

## **PAPER SUBMISSION**

**14<sup>th</sup> Global Forum on Tourism Statistics**

**23-25 November 2016**

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### **Theme 5: Economic dimension of tourism**

#### **Paper Title:**

**Extending the Tourism Satellite Account Framework to inform policy making in the UK**

#### **1. Introduction**

The Tourism Intelligence Unit (TIU) based in the Office for National Statistics (ONS) in the UK has produced Tourism Satellite Accounts (TSA) since 2008 covering the period 2006 through to 2014 (the latest release). This paper describes attempts to extend the TSA to address three important priorities for tourism policy makers: more timely data, regional level estimates, and measures of the productivity of the sector.

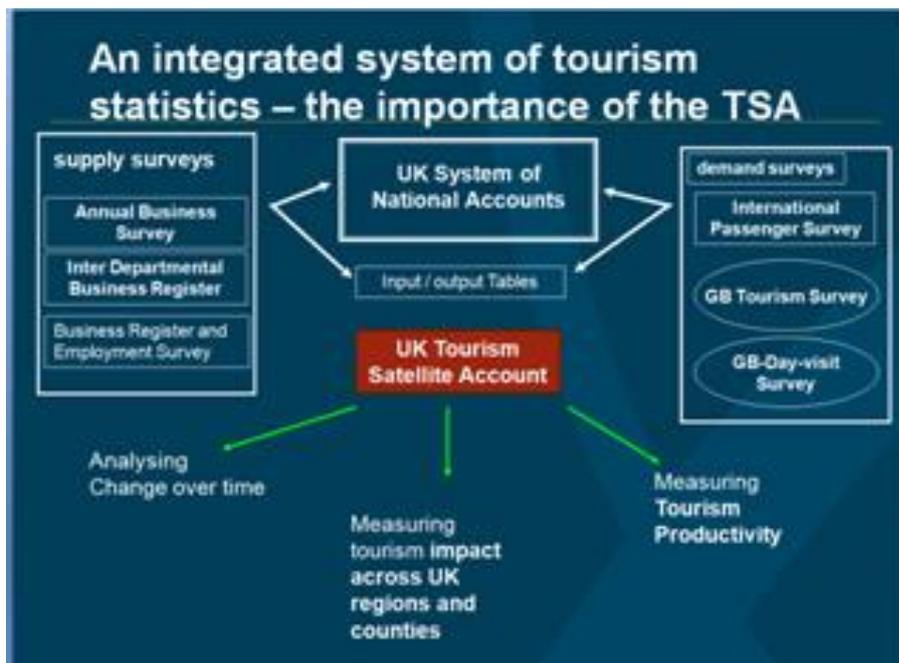
In order to provide some national context, it is useful to describe the institutional context and requirements for a TSA within the UK. The ministry responsible for tourism in the UK is the Department for Culture, Media and Sport (DCMS). DCMS funds several 'arms length bodies' that are responsible for delivering the tourism policies set out by the ministry. These include VisitEngland and VisitBritain – the national tourism boards (NTBs) as well as some regional tourism organisations. There has always been a need for comprehensive data on the value of tourism in the economy and for many years DCMS and the NTBs have relied upon information from economic consultancies following a WTTC approach to estimating the value of tourism and a wider concept known as the 'visitor economy'. When the Tourism Intelligence Unit was set up in ONS in 2008, the IRTS and TSA: Recommended Methodological Framework documents were being issued by OECD/UNWTO/Eurostat. The TIU set about trying to align the UK with these international recommendations for the measurement of tourism and the development of a TSA.

Although the TIU and ONS moved quickly to develop a system of tourism statistics based on available sources (see figure 1) and to produce a TSA, there was resistance within policy spheres in the UK in terms of accepting the new measures of the value of tourism. This was partly a symptom of existing measures including elements such as indirect impacts of tourism which resulted in much higher values for the contribution of tourism to the economy, but there was also a feeling that the

TSA framework had some limitations for policy makers. These limitations were focused around the fact that as the TSA is based on national accounts data which is produced 2 years after the reference date, and, secondly, that the estimates are only available from the TSA at the national UK level.

Through addressing those two main concerns the TIU has persuaded DCMS of the merits of using an internationally recognised, transparent, methodology for measuring the value of tourism in the economy and the TSA is at the heart of the UK government evaluation of the sector. This paper details these developments of the TSA but we first highlight some key aggregates from the 2013 TSA.

**Figure1: An Integrated system of tourism statistics**



## 2. The UK Tourism Satellite Account Key Aggregates

This section presents the findings for the 2013 UK-TSA. All findings are in current prices which means they are not adjusted for inflation, so, caution should be taken when comparing to previous years. As well as providing an indication of the economic importance of tourism in the UK, the report includes information about tourism demand and supply and explanations of the internationally agreed concepts and definitions that are part of the TSA process. The production of the UK-TSA is commissioned by the Department for Culture, Media and Sport (DCMS).

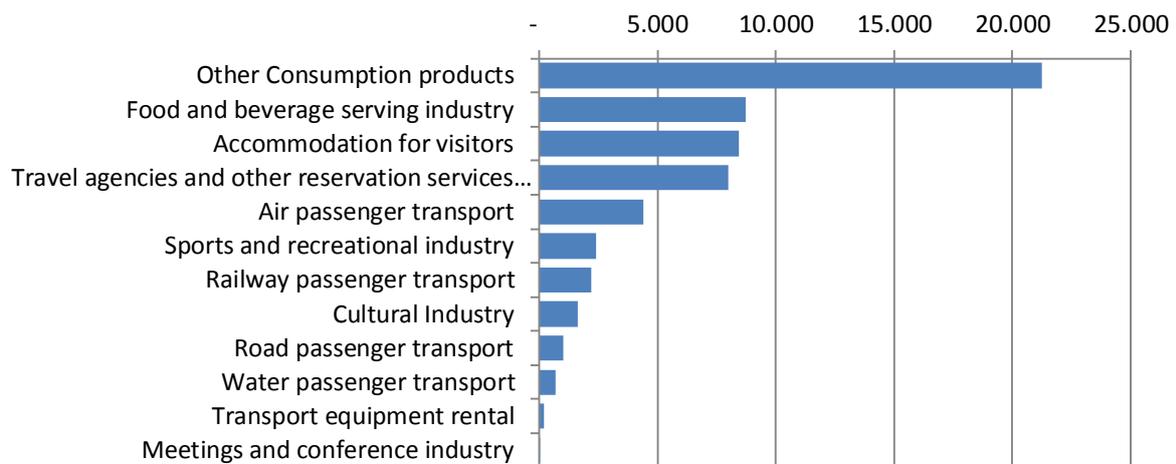
TDGVA was worth £59.0 billion to the economy in 2013, which was a 2.9% increase when compared to 2012 where TDGVA stood at £57.3 billion (see table 1 below). This is a key aggregate of the UK-TSA as it indicates the output of the set of UK tourism industries that is driven directly by tourism spend.

The majority of tourism characteristic activities saw growth. ‘Sport and recreation activities’ contributed £2.4 billion to the total TDGVA estimate in 2013, but saw the largest monetary decrease - a 12% decrease on the industry’s contribution in 2012. This can largely be explained by the London Olympics in 2012.

Figure 2 shows the value of each of the individual tourism industries in 2013. The main contributor to TDGVA was 'other consumption products' which refers to the proportion of output from non-tourism industries that is accounted for by tourism spend. This includes activities such as non-food shopping or expenditure on personal transport and other activities not included within the tourism industries.

The highest contributors to TDGVA (other than 'other consumption products') were 'food and beverage serving services' (£8.7 billion), 'accommodation services for visitors' (£8.4 billion) and 'travel agencies and other reservation services' (£8.0 billion).

**Figure 2: Tourism Direct Gross Value Added (£ millions) by industry in the UK, 2013**



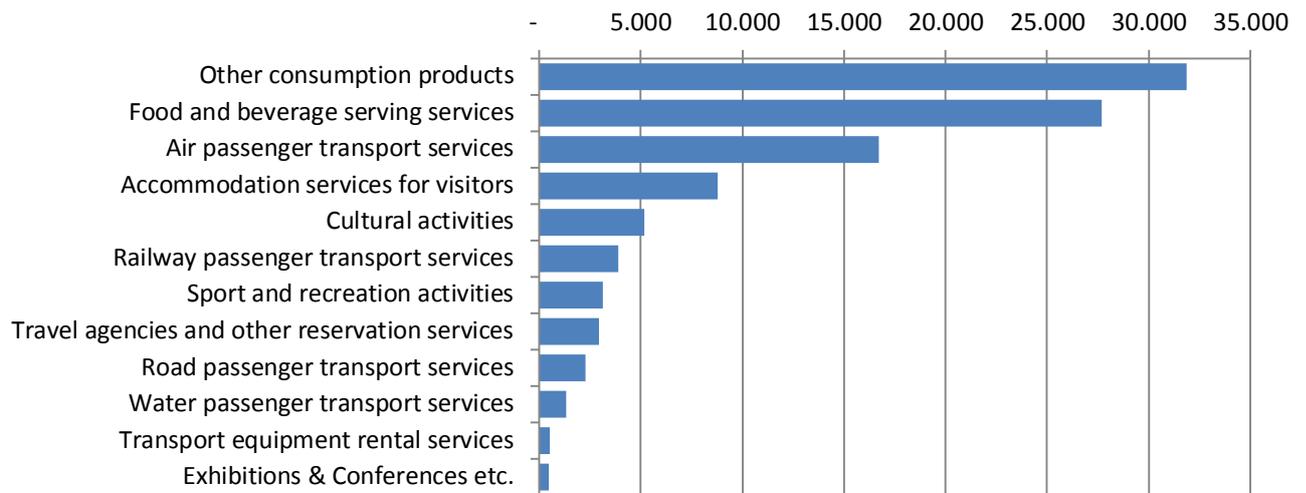
Notes: Current Prices

Source: UK-TSA 2013, ONS

Domestic tourism consumption within the UK was £104.9 billion in 2013, a decrease of 1.7% or £1.8 billion from 2012 (see table 3 below). This could be partly explained by a number of special events occurring in 2012, for example the Olympics and the Queen's diamond jubilee.

