

# A method to analyse seasonality in the distribution of tourists in Iceland



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## ABSTRACT

Iceland has enjoyed increased popularity among tourists during the last few years. In 2010, 459 thousand visitors came to Iceland but in 2015 about 1,3 million visited the country. Before 2010 seasonality was high but has decreased since. This is reflected in the changing amount of overnight stays in the capital area. The same has not happened in other regions of the country where seasonality is still high. It seems that during the off-peak season the visitors are overnighing in the capital region and taking day tours to destinations in South and West Iceland. Overnight stay data does therefore not give complete picture of travel behaviour and how tourists distribute around the country. Therefore a new approach is needed.

The paper describes a method that analyses seasonality in the number of tourists at nature destinations in South and West Iceland. The data is obtained from vehicle counters. Seasonality at the destinations is then expressed numerically by computing the Gini coefficient. Finally the Gini coefficients are compared for the destinations, regional overnight stays and departures from Keflavík International Airport. The paper provides a methodological approach to analyse seasonality and the distribution of tourists in an efficient manner.

### Management implications:

- The study provides important tools for analysing seasonality in the distribution of tourists on three levels: Nationally, regionally and at destination level. This is vital when planning tourism and gives a more complete picture of seasonality and the distribution of tourists than using only overnight stay data.
- Managing seasonality at a destination level requires having reliable data about the number of visitors. This can be obtained economically by counting vehicles arriving at the destination.
- For destination management it is important to know the number of tourists at all times during the year. It is important for deciding the amount of infrastructure and the staff required.
- Computing the Gini coefficient is important when comparing seasonality between destinations or regions as well as between years. Having a numerical measure of seasonality makes the comparison reliable and easy.

## 1. Introduction

Iceland is sometimes said to be at the edge of the world, being an island far north in the Atlantic. Even so the country has in the last few years enjoyed increased popularity among tourists. In 2010 the annual visitation to Iceland was 459 thousand. Until then Iceland was a typical summer nature destination where 50% of visitors came in the period from June to August. In 2015 the annual visitation had increased to 1,3 million and 40% of the visitors came from June to August. From 2010 to 2015 the number of tourists in the three-month summer period had increased from 230 thousand to 515 thousand. At the same time the number of off-peak tourists did increase considerably, from 229 thousand to 785 thousand (Icelandic Tourist Board, 2017). In comparison the population of Iceland is only 330 thousand (Statistics Iceland, 2016b).

This dramatic increase has made tourism very important for the Icelandic economy and it has become one of its three main pillars. Tourism is now more important than both the fishing industry and the aluminium industry, until now the main industries in Iceland. In 2015 the percentage of foreign exchange from tourism was around 30% but 22% from the fishing industry and 20% from the aluminium industry (Statistics Iceland, 2016c).

The increase in the number of tourists has created several challenges for the management of tourism in Iceland. There is a lack of staff in the tourism industry and many employees are now coming from abroad. The infrastructure was not prepared for the massive increase. That relates to infrastructure at the destinations as well as to public infrastructure as roads and health care. The transportation system in Iceland has been insufficiently funded since the economic crisis in 2008 and with increased tourism the road system is inadequate and is becoming

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dangerous in some areas.

A further problem is that the regional distribution of tourists is quite uneven. Some regions receive more tourists than they can comfortably handle, while other regions still experience high seasonality and few tourists. It seems that during off-peak the visitors are overnighing in the capital region and taking day tours to destinations in South and West Iceland (The capital city Reykjavík, 2011). Therefore, the revenues from tourism are mostly created in the capital area and the income from tourism does not contribute to funding infrastructure in all the regions where it is required. When solving these problems it is necessary to know the number of visitors and the destinations they visit. It is difficult to allocate resources to infrastructure without knowing the level of use.

The aim of this project is to develop a method that compares data about visits to nature tourist destinations with data about where tourists overnight. That makes it possible to evaluate the pressure of tourism on nature and local communities and compare where the income from tourism originates and where the cost occurs. The results are expected to be useful for the government when making a comprehensive management plan for the country and when distributing money to infrastructure.

This paper describes a part of the project, a method that analyses seasonality in tourist distribution in Iceland. It uses data about the number of visitors at tourist destinations obtained by counting vehicles arriving at the destinations. The data is analysed using the Gini coefficient and the actual number of visitors.

