Extending Supply Side Statistics for the Tourism Sector: A new approach based on linked-administrative data

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ABSTRACT:

This paper presents a new approach to measuring and understanding the activities of the tourism industries in Ireland. Using structural business statistics and administrative registers a new set of static and dynamic supply-side indicators are developed at both national and sub-national level. These indicators not only complement and expand the suite of tourism indicators already available but also offer a practical approach to filling a gap in the UNWTO – 2008 International Recommendations on Tourism Statistics.

KEYWORDS: registers, tourism dependency ratios, International Recommendations on Tourism Statistics

Introduction

Tourism activity is a complex, demand driven, phenomena. The tourism sector, as defined by the 2008 International Recommendations for Tourism Statistics or IRTS (United Nations Statistics Division, 2010), reflects this complexity by classifying a comprehensive but fragmented set of industries to tourism. This complexity poses challenges for many domains within official statistics as it requires a fine level of disaggregation of activity; the equivalent of ISIC[1] or NACE class level[2]. For many published series, at least in Ireland, this level of disaggregation is not available.

Tourism, as a sector, is also unusual or even unique in that the unit of analysis tends to be the customer or 'visitor' rather than the service provider or producer. In large measure this is a consequence of the complexity noted above. Tourism activity and consumption expenditure tends to be dispersed across a wide arc of industries: transport, accommodation,

[1] ISIC or the International Standard Industrial Classification is the United Nations system for classifying all economic activity. Class level corresponds with 4 digit level disaggregation.
[2] NACE is the economic activity classification used by Eurostat (the European equivalent of ISIC). Class level corresponds with 4 digit level disaggregation.

catering, retail, culture and sports. In some cases tourism expenditure occurs well before the trip begins and payment is often deferred until well after the trip and as a consequence it can be very difficult to measure properly. The net result is that traditional tourism statistics have put greater emphasis on demand side surveys (i.e. on the visitor rather than on the service provider) as many tourism industries would not naturally consider themselves as such, and are not in a position to distinguish tourist and non-tourist activity. As a result, there has been relatively less focus on supply side statistics, and here the emphasis has been on arrival and bed-night statistics at 'collective accommodation'.

For the reasons noted above, only two of the nine chapters in the 2008 IRTS are dedicated to supply-side and employment issues[3]. While this is understandable, it has meant that tourism statistics have become very sector specific and are consequently very difficult to compare with other economic sectors; 'arrivals' or 'bed-nights' do not mean much, and are not relevant, to anyone outside the tourism sector. The economic rationale for having a tourism sector is to provide jobs, generate incomes and profit and to support the national economy. Yet from a business or economy perspective the existing suite of tourism statistics say little about the overall performance of the sector. Equally, little is known or understood about the real contribution of tourism to national and regional economies (Kenneally & Jakee, 2012). This 'isolation' of tourism statistics was part of the reason why the UNWTO has invested so much effort in carefully developing the Tourism Satellite Accounts or TSA (United Nations and World Tourism Organisation, 2010) and ensuring their consistency with the UN System of National Accounts 2008 (United Nations Statistics Division, 2009) and the 6th and latest edition of the IMF Balance of Payments and International Investment Position Manual or BPM6 (International Monetary Fund, 2009). The TSA has put tourism on a comparable analytical footing with other economic sectors or industries from a macro-economic perspective, facilitating credible analyses and providing meaningful information to policy and decision makers.

At sub-national level, the challenges inherent in compiling national tourism statistics magnify. Not only can tourism not be identified owing to problems of sectoral disaggregation noted above, but furthermore, many of the sample sizes employed in traditional official statistical surveys cannot support sub-national breakdowns. Equally the challenges of compiling a TSA multiply considerably below national aggregation (Frechtling, 2008; Jones, 2009; Jones et al, 2009). This poses a particular challenge for tourism as it is a very place specific or local phenomenon where the tourism product and the relative contribution to the regional economy can differ quite significantly from region to region.

There are however a range of data sources, not typically associated with tourism, already in existence from which a range of useful complementary tourism indicators can be derived that could overcome some of the challenges noted above, namely; structural business statistics (SBS), labour force surveys (LFS) and administrative and similar large public service datasets and structured commercial 'big data'. This paper seeks to identify and harvest some of these data in order to address some of the supply side gaps that exist at both national and sub-national (regional) level. While SBS data are used, this paper will concentrate primarily on exploiting public service or administrative data. In many countries, including Ireland, traditional LFS cannot even at national level[4], provide robust estimates of employment at NACE Class level. For the same reason and also owing to gaps in coverage, many structural or annual business statistics cannot provide estimates of tourism activity,

[3] Chapters six and seven

[4] See (Smith & White, 2012) for a good example of tourism statistics derived from Labour Force Surveys, when sufficient levels of detail are available.

particularly at the sub-national level[5]. So for the purposes of this paper, the acknowledged potential of SBS, LFS and structured 'big data', such as credit card or mobile phone data are not investigated or discussed in any detail.

The approach outlined this is paper is particularly relevant at a time when National Statistical Institute (NSIs) and National Tourism Authority (NTAs) budgets are contracting and are also under considerable pressure to reduce respondent burden (National Statistics Board, 2003; European Commission, 2009; Eurostat, 2009; Stoiber, 2009). The administrative data used or recycled in this paper already exist, making it an efficient approach where the only cost is the marginal costs of conducting new analyses. Furthermore the approach outlined in this paper complements the philosophy of the TSA, providing indicators that can be directly compared with those in other economic sectors but in this case at a micro rather than a macro-economic level.

This approach can also provide indicators at sub-national and regional level. This is important as the lack of regional data has prevented sub-national tourism indicators being developed and has retarded analysis in this domain. In turn, this has undermined the credibility of the sector. So, this approach can contribute to the INRouTe guidelines[6] being developed in cooperation with the UNWTO on the establishment of a Regional Tourism Information System (R-TIS) that might combine official and un-official tourism data.

This paper is presented in four sections. The first section outlines the purpose of the paper and the general approach proposed. Section II presents some important definitions and concepts underlying the findings of the paper and outlines the main data sources used. Section III provides some illustrations of the type of data that can be compiled from this approach. The paper is then concluded in Section IV with a brief discussion of how this approach can be developed and extended.

SECTION I – Purpose and General Approach

Purpose of the paper

This paper has a number of purposes. Firstly, the paper proposes an approach to developing supply-side tourism statistics, where a gap exists or at any rate is a relatively un-developed topic in the IRTS 2008. Although not outlined in any detail here, this approach can also be extended to tourism employment where the same criticism applies (UNWTO, 2008). So, the approach outlined can be viewed either as an extension or development to that already detailed in the 2008 IRTS or as a set of complementary indicators that sit alongside those recommendations (see Figure 1.1). Either way, what is proposed here, is consistent with the spirit of the IRTS – '*Owing to the range of impacts and wide spectrum of stakeholders involved, there is a need for a holistic approach to tourism development, management and monitoring*' (United Nations and World Tourism Organisation, 2010, p.1).

Secondly, this paper proposes an approach that addresses, at least partially, one of the major challenges facing tourism statistics; how to compile robust sub-national statistics. The paucity of regional tourism data has been articulated many times (Deegan et al, 2004; MacFeely, 2006; United Nations World Tourism Organisation, 2013). The approach proposed here also dovetails or supports the policy initiatives being cultivated by Fáilte

[5] See (Demunter and Dimitrakopoulou, 2012) for some examples of national level tourism statistics derived from Structural Business Statistics.

