an additional 41 668 visitors can be expected at Trollstigen, 53 171 at Geiranger and 7 013 at Dalsnibba. This would mean that the number of visitors in 2010 would be 604 999 at Trollstigen, 476 814 at Geiranger and 163 791 at Dalsnibba. The predicted average annual increase between 2006 and 2010 is 1.9% at Trollstigen, 3.1% at Geiranger and 1.1% at Dalsnibba. These are fairly conservative estimates compared to those that have been made for tourist arrivals to Norway. An average annual increase of 3.3% between 2006 and 2010 is expected for Norway, providing an additional 521 000 tourist arrivals (Tuftin, 2006).

“Any forecast involving people is inherently unreliable and likely to be wrong” (Neufville & Odoni, 2003; p765) and although inertia means that short-term forecasts (i.e. of less than 5 years) are likely to have a higher level of accuracy than long-term forecasts, it does not mean that they will be accurate. Table 6.1 provides the number of visitors at each of the three main attractions in the Geiranger/Trollstigen area in 2006 and 2007 and emphasises the unreliability of forecasting. Average annual increases of 1.9%, 3.1% and 1.1% are predicted at Trollstigen, Geiranger and Dalsnibba respectively

between 2006 and 2010 however, the results for 2007 are 4.8%, 0.7% and -14.4% respectively.

Table 6.1 Visitors to the main attractions in the Geiranger/Trollstigen area, 2006-2007

Attraction	2006	2007	Annual Change 06/07	Additional visitors
1. Trollstigen	563 331	590 300	4,8	26 969
2. Geiranger	423 643	426 663	0,7	3 020
3. Dalsnibba	156 778	134 270	-14,4	-22 508

Data source: Møre & Romsdal Fylke (2007b)

One of the reasons why forecasting is unreliable is because it can not always control for unforeseen events or factors that can affect future demand. For instance, limitations in capacity are likely to constrain future growth in the Geiranger/Trollstigen area, especially if additional demand is concentrated during the main holiday period. Social and environmental limitations may also constrain growth during this period and this has already been highlighted by the imposition of a limit on cruise ship calls and the number of cruise ship passengers that can enter the Geirangerfjord each day (see section 5.2.2).

Developing additional capacity for the main holiday period is important to the competitiveness of the Geiranger/Trollstigen area. However, attention should also be given to lengthening the season so that additional demand can be spread across a longer period of time. This would allow the area to generate additional demand and visitor expenditure whilst minimising some of the negative effects of seasonality that were introduced in Chapter 1.

The Geiranger/Trollstigen area does provide opportunities for year-round tourism. Strandafjellet Skisenter, close to the village of Stranda, offers opportunities for alpine skiing in winter and a number of prepared tracks for cross-country skiing are also available in the area. However, the main tourism season runs from mid-May to mid-September. Most of the main visitor services in the area are available during this time although there are some inconsistencies between them. For instance, in 2007 the Geiranger Fjord Service was available from 10 May to 14 September, the Geiranger Fjord Centre was open from 1 May to 15 September and Geiranger Skysstag was open from 1 June to mid-September. The tourist ferry route between Valldal and Geiranger only operated between 22 June and 22 August. Some accommodation providers in the area open after 1 May and close before the end of September. Cruise ships rarely call into the Geirangerfjord until the last week of May and rarely call after the first week of September.

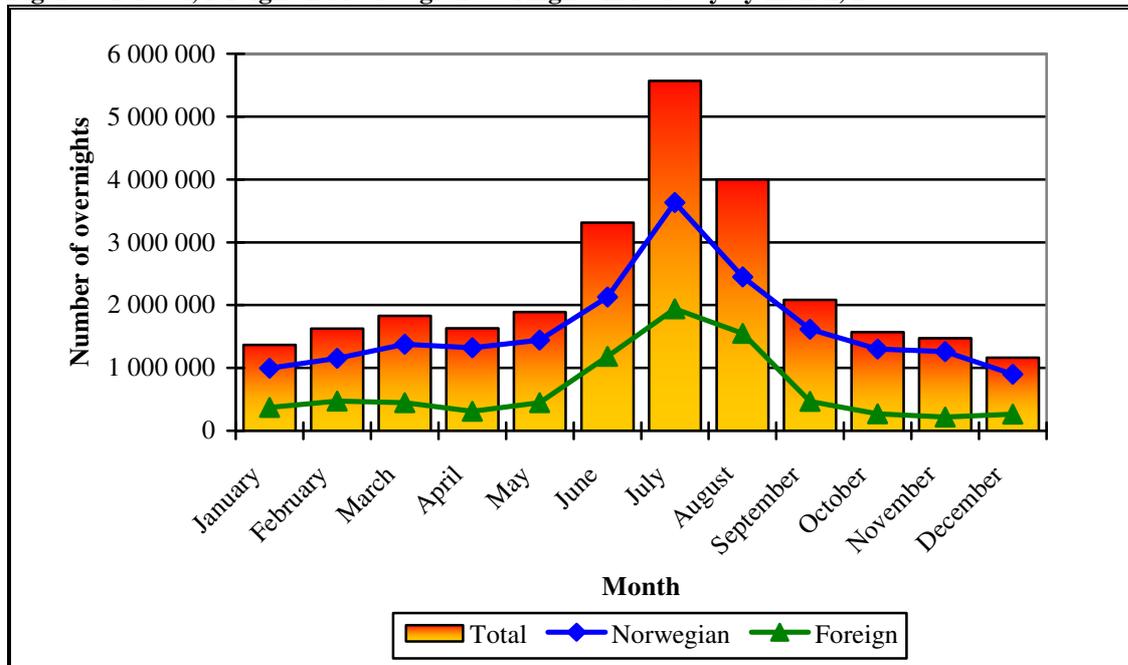
The current situation means that some services are available but others are not and this provides a distorted message to potential visitors. It is also likely to have a negative effect on those that do visit the area and find that some services are available but others are not. Any lengthening of the season may be determined by the availability of visitor services in the area because it is not worth targeting demand for a longer season if visitor services in the area are not available. It is likely that any lengthening of the season would benefit from a collaborative approach that involves all tourism stakeholders. This means that competing companies may benefit from working together rather than pursuing any individual agendas.

