Utilise statistics for speedy tourism receipts estimates, to perform seasonality analysis and input for balance of payments

By

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Abstract:

Increasingly, we, as a national tourism organisation, are faced with the needs from public and private stakeholders on national, regional and local levels, to give timely, reliable and detailed estimates on the economic impact of tourism. For a decade the national tourism organisation, VisitDenmark, has been responsible for the tourism account, later developed into a RTSA, and therefore gathers information on daily expenditure for the internal tourism on a very detailed level, mainly from visitor surveys. Expenditure data combined with visitor statistics forms the basis of the demand side in the national RTSA, as well as for sub-segments of particular commercial interest and importance. Up till now, tourism receipt estimates have been published annually with a time lag of about one year to the reference period, whereas most of the tourism volume input is available within a good month's time. VisitDenmark has developed a tool that uses current and historic tourism statistics in order to deliver monthly estimates on the tourism receipts on a very detailed up to a highly aggregated level, immediately after receiving the latest accommodation statistics, just about 40 after the reference period. The new tool has contributed to solve three important challenges within the framework of tourism business and policy analysis; firstly to deliver very timely data on internal tourism receipts broken down by month, market, type of accommodation, purpose and region; secondly to deliver information on the seasonality in both volume and tourism spending for detailed segments and lastly; to deliver input for the export side of the travel account in the balance of payment accounts, so it now is in bearing with the tourism account.

Content

1. Background

Tourism demand from an economic point of view can typically be described from three different perspectives; firstly the structural point of view, where focus is on the overall levels and composition of tourism, secondly the trend point of view, where focus is the development in tourism numbers and receipts, and lastly the forecast, where predictions and scenarios are in focus.

This paper deals with a tool related to the trends part of tourism description, in which elements from the structural as well as the trend analysis are combined, in order to increase relevance and timeliness in the current economic description of tourism.

For almost two decades the core part of commercially based tourism has been carefully monitored by Statistics Denmark, in accordance with the guidelines of the common directive on tourism statistics. This statistics has been, and still is, the main tourism indicator due to its timeliness, reliability, coverage and relevance. I contrast here to, the monetary indicators of tourism have taken up to a year after the reference period to publish, and thereby limiting the effect it might have as trend indicator.

Since 1996 VisitDenmark has produced and published a tourist demand account, later developed into a regional TSA, for the internal tourism demand in Denmark. The basic method have been to establish an estimate for the internal tourism demand by combining a series of official and non-official statistics on tourism volume, with corresponding daily expenditure estimates, found in mainly visitor surveys. The approach is bottom up, meaning that the lowest aggregation receipt level is year, region, source market, type of accommodation, purpose and component.

In recent years however, demand for timely and disaggregated tourism indicators has increased, as has the focus on economic indicators *vís a vís* the sheer volume indicators. To exemplify, has the national and local destination management organisations in collaboration with the tourism industry, embarked on projects to reduce seasonality in tourism, requiring economic and volume indicators on monthly basis. Another example is the new balance of payments system that has substituted administrative sources with survey based sources, and as such accentuated the need for economic performance indicators on a monthly basis for travel im- and exports.

To satisfy these needs and numerous others, the ‘tourism receipt indicator’ tool or system has been developed. It drastically reduce publication time for preliminary figures on tourism receipts, by exploiting ready and available elements from the structural and trends descriptions of tourism respectively.

2. The system

This chapter explains the structure, build up and step-by–step application of the tool, giving inspiration for establishing a similar system.

2.1 Structure

Basically the tourism receipts estimate is established by multiplying the number of overnights/same-day visits for a certain time period with the corresponding daily expenditure estimate. To achieve the greatest level of accuracy, tourism volume and spending are segmented according to source market (nationality), type of accommodation (incl. same-day), purpose and destination (region). The level of detail in statistics on tourism volume is defined by the regulation and sets the aggregation level possible. In numerous cases no specific expenditure estimate exists for a given 'cell' combination of e.g. market, overnights, purpose and region, and the cell are given a more general expenditure figure. Neither is the daily expenditure figure specific for the particular time period (month) within the particular year.