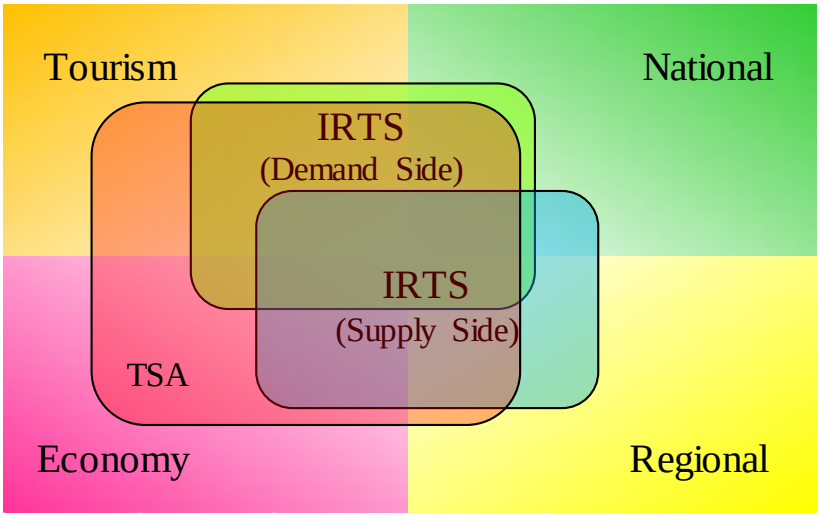
[6] See INRouTe (2013) to view the first set of prototype guidelines

Ireland to develop national and regional destination management systems (Wall & MacFeely, 2011) and complement the approach taken by Galan & Bermejo (2006) to develop a set of destination indicators. Although the challenges of how to regionalise traditional tourism statistics are not addressed here, the paper nevertheless illustrates how policy relevant data for the tourism industries can be compiled for sub-national regions (or even small or atomic areas if required).

Thirdly, and finally, this paper articulates how other long standing criticisms or gaps in tourism statistics might be addressed. For example, business performance has typically been outside the scope of traditional tourism statistics, reflecting a wider knowledge gap regarding small business and entrepreneurial activity across regional economies (Mshenga et al, 2010; Eurostat, 2013). Specifically, this paper outlines an approach for analysing the performance and survival of tourism industries. Also, and very importantly, this approach to compiling additional or supplementary policy relevant national and regional tourism indicators can be done in a cost effective and burden free manner.

The general approach and the specific set of indicators proposed in this paper will facilitate or allow comparative analyses with other economic sectors (described in aggregate form in this paper as 'non-tourism industries') reducing the relative isolation of tourism statistics. This approach complements the aims and philosophy of the TSA (albeit from a micro rather than a macro perspective) in that these indicators can also be used to bridge the gap between tourism and other industries by providing comparable economic, business and social indicators.

Figure 1.1 – Relationship between Supply-Side Indicators and traditional tourism statistics and accounts



These supplementary or complementary indicators can be compiled at both national and regional level. At a national level, the supplementary indicators can be sourced from a variety of sources, including SBS, LFS, administrative data and 'big' data. At sub-national level, robust indicators are more likely, but not exclusively, to come from administrative or structured big data.

General Approach

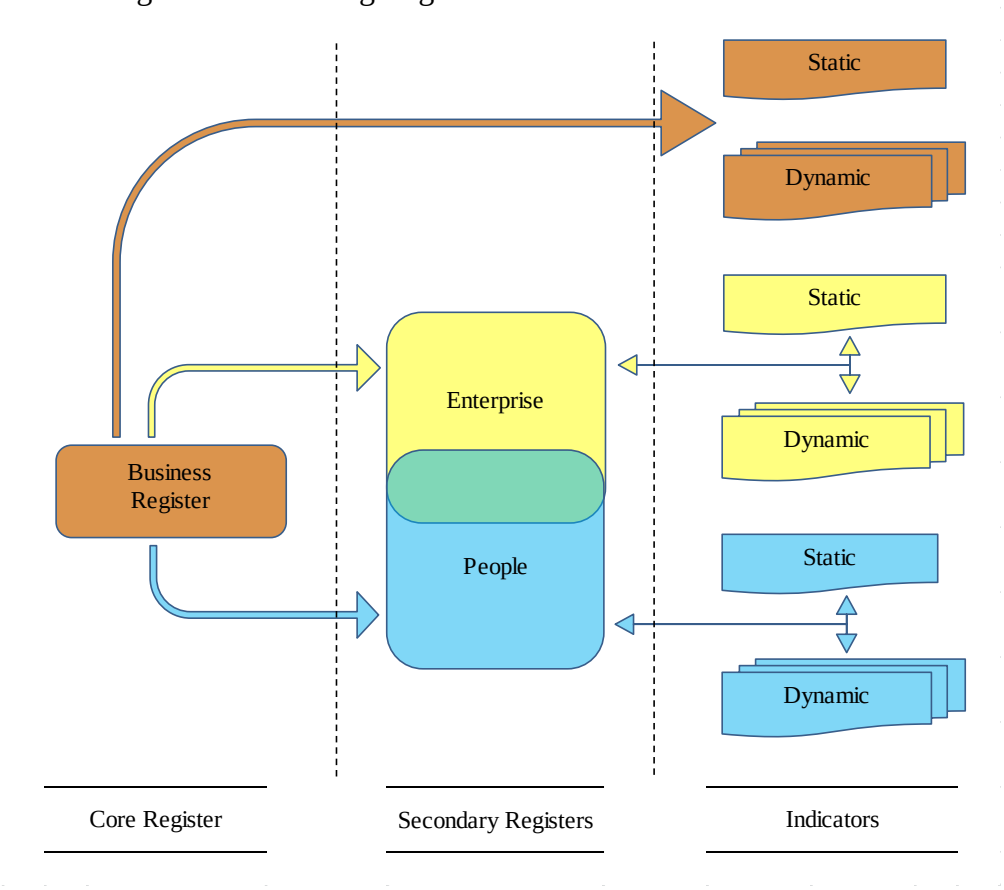
This paper illustrates how business registers can be used as a source to generate a new suite of supply side tourism indicators, notably: national and regional 'tourism dependency ratios' for variables such as number of enterprises, total employment and turnover. Other useful indicators, such as labour intensity, labour utilisation and regional enterprise demography and survival rates can also be derived. The use of business demography data is fundamental to this approach as standardised business register and demography data exist across all EU member states to comply with EU legislation. Similarly structured business registers exist in most other countries where reasonably developed statistical systems exist, making the approach outlined readily transferable and offering the opportunity to develop internationally comparable metrics by re-using already harmonised statistical sources. The scope of the data available from these sources is described in Figure 2 - 'core register'.

While the 'core register' offers a framework to develop internationally comparable indicators, the structure, quality and organisation of public service or administrative data may otherwise vary enormously from country to country. Consequently, harvesting data from the 'secondary registers' i.e. other administrative data sources, may not be as readily transferable across countries (or perhaps regions in federal states). Nevertheless, the broad approach or logic of what is proposed in this paper should be transferable, even if the exact indicators vary from country to country.

For the purposes of this paper, registers and administrative data are bundled into two broad categories: enterprise data holdings and people data holdings (see 'secondary registers' in Figure 2). Of course, in some cases, such as taxation or social protection records, files may contain both person and enterprise information. But from an outputs perspective, or an analysis perspective, it arguably makes more sense to bundle data into enterprise (e.g. size, nationality, ownership type, profitability, business costs, prices, taxes, subsidies etc.) or people data (e.g. gender, age, income, nationality etc.). The people dataset could include employees, sole traders, directors and business proprietors.

Business demography statistics derived from the business register compiled and maintained by the CSO are central to the analyses presented in this paper. The scope or approach outlined in this paper can be extended to generate a more complex set of indicators by linking the 'core' business register at the unit-record level to other 'secondary' registers or administrative data sources. By incorporating other administrative data sources, for example environment or culture, other useful indicators on wellbeing or competitiveness could be derived (see Dupeyras & MacCallum, 2013). As already noted, for the purposes of exposition, the scope of this paper will focus on indicators that can be sourced from the 'core' register. Indicators from secondary registers are outside scope of this paper, but for some examples of labour market indicators that can be derived from secondary tax and social welfare systems - see Delaney & MacFeely (2012) and Sakowski (2012).

Figure 1.2 – Linking Registers and Administrative Databases



From a statistical compilation perspective administrative data have a number of advantages, particularly when trying to produce sub-national data. Most importantly, key administration files such as taxation or social protection files typically have universal coverage, so even small, hard to reach areas and cohorts are included. In addition, if administrative data are well organised and structured, linkages or matching unit records over time may be possible, so that longtitudinal or time-series datasets can be constructed (see MacFeely & Dunne, 2014). This allows analyses to move beyond static or point-in-time indicators to more dynamic or flow type analyses.