Becoming a twelve month destination is perhaps not a reality for the Geiranger/Trollstigen area. Primarily because of acute access and climatic conditions in winter however, extending the season so that it runs from the start of May to the end of September should be possible. Scheduled ferry routes in the area already operate all year round although the route between Eidsdal and Linge operates less frequently during May and September. Road access is more problematic. Table 5.1 shows how Trollstigen, which is the main attraction in the area, is not normally open before the end of May. The road between Geiranger and Langvatn is not normally open until mid-May. Statens vegvesen would need to agree to open the roads earlier if potential demand for the whole of May is to be realised. September is less problematic because Trollstigen does not normally close until late-October and the road between Geiranger and Langvatn does not normally close until mid-November. This also means that extending the season into October should be possible but again, commitments from the Statens vegvesen may be needed to ensure that road access is maintained during October. Extending the season into April seems less realistic and may be too early in the season for the roads to be opened.

6.2.2 Demand during the shoulder period in other areas

Figure 6.2 shows the demand for overnights in Norway by month in 2006. This provides an indication of the number of overnights that the Geiranger/Trollstigen area can compete for during the shoulder period (i.e. around 2 million overnights in both May and September and over 1.5 million overnights in both April and October). Figure 6.2 also indicates how demand varies each month. It can be seen that May and September experience much less demand than June and August but that the difference between April and May and September and October is relatively small.

Figure 6.2 Total, foreign and Norwegian overnights in Norway by month, 2006



Data source: Statistics Norway (2002-2006)

The share of demand from foreign overnights in Norway decreases at a faster rate than Norwegian overnights either side of the main holiday period. This is also the case in the Geiranger/Trollstigen area (see figure 5.5). The foreign share is as high as 35.8% in June and 38.8% in August. This decreases to 23.7% in May and 22.4% in September. It then decreases to 19.1% in April and 17.1% in October.

Table 6.2 provides the number of overnights by month in the four regions of Fjord Norway and the four destination areas of Møre and Romsdal. The seasonal pattern of demand for overnights in each of the regions is similar to that of Norway with the peak month being July, and the peak period being June, July and August. The other important point from table 6.2 is that the Geiranger/Trollstigen area is the only area that is not a twelve month destination. Demand for overnights in similar and neighbouring areas is year-round.

Table 6.2 Overnights in Fjord Norway and Møre and Romsdal by month, 2006

Month	Fjord Norway				Møre and Romsdal			
	Møre & Romsdal	Sogn & Fjordane	Hordaland	Rogaland	Kristiansund /Nordmøre	Molde/Romsdal	Geiranger/Trollstigen	Ålesund/Sunnmøre
Jan	43 025	25 840	98 964	75 005	11 679	11 203	0	17 976
Feb	44 950	27 784	114 269	80 403	11 627	12 012	0	18 026
Mar	62 156	38 096	134 796	100 116	13 429	18 406	0	26 237
Apr	52 731	45 706	137 961	102 554	14 041	14 971	0	18 571
May	99 423	85 744	201 040	144 786	21 396	31 722	10 973	33 986
Jun	192 781	202 986	293 060	186 069	35 882	56 239	45 789	55 207
Jul	294 597	344 292	409 675	263 888	52 691	79 670	79 338	77 500
Aug	229 613	295 787	382 066	230 964	43 620	61 991	58 239	65 489
Sep	96 333	104 639	217 697	151 384	16 753	28 826	16 670	32 645
Oct	70 746	49 115	155 111	128 984	16 487	19 844	0	27 058
Nov	69 595	40 770	141 371	125 971	17 098	19 981	0	26 674
Dec	43 960	27 995	98 010	83 737	11 686	12 742	0	15 729
Total	1 299 910	1 288 754	2 384 020	1 673 861	266 389	367 607	211 009	415 098

Data source: Statistics Norway (2002-2006)

Demand for overnights in each area decreases either side of the main holiday period. Despite this, there is a substantial market of overnight visitors to each area during the shoulder period that could be targeted by the Geiranger/Trollstigen area. The Geiranger/Trollstigen area could of course attract new demand that visits Norway with the main reason being to visit the Geiranger/Trollstigen area however, based on the average length of stay of overnights in the Geiranger/Trollstigen area (1.36 in 2006) compared to an average nights stay of 7.2 in Norway (Innovation Norway, 2007b), it is more prudent to assume that a lengthening of the season will primarily enable the area to compete for visitors that are already in Norway.