Daily expenditure estimates are generally established through visitor surveys and calculated in separate process involving advanced weighting and imputation procedures.

An attempted description of the system;

$$\boxed{\sum_{t=i}^{j} S_{c,p,m,t,a,r} O_{c,p,m,t,a,r} = E_{c,p,m,t,a,r}}$$

Dependant variable	Parameter
E	Tourism receipts (DKK)
Input variables	
O	Number of overnights/same-day visits
S	Daily expenditure total (DKK)
c	Daily expenditure by component (11 expenditure components)
p	Purpose of trip (business or leisure)
m	Source market (up to 49 defined source markets
t	Time period (reference month)
a	Type of tourism (15 types of accommodation + same day)
r	Destination Region (five NUTS2 regions)

2.2 Prerequisites

Basically the system needs to establish two sets of variables, one for the number of overnights or same-day visits in a given time period by purpose, source market, accommodation type and region, and one for the corresponding daily expenditure estimate.

The 'driver' and core trend component of the system is the current official accommodation statistics, published by Statistics Denmark, since it's the most reliable and timely of all the tourism volume indicators. All other tourism types, of which most are not covered by the official statistics, are collected and published with a considerable time-lag and therefore imputed in the system, normally by using last year's data. Some of these figures may even be collected by Statistics Denmark on a non-regulated basis, whereas other data are collected by third party or directly by e.g. VisitDenmark as part of the RTSA maintenance.

Daily expenditure figures are exclusively collected by VisitDenmark as part of the RTSA obligation, mainly through commissioned visitor surveys. Major visitor surveys have been carried out on a regular basis since 1996. The following table lists the main sources for tourism volume and average daily expenditure running in the system currently.

Table 2.1. Key sources for system input

Type of tourism	**Tourism volume**	**Tourism spending**
Hotels and similar	-Regulated monthly statistics, Statistics Denmark. - Regulated annual supplement on division between leisure and business related overnights, Statistics Denmark. -Non-regulated supplement on small business units by Statistics Denmark (2006).	Visitor survey 2005.
Holiday centres	-Regulated monthly statistics, Statistics Denmark.	Visitor survey 2004.
Rented holiday cottages	-Non-regulated monthly statistics, Statistics Denmark. - Non-regulated supplementary on private letting by Statistics Denmark (2006)	Visitor survey 2005.
Camping sites	- Regulated monthly statistics, Statistics Denmark. -Non-regulated supplement on small business units by Statistics Denmark.	Visitor survey 2006.
Hostels	-Regulated monthly statistics, Statistics Denmark.	Visitor survey 2004.
Yacht harbours	-Non-regulated monthly statistics, Statistics Denmark.	Visitor survey 2006.
Cruise ships	-Regulated annual statistics, Statistics Denmark. - Non-regulated supplement on market breakdown by VisitDenmark.	Visitor survey 2007.
Festival sites	- Non-regulated annual statistics, VisitDenmark.	Visitor survey 2008.
Farm houses	- Non-regulated annual statistics, VisitDenmark.	Visitor survey 1996.
Same-day visits	- Non-regulated statistic, Statistics Denmark (domestic, 2004). - Non-regulated statistics, VisitDenmark (inbound, 2003).	Visitor survey 2003.
Visits by friends and rel. (VFR)	- Non-regulated annual statistics, Statistic Denmark.	Visitor survey 2004.
Own/borrowed holiday cottage	- Non-regulated statistics, Statistics Denmark (annual, 2007).	Visitor survey 2004.

2.3 Step by step

Source data for the system can be divided into to three types; 1) tourism volume data supplied by the official overnight statistics and 2) tourism volume data not covered by current statistics and therefore imputed from previous periods and 3) tourism daily expenditure data from, mainly, historic visitor surveys. The system will produce preliminary receipts estimates of good quality for the tourism covered by the current and regulated statistics, and less reliable figures for non-regulated tourism types or imputed from e.g. last year.