SECTION II – Definitions, Concepts and Data Sources

What are administrative or public sector data?

This paper proposes harvesting administrative data to compile new tourism indicators, so it important that the reader understand what is meant by the term administrative data. Blackwell defines administrative or public sector data as '*information which is collected as a matter of routine in the day-to-day management or supervision of a scheme or service or revenue collecting system*' (National Economic Social Council, 1985: p78). Across civil and public services, huge volumes of administrative records are collected, maintained and updated on a regular basis. Considerable resources are expended by public services around the world in maintaining these records to ensure they are accurate and up-to-date. These data pertain to the wide range of administrative functions in which the State is involved, ranging

from individual and enterprise tax payments to social welfare claims or education or farming grants. Typically these administrative records are collected and maintained at the lowest level of aggregation i.e. transaction or interactions by individual taxpayer/applicant/recipient with the state, making these data very rich from an analytical perspective.

This paper argues that with some additional effort, these records can be used or harvested to generate a new suite of indicators. The quality and complexity of the indicators will depend on how well organised and open public sector information is in any given country. The more organised and coordinated the data infrastructure is, the greater the potential for compiling statistics. Administrative datasets have a number of advantages; they are typically well established and in many cases, may be sufficiently large to provide robust, sub-national data. Like a census, administrative data offer considerable flexibility, as they typically capture their respective universe. So for example, the business register, which is constructed from several administrative data sources, can provide statistics at NUTS 4 level or even small or atomic area level, which is particularly useful, not only when analysing a sector such as tourism which is very place centric, but also as it provides a mechanism for adapting to changed regional administrations, such as those proposed in the most recent strategy for local government (Department of Environment, Community & Local Government, 2012). Such flexibility doesn't always exist with sample based data, as sample design takes into account existing administrative structures and cannot be easily adapted to take on board changed regional structures.

However administrative data sources are not typically designed to align with statistical concepts. Consequently, extensive work may be required in order to derive usable statistical information. So there may be trade-offs; administrative or other very large datasets are realistically the only source of high quality, sub-national data available but these data may not align perfectly with tourism statistics concepts and may not be able to yield the traditional metrics associated with tourism. They can however yield a range of robust indicators, although not typically familiar to tourism analysts that are nevertheless very useful and policy relevant.

What are tourism industries?

As already noted the tourism sector is complex and is comprised of a heterogeneous bundle of diverse industries. The tourism industries, also referred to as tourism activities, are formally defined by the United Nations World Tourism Organisation International Recommendations for Tourism Statistics (United Nations and World Tourism Organisation, 2010) as activities that typically produce tourism characteristic products – see Appendix 1.

For the purposes of this paper, the definition of tourism industries is closely aligned but not exactly the same as that specified by the UNWTO (see Appendix 2 for definition of tourism industries used in this study). A one-to-one concordance between the UNWTO and NACE classifications was constructed in as far as was possible; a few differences exist between the two. The main difference arises where the business register in Ireland does not have sufficient granularity to identify very specialist 'country specific' tourism industries. There are a few areas where such specialist tourism products might exist: retailing, student education, specialist health or dental services. This problem will not be unique to Ireland and will most likely be an issue for any country that does not classify activity beyond ISIC or NACE class level. Consequently the absolute value for the key indicators presented in this paper may be a slight underestimate of activity in the tourism industries. This underestimation should not be significant as the values associated with 'retail trade of

country-specific tourism characteristic goods' and 'other country-specific tourism characteristic activities' are unlikely to be very large in Ireland's case.

It is worth noting that Eurostat has also been examining the compilation of using alternative sources to develop supply side statistics (Demunter and Dimitrakopoulou, 2012). As part of this work, they are re-examining the scope of the tourism industries from a European perspective (Eurostat, 2013). For example, they are examining the value or relevance of including NACE Rev.2 5590 'Other Accommodation' as a tourism industry.

What are business demography statistics?

Business demography statistics provide data on the active population of enterprises in the State, including enterprise births (entries) and deaths (exists or failures) along with information on growth and survival (life expectancy) rates. These statistics are also used to generate indicators of entrepreneurial activity and the factors that enhance or impede it and to understand the contribution of newly-born enterprises to the creation of jobs.

Primary data sources

The source data for this study are Business Demography statistics, published by the Central Statistics Office in Ireland, in compliance with EU legislation[7]. In turn, business demography statistics are sourced from the Business Register, which is a register of all enterprises that are active in the State, which is also compiled in adherence to EU legislation[8]. These register data are assembled using information provided by the Revenue Commissioners covering all companies, individuals and partnerships that register for VAT, Corporation Tax or Income Tax or as employers. See Appendix 3 for more detail. The main variables available from the business register are location, legal status and size of enterprise, number of employees and persons engaged and total turnover.

Conceptual scope

Owing to the broad, heterogeneous mix of tourist products, tourism expenditure is dispersed across a wide set of industries. Hence the importance of the demand side perspective (sourced from visitors), as it is probably the only way to properly capture the full breath of tourism consumption expenditure. The information in this paper is taken from supply-side (industry) sources and relate to the total activity in the tourism industries, irrespective of whether the products or services sold by these enterprises were consumed by tourists or not (i.e. total output of a Tourism Characteristic Industry (TCI) usually exceeds visitor consumption as some of the output generated by most TCIs are purchased by non-visitors). In other words the analyses do not quantify enterprise activity or employment generated by tourism demand – this is simply the measurement of jobs in the tourism industry not jobs created by tourism consumption. This is necessarily a restriction or limitation of many

[7] Annex IX (A Detailed Module for Structural Statistics on Business Demography) of Regulation (EC) No. 295/2008 of the European Parliament and of the Council of 11 March 2008 concerning Structural Business Statistics (recast).

[8] Regulation (EC) No. 177/2008 of the European Parliament and of the Council of 20 February 2008 establishing a common framework for business registers for statistical purposes and repealing Council Regulation (EEC) No. 2186/93.

supply side sources. With the possible exception of those providing collective accommodation, tour operating services or perhaps chatty taxi drivers, most suppliers are unaware of whether their customers are tourists or not and do not make this distinction in their management or financial accounts. In order to measure the activity generated by tourism demand a Tourism Satellite Account is required[9].

Equally, any secondary 'tourism' activity generated by 'non-tourism' industries will not be captured in these analyses. NACE activities of enterprises are codified to predominant activity and secondary activity is therefore not reflected. Although outside the scope of 'business economy' an example of relevant secondary activity would be tourism activity on farms, say horse riding. The National Farm Survey estimates that 2,000 farms/stables were engaged in secondary horse riding activities with approximately 2,400 persons employed on a FTE basis (CSO, 2008).

It is worth noting, for the sake of clarity, that the approach used in this paper is limited to direct employment in the tourism characteristic industries. Furthermore, it does not take into account indirect employment or tourism induced employment.

Tourism Dependency Ratios

Tourism Dependency Ratios (TDRs) should more accurately be called Tourism Industries or Tourism Sector Dependency Ratios but for ease of presentation are simply called TDRs. These ratios are simply standardised data; the ratio of the Tourism Industries to the Total Economy for a particular region (national or regional) and variable (Enterprise population, total employment or total turnover etc.).

$$TDR_N = \left(\frac{V^{TI}}{V^{TE}}\right)_N$$

Where:

TI are aggregate of the Tourism Industries for a particular region *N*;
TE is the Total Economy for region *N*;
V is the variable being compared (Enterprises, Employment, Turnover…);
N are the NUTS regions (NUTS 1, 2, 3 or 4).

SECTION III – Statistics and Indicators

This section of the paper outlines some of the national and regional statistics that can be compiled from 'core' register or administrative data sources, namely business demography statistics. As already noted, this source provides a range of count (static) variables: location of enterprise; size of enterprise; number of employees; number of persons engaged; and total turnover. Flow or dynamic variables can also be derived, for example, survival rates. Importantly, this data source is compiled under EU legislation and so should be available across the EU-28. Furthermore, most extra-EU countries will have equivalent demography statistics or similar business registers, so this approach should be internationally transferable.