Figure 3 shows that (apart from 'other consumption products') 'food and beverage serving activities', 'air passenger transport services' (primarily for outbound travel), and 'accommodation services' were the key drivers of domestic tourism consumption in 2013.

**Figure 3: Domestic Tourism Consumption (£ millions) by industry in the UK, 2013**

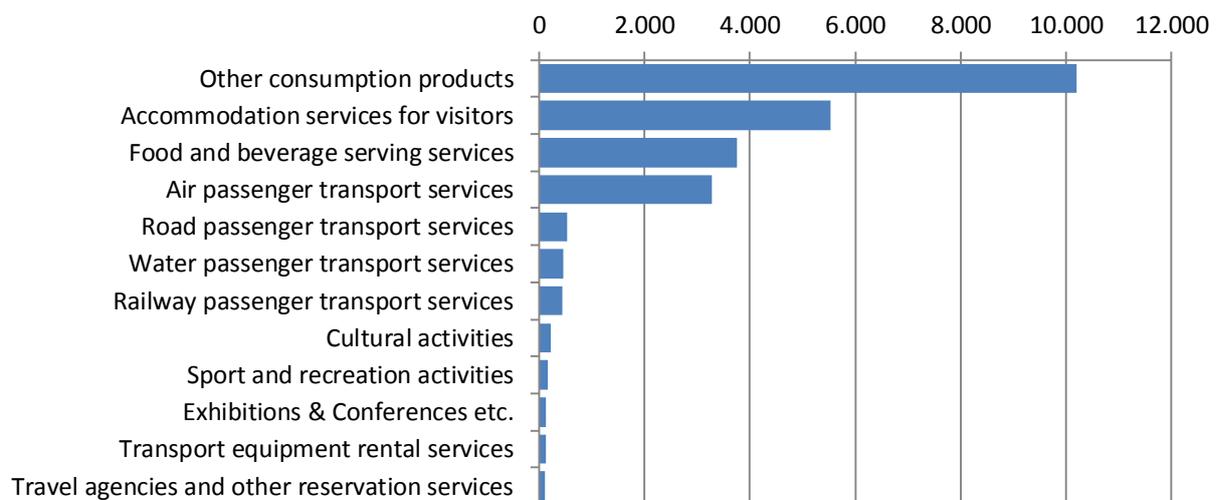


Notes: Current Prices  
Source: UK-TSA 2013, ONS

Inbound tourism consumption within the UK was estimated to be £24.9 billion in 2013, an increase of 14.7% from 2012 where the value stood at £21.8 billion (see table 2 below). Inbound water passenger transport saw a big increase reaching £454.0 million, up 83.8% on 2012 where the figure was £247.0 million, although this still remains a relatively small contributor to inbound tourism consumption. Figure 4 shows that 'other consumption products' was the highest contributor of tourism consumption in 2013, worth £10.2 billion. Beyond this there were three other main areas of tourism demand in 2013. These were:

- Accommodation services for visitors, worth £5.5 billion
- Food and beverage serving activities, worth £3.8 billion
- Air passenger transport services, worth £3.3 billion

**Figure 4: Inbound Tourism Consumption (£ millions) by industry in the UK, 2013**



Notes: Current Prices  
Source: UK-TSA 2013, ONS

Table 1 shows the change in Tourism Direct Employment (TDE) between 2012 and 2013. This is employment that is directly supported by tourism consumption across the tourism industries. There was an increase of 4.7%, equating to approximately 72,000 jobs, in tourism during this period. The largest gains were in ‘accommodation services for visitors’ and ‘food and beverage serving activities’, in terms of numbers employed.

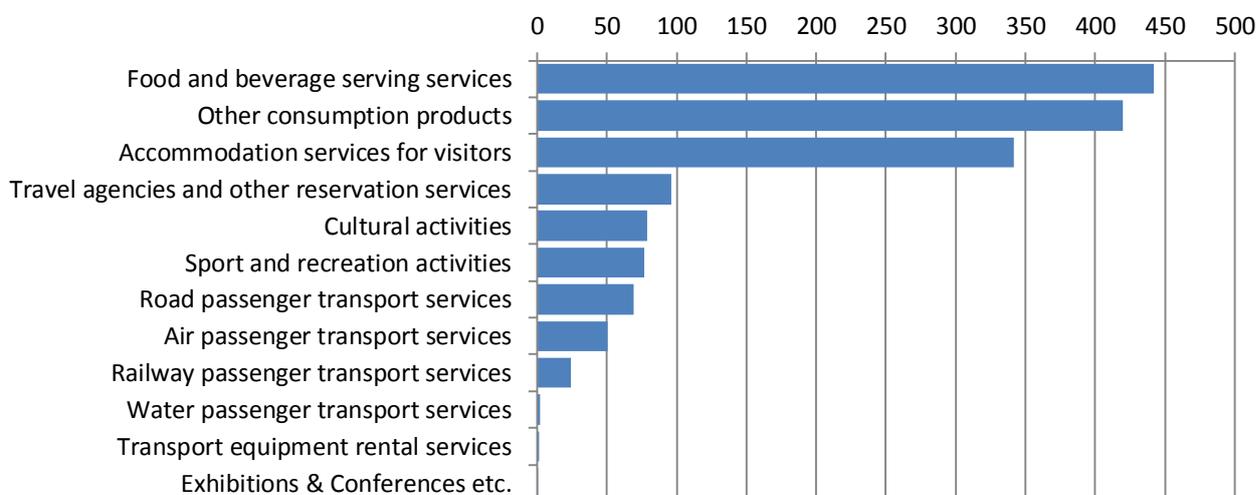
<b>Table 1: Tourism Direct Employment</b>		Thousands and percentage	
United Kingdom, 2012-2013			
	2012	2013	Change (%) between 2012 and 2013
Accommodation services for visitors	298.3	341.9	14.6
Food and beverage serving services	433.6	442.3	2.0
Railway passenger transport services	25.5	24.1	-5.5
Road passenger transport services	89.6	69.2	-22.8
Water passenger transport services	1.9	2.2	15.8
Air passenger transport services	54.3	50.7	-6.6
Transport equipment rental services	1.5	1.5	0.0
Travel agencies and other reservation services	106	96	-9.4
Cultural activities	72.6	78.6	8.3
Sport and recreation activities	88.1	76.6	-13.1
Exhibitions & Conferences etc.	0.4	0.7	75.0
Other consumption products	360.1	420	16.6
<b>TOTAL</b>	<b>1,531.9</b>	<b>1,603.9</b>	<b>4.7</b>

Source: UK TSA 2013 (ONS)  
Tourism totals for Tourism Direct Employment include employment data relating to "other consumption products"

Data may not sum due to rounding

The biggest contributors to TDE in the UK in 2013 were ‘food and beverage serving activities’, ‘other consumption products’ and ‘accommodation services for visitors’, as shown in figure 5.

**Figure 5: Tourism Direct Employment (thousands) in the UK, 2013**



Source: UK TSA 2013 (ONS)

### 3. Nowcasting the TSA

In this section we detail the methodology for producing more up-to-date estimates from the UK TSA presented in section 2. This involves producing estimates of both the demand and supply components of tourism

The overall procedure to estimate timely and frequent time series for each of the components of tourism demand or consumption can be articulated in four steps: first, the total demand or consumption is estimated; second, for inbound and domestic overnight tourists' expenditure we directly use available time series to benchmark the correspondent annual figures of the UK TSA; third, we obtain an estimate of the domestic expenditure of resident visitors travelling abroad; fourth, we can obtain an estimate of the expenditure of day visitors using the Great Britain Tourism Survey.

Obtaining a quarterly time series for the total demand of tourism is relatively straightforward by the availability of a quarterly time series for the total UK GVA, which, together with the Demand to Supply Ratio (or Tourism Ratio), allows for the following estimation procedure

$$Total\_Demand_t = DSR \times Total\_Supply_t \quad (1)$$

Having obtained quarterly estimates of the total demand of the tourism economy over the time span 2006q1-2009q1, we have now to break it down in its main components.

The International Passenger Survey (IPS) collects spend and volume data for the inbound tourists. This data source is both frequent (monthly), and timely (approximately one month after the reference period). The IPS measures both excursionists' and overnight visitors' inbound expenditure. Timely and frequent data are also available for the overnight component of domestic tourists. The Great Britain Tourism Survey (GBTS) provides quarterly estimates for the total domestic tourism expenditure. Hence, this data source can fit the purpose of benchmarking the national figure reported in the UK TSA with a relatively high degree of accuracy.