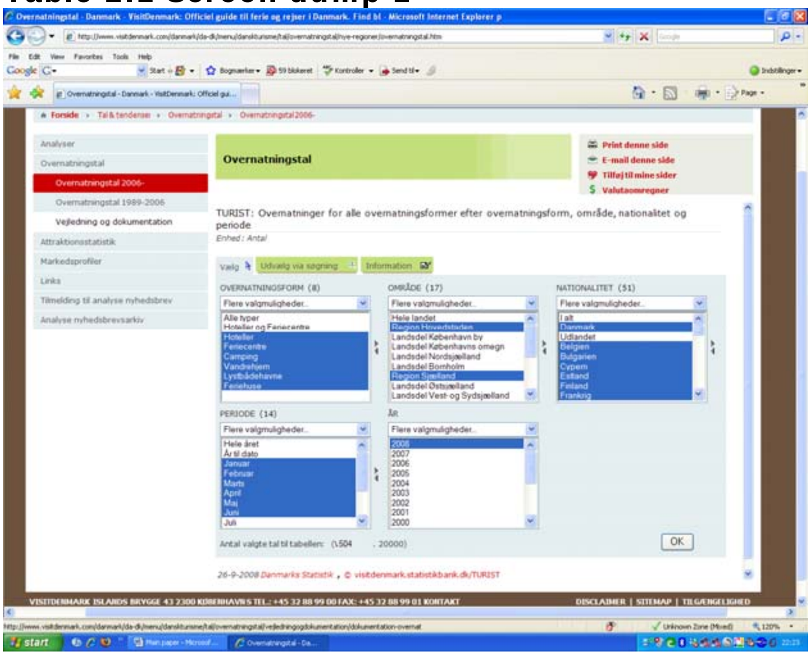
The procedure for producing the figures can be divided in two processes 1) 'business as usual' where only type 1) and no type 2) or 3) data has to be updated and 2) when new information on 2) and/or 3) has to be implemented.

<u>Step 1:</u>

Official overnight statistics are published, through I-framing on VisitDenmark's homepage, as part of a subscription agreement, simultaneously with the official release of Statistics Denmark, normally 40 to 45 days post to the reference period.

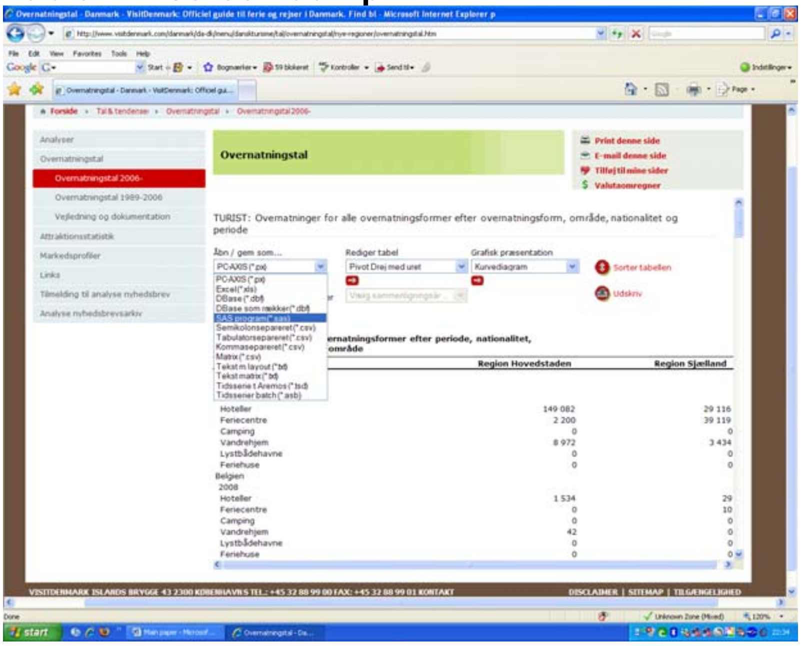
Relevant data are selected, see screen dump below, which means up to six accommodation types ("Overnatningsform"), five regions ("Område") and all source markets ("Nationalitet") and current year's months to date ("Periode").