[9] Usually derived using Tourism Value Added Ratios

Table 3.1 – Summary Profile of Tourism Sector, 2011

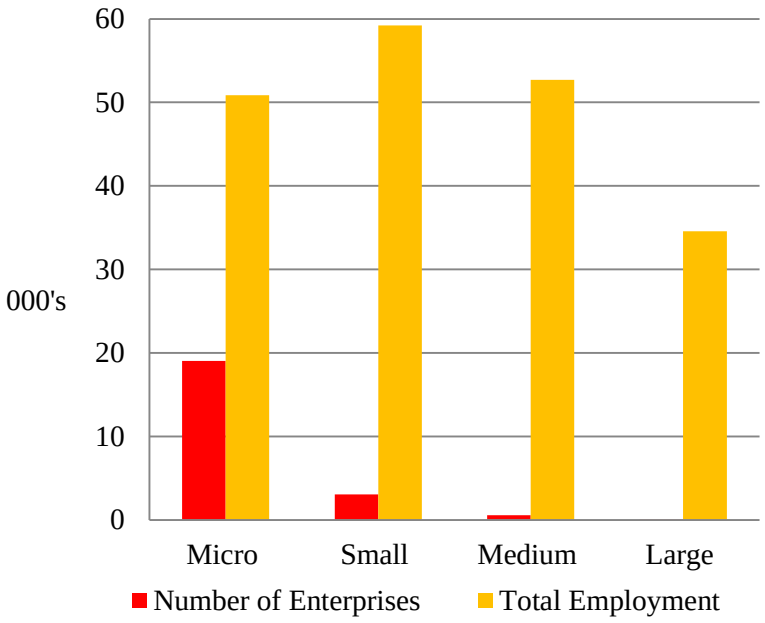
NACE Rev. 2 Section	Number of Enterprises	Total Employment	Total Turnover[1]	Total GVA[1]
	000's	*000's*	*€ Billion*	*€ Billion*
Transportation and Storage (H)	1.9	27.1	7.6	2.6
Accomodation and Food Services (I)	16.3	146.0	7.9	3.0
Administrative and Support Services (N)	0.8	5.9	1.8	0.3
Arts, Entertainment & Recreation (R)	3.6	18.3	1.6	0.8
All Tourism Industries	22.7	197.3	18.8	6.7

[1] Creative, Arts and Entertainment (NACE Rev.2 - 90) or Libraries, Archives, Museums and other Cultural Activities (NACE Rev.2 - 91) were imputed

Source: Business Register & Annual Services Inquiry

Table 3.1 presents a summary profile of the tourism industries in 2011. In brief, the tourism sector comprised of almost 23,000 enterprises, of which over 70% were in the accommodation and food industries (NACE Section I). These enterprises engaged a little over 197,000 persons and generated a total turnover of approximately €18.8 billion and a Gross Valued Added (Factor Cost) of €6.7 billion (or 4.6% of national GVA).

Figure 3.1 – Number of Enterprises & Total Employment by Employment Size Class in the Tourism Industries, 2011



The vast majority (98.8%) of Tourism Industries are SMEs, with only 38 of the 23,000 classified as large – see Figure 3.1. These SMEs account for 82% of employment in the Tourism Industries. Average employment per enterprise grows progressively with each

size class, from an average of 3 persons per micro enterprises to an average of 910 per large enterprise – see appendix 5.

Although Turnover is available from the business register, GVA is not, therefore the estimates of turnover and GVA presented in Tables 3.1 and 3.2 were sourced from the Annual Services Inquiry, so that the relative values of Total Turnover and GVA were consistent. The contribution of the tourism industries to national GVA of 4.6% seem reasonable, as the pilot Tourism Satellite Account (Deegan et al, 2004) estimated the contribution of tourism demand to national GDP at 3.5% in 2000. Given the conceptual differences in the two approaches, the estimates presented here seem plausible. The key indicators detailed in Table 3.1 can be compared with their economy wide equivalents to give a number of national 'Tourism Dependency Ratios'. These ratios illustrate the importance of the tourism sector to the national and regional economies - see Table 3.2.

Table 3.2 – National Tourism Dependency Ratios (current prices), 2006 – 2011

	Unit	2006	2007	2008	2009	2010	2011
Tourism Industries							
Number of Enterprises	*000's*	23.0	23.3	24.1	24.0	23.5	22.7
Total Employment	*000's*	212.3	220.2	225.0	206.2	198.8	197.3
FTE Employment	*000's*	167.7	178.6	155.0	142.6	135.3	135.3
Turnover[1]	*€ Billions*	-	-	20.0	18.1	17.6	18.8
Gross Value Added[1]	*€ Billions*	-	-	7.0	6.5	6.2	6.7
All Industries							
Number of Enterprises	*000's*	217.2	221.9	222.1	212.9	201.7	195.2
Total Employment[2]	*000's*	2,053.6	2,143.1	2,128.4	1,961.4	1,882.2	1,849.1
FTE Employment[3]	*000's*	1,891.9	1,968.0	1,947.7	1,769.3	1,680.0	1,644.8
Turnover[4]	*€ Billions*	-	-	414.4	359.4	352.4	376.7
Gross Value Added[5]	*€ Billions*	-	-	161.1	147.1	142.8	147.6
Tourism Dependency Ratios							
Number of Enterprises	*%*	10.6	10.5	10.8	11.3	11.6	11.6
Total Employment	*%*	10.3	10.3	10.6	10.5	10.6	10.7
FTE Employment	*%*	8.9	9.1	8.0	8.1	8.1	8.2
Turnover	*%*	-	-	4.8	5.0	5.0	5.0
Gross Value Added	*%*	-	-	4.3	4.4	4.3	4.6

[1] Source: Annual Services Inquiry - (NACE Rev.2 90 & 91 were imputed)

[2] Source: QNHS - arithmetic average of quarterly QNHS

[3] Source: QNHS - arithmetic average of quarterly QNHS

[4] Source: Business in Ireland 2009 - 2011. 2008 derived from SBS. Scope is 'Business Economy' only

[5] Source: NIE (2012) Table 2 - item 29. Scope is national economy

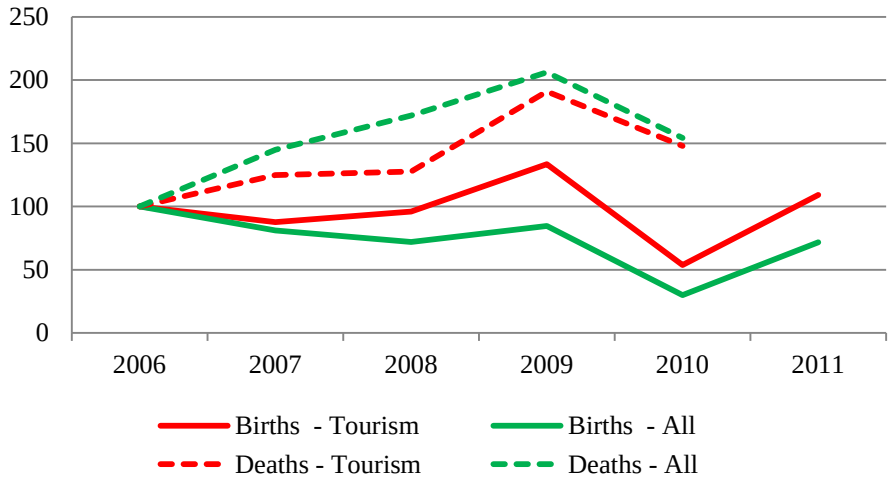
From Table 3.2 it is evident that average labour productivity in the tourism industries is considerably lower (GVA per FTE of €49,500) than for the economy as a whole (€89,700).

However it is worth noting that the labour productivity generated by the tourism industries is the same as that generated by Irish owned enterprises that export (CSO, 2013b).