More problematic is to find a way to benchmark the annual figures for the resident visitors travelling abroad (RVTA). The IPS collects volume and value data for this class of visitors while they are abroad. However, at present, no survey details the UK based spending of this group of tourists. To tackle the problem of generating up-to-date figures for RVTA involves benchmarking the 2013 figures to the volume of RVTA. In formula,

$$RVTA_t = (1 + r_{t-1,t}^i)RVTA_{t-1} \quad (2)$$

where  $RVTA_t$  represents estimated quarterly time series for the expenditure of residents travelling abroad at time period  $t$ .  $r_{t-1,t}^i$  represents the rate of growth of outbound tourist volumes between  $t$

and t-1. Estimates obtained from equation 2 heavily rely on the assumption that the outbound expenditure and the domestic expenditure of RVTA enjoy the same time series properties.

The last step of our procedure involves obtaining quarterly data on the expenditure of day visitors from the Great Britain Day Visits Survey which provides a high degree of detail on the expenditure of day visitors that can be matched to TSA categories.

For the supply side we can access more detailed data from internal ONS resources. We employ gross value added time series for each of the tourism related industries as defined by the international recommendations for the production of TSAs. With this data available we can directly benchmark each of the totals reported in Table 6 of the UK TSA.

The supply side is nowcasted adopting a bottom-up approach. This involves nowcasting the supply of each tourism industry individually and summing them up to obtain total supply of the tourism industries. This is achieved by benchmarking UK TSA industry supply figures to a quarterly non-seasonally adjusted (NSA) GVA index series for each tourism industry, measured in current prices (CP). Each series is weighted according to the importance of each component in an industry.

The final stage is to nowcast 'Other consumption products'. This is realized by benchmarking the corresponding UK TSA figure to a non-seasonally adjusted GVA index series for the whole economy, again measured at current prices.

Formally, the method for *nowcasting* the tourism industries is as follows

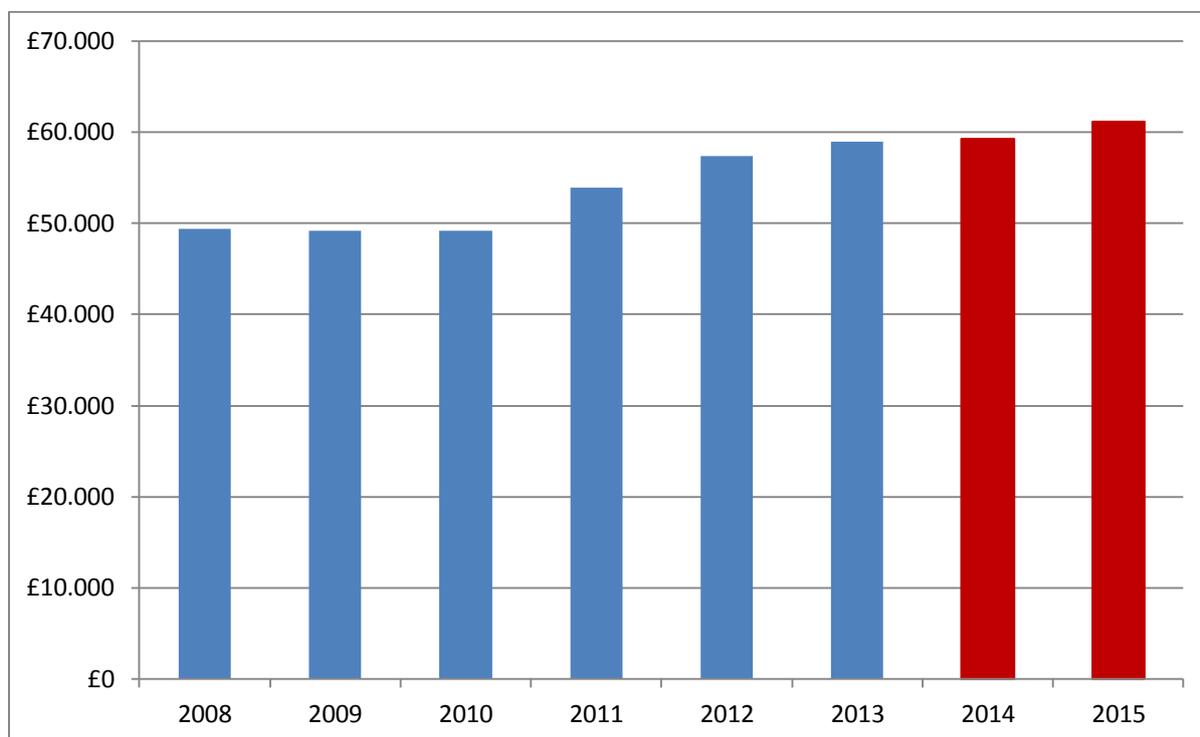
$$Y_{i,t} = (1 + (\sum_{j=1}^n w_j^i \cdot r_j^i)) \cdot Y_{i,t-1} \quad (3)$$

where  $Y_{i,t}$  is the time series for the tourism industry  $i$  at quarter  $t$  with  $t=2008q1, 2008q2, \dots, 2015q4$  refers to the quarter and  $i=1,2,\dots,11$ .  $w_j$  represents the weight attached to the growth in GVA of the component  $j$  part of the industry  $i$ .  $r_j$  represents the rate of growth in GVA of component  $j$ , and is calculated as  $X_j = (GVA_{j,t} - GVA_{j,t-1}) / GVA_{j,t-1}$ .

We now show how this methodology can be applied to the TSA estimates for 2013.

Figure 6 shows how TDGVA has grown since 2008 when it stood at £49.4 billion, to £59.0 billion in 2013. Applying the nowcast technique allows estimates of TDGVA to be produced for 2014 and 2015, at £59.3 billion and £61.2 billion respectively.

**Figure 6: Total Tourism Direct GVA 2008 – 2013, nowcast estimates of Tourism Direct GVA 2014 and 2015, in the UK (£ millions)**



Notes: current prices

Source: UK-TSA 2013 (ONS)

Table 2 shows the change between each year emphasising the flat growth in TDGVA between 2008 and 2010, the high level of growth in TDGVA in both 2011 and 2012, and then the slowdown in TDGVA growth in 2013 followed by a further slowdown in TDGVA growth in 2014, before an increase of growth in 2015. TDGVA growth peaked in 2011 where it was 9.8% and stood at 6.3% in 2012, 2.9% in 2013, 0.5% in 2014 and 3.2% in 2015. In the UK TSA for 2012, we provided estimates for 2013 and 2014 based on the same nowcast methodology and projected that in 2013 TDGVA would be £58.7, billion which is £0.3 billion short of the actual TSA estimate for 2013 shown in table 8. For 2014 the previous nowcast estimate stood at £59.6 billion which £0.3 billion higher than the current estimate suggested in table 2. This is largely due to changes in the estimate for costs associated with second-home ownership within the UK-TSA and revisions to the GVA series used to calculate the nowcast estimates. This demonstrates that the nowcast technique is effective in predicting the main aggregate measures from the TSA and this is useful for policy makers faced with providing data on the performance of the sector.

<b>Table 2: Tourism Direct Gross Value Added</b>		
United Kingdom, 2008-2015    £ millions and percentage		
	TDGVA	Change (%) based on previous year
<b>2008</b>	49444	-
<b>2009</b>	49217	-0.5
<b>2010</b>	49148	-0.1
<b>2011</b>	53947	9.8
<b>2012</b>	57344	6.3
<b>2013</b>	58997	2.9
<b>2014</b>	59268	0.5
<b>2015</b>	61183	3.2

Notes: current prices

Source: UK-TSA 2013 (ONS)

Data may not sum due to rounding

TDGVA is calculated by reconciling the supply (the output of tourism industries) with the demand (tourist expenditure) side of tourism, so that the proportion of the output of tourism industries that is accounted for by tourism expenditure can be estimated. The reason behind the small increase in TDGVA in 2014 is shown below in figure 7. In all four quarters of 2014 the chart shows that the growth rate of tourism supply was higher than the growth rate of tourism demand (based on the same quarter the previous year). This has caused a decrease in the percentage of supply attributable to the demand and, therefore, has had the effect of reducing the size of the increase in TDGVA nowcasted for 2014 (to a 0.5% increase). The chart also shows the subsequent increase in tourism demand in 2015 coupled to a reduction in total tourism supply which has driven the nowcasted increase in TDGVA (3.2% growth on 2014).

**Figure 7: The percentage growth in tourism supply/demand based on the same quarter of the previous year, 2012-2015**



Source: UK TSA 2013 (ONS)

#### 4. Regional estimates of the value of tourism

Although it is not possible to construct regional TSAs in the UK due to a lack of regional input-output and supply use tables, it is possible to construct regional estimates of the value of tourism to the NUTS 2 level that are consistent with the estimates of Tourism Direct GVA and internal tourism consumption within the TSA. The method developed to achieve this is detailed below.

The most demanding aspect of producing regional estimates of the value of tourism is the wealth of data that must be compiled on both the demand and supply sides of tourism. For the supply side the task is simpler as ONS data is available for all the of industries grouped by international recommendations in the **Standard International Code of Tourism Activities (SICTA)**, which includes 42 five-digits Standard Industrial Codes (SICs) aggregated into 10 industries consistent with the TSA. Concerning the demand side, the only component of tourists’ consumption measured within the ONS is the inbound expenditure of tourists. The consumption of overnight domestic tourism and the expenditure of domestic excursionists (or tourism day visits) are all collected by external suppliers.