One of the main competitors to the Geiranger/Trollstigen area is the Aurland/Lærdal area where the Nærøyfjord is located. The Geirangerfjord and Nærøyfjord form the area known as the West Norwegian Fjords. It is the West Norwegian Fjords that is listed on the UNESCO World Heritage List and received the National Geographic Traveler award for the best preserved World Heritage Site in 2006.

The Nærøyfjord is one arm of the Sognefjord and is located in the municipality of Aurland in the county of Sogn and Fjordane. It is the narrowest fjord in the world. At one point, it is just 250 metres wide with mountains towering 1 800 metres above its waters. The Nærøyfjord starts at Gudvangen, a village no larger than the village of Geiranger and ends at a mountain called Beitelen. The Nærøyfjord is listed in table 3.2 as the 7th most visited nature-based attraction in Norway with 297 038 visitors in 2006.

The Aurland/Lærdal area is home to Aurlandsvegen, a stretch of road that runs between Aurland and Lærdal. The road is known as Snow Road because snow normally lies beside the road throughout the summer. The stretch of road is 48 kilometres long and its highest point is at 1 306 metres. The road offers views of the Aurlandsfjord and the surrounding area.

The Aurland/Lærdal area is popular with walkers and offers excellent opportunities for hiking. A range of land-based and water-based activities are offered including fishing trips, fjord sightseeing and kayaking. One way of viewing the Nærøyfjord is on the tourist ferry route from Gudvangen, which travels out of the Nærøyfjord and Aurlandsfjord to Kaupanger in Sognefjord. The route is only available between May and September.

The nature-based products and services of the Aurland/Lærdal area are similar to those of the Geiranger/Trollstigen area. Table 6.3 provides a summary of overnights in both areas and similarities can be seen in terms of the number of overnights, the share of overnights by main market, the top 5 foreign markets, the share of overnights by accommodation, and the share of hotel overnights by purpose of trip.

Table 6.3 Overnights in the Geiranger/Trollstigen area and the Aurland/Lærdal area, 2006

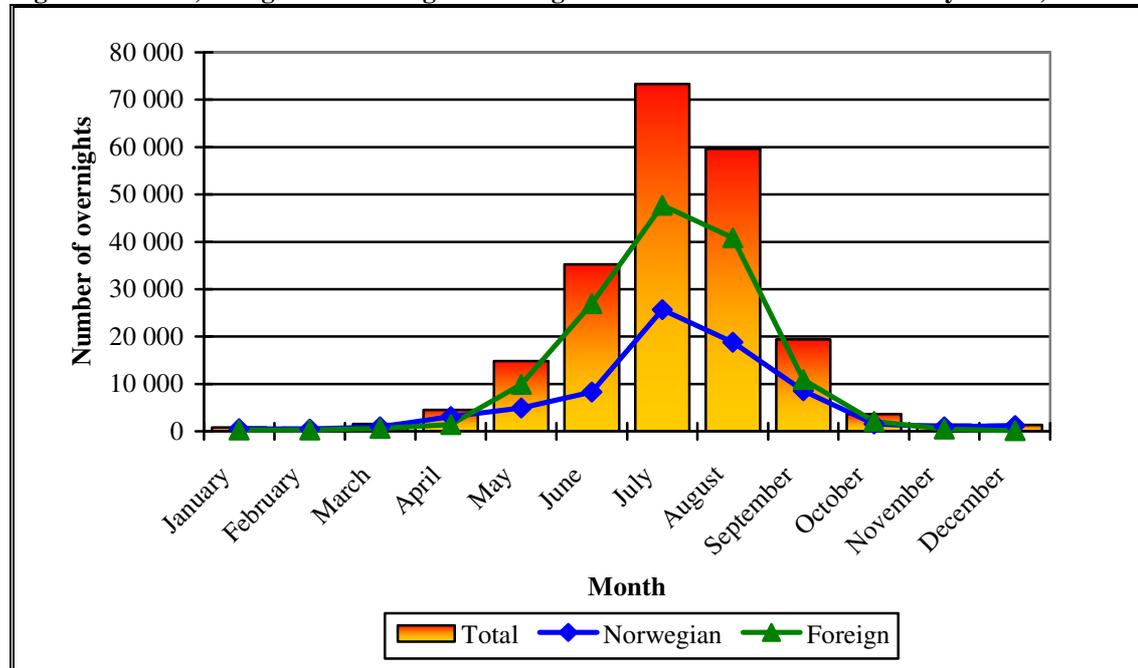
Measurement	Geiranger/Trollstigen area	Aurland/Lærdal area
Overnights	211 009	216 532
% foreign	62.3	65.2
% Norwegian	37.7	34.8
Top 5 foreign markets	Germany Holland Japan Sweden UK	Germany Holland Japan UK USA
Overnights by accommodation	211 009	216 532
% hotel	48.6	45.5
% hut	20.9	22.1
% tent/caravan	15.2	21.6
% campervan	10.7	10.9
% season camp	4.6	0.0
Hotel overnights by purpose of trip	102 550	98 522
% holiday/leisure	81.1	92.4
% course/conference	13.2	2.8
% business	5.7	4.8

Data source: Statistics Norway (2002-2006)

Small differences between the two areas exist (i.e. the Geiranger/Trollstigen area is more popular for course/conference markets, which contribute 13.2% of hotel overnights compared to 2.8% of hotel overnights in the Aurland/Lærdal area). The

main difference between the two areas is that the Aurland/Lærdal area offers year-round accommodation. Demand for overnights in the Aurland/Lærdal area by month in 2006 can be seen in figure 6.3.