FTE employment for the tourism industries was derived on the same basis as the economy wide measure published in the QNHS. The reduced dependency ratio for the FTE measure indicates the higher utilisation of part-time labour in the tourism industries relative to the labour market as a whole. This measure shows that the real fall in labour utilisation between 2007 and 2011 has been greater than the simple head-count implies, closer to -24% than the -10% fall estimated by the Total Employment measure. Turnover and GVA for the tourism industries cannot be compiled prior to 2008 as NACE Rev.1.1 did not provide sufficient disaggregation to properly identify those industries within the services sectors. The values for these indicators are given in current prices.

Between 2006 and 2011, the broad pattern or trend of enterprise births and deaths experienced in the tourism sector were broadly similar with those of the wider business economy, although in relative terms Tourism Industry births exceeded those of the economy as a whole while deaths were marginally less - see Figure 3.2 and Appendix 6. As noted in Appendix 4, statistical deaths take two years to determine, and consequently, the data for enterprise deaths in 2011 are not yet available.

Figure 3.2 – Enterprise Births & Deaths (Index: Year 2006 = 100)



A good example of the type of dynamic or flow indicators that can be derived are enterprise survival rates. To derive these indicators, microdata are required, as are unique business identifiers that facilitate matching and tracking of individual enterprises, so that individual enterprise survival can be ascertained. Surviving enterprises can be sub-set into high and low growth (either defined by turnover or employment or a combination of both). In general terms, the survival rates of tourism industries have not been significantly different from those of experienced by non-tourism industries (see Table 3.3). For all industries, whether tourism or not, survival rates for each duration (1 Year – 5 Year) deteriorated between 2006 and 2009. There appears to have been some improvement in 2010. Of the 1,600 tourism enterprises that commenced trading in 2006, only 53% survived their five years of trading. This is broadly in line with the wider economy, where the odds of surviving the first five years of trading we roughly 50-50.

Table 3.3 – Enterprise Survival Rates, 2006 – 2011

Year of Birth	Number of Surviving Enterprises					Survival Rates				
	1 Year	2 Years	3 Years	4 Years	5 Years	1 Year	2 Year	3 Year	4 Year	5 Year
	Units	*Units*	*Units*	*Units*	*Units*	*Units*	*%*	*%*	*%*	*%*
Tourism Industries										
2006	1,613	1,407	1,274	1,168	913	850	87	79	72	57	53
2007	1,415	1,196	1,064	838	743		85	75	59	53	
2008	1,550	1,322	992	885			85	64	57		
2009	2,153	1,618	1,458				75	68			
2010	1,680	1,406					84				
Non-Tourism Industries										
2006	15,083	13,586	12,250	10,984	9,180	7,746	90	81	73	61	51
2007	12,046	10,383	9,122	7,691	6,381		86	76	64	53	
2008	10,404	8,930	8,141	6,410			86	78	62		
2009	11,657	9,718	8,341				83	72			
2010	9,557	7,981					84				

Source: Business Register

Regionalising administrative data

Although the business register covers the universe of active enterprises in Ireland, deriving regional aggregates requires care. The geographical breakdown for each enterprise is an approximation as no comprehensive administrative source with exact business location is currently available. Consequently, county activity is based on the address where enterprises have registered for taxation purposes, rather than where businesses actually operate from. In the vast majority of cases, the registration or administrative address and the location of HQ activity are one and the same. The problem noted above, causes more significant challenges when attempting properly to allocate employment to region. For single unit enterprises this is not an issue, however for larger enterprises with several local units or branches, estimates of regional employment will be less exact, as all employment is often attributed to the county where the head office is located. Typically, this gives an employment bias in favour of Dublin, the capital city. Enterprises with an 'Unknown' address are generally registered outside the Republic of Ireland. However, their employees are working in the Republic of Ireland, and allocating this employment to location may not always be exact.

In turn, the HQ bias may result in an overstatement of the importance of the tourism industries to regions outside Dublin as some sectors, for example, Distributive Trades, may have a greater regional distribution in terms of local units than tourism industries (i.e. tourism industries are by and large single unit enterprises and so their regional distribution should be quite accurate, whereas some other industries may have more local units that may distort the true relative importance at county level). Consequently the derivation of regional Employment TDRs was done with considerable care as the HQ effect, which results in an overstatement of employment attributed to Dublin, had to be adjusted for. The number of

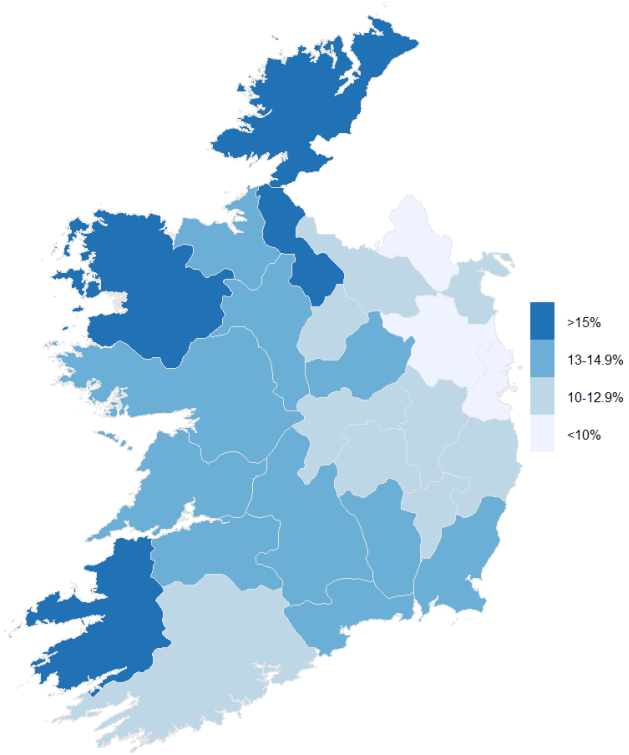
persons engaged in Dublin in 2011 according to the business register was 599,000 compared to an equivalent labour force estimate of only 401,000[10], a difference of 198,000 (or 33%). As a result county Employment TDRs are likely to be overstated. This bias was adjusted for by matching 'Business Sector' employment from the business register and LFS for the Dublin region, which is both a NUTS 3 and NUTS 4 region. The residual was redistributed across the other counties on a proportionate basis[11].

When the absolute data are mapped the dominance of the Dublin economy is immediately apparent but otherwise little useful information is illustrated. However if the data are standardised by region to derive TDRs, the data are more revealing, as the relative importance of the tourism industries to each region becomes apparent. In 2011, Enterprise and adjusted Employment TDRs ranged from 8.8% to 19.1% and 5% to 15.3% respectively – see appendices 7 and 8. County Meath is in the lowest cohort for both measures. Counties Donegal and Kerry are in the highest cohort for both TDRs. Map 1 (Enterprise TDRs) illustrates clearly that for Dublin, the number of tourism industries are relatively less important to that regional economy, as to most others. This is intuitive as Dublin, with a large urban centre with the most diversified industrial base, is relatively less dependent on tourism and the tourism industries compared with several other regions. Map 2 shows the importance of tourism employment to the counties along the western seaboard, the South-East and Dublin. The composition of employment in Dublin is quite different to that of the tourism industries in other counties. Dublin is less dependent on the traditional 'food and accommodation' but has significant numbers employed in Transportation & Storage, Administrative & Support Services and Arts, Entertainment & Recreation. Again this illustrates the diversity of the Dublin economy and in particular the importance of the airport, seaport and other tourism and sporting infrastructure.