Using ONS Annual Business Survey data, we carry out a simple computational procedure to measure the **Gross Value Added of Tourism Industries (GVA-TI)**. The procedure to compute the GVA-TI consists in summing up the GVA of the SICTAs and the GVA of the overall economy to then reconcile them in a simple percentage ratio, which in symbols

$$GVA - TI(\%) = \frac{\sum_{n=1}^N GVA_i^{ABI}}{\sum_{k=1}^K GVA_i^{ABI}} \times 100 \quad (1)$$

where  $n = 1, 2, \dots, 42$  is meant to sum GVA over SICTAs and  $k = 1, 2, \dots, 638$  sum the GVA over the complete set of 5-digits SICs composing the whole economy. The ratio is then rescaled to represent a percentage. The GVA-TI ratio represents itself a very important statistic on the importance of tourism related activities in relation to the overall regional economy. The information conveyed by the  $GVA - TI(\%)$  has the main advantage of being derived from a single dataset and is therefore internally consistent.

Formula (1) can be computed also at the regional level, which results in the correspondent regional counterpart of the  $GVA - TI(\%)$ . The regional  $GVA - TI(\%)$  is a very good indicator in order to compare regional economic performance. Using the shares based on the ABI, we can then apportion the gross value added at basic prices reported in the SUT. The choice of using the SUT as a numeraire allows us to obtain regional totals summing up to national UK figures. The procedure can be described in two elementary steps; first, we compute the ratio based on the ABI and conveying information about the overall distribution of the product at basic prices across regions to apportion the total product at basic prices as reported in the SUT; and, second, we can then use the regional GVA-TI (ratio) to obtain the regional totals of tourism related regional supply of products at purchasers' prices. In formula

$$SP - TI_i^{SUT} = \left( \frac{TOTGVA_i^{ABI}}{TOTGVA_{UK}^{ABI}} \times TOT - SP^{SUT} \right) GVA - TI(Ratio)_i^{ABI} \quad (2)$$

where  $SP - TI_i^{SU}$  denotes the tourism related supply of products at purchaser prices for the region  $i$  expressed in SUT's units with  $i = 1, 2, \dots, 12$  denoting the regions. The first factor of the formula is used to compute the total product at purchaser prices in region  $i$ . The second factor is needed to compute what part is attributable to the tourism related industries present in region  $i$ .

Compiling data on the demand side is more complex as it involves bringing together data from a range of different sources at the regional and sub-regional level. The problem faced is often related to insufficient detail on what tourists have consumed on their visit which has to then be allocated to a specific tourism product while referring to other data sources or assigned to 'other consumption products'. As already mentioned the only demand component measured in the ONS is the expenditure of inbound visitors through the **International Passenger Survey (IPS)**. The expenditure of domestic overnight visitors is contained in the **GB Tourism Survey (GBTS)** implemented by Taylor Nelson Sofres (TNS) and commissioned by the national tourist boards. Tourism day visits expenditure is measured by the Great Britain Tourism Survey (GBTS). Expenditure in Northern Ireland is collected through separate surveys carried out by the Northern Ireland statistics agency (NISRA).

The methodology is then completed by the reconciliation of demand and supply sources. The reconciliation is obtained by computing the so called demand to supply ratio, which also represents the most important figure provided within the TSA framework. Arithmetically, the reconciliation is

obtained by computing a simple ratio of the sum of all the demand side data components to the total obtained from the supply side data components. Summarizing in formula:

$$DS(ratio)_i = \frac{TotInbExp_i + TotDomNightExp_i + TotDomDayVis_i + TotOutDomExp_i}{TOT - SP_i^{SU}} \quad (3)$$

This simple ratio is usually expressed as a percentage. On the numerator of the above fraction we sum up all the components of tourism for region  $i$ , with  $i=1,2,\dots,12$  – total inbound tourism  $TotInbExp_i$ , total domestic overnight expenditure  $TotDomNightExp_i$ , total domestic expenditure by day visitors  $TotDomDayVis_i$ , total domestic expenditure of outbound tourists before they leave the region  $TotOutDomExp_i$ . At the denominator of the fraction is reported the total supply of products at purchasers' prices for the region  $i$  in SUT units apportioned through the ABS. The demand to supply ratio is considered one of the most important indicators of tourism's economic impact. Indeed, it reflects the accepted conceptualisation of tourism as a demand driven economic sector and, at the same time, offers a supply-standardized measure.

Finally, we can employ the demand to supply ratio to obtain figures for Tourism Direct Gross Value Added. This last step requires apportioning by region the GVA of the whole UK directly pre-multiplying it by the regional demand to supply ratios (3). The total Gross Value added of the UK as a whole is reported in the SUT. This is first apportioned by region using ABI based shares. Hence, we can construct a formula for the TDGVA as follows:

$$TDGVA_i^{SUT} = GVA_i^{SUT} \times DS(Ratio)_i \quad (4)$$

It is worth stressing that we end up reporting all the most important figures present in the TSA but we are unable, however, to attain the complete TSA framework at the regional level. This is mainly due to the lack of regional SUTs, which would enable the regional breakdown of TDGVA sector by sector.

Using this methodology we now present some findings based on the 2013 UK TSA.

This section examines how tourism expenditure affects the economic output of regions. This can be determined by calculating a tourism ratio for each region or sub-region. This statistic is the result of dividing the total demand within an area (or visitor expenditure) by the total supply (or output of all industries) in each region.

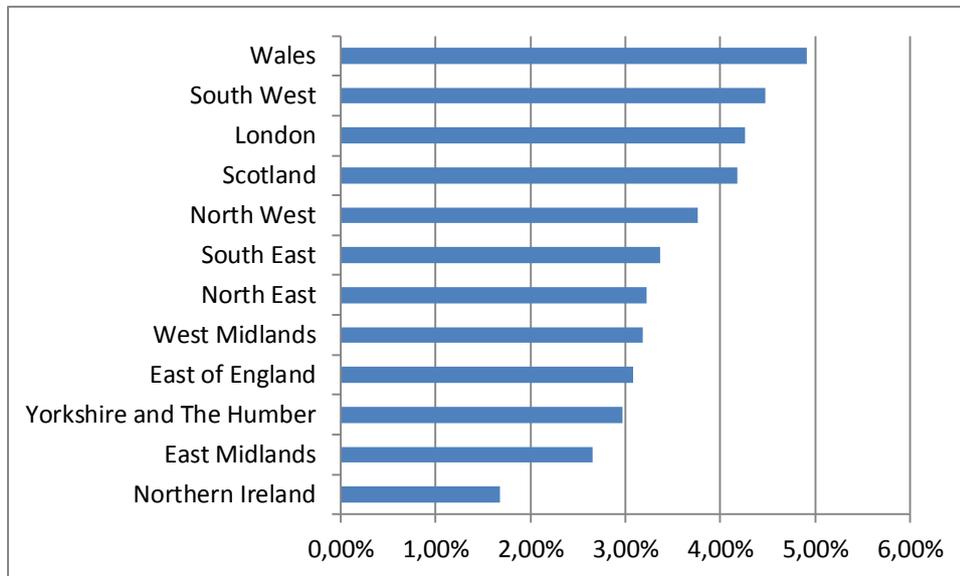
The tourism ratio itself is a good measure of the economic importance of the tourism sector within regions, as it shows the proportion of the output of all industries in a region that is attributable to tourism expenditure.

Figure 8 shows the tourism ratio by region (NUTS 1) and Figure 2 (and Map 1) at the sub-regional level in England and Wales (NUTS 2). Wales (4.9%) and the South West (4.5%) have the highest tourism ratios but there are a number of regions with ratios above 3.7% (which is the UK average). From further exploration, the main contributor to the high tourism ratio in Wales is West Wales and

the Valleys (5.7%) and the main contributor to the tourism ratio in the South West is Cornwall and the Isles of Scilly (9.9%).

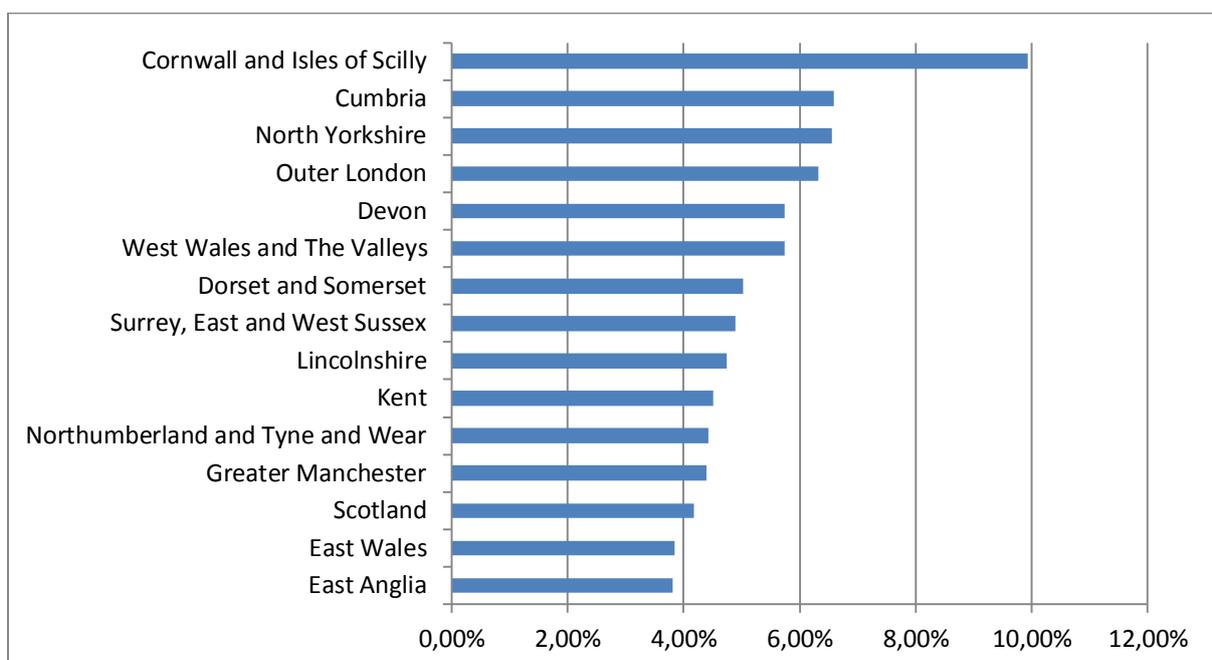
At the sub-regional level, tourism would be expected to have a dominant role in creating output in some regions and Figure 9 shows this clearly in relation to Cornwall and the Isles of Scilly, Cumbria and North Yorkshire in particular.