Figure 6.3 Total, foreign and Norwegian overnights in the Aurland/Lærdal area by month, 2006



Data source: Statistics Norway (2002-2006)

Demand for overnights is still fairly strong in May and September although the difference between these two months and the main holiday period is large. Demand in May is 42.0% less than in June and demand in September is 32.6% less than in August. Demand in May is dominated by foreign markets with 66.9% of total demand. Foreign markets also provide the largest share of overnights in September (56.1%).

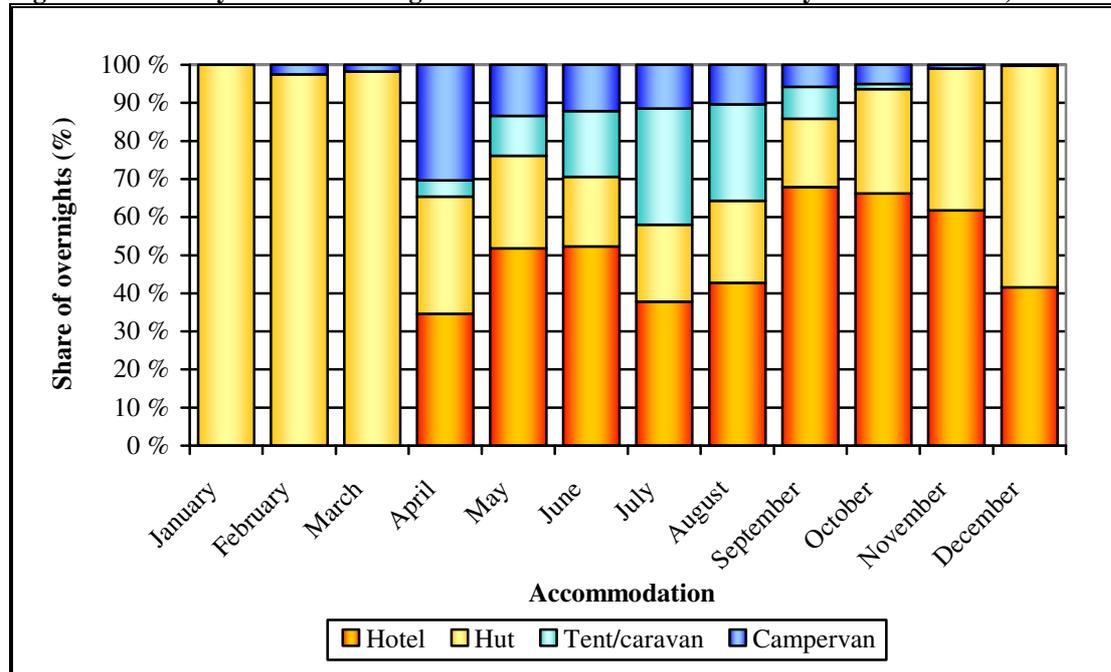
Demand for overnights in April and October is weak compared to the main holiday period and the months of May and September however, there is still some demand with 4 502 overnights in April and 3 631 overnights in October. The greater share of demand is from the Norwegian market in April (68.1% of total demand) and from foreign markets in October (57.5%). Variations in demand also exist according to individual foreign markets (see table 6.4). Data is provided from April to October as these are the months of interest to this study.

Table 6.4 Total, Norwegian and foreign overnights in Aurland/Lærdal by month, 2006

Market	April	May	June	July	August	September	October
Total	4 502	14 814	35 282	73 347	59 619	19 435	3 631
Norwegian	3 067	4 905	8 319	25 662	18 782	8 532	1 543
Foreign	1 435	9 909	26 963	47 685	40 837	10 903	2 088
-Germany	58	1 258	5 054	9 527	9 000	1 669	153
-Holland	17	948	4 264	10 379	7 751	571	41
-Japan	35	1 415	2 821	2 746	2 047	1 791	109
-UK	83	1 153	2 085	3 108	2 830	657	108
-USA	53	854	1 943	2 362	2 157	1 042	113
-Denmark	16	33	917	3 117	1 730	276	82
-Sweden	5	139	558	2 613	1 400	366	26
-Spain	45	126	914	1 401	2 013	412	22
-France	34	322	487	1 991	1 923	83	15
-Italy	25	154	344	1 203	2 249	100	6
-Switzerland	5	89	237	811	444	124	25
-Finland	4	2	132	382	189	49	0

Data source: Statistics Norway (2002-2006)

Figure 6.4 shows the monthly share of overnights in the Aurland/Lærdal area by accommodation in 2006.