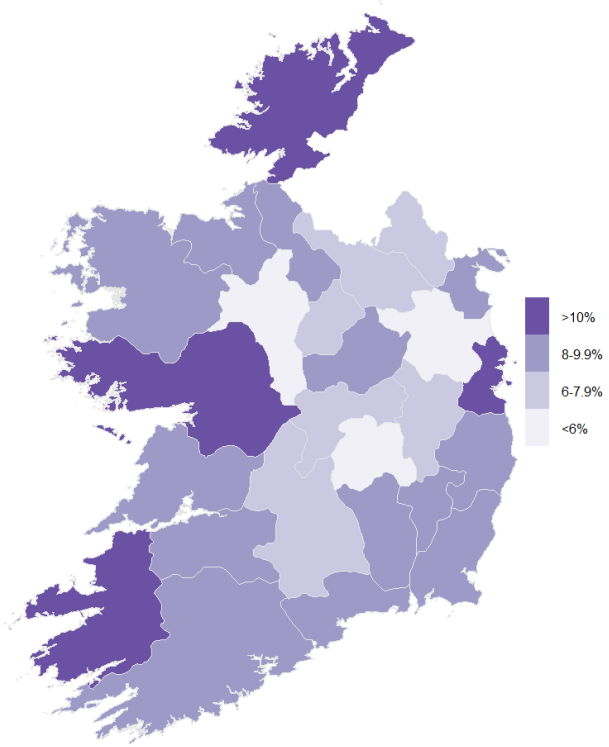
[10] Average employment for 2011 in the Dublin region of 549,000 less NACE Sections A (Agriculture, Forestry & Fishing), O (Public Administration & Defence), P (Education) and Q (Human Health & Social work activities).

[11] As the QNHS cannot provide county level employment estimates, Dublin which is both a NUTS 3 and NUTS 4 level region, provided a bridge. The county patterns for the QNHS were estimated from the 2006 and 2011 Census of Population employment patterns.

Map 1 – Enterprise TDRs by County, 2011

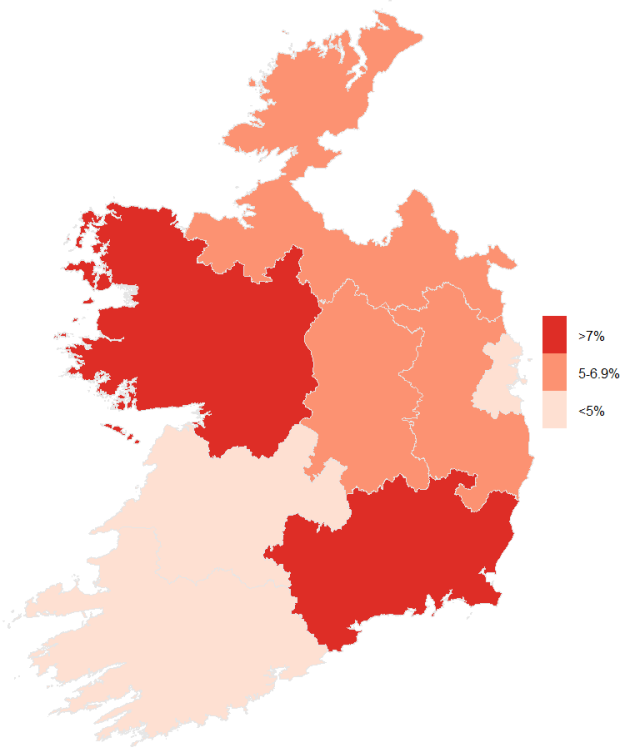


Map 2 – Employment TDRs by County, 2011



The Turnover TDRs are quite erratic compared with enterprise and employment TDRs. For this reason, Turnover TDRs were averaged over 2009 – 2011 and are presented at NUTS 3 level in order to make the data more stable. Turnover TDRs ranged from a low of 3% in the South-West to highs almost of 9% in the West - see Appendix 9 and Map 3. The Turnover TDRs for the BMW (Border, Midlands & Western) and S & E (Southern & Eastern) regions contrast noticeably – 7.2% and 4.7% respectively[12]. The low TDRs in the Dublin and the South-West reflect the high turnovers generated by non-tourism industries in Cork and Dublin. Equally, the high TDRs in the West, South-East and Midlands highlight the economic importance of tourism industries to less diversified regional economies.

Map 3 – Turnover TDRs by NUTS 3 Region, 2011



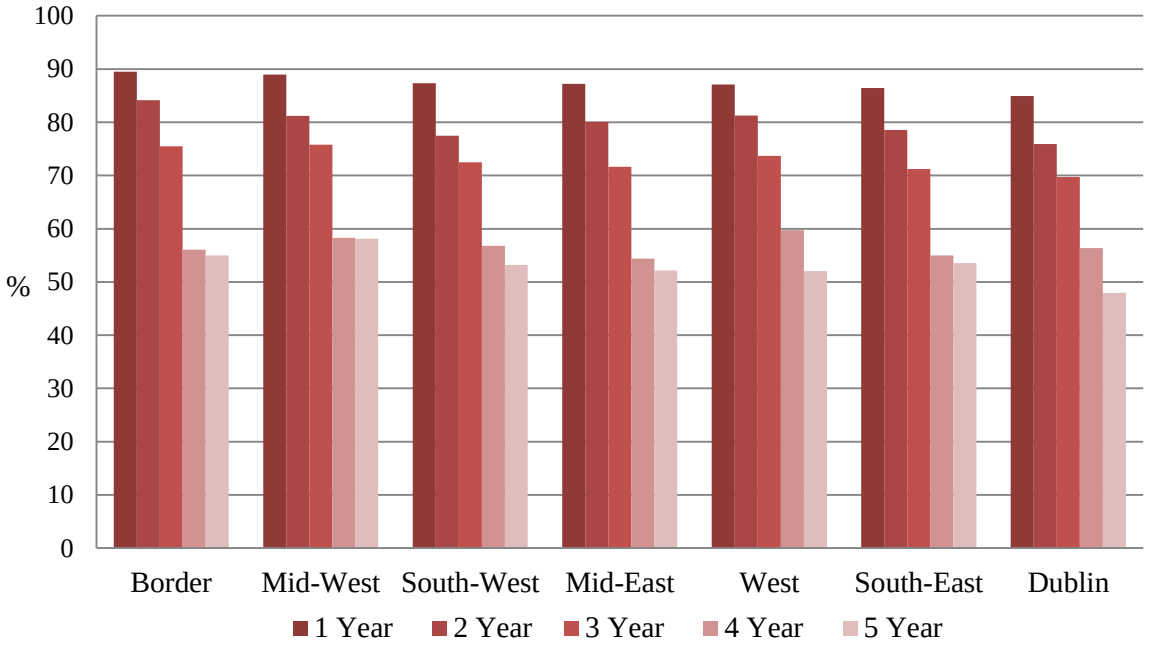
From a policy perspective these patterns are important as many the counties with the highest TDRs (particularly those along the western seaboard, midlands and South-East) are some of the most deprived counties in the State as measured by per capita Household Disposable Income i.e. less than 95% of State average (CSO, 2013a). Of particular interest from an Irish perspective are the implications for industrial, regional and employment policy, as these are the counties where multinational enterprises will be least keen to invest in as they don't have large urban centres with easy connectivity, ready supplies of workers, universities and research capacity (Clinch et al, 2002; Doring et al, 2006).

Regional births, deaths and survival rates can vary quite a bit. This is not very surprising as the number of enterprise births and deaths in any one individual county for any one year can be quite small and could be affected by a range of localised circumstances. Kaniovski & Peneder (2008) list a variety of factors, including seasonality, destination size and market structure, which may influence an enterprises chances of survival. Issues such as

[12] See Appendix 9

access to finance, access to market and global conditions and security could also be added. Figure 3.3 presents the 1 year, 2 year, 3 year, 4 year and 5 year survival rates for the tourism industries by NUTS 3 region. While the patterns are fairly similar across the regions, lower survival rates in Dublin are evident, where after five years only 48% of enterprises born in 2006 were still trading (compared with 58% in the mid-West).

Figure 3.3 – Survival Rates by NUTS 3 Region



SECTION IV – Conclusion

Tourism statistics are difficult and costly to compile at a national level. At a regional level these difficulties and costs escalate and may be so prohibitive as to prevent their compilation altogether. At a time when National Statistical Institutes and National Tourism Authorities have contracting budgets, and are under pressure to reduce respondent burden, it is important that all available data sources are examined and utilised to the maximum extent possible. From a demand-side perspective, sub-national tourism statistics are complex and prone to error, as in addition to the usual recall problems, visitors often don't properly understand where they were or as Theroux (1992, p.18) famously put it '*Tourists don't know where they've been, travellers don't know where they're going*'. Realistically the traditional methods of compiling tourism statistics (i.e. from survey data) cannot provide robust, detailed, small area or regional tourism information and thus alternate approaches to compiling sub-national statistics and deriving indicators must be considered. In particular, administrative datasets relating to the tourism supply side or large commercial datasets arising from tourists' digital footprints should be explored and exploited.