Table 2.1 Screen dump 1



The I-framed statistics features the option of downloading the screen display in various tabulation formats, e.g. SAS, in form of a program containing the data selected, see feature below. The program is then run and a dataset containing current year's month to date data is formed.

Table 2.2 Screen dump 2



<u>Step 2:</u>

Another statistical program (SAS) is run, that does the following:

1) merges current data and historic data (extrapolated)
2) aggregates source marked codes for later merge with expenditure data
3) splits current hotel overnight data between leisure and business, based on historic information (from last years official statistics)
4) merges overnight data with historic daily expenditure data (inflated to current year)
5) creates a dataset with breakdown of expenditure and volume on accommodation type, region, source market and purpose, for tourism trend and analysis purpose
6) creates a dataset with breakdown of expenditure on inbound source market and purpose, for balance of payments purpose

Voilá, a preliminary short term tourism spending estimate is created, a few minutes after publication of the latest accommodation statistics.

2.4 Updating

In its nature the system reliability rests on data submitted to it. Besides the simple updating with new data, either of the tourism volume and/or spending levels (more rare), the spending input needs inflationary adjustment over time to compensate for price developments, in case of no new surveys is carried out. This of course assumes an even price-elasticity within and between goods, which may be a reasonable assumption in the shorter term.

To be as accurate as possible inflation are applied on component level, taking into account the various price developments between the up to 11 different types of goods.

3. Applications

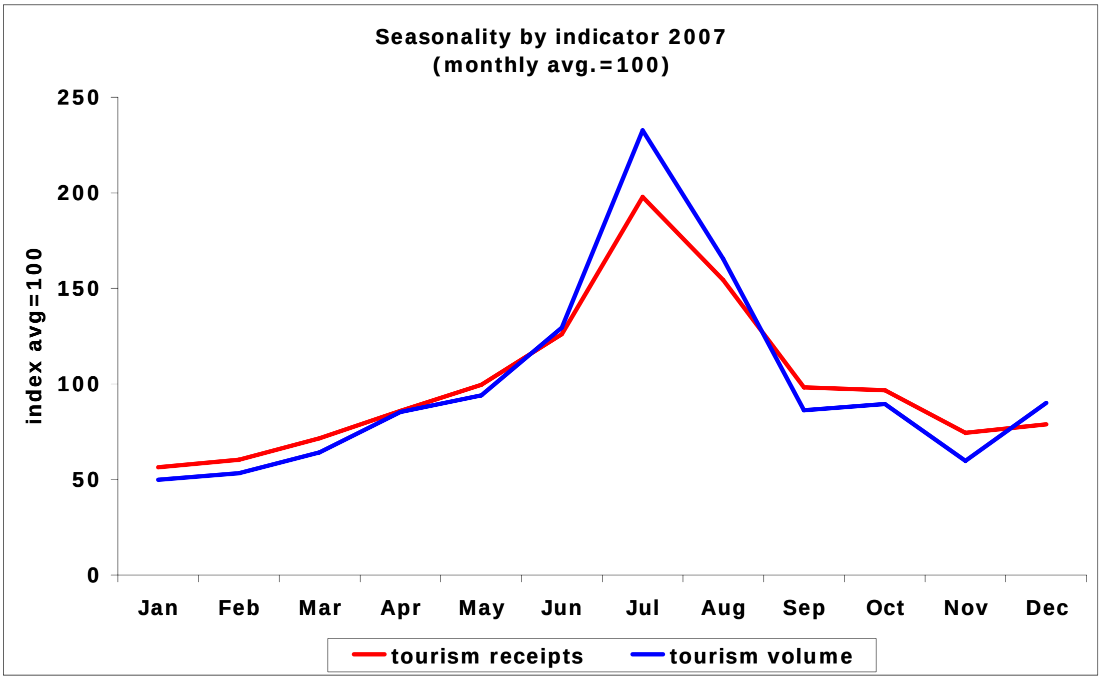
In the following results from different applications of the tool is shown, with short comments on the actual findings.