Figure 6.4 Monthly share of overnights in the Aurland/Lærdal area by accommodation, 2006

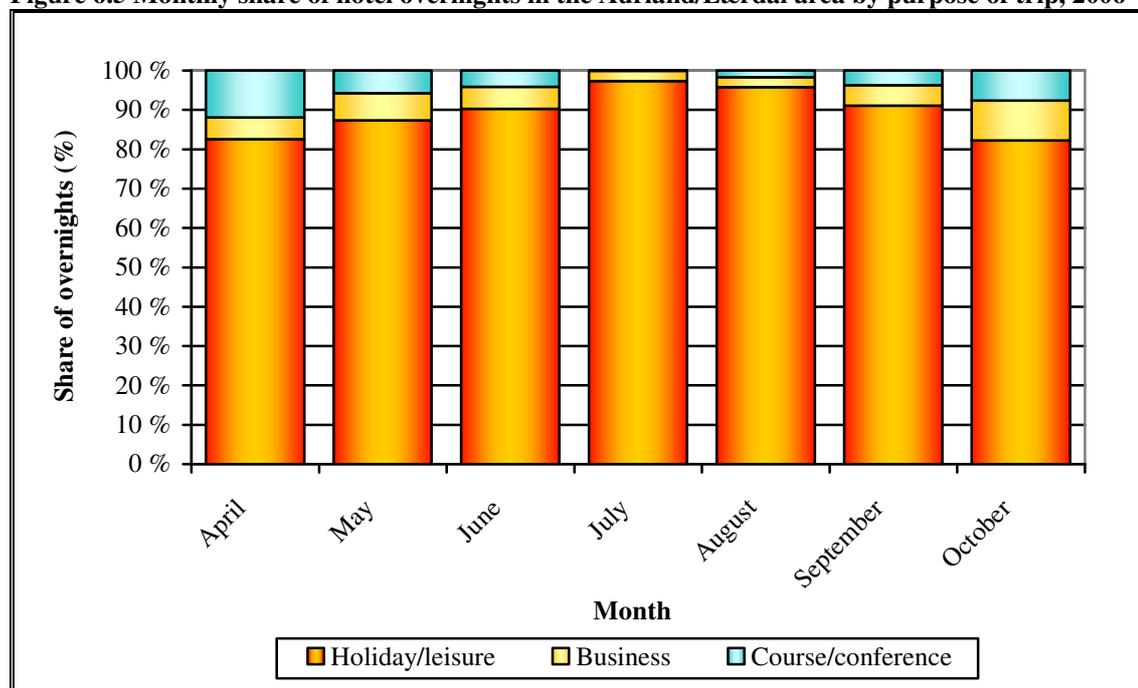
Data source: Statistics Norway (2002-2006)

Hotel accommodation provides the majority of overnights in May and September, providing 51.8% and 67.9% of all overnights respectively. This changes in April when hotels only provide 34.6% of all overnights. Hut and campsite accommodation have 65.4% of all overnights in April and the majority of these are in huts and campervans.

This is very different to October when 66.2% of all overnights are in hotels and only 33.8% are in hut and campsite accommodation.

Figure 6.5 shows the monthly share of hotel overnights in the Aurland/Lærdal area by purpose of trip in 2006. The holiday/leisure market dominates hotel overnights in May and September and April and October. It is likely that overnights at huts and campsites (which are not included in figure 6.5) are largely for holiday/leisure purposes too. Business and course/conference markets become increasingly important at hotels outside of the main holiday period, probably as they seek to fill spare capacity that is left from declining demand from holiday/leisure markets. This is not likely to be the case at huts and campsites where demand from business and course/conference markets is likely to be minimal at all times.

Figure 6.5 Monthly share of hotel overnights in the Aurland/Lærdal area by purpose of trip, 2006



Data source: Statistics Norway (2002-2006)

6.2.3 Potential demand during the shoulder period in the Geiranger/Trollstigen area

Linear trendline estimates in section 6.2.1 suggest that the Geiranger/Trollstigen area can expect an average annual increase in visitors of 1.9% between 2006 and 2010⁸.

This would mean that in 2008, the area can expect:

- 219 103 overnights ($211\ 009 \times 0.019 = 215\ 018 \times 0.019 = 219\ 103$).
- 276 604 same-day visitors ($266\ 385 \times 0.019 = 271\ 446 \times 0.019 = 276\ 604$).
- 145 052 same-day cruise visitors ($139\ 693 \times 0.019 = 142\ 347 \times 0.019 = 145\ 052$).

⁸ The average annual increase of 1.9% is for Trollstigen. Trollstigen was used as the basis for estimating the total number of visitors to the Geiranger/Trollstigen area in Chapter 3 (see section 3.2).

Assumptions from Chapter 3 can be used to turn the figure for overnights into a figure for overnight visitors. Assumptions are that 62.3% of overnights are foreign and 37.7% are Norwegian, and that foreign overnights stay for an average of 1.27 nights compared to 1.48 for Norwegian overnights. This means that the Geiranger/Trollstigen area can expect 163 293 overnight visitors in 2008 ($219\,103 \times 0.623 / 1.27 = 107\,481$ foreign overnight visitors and $219\,103 \times 0.377 / 1.48 = 55\,812$ Norwegian overnight visitors).

Assuming no lengthening of the existing season in 2008, the Geiranger/Trollstigen area can expect 584 949 visitors (163 293 overnight visitors, 276 604 same-day visitors, and 145 052 same-day cruise visitors). This is an increase of 21 618 visitors on the 2006 total of 563 331, representing an average annual increase of 1.9%.