Historically, greater attention has been devoted to the demand side of tourism statistics. Thus, our understanding of tourism industries and employment is poor relative to other economic sectors of the economy. Although the IRTS 2008 point to the importance of administrative data and registers as a valuable source of data, the framework document is relatively quiet on specifics. This should not be surprising as until relatively recently, availability and access to administrative data was not possible in many countries including

Ireland, and no doubt, this limited our understanding of the potential of these data. However with improvements in technology and information storage, the quality and accessibility of public sector data has been steadily improving. In this paper we argue that it is time to move beyond arrivals and bed-nights and exclusive reliance on collective accommodation statistics and begin harnessing the power of administrative data and registers.

The approach proposed in this paper has limitations, as does every approach, but many of the obvious downsides can be addressed with further work and research. Most notably, the indicators derived only measure total activity of the tourism industries, rather than activity created by tourism demand. Perhaps this is viewed as too heavy a price and not worth the effort. We take a contrary view and argue that policy relevant, internationally comparable indicators can be compiled from administrative data. Furthermore this approach can be supplemented by Tourism Value Added Ratios to generate tourism demand statistics. The approach proposed in this paper is also a mechanism to develop new and very rich statistics on employment in the tourism industries and the quality of that employment and associated earnings. These indicators can be used in their own right or be used as the basis for top-down adjustments to national estimates or periodic satellite accounts. These data could also be used to supplement composite tourism sustainability indices, such as those proposed by Fernandez et al (2009).

This approach only offers a partial solution to the supply-side gap as it will most likely not yield short-term indicators. The indicators derived from this approach are limited to annual and come with a time lag of roughly T+18 months. These are drawbacks to a sector with clear seasonal patterns. Nevertheless, for structural analyses, these data offer real potential. With some adjustments to short term indicators, such as the Monthly Services Inquiry compiled by the CSO, a monthly tourism production index could be compiled.

There are a number of advantages to utilising business registers and demography information; they provide a robust data source and are already compiled to support the wider body of business statistics and so are relatively inexpensive to use and impose no additional response burden on respondents or businesses. Furthermore, broadly comparable data should be available across the EU, as every member state must compile business demography information in compliance with EU Regulation No. 295/2008. This last point is important, as raw tax administration on their own may have gaps or biases arising from poor tax compliance. However EU member states, in compiling their business demography data, should have made any necessary adjustments.

The national and regional indicators presented in this paper are only a small illustration of the statistics and information that can be compiled and the data sources used are just an illustration of the data potentially available. By linking business demography statistics to other administrative data sources at a micro-level[13], such as, social welfare or taxation data, a much wider suite of complementary national and regional statistics can be derived. For example, information on nationality, age, gender of employees and enterprise CEOs working in the tourism industries in each region, earnings and duration of employment are available to develop new indicators on *quality of work* in the tourism industries. Potentially even more sophisticated analyses could be facilitated, such as, tracking spatial migration of temporary workers, lifecycle working patterns or determining real labour costs.

The approach outlined in this paper is simple and straight forward. By harvesting existing data sources, both official statistics and administrative data, a large set of valuable, structural statistics that shed light on the supply-side of the tourism sector can be compiled on a comparable basis at regional, national and international level. These new indicators allow

[13] This will largely depend on the coherence of the statistical or data infrastructure and legislation that exists in any given country.

the tourism sector to be compared with other economic sectors, making the contribution of the sector to the national and regional economies more transparent. From a policy perspective this is important, as it reduces the isolation of the tourism sector and allows the interconnections and interdependencies with the wider economy to be better understood.

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Appendix 1 - UNWTO Tourism Industries/Activities

Tourism industries, also referred to as tourism activities, are activities that typically produce tourism characteristic products.

Tourism characteristic products are those that satisfy one or both of the following criteria:

(a) Tourism expenditure on the product (either good or service) should represent a significant share of tourism expenditures (share-of- expenditure/demand condition)

(b) Tourism expenditure on the product should represent a significant share of the supply of the product in the economy (share-of-supply/demand condition). This criterion implies that supply of a tourism characteristic product would cease to exist in meaningful quantity in the absence of visitors (United Nations Statistics Division, 2010, p.40).

	Tourism Activities/Industries
1	Accommodation for visitors
2	Food & Beverage serving activities
3	Railway passenger transport
4	Road passenger transport
5	Water passenger transport
6	Air passenger transport
7	Transport equipment rental
8	Travel agencies and other reservation services activities
9	Cultural activities
10	Sports and recreational activities
11	Retail trade of country-specific tourism characteristic goods
12	Other country-specific tourism characteristic activities

Source: United Nations Statistics Division (2010, p.42)

Appendix 2 - Concordance between UNWTO Tourism Industries and NACE Rev.2

	UNWTO Tourism Industries	**NACE Rev.2**
1	Accommodation services for visitors	NACE Rev.2
	Hotels and similar accommodation	55.10
	Holiday and other collective accommodation	55.20
	Recreational vehicle parks, trailer parks and camping grounds	55.30
	Other accommodation	55.90
2	Food and beverage serving services	
	Restaurants and mobile food service activities	56.10
	Event catering activities	56.21
	Other food services	56.29
	Beverage serving activities	56.30
3 & 4	Railway & Road passenger transport services	
	Passenger rail transport, interurban	49.10
	Urban and suburban passenger land transport	49.31
	Taxi operation	49.32
	Other passenger land transport n.e.c.	49.39
5	Water passenger transport services	
	Sea and Coastal passenger water transport	50.10
	Inland passenger water transport	50.30
6	Air passenger transport services	
	Passenger Air Transport	51.10
7	Transport equipment rental services	
	Renting and leasing of cars and light vehicles	77.11
8	Travel agencies and other reservation services	
	Travel agency activities	79.11
	Tour operator activitiies	79.12
	Other reservation service and related activity	79.90
9	Cultural services	
	Performing arts	90.01
	support activities to performing arts	90.02
	Artistic creation	90.03
	Operation of arts facilities	90.04
	Library and archives activities	91.01
	Museums activities	91.02
	Operation of historic sites and buildings and similar visitor attractions	91.03
	Botancial and zoological gardens and nature reserves activities	91.04
10	Sports and recreational services	
	Operation of sports facilities	93.11
	Fitness facilities	93.13
	Other sports activities	93.19
	Activities of amusement parks and theme parks	93.21
	Other amusement and recreation activities	93.29
	Renting and leasing of personal and household goods	77.21
	* Activities of sports clubs (93.12) excluded	

Appendix 3 – Enterprise Demography

The population of active enterprises, for a given year, contains all enterprises that were active at any stage during the reference year. Enterprises are counted as active if they satisfy at least one of the following conditions. The enterprise:

- Paid VAT during the reference year;
- Employed persons during the reference year;
- Filed a Corporation Tax return for the reference year; or
- Filed an Income Tax return for the reference year with turnover of more than €50,000.

Although, in theory the Business Register should cover all economic activity in the State, in practice, coverage is not complete. The register, when classified to NACE Rev.2, includes the following NACE Sections:

B Mining and quarrying;
C Manufacturing;
D Electricity, gas, steam and air conditioning supply;
E Water supply; sewerage, waste management and remediation activities;
F Construction;
G Wholesale and retail trade; repair of motor vehicles and motorcycles;
H Transportation and storage;
I Accommodation and food service activities;
J Information and communication;
K Financial and insurance activities (excl. 64.20 *Activities of holding companies)*;
L Real estate activities;
M Professional, scientific and technical activities; and
N Administrative and support service activities.

Thus, Agriculture and non-market/Public services sections are excluded.