## 2. Tourism development in Iceland

### 2.1. The growth of Icelandic tourism

In the last four to five years tourism in Iceland has expanded greatly, on average 21% per year from 2010 to 2015. Fig. 1 compares the increase in tourist arrivals/departures internationally and in Iceland from 1995 to 2015. The growth internationally has been relatively stable, on the average 4% in the 20-year period. Until 2010 tourism in Iceland behaved similarly, the average increase was 6%. In 2011 there was a dramatic increase in Icelandic tourism that has continued since. Between 2011 and 2012 the growth was 19%, but between 2014 and 2015 the growth was 29% (Icelandic Tourist Board (2017); World Tourism Organization (UNWTO) (2015)).

The reason for this great increase is not known. There is probably not one single explanation but a variety of causes. Iceland was until 2008 considered to be an expensive destination. In 2008 there was a financial crisis in the world that affected Icelandic economy greatly. The value of the Icelandic currency dropped and it became less expensive to travel to Iceland. In 2011 the volcano Eyjafjallajökull erupted and grasped great attention all over the world. To minimize the effect of negative discussion about how safe it was to visit Iceland the marketing agency Promote Iceland started a campaign called Inspired by Iceland. In the years since the promotion campaigns have continued.

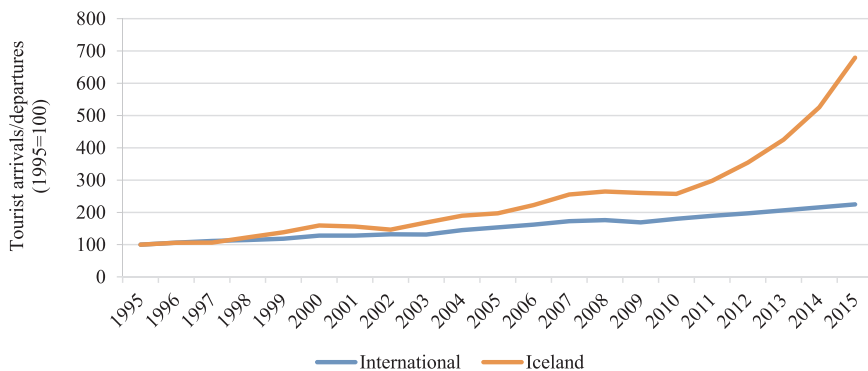


Fig. 1. Increase in tourist arrivals/departures internationally and in Iceland (Icelandic Tourist Board, 2017; World Tourism Organization UNWTO, 2015).

The focus has evolved during the years and is now on reducing seasonality. Whether the reason for the increased tourism is one of the above mentioned or something else is not clear and will not be discussed in this paper.

This great increase was not expected and Iceland was, and still is, not prepared for it. The infrastructure both at destinations and generally in the country was unprepared. The destinations lacked facilities to service this number of guests. There were far too few accommodations as well as trails, parking places and toilet facilities. A further problem was a lack of staff to service the guests. Public services as health care and law enforcement were badly financed. The same applied to public infrastructure as roads. The problems are therefore varied, from narrow roads to how to distribute the income from tourism fairly to the municipalities that bear the burden of the tourist flow. Municipalities get most of their income from local taxes that are paid by local inhabitants and companies registered in the municipality. Many of the tourism companies are registered in the capital area where they pay their local taxes (The Icelandic Travel Industry Association, 2017). Consequently they do not leave much behind in the regions.

### 2.2. Seasonality in Icelandic tourism

Along with this great increase there has been a major change in when tourists arrive and visits outside the high season have increased considerably (Fig. 2).

It is desirable to be able to express the seasonality numerically. This is frequently done by calculating the Gini coefficient (further discussion on numerical indicators in Section 4.2). The Gini coefficient takes values from zero to one. The closer it is to zero the less seasonality and the closer it is to one the more seasonality. The Gini coefficient has been computed for the number of tourists departing from Keflavík International Airport for the years 2010–2015 (Table 1). In 2010 it was 0,31, but in 2015 it had decreased to 0,21. The reasons have not been fully analysed. Undoubtedly the before mentioned joint campaign by the government and the industry to minimize seasonality has had an effect.

Seasonality is problematic for the industry in many ways and less seasonality means more stable all year employment which is considered desirable. Although seasonality in the visits of foreign tourists has diminished this change is not experienced equally everywhere in the country. The regional variation is great as can be seen from analysis of overnight stay data (Table 2) (Statistics Iceland, 2015). In 2015 seasonality in the capital area (Gini = 0,16) was similar to the seasonality in tourist departures from Keflavík International Airport (Gini = 0,21). In regions outside the capital area seasonality was still considerable (Table 1). To ensure a more profitable and stable industry there is a wish to decrease seasonality everywhere and distribute visitors more evenly around the country. This is a common goal of the industry as well as both central and regional government. For this reliable and descriptive data is needed as is clearly stated in a recent policy paper by The Ministry of Industries and Innovation and The Icelandic Travel Industry Association (2015).

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