Table 6.1 shows that the estimates of this study may be rather pessimistic. The number of visitors to the Geiranger/Trollstigen area reached 590 300 in 2007, representing a 4.8% increase on 2006 and exceeded the number of visitors forecast for 2008. This is despite a decrease of 39 491 same-day cruise visitors in 2007 compared to 2006.

Figure 5.5 shows that 5.2% of overnights in the Geiranger/Trollstigen area in 2006 were in May and 7.9% were in September. Using the 2008 estimate of 219 103 overnights, this would provide 11 393 overnights in May ($219\,103 \times 0.052$) and 17 309 overnights in September ($219\,103 \times 0.079$).

Table 6.4 shows the number of overnights in the Aurland/Lærdal area by month (April to October) in 2006. Between May and September, the area attracted 202 497 overnights. 7.3% were in May and 9.6% were in September. If visitor services in the Geiranger/Trollstigen area are open for the whole of May and September in 2008, an increase in the number of overnights in those months would be expected. If the area could attract a similar share of overnights in May and September 2008 as the Aurland/Lærdal area did in 2006 (i.e. 7.3% in May and 9.6% in September), it would attract 15 995 overnights in May ($219\,103 \times 0.073$) and 21 034 overnights in September ($219\,103 \times 0.096$). This means that lengthening the season in May and September could potentially provide 8 327 additional overnights in 2008 (37 029 potential overnights for the whole of May and September minus the 28 702 overnights that are expected without a lengthening of the season). 8 327 overnights is equivalent to 6 206 overnight visitors (4 085 foreign and 2 121 Norwegian). This means that the Geiranger/Trollstigen area can expect 169 499 overnight visitors ($169\,293 + 6\,206$) in 2008 for a season that runs from the start of May to the end of September.

8 327 overnights represents an additional 3.8% of the 219 103 overnights that are expected for 2008 without any lengthening of the season. A 3.8% increase in the number of same-day visitors in 2008 would provide an additional 10 511 same-day visitors ($276\,604 \times 0.038$) and 5 512 same-day cruise visitors ($145\,052 \times 0.038$). This means that the total number of visitors to the Geiranger/Trollstigen area in 2008, for a season that runs from the start of May to the end of September, would be 607 178 (169 499 overnight visitors, 287 115 same-day visitors, and 150 564 same-day cruise visitors). This is an increase of 43 847 visitors, representing a 7.8% increase on the 2006 total of 563 331. An increase of 21 618 visitors would be expected from the 1.9% average annual increase whilst an increase of 22 229 visitors (which includes an

additional 8 327 overnights) can be expected in 2008 from lengthening the season in May and September.

Discussions in section 6.2.1 suggest that lengthening the season into April and/or October may be possible although restrictions on road access limit options for April. Assuming that road access can be provided during the latter parts of April, this study would recommend a lengthening of the season by half a month in April and half a month in October. Lengthening the season by the whole of October is an alternative option but it may not maximise demand because the latter stages of October may not experience as much demand as the earlier stages of April.

It can be seen from table 6.4 that demand in October contributed 3 631 overnights to the Aurland/Lærdal area in 2006. This is a 1.8% increase on the number of overnights between May and September. April adds 4 502 overnights (a 2.2% increase). Similar demand for the Geiranger/Trollstigen area means that lengthening the season into half of April and half of October could potentially generate 2.0% in additional visitors. This would mean that in 2008, the area can expect:

- 231 979 overnights ($227\,430 \times 0.02$).
- 292 857 same-day visitors ($287\,115 \times 0.02$).
- 153 575 same-day cruise visitors ($150\,564 \times 0.02$).

231 979 overnights is equivalent to 172 890 overnight visitors (113 798 foreign and 59 092 Norwegian). This means that the total number of visitors to the Geiranger/Trollstigen area in 2008, for a season that runs from mid-April to mid-October, would be 619 322 (172 890 overnight visitors, 292 857 same-day visitors, and 153 575 same-day cruise visitors). This is an increase of 55 991 visitors, representing a 9.9% increase on the 2006 total of 563 331. An increase of 21 618 visitors would be expected from the 1.9% average annual increase whilst an increase of 34 373 visitors (which includes an additional 4 549 overnights) can be expected in 2008 from lengthening the season into half of April and half of October.

A summary of potential demand for the Geiranger/Trollstigen area in 2008 is provided in table 6.5.

Table 6.5 Potential demand for the Geiranger/Trollstigen area, 2008

Measurement	Actual 2006 ^o	Predicted 2008 ¹	Additional May /September 2008 ^{2a}	Additional April /October 2008 ^{2b}	Potential 2008 ³
Overnights	211 009	219 103	8 327	4 549	231 979
Overnight visitors	157 253	163 293	6 206	3 391	172 890
Same-day visitors	266 385	276 604	10 511	5 742	292 857
Same-day cruise visitors	139 693	145 052	5 512	3 011	153 575
Total visitors	563 331	584 949	22 229	12 144	619 322

Notes:

^o Actual demand for the 2006 season.

¹ Predicted demand for 2008 without any lengthening of the season (2006 figure plus an average annual increase of 1.9%).