**Figure 8: Tourism ratios for the regions and nations of the UK in 2013 (NUTS 1)**



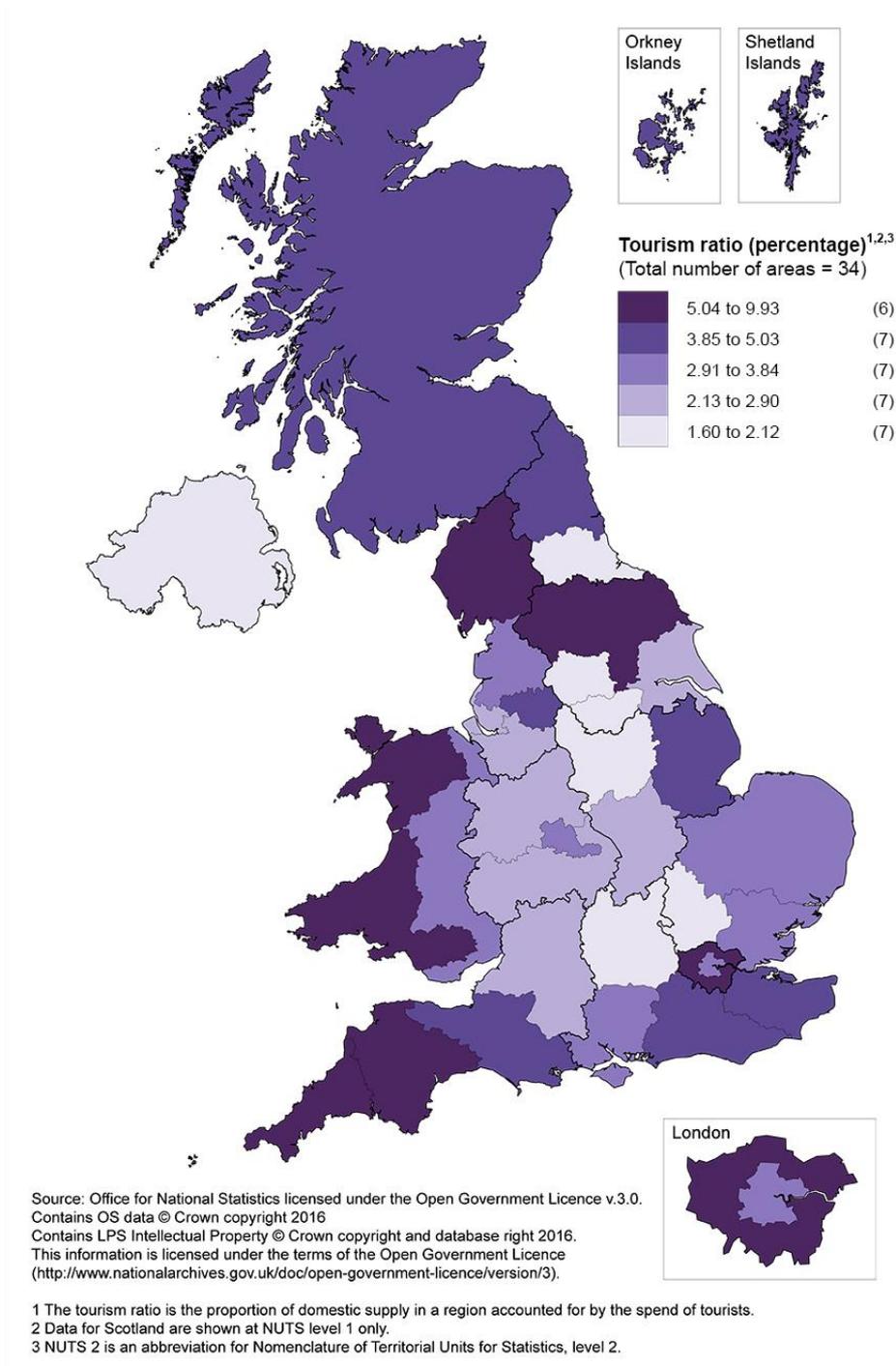
Sources: UK TSA 2013 (ONS), ONS IO&SUT 2013, Annual Business Survey 2013; GB Day Visits Survey 2013; GB Tourism Survey 2013; International Passenger Survey 2013

**Figure 9: Tourism ratios for the sub-regions of England and Wales (NUTS 2 regions) in 2013 (top 15 regions shown – plus Scotland total)**



Sources: UK TSA 2013 (ONS), ONS IO&SUT 2013, Annual Business Survey 2013; GB Day Visits Survey 2013; GB Tourism Survey 2013; International Passenger Survey 2013

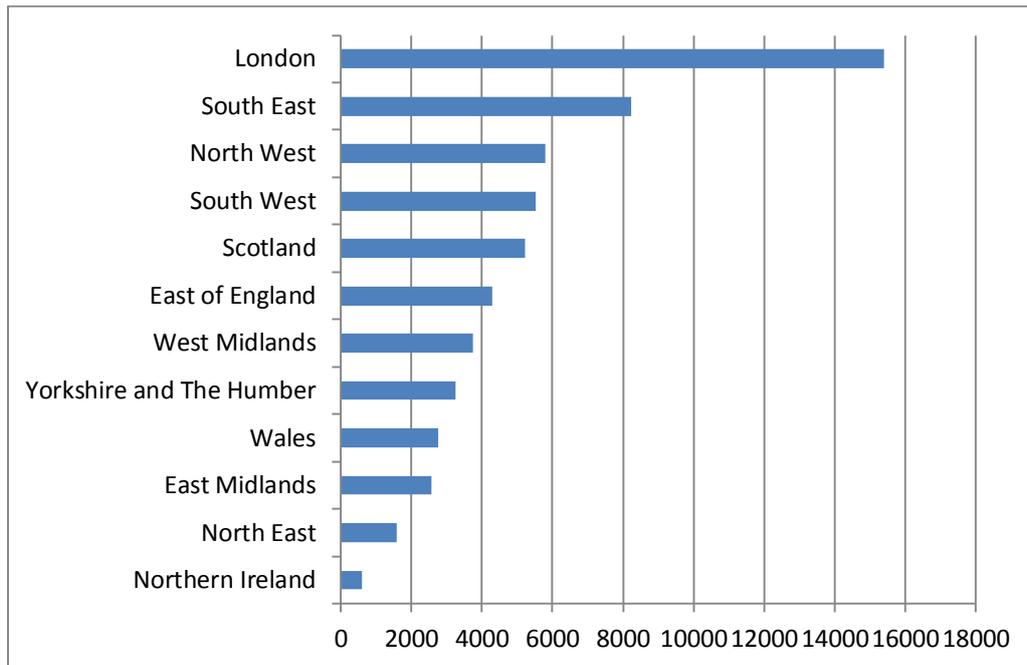
**Map 1: Tourism ratios for the sub-regions of England and Wales (NUTS 2 regions) in 2013 (top 15 regions shown – plus Scotland total)**



The tourism ratio is an important statistic in terms of this analysis because it is used in the calculation of tourism direct gross value added (TDGVA) for each region and sub-region. This is achieved through a multiplication of the tourism ratio and the total GVA of each region in current prices (which are not adjusted to remove the effects of inflation). The TDGVA is a main aggregate in tourism statistics and is also derived in the Tourism Satellite Account.

In Figure 10 we display the TDGVA for the regions and nations of the UK (NUTS 1) and in Figure 11 (and Map 2) the same TDGVA figures are presented at the sub-regional level (NUTS 2). It is clear that London has a dominant position in terms of TDGVA, followed by the South East, North West and South West. This reflects the size of the host economy to some extent, but also the role of major airports and other major ports. This becomes clearer when we look at the sub-regional figures, where 'Surrey, East and West Sussex' has the fourth highest TDGVA which could partly be explained by the presence of Gatwick airport.