3.1 Seasonality

By its monthly nature the system enables an analysis of the seasonality on volume and turnover, on any level or combination of period/purpose/region/marked. Various seasonality measures can be applied, but we have here selected a fairly intuitive and easily calculated measure. What is compared is the high season compared to the average month, either measuring how much higher the activity is in the peak months compared to the average (the amplitude), or the reciprocal; how much lower is the average month compared to the peak. In either measure we get an idea of, how much capacity, labour etc. is needed is peak versus average/low season. The premise is that the overall aim is to reduce seasonality dependency, as it is one of the factors implying risk to the tourism industry and hence lowers the attractiveness of the business for capital and labour.

Table 3.2. below shows the indexed seasonal spread for tourism volume and receipts. The amplitude for volume, equivalent to overnights/same-day visits, is 2.0, indicating that in peak months twice as many tourists are served compared to an average month. Or even four times as much as in low season. On the other hand tourism receipts are just 1.8 times higher in peak than in an average month, and just three times higher in peak than in lowest season. Not surprisingly, receipts are more evenly spread than tourism volumes, due to the fact that business tourism and other high spending segments, such as hotel based tourism, are less seasonal for respective reasons. Overall the gap between volume and receipt spread may seem limited, but for selected segments or regions, the gap between the volume indicator and receipts can be significant and give valuable strategic information.

Table 3.2. Seasonality by indicator



When dealing with seasonality various strategies can solve the dependency problem, e.g. by focusing on markets or tourism types that even seasonality. Below in table 3.3 actual seasonality indicators are shown for various source markets and types of accommodation.

Table 3.3. Table with spending seasonality indicators between segments

Market	Amplitude
Poland	2,4
Netherlands	2,4
Switzerland	2,3
Norway	2,2
Italy	2,0
Canada	2,0
Germany	1,9
USA	1,9
Austria	1,8
Finland	1,7
Sweden	1,6
Japan	1,5
Spain	1,5
France	1,4
Great Britain	1,3

Tourism type	Amplitude
Yacht harbours	4,4
Camping sites	3,3
Cruise ships	3,2
Rented holiday cottages	2,5
Holiday centres	2,0
Hostels	1,9
VFR	1,5
Hotels	1,3
Same-day visis	1,2

3.2 Balance of payments

The tourism indicator produces monthly estimates on the current year to date inbound tourism spending by source market and purpose of travel, equivalent to the main component of exports in the balance of payments account for travel. The spending estimate, based on the actual tourism volume, then corresponds to the leisure and business travel part of the travel component in the balance of payments accounts. This estimate does not entirely form the travel account, as the travel account also consists of the spending derived from the minor inbound health travel and educational travel, posts, which are collected separately by the Statistics Denmark.

The advantages from a tourism organisations point of view, is that the tourism balance, or at least the export side of it, is corresponding to the tourism figures that previously was a ‘black box’. Table 3.4. shows the publication levels for the travel account. It is clear that only on an annual basis the figures are detailed enough to identify the tourism receipts and to date only 2006 is finalised. VisitDenmark has supplied tourism export figures for the balance of payments for 2005 and onwards.

Table 3.4. Composition and publication of the travel account

Frequency	Aggregation of travel receipts	Latest reference period published
Annually	Business travel receipts Leisure travel receipts (Health travel receipts) (Educational travel receipts)	2006

Quarterly	Travel import and export receipts	2008, 2nd. Quarter
Monthly	Services net receipts	2008, July

4. Concluding remarks

Despite the novelty of the tool, it has already demonstrated that it satisfy demands for speedily estimates on tourism receipts on a detailed level. Moreover it has given new insights into seasonality that will enrich certain aspects of tourism analysis and policy. By its timeliness and relevance, the tool will probably contribute to a broader familiarisation with the economic aspects of tourism in- and outside of the tourism industry. However, with more attention to the figures, they come under greater scrutiny and demand for reliability will rise.

The major drawbacks of the system, if any, are the inherent variances of the expenditure estimates, which are relatively high and subject to change for each new survey. Secondly, considerable uncertainty rests with the series of less well documented types of tourism, namely same-day visits and various forms of private accommodation, which represent huge number of tourists and spending, but lacks in standard when it comes to timeliness and reliability.