² Additional demand expected for a lengthening of the season into early May/late September (^{2a}) and into late April/early October (^{2b}).

³ Total demand expected for a longer season in 2008 (i.e. ¹ + ^{2a} + ^{2b}).

Figure 5.5 shows that foreign markets provide the largest share of overnights in the Geiranger/Trollstigen area in May (57.7%) and the Norwegian market provides the largest share of overnights in September (55.3%). Figure 6.3 shows that foreign markets provide the largest share of overnights in both May and September in the Aurland/Lærdal area but similarly to the Geiranger/Trollstigen area, the share of foreign overnights is greater in May than it is in September. This would suggest that foreign markets are more likely to visit the Geiranger/Trollstigen area in May compared to the Norwegian market but that there is likely to be little difference between markets in September.

There is no data available on overnights in the Geiranger/Trollstigen area for April or October. The share of foreign overnights in the Aurland/Lærdal area is 31.9% in April and 57.5% in October (see figure 6.3). This would suggest that the Geiranger/Trollstigen area should focus on the Norwegian market in April and on foreign markets in October. The most important foreign markets for the Aurland/Lærdal area in October were from Germany, the USA, Japan and the UK. It is likely that the Geiranger/Trollstigen area would need to focus on similar markets in October however, other markets for October, and at other times in the season, should not be ignored.

Figures 5.7 and 6.4 suggest that the largest share of demand for overnights is likely to be for hotels in May, September and October. Figure 6.4 shows that the share of overnights in hotels in the Aurland/Lærdal area is reduced dramatically in April (to just 34.6% of all overnights). Hut and campsite accommodation provide the largest share of overnights in April (especially huts and campervans). It is not possible to say whether this is because of different preferences for accommodation in April or whether it is simply a consequence of certain markets being targeted at certain times. It may also be because of local factors such as variations in the availability of accommodation or pricing.

Figure 5.8 and 6.5 suggest that holiday/leisure markets are likely to provide the vast majority of overnights at all times. However, the share of business and

course/conference markets at hotels is likely to be greater during the shoulder period than it is during the rest of the season.

It is useful to look at trends in Aurland/Lærdal area in order to identify target markets for the shoulder period in the Geiranger/Trollstigen area. However, it is naïve to assume that the two areas will attract the same markets just because they offer similar nature-based products and services. The Geiranger/Trollstigen area may be able to attract new markets during the shoulder period.

Tourism planners should recognise that markets targeted during the shoulder period should not necessarily be the same as those that are targeted during the main holiday period because as this study has found, slight changes in demand take place throughout the season. Tourism planners should also think carefully about the tourism product and should consider offering different products for different markets at different times of the season.

It is possible to develop a new product that can be used to target different markets at different times of the season. For instance, the provision of a municipal spa facility, like the Caldea Spa in Andorra, could allow the area to add to the visitor experience during the main holiday period and encourage a longer average length of stay in the area. The facility could then be used as a basis for targeting the elderly and baby boomer markets with spa breaks during the shoulder period. This would take advantage of demographic trends towards an ageing population and would target less time and money sensitive markets. A spa facility would also provide the area with an additional product to offer to business and course/conference markets, which are popular during the shoulder period. The spa facility could be branded on the pure and natural waters of the Geirangerfjord and would provide opportunities for merchandising and the sale of local products.

Spa facilities are already provided in Norway. For instance, Spa-hotell Velvære opened on 10 March 2006. It has a shore-side location in Hjelmeland in the heart of Ryfylke. However, access to the facility is restricted to hotel guests. Spa facilities are also offered at the Selje Hotel (Selje Spa Thalasso), which is located in Selje in Sogn and Fjordane. The spa facilities at Selje Hotel can be used by all visitors but are typically targeted at hotel guests. A municipal spa facility would target and allow access to all visitors.

The development of a municipal spa resort may be unrealistic for the Geiranger/Trollstigen area. It may be too difficult to raise the necessary investment, and the product may not be in-line with the areas focus on nature-based tourism. Alternative options include ad-hoc events such as sports events, festivals, business travel and courses/conferences. Ad-hoc events can stimulate demand at certain times during the shoulder period and although demand will be temporal in nature, it can make it worthwhile for local businesses to remain open for a couple of weeks either side of the existing season. This study has shown that the preferred time for business travel and courses/conferences in the Geiranger/Trollstigen area is during the shoulder period so it might be possible to increase demand for these and other ad-hoc events however,

competition for such markets is intense. A list of festivals that are offered in county of Møre & Romsdal alone can be found on the website of Møre & Romsdal Kulturnett⁹.

Opportunities also exist for specialist activities or excursions and tailor-made holidays in the area. Issues in access by road could be overcome by providing access by water (i.e. from Ålesund, where the airport now has direct scheduled flights from London). However, products such as these are largely dependent upon the initiative of local companies and tour operators that may not consider demand to be strong enough for such products during the shoulder period.

This study has estimated demand for the shoulder period of the season in the Geiranger/Trollstigen area but the estimates are based simply on what the area could expect from lengthening its season. Estimates do not take account of new markets or products that could be developed for the shoulder period and it is possible that marketing and product development activities can enable the area to generate much higher levels of demand. It is fairly naïve of this study to assume that additional demand can be generated by simply extending the season so any lengthening of the season would need to coincide with increased marketing and product development activities that are specific to the shoulder period. This study has provided some initial ideas but a more thorough analysis of the market would be needed and market research can help to identify potential markets and products.