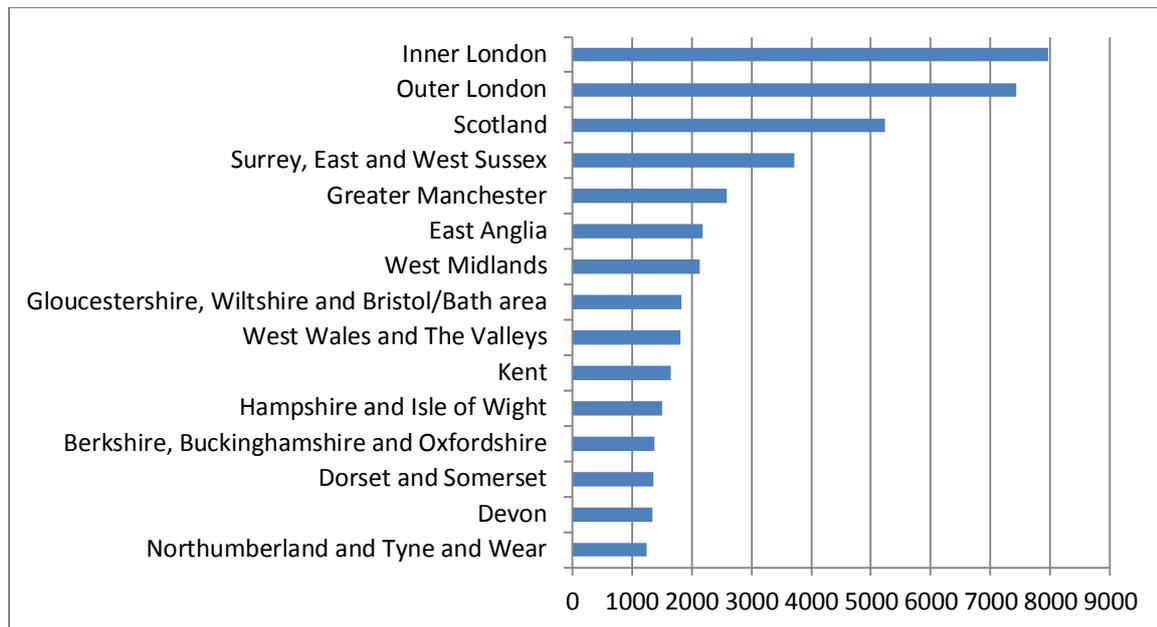
**Figure 10: Tourism direct gross value added in regions and nations of the UK in 2013 (NUTS 1) (£ millions)**



Note: current prices

Sources: UK TSA 2013 (ONS), ONS IO&SUT 2013, Annual Business Survey 2013; GB Day Visits Survey 2013; GB Tourism Survey 2013; International Passenger Survey 2013

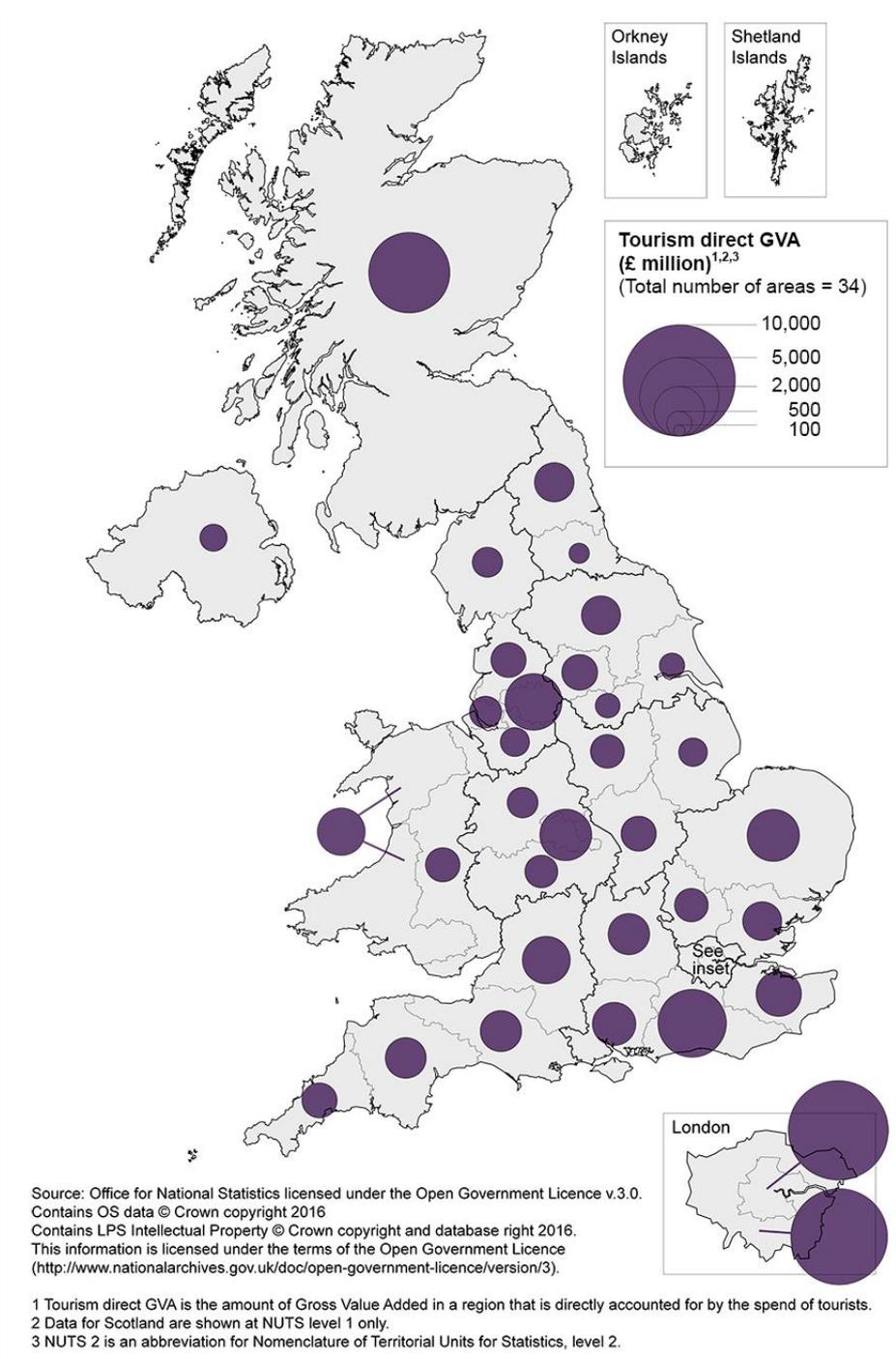
**Figure 11: Tourism direct gross value added (£ millions) at the sub-regional level in the UK, 2013 (top 15 ranked NUTS2 regions in England and Wales - Scotland and Northern Ireland totals included)**



Note: current prices

Sources: UK TSA 2013 (ONS), ONS IO&SUT 2013, Annual Business Survey 2013; GB Day Visits Survey 2013; GB Tourism Survey 2013; International Passenger Survey 2013

**Map 2: Tourism direct gross value added (£ millions) at the sub-regional level in the UK, 2013**



Finally, in this section the expenditure of tourists is analysed in each region and sub-region in terms of the type of visit. This includes:

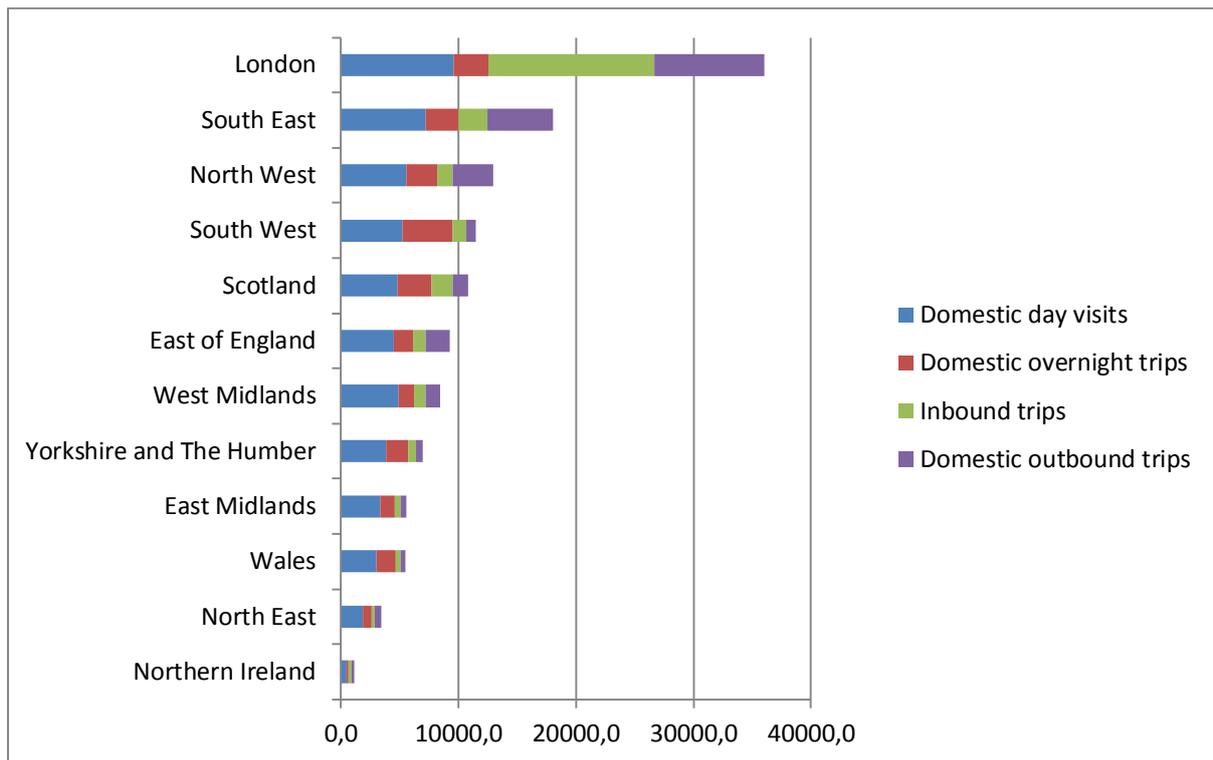
- inbound visits, which refers to visits to the UK from overseas tourists
- domestic overnight visits, which refers to UK residents taking trips within the UK that include an overnight stay
- day visits, which refers to UK residents taking a tourism day visit within the UK

- domestic outbound visits, which refers to UK resident spend within the UK on trips abroad (this includes spend on fares to UK-based carriers, for example, airlines)

### Tourism expenditure by region

Figure 12 shows that 40% of the total 2013 tourism expenditure was in London and the South East. Spend relating to outbound travel was particularly prevalent in these areas at around 57% of the total. This reflects the large proportion of UK outbound airport passengers flying from Heathrow and Gatwick, as well as the ferry and Channel Tunnel departures from these 2 regions.