6.3 Additional visitor expenditure

Using the estimates in table 6.5 and the average daily levels of expenditure that were used in Chapter 4 (i.e. 733 NOK for overnights, 476 NOK for same-day visitors and 500 NOK for same-day cruise visitors), it is possible to estimate visitor expenditure for a lengthened season in 2008. A summary of the estimates is provided in table 6.6.

Table 6.6 Estimated visitor expenditure in the Geiranger/Trollstigen area, 2008 (NOK)

Measurement	Actual 2006 ^o	Predicted 2008 ¹	Additional May /September 2008 ^{2a}	Additional April /October 2008 ^{2b}	Potential 2008 ³
Overnights	154 669 597	160 602 499	6 103 691	3 334 417	170 040 607
Same-day visitors	126 799 260	131 663 504	5 003 236	2 733 192	139 399 932
Same-day cruise visitors	69 846 500	72 526 000	2 756 000	1 505 500	76 787 500
Total	351 315 357	364 792 003	13 862 927	7 573 109	386 228 039

Notes:

^o Expenditure from actual demand for the 2006 season.

¹ Expenditure from predicted demand for 2008 without any lengthening of the season.

² Expenditure from additional demand expected for a lengthening of the season into early May/late September (^{2a}) and into late April/early October (^{2b}).

³ Expenditure from total demand expected for a longer season in 2008 (i.e. ¹ + ^{2a} + ^{2b}).

Total expenditure from visitors during a 2008 season that runs from mid-April to mid-October is expected to be 386 228 039 NOK. This is 34 912 682 NOK more than the

⁹ The website is: <http://moreogromsdal.kulturnett.no/kulturnett/diverse/festivalar>.

current 2006 season. 13 862 927 NOK of additional expenditure is expected from lengthening the season so that it runs from the start of May to the end of September, 7 575 109 NOK of additional expenditure is expected from lengthening the season so that it runs from mid-April to mid-October, and 13 474 646 NOK of additional expenditure is expected from the average annual increase in visitors of 1.9% between 2006 and 2008.

Using the estimates in table 6.6 and the estimated shares of expenditure on different goods and services in table 4.4 (for overnights), table 4.5 (for same-day visitors), and table 4.6 (for same-day cruise visitors), it is possible to estimate the share of expenditure on different goods and services in order to show where the distribution of additional expenditure might go. A summary of the estimates is provided in table 6.7.

21 436 036 NOK in additional expenditure is likely to be generated from lengthening the season so that it runs from mid-April to mid-October. Other shopping is likely to benefit most with an additional 4 558 929 NOK (21.3% of total additional expenditure). Although not shown in table 6.7, much of this expenditure comes from same-day cruise visitors that spend 58% of their average daily expenditure on other shopping. Restrictions imposed on the number of cruise ships and passengers that can enter the Geirangerfjord each day in 2008 may mean that the estimate for other shopping is reduced. 3 755 670 NOK (17.5%) is likely to go on food and drink, 3 373 421 NOK (15.7%) is likely to go on transport, 3 303 338 NOK (15.4%) is likely to go on accommodation, 3 201 675 NOK (14.9%) is likely to go on grocery shopping and 2 300 334 NOK (10.7%) is likely to go on activities/attractions/museums. 942 669 NOK (4.4%) is likely to go on other goods and services.

As was mentioned in section 4.2.4, it is difficult to assess the accuracy of the estimates provided by this study. A representative survey of visitors to the Geiranger/Trollstigen area that includes questions on expenditure would allow for more accurate estimates to be made. It should also be noted that estimates would vary according to the types of markets that are served because average levels of daily expenditure and expenditure on different goods and services varies greatly between different markets (see section 4.2).

Table 6.7 Estimated visitor expenditure on different goods and services in the Geiranger/Trollstigen area, 2008 (NOK)

Goods & services	Actual 2006^o	Predicted 2008¹	Additional May /September 2008^{2a}	Additional April /October 2008^{2b}	Potential 2008³
Accommodation	54 134 359	56 210 875	2 136 292	1 167 046	59 514 213
Food & drink	61 552 424	63 913 626	2 428 837	1 326 833	67 669 296
Grocery shopping	52 472 379	54 485 246	2 070 557	1 131 118	57 686 921
Other shopping	74 719 116	77 585 466	2 948 330	1 610 599	82 144 395
Transport	55 287 067	57 407 906	2 181 626	1 191 795	60 781 327
Activities/ attractions/museums	37 700 471	39 146 686	1 487 650	812 684	41 447 020
Other	15 449 541	16 042 198	609 635	333 034	16 984 867
Total	351 315 357	364 792 003	13 862 927	7 573 109	386 228 039

Notes:

^o Share of expenditure from actual demand for the 2006 season.¹ Share of expenditure from predicted demand for 2008 without any lengthening of the season.² Share of expenditure from additional demand expected for a lengthening of the season into early May/late September (^{2a}) and into late April/early October (^{2a}).³ Share of expenditure from total demand expected for a longer season in 2008 (i.e. ¹ + ^{2a} + ^{2b}).

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