**Figure 12: Estimated tourism expenditure, 2013 (£ million) by UK NUTS 1 area and visit type**



Note: current prices

Sources: UK TSA 2013 (ONS); GB Day Visits Survey 2013; GB Tourism Survey 2013; International Passenger Survey 2013

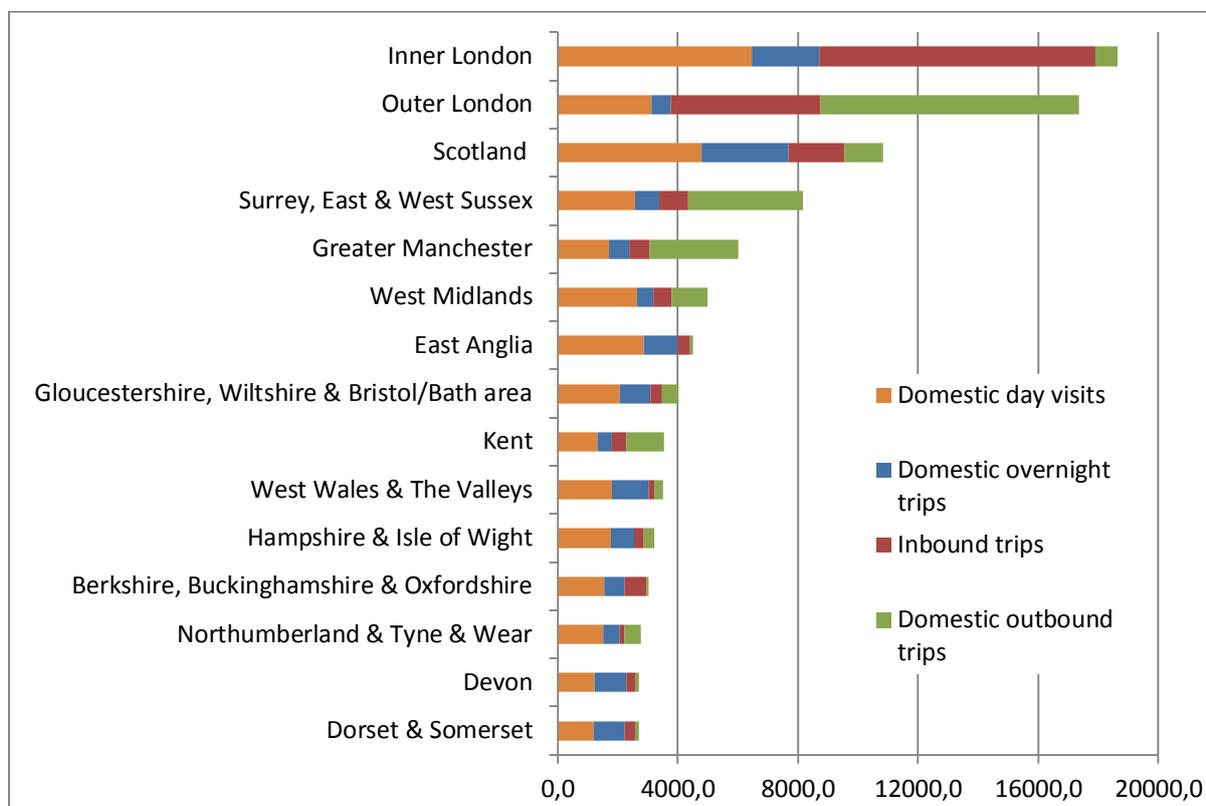
London and the South East also received 30% of expenditure on domestic day visits, reflecting a combination of their high populations and the large number of days out to London from elsewhere in the UK. In addition, over half of expenditure by overseas visitors in the UK was in London. However, for domestic overnight stays, the South West of England received the highest expenditure, with 17% of the UK total, followed by London and Scotland.

### Tourism expenditure by sub-region

Sub-regional data in Figure 13 illustrates how types of visitors contribute to overall expenditure in the NUTS 2 areas of England and Wales and NUTS 1 areas of Scotland and Northern Ireland. In areas with busy airports, domestic outbound expenditure is, not surprisingly, very prevalent. Domestic day visit expenditure is particularly important in areas that include major conurbations or are relatively close to London and the South East. The importance of spend from domestic day visitors is clearly an important element of overall tourism spend in many regions of England and Wales, with Inner

London generating the highest level of spend in this category of visitor. Scotland has the second highest level of spend from this type of visitor.

**Figure 13: Estimated tourism expenditure, 2013 (£ million) by NUTS 2 area and visit type (Top 15 ranked NUTS 2 regions in England and Wales – Scotland and Northern Ireland totals included)**



Note: current prices

Sources: UK TSA 2013 (ONS); GB Day Visits Survey 2013; GB Tourism Survey 2013; International Passenger Survey 2013

## 5. Tourism Productivity

A focus of policy departments within the UK government is on measuring productivity, including the productivity of the whole economy but also of individual industries. Here, productivity is defined as the rate of output per unit of input used, expressed as a ratio of the 2 components. Productivity is an important metric in formulating and assessing government policy, as it helps define both the scope for raising living standards and the competitiveness of the economy. It was for this reason that we explored productivity estimates for the tourism industries.

Previous estimates of productivity in tourism were produced by the DCMS which showed productivity growth between 2000 and 2007, but these estimates were not based on Tourism Satellite Account outputs. The DCMS report is available to read on the gov.uk website. These estimates haven't been produced since and little research has been completed into measuring productivity within tourism.

However there are limitations of measuring the productivity of tourism industries. The idea behind productivity is that you can increase it, by either increasing the output or decreasing the input, therefore increasing competitiveness. In a product-based industry, this is more straightforward: for example purchasing newer machinery that produces more and requires less staff. However tourism

is a demand driven service industry, reliant on tourist expenditure, which is in turn reliant on the health of the economy. Improving tourism productivity is therefore difficult.

We developed productivity estimates using two different methodologies:

- the tourism satellite account outputs
- ONS methodology to produce labour (using jobs and hours) productivity estimates

This section will primarily focus on the key results and methodology of producing tourism productivity estimates using the Tourism Satellite Account but provide a brief overview of the second methodology, including a comparison between the two.

When calculating tourism productivity, the ‘output’ is tourism direct GVA (calculated from the GVA of tourism industries and tourism ratios) found in Table 6 of the UK-TSA. The ‘input’ is found in Table 7 of the UK-TSA: number of jobs directly attributable to tourism (tourism direct jobs). The productivity is calculated by dividing the tourism direct GVA by tourism direct employment. An alternative would be to use tourism direct full-time equivalents, which would remove the bias created by the number of part-time workers in the UK tourism industries. A comparison of both measures produced very similar estimates.

When reviewing these main results, it should be noted that the TDGVA and GVA estimates used are in current prices and therefore are not adjusted for inflation. The productivity estimates are indexed with base year 2008.

Figure 14 shows the productivity of tourism industries in comparison to non-tourism industries. A key point to note is that since the economic downturn, tourism productivity has continued to increase at a large rate than non-tourism industries, until 2012 when the two start to converge.

**Figure 14: Productivity of tourism and non-tourism industries, 2008 to 2013 (base year 2008=100)**

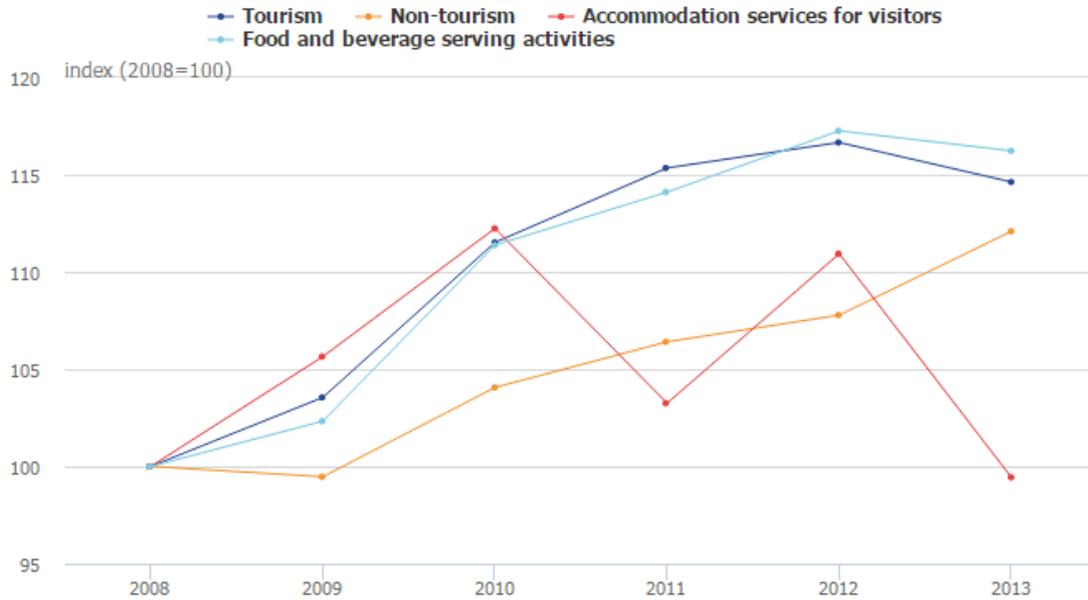


Source: The Productivity of Tourism Industries, Office for National Statistics

Figure 15 compares tourism, non-tourism, accommodation and food and beverage serving industries. The productivity of food and beverage serving activities increases similarly to tourism as a whole, whereas the productivity of the accommodation industry fluctuates much more. These fluctuations are caused by peaks and troughs in the employment directly attributable to tourism

within this sector, which could be due to the part-time nature of many jobs within the accommodation industry.

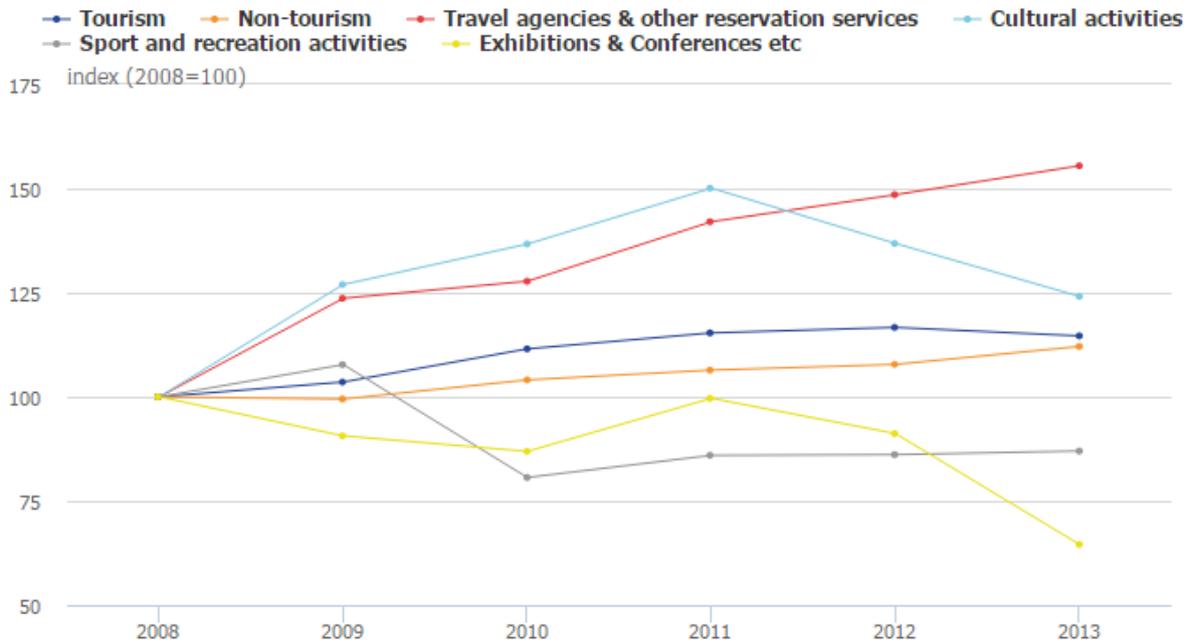
**Figure 15: Productivity of accommodation services for visitors and food and beverage serving activities, 2008 to 2013 (base year 2008=100)**



Source: The Productivity of Tourism Industries, ONS

Figure 16 compares tourism and non-tourism productivity with cultural activities, sport and recreation activities, exhibitions and conferences (country specific tourism characteristic activities) and travel agencies and other reservation services. The productivity of travel agencies and other reservation services increases a huge amount over the 5 years measured. Between 2008 and 2011, the productivity of cultural activities also largely increases, before declining to pre-economic downturn levels. The productivity estimates of sport and recreation activities declining in 2010 and then only slightly increasing is surprising given the London Olympics, held in 2012. This could potentially be due to a large increase in employment in sporting industries, without the matched increase in GVA.

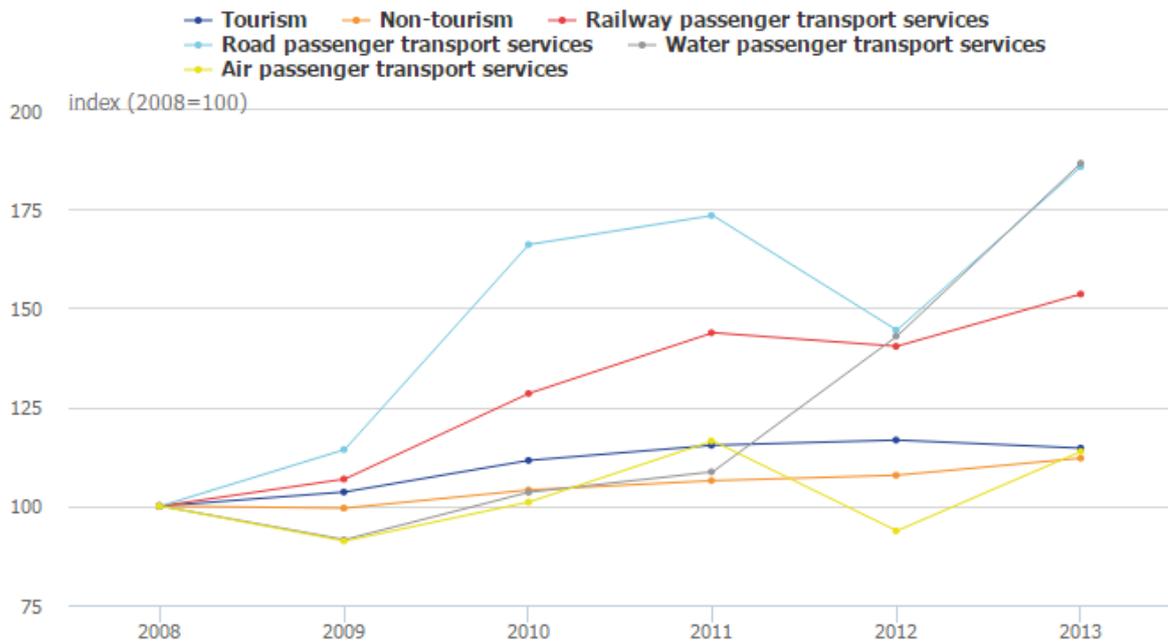
**Figure 16: Productivity of travel agencies & other reservation services and leisure activities, 2008 to 2013 (base year 2008=100)**



Source: The Productivity of Tourism Industries, ONS

Figure 17 compares the productivity of tourism and non-tourism industries with different passenger transport services (road, rail, water, air). The productivity of these industries varies much more in comparison to other tourism characteristic activities. However, the tourism characteristic activity with the largest productivity increase is water passenger transport services, closely followed by road passenger transport services.

**Figure 17: Productivity of transport services, 2008 to 2013 (base year 2008=100)**



Source: The Productivity of Tourism Industries, ONS

The labour productivity methodology used by ONS to produce productivity measures for a range of industries is calculated using different data. The input for this measure is either 'productivity jobs' or 'productivity hours'. The output is the GVA (current prices, chain volume measure) attributable to the relevant industry. As there are two inputs, two measures are produced. Productivity using hours is the preferred measure as it is more comprehensive and is able to reflect full- and part-time working.

The formula below shows how labour productivity is calculated.

$$\Delta \text{Labour productivity} = \Delta \left( \frac{\text{Output in Gross Value Added (GVA) terms}}{\text{Labour Input (hours, workers or jobs)}} \right) \approx \Delta \text{GVA} - \Delta \text{Labour Input}$$

Now we will compare the 2 productivity methodologies. The table below highlights the main differences.

Tourism Satellite Account productivity estimates	ONS Labour productivity estimates
<ul style="list-style-type: none"> <li>• uses components that are directly attributable to tourism</li> <li>• a whole tourism productivity figure can be calculated and compared with a non-tourism industries figure, calculated using consistent methodology</li> <li>• TSA productivity estimates can be produced for each of the 11 tourism characteristic activities in the UK-TSA tables, providing an in-depth look</li> <li>• the tourism direct gross value added (GVA) (output) component is in current prices, meaning that it is not adjusted for inflation which would affect the tourism direct GVA (TDGVA) and thus impact the growth of productivity in tourism industries</li> <li>• productivity estimates using the UK-TSA rely on data in the UK System of National Accounts which is unavailable until 18 months after the reference year</li> </ul>	<ul style="list-style-type: none"> <li>• uses the inputs and outputs of tourism industries</li> <li>• estimates are non-additive (cannot be summed together), so a whole tourism productivity figure cannot be calculated</li> <li>• industry classes we have data for (SIC 2 digit) also include non-tourism activities and are therefore not wholly tourism related industries</li> <li>• GVA estimates used in labour productivity measures are chain-linked and adjusted for inflation, allowing each year to be compared</li> <li>• timely estimates, they can be produced 2 months after the latest quarter</li> </ul>

Next steps: in order to increase the timeliness of the productivity measures based on the UK-TSA, we plan to explore using the Nowcasting estimates and up to date employment estimates. This will hopefully lead to us being able to base our productivity measures solely on the UK-TSA.

## 6. Conclusions

This paper has demonstrated how a system of tourism statistics with the TSA at its core can be developed in ways that meet the demands of policy users. The evidence presented here is being used by policy makers in the UK and takes as its starting point the key aggregates produced from the UK-TSA. The methodologies presented here are transferable to other national situations where the TSA forms a central component of the system of tourism statistics.

## **References**

UK Tourism Satellite Account, 2013:

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