The geographical breakdown for each enterprise is an approximation because no comprehensive administrative source is currently available for business locations. Consequently, the county activity is based on the address where enterprises have registered for taxation purposes, rather than where businesses actually operate from. In the majority of cases, the registration or administrative address and the place of activity are the same. However, for some larger enterprises with several local units or branches, estimates of regional employment will be less exact, as all employment is attributed to the county where the head office is located. This gives an employment bias in favour of Dublin, the capital city. Enterprises with an 'Unknown' address are generally registered outside the Republic of Ireland. However, their employees are working in the Republic of Ireland, and allocating this employment to location may not always be exact. The register also draws a distinction between total employment (persons engaged) and employees. For the purposes of business demography, employees are defined as: 'Persons who are paid a fixed wage or salary, including those temporarily absent because of illness, holidays or strikes'. Persons working on a labour-only, sub-contract, basis will usually not be included in the sector sourcing the activity but rather in the sector selling the service - NACE 78.20 (Temporary Employment Agency Activities). A better measure of total labour input is Persons Engaged, which includes proprietors, partners and casual or temporary workers.

Appendix 4 – Enterprise Births, Deaths & Survival

Enterprise Births

An enterprise birth is the creation of a combination of production factors with the restriction that no other enterprises are involved in the event. Births do not include entries into the population due to mergers, break-ups, split-off or restructuring of a set of enterprises. It does not include entries into a sub-population resulting only from a change of activity.

A birth occurs when and enterprise starts from scratch and commences activity. An enterprise creation can be considered a valid 'birth' if new production factors, in particular new jobs are created. If a dormant unit is reactivated within two years, this event is not considered a birth.

Calculation of Enterprise Births

The population of real births in each year was estimated using administrative data as follows:

All enterprises registered with the Revenue Commissioners, recording activity from a taxation perspective in the reference year, but none in the previous two years, are extracted as the population of potential births. From this population, all potential births employing more than 20 people in the reference year are checked, along with a sample of smaller potential births. This determines whether the enterprise is a real birth in the reference year, or if it is a takeover or company restructure of an existing enterprise. Validation is carried out using other administrative sources, internet searches, or direct contact with the enterprise.

Validation shows that typically, around half of all potential births are not actually genuine new enterprises. For large potential births, employing over 20 people, only the births that were confirmed to be real are included in the final figures. For smaller size births, the proportion of real births identified in the validated sample is used to weight the potential births to create an estimate of the number of total births.

Potential issues with measuring enterprise births in tourism related sectors

Some of the activities covered in the tourism related industries are associated with frequent changes of ownership, e.g. pubs and restaurants. It is likely that this results in a higher proportion of potential births that are not real births appearing in the administrative data. Consequently the number of enterprise births and employment in these births may be overstated in tourism related sectors.

Enterprise Deaths

An enterprise death is the dissolution of a combination of production factors with the restriction that no other enterprises are involved in the event. Deaths do not include exits from the population due to mergers, takeovers, break-ups or restructuring of a set of enterprises. It does not include exits from a sub-population resulting only from a change of activity. An enterprise is included in the count of deaths only if it is not reactivated within two years.

Calculation of Enterprise Deaths

All enterprises registered with the Revenue Commissioners, recording activity from a taxation perspective in the reference year but do not record activity in the following two years, form the population of potential deaths. Two years of data are required to exclude enterprises that are dormant for one year, but recommence activity in the following year. However, preliminary figures are released using just the following year's activity data. These preliminary figures include enterprises that later reactivate and are subsequently removed from the final figures.

As with enterprise births, samples of potential deaths are manually checked to eliminate takeovers and changes of administrative numbers that don't result in the real cessation of a business.

In Ireland the main administrative data sources for reference year $t + 1$ are not available until November of year $t + 2$. Preliminary data on deaths for year t are published once these data have been received and processed in year $t + 3$. The final data on deaths for year t are published in year $t + 4$.

Enterprise Survival

Estimates are provided for the number of new enterprise births that are still active in the years after their birth, along with the numbers of persons engaged in these enterprises in the year of birth, and in the year in which they survive.

Calculation of Enterprise Survival

All enterprises registered with the Revenue Commissioners, recording activity from a taxation perspective in the reference year

All potential births that are still active from a Revenue Commissioner perspective in the year after their birth are considered the population of potential one year surviving enterprises. Adjustments are made to this population to account for potential births in this population that were not real births (see calculation of Enterprise Births) and also for enterprises that survived by take-over.

Similar calculations are used to estimate figures for enterprises that survive two, three, four and five years after their year of birth. The size class breakdown provided for the variables relating to survival is based on enterprise employment in their year of birth.

Potential issues with measuring enterprise survival in tourism related sectors
As noted above some tourism related industries are associated with frequent changes of ownership, which may result in an over estimation of births and new employment. In turn this may result in an under estimation of survival rates for the same sectors.

Business Demography Population Changes, Births and Deaths

The difference between the Business Demography enterprise populations in successive years is different from the number of new births minus the number of ceased enterprises. This is due to the method of calculating real births and deaths from potential administrative changes.

Enterprises in year t - 1 are matched with year t to identify potential births and deaths. Those in year t but not year t - 1 are potential births in year t, while those in year t - 1 but not in year t are potential deaths in year t - 1.

So the population in year t equals the enterprises that continued between years t - 1 and t plus the potential births in t and the population in year t - 1 equals the enterprises that continued between years t - 1 and t plus the potential deaths in t – 1. This means that the difference between the numbers of enterprises in t and those in t - 1 equals the potential births in t minus the potential deaths in t - 1.

However, typically around half of the potential births are not real births (they are registrations of administrative change, but no new business has actually been created). Usually a higher number of potential deaths are real deaths, but again many are due to administrative changes, and not the real closure of a business. So the difference between potential births in t minus potential deaths in t - 1 doesn't equal the numbers of real births in t minus real deaths in t - 1. However, note that for years where the percentage of potential births that were real is fairly close to the percentage of potential deaths that were real, the differences between the potential figures will be close to the differences between the real figures.

Appendix 5 – Number of Enterprises & Total Employment by Employment Size Class, 2011

NACE Rev. 2 Description	Micro (< 10)	Small (10-49)	Medium (50-249)	Large (250 +)	All
	Units	*Units*	*Units*	*Units*	*Units*
Number of Enterprises					
Transportation and Storage (H)	1,777	140	15	10	1,942
Accomodation and Food Services (I)	13,324	2,508	485	23	16,340
Administrative, Arts & Entertainment (N) & (R)	3,920	405	72	5	4,402
All Tourism Industries	19,021	3,053	572	38	22,684
Total Persons Engaged					
Transportation and Storage (H)	4,235	2,380	1,436	19,065	27,116
Accomodation and Food Services (I)	39,481	48,617	44,581	13,345	146,024
Administrative, Arts & Entertainment (N) & (R)	7,156	8,200	6,675	2,171	24,202
All Tourism Industries	50,872	59,197	52,692	34,581	197,342
Average Number of Persons Engaged per Enterprise					
Transportation and Storage (H)	2	17	96	1,907	14
Accomodation and Food Services (I)	3	19	92	580	9
Administrative, Arts & Entertainment (N) & (R)	2	20	93	434	5
All Tourism Industries	3	19	92	910	9

Administrative and Support Services (N) and Arts, Entertainment and Recreation (R) were merged to protect confidentiality

Appendix 6: Enterprise Births & Deaths, 2006 – 2011

		Unit	2006	2007	2008	2009	2010	2011
Births	Tourism Industries	*000's*	1.6	1.4	1.6	2.2	1.7	1.8
	All Industries	*000's*	17.2	13.9	12.3	14.5	11.8	12.3
	% of Tourism Industries	*%*	9.4	10.2	12.6	14.8	14.3	14.3
Deaths	Tourism Industries	*000's*	1.4	1.7	1.7	2.6	2.0	-
	All Industries	*000's*	12.2	17.7	21.0	25.2	18.9	-
	% of Tourism Industries	*%*	11.2	9.6	8.3	10.3	10.7	-

Appendix 7: Regional TDRs – Number of Enterprises, 2006 – 2011

NUTS Region		2006	2007	2008	2009	2010	2011
		%	%	%	%	%	%
NUTS 1	State	10.6	10.5	10.8	11.3	11.6	11.6
NUTS 2	BMW	12.0	11.9	12.4	13.2	13.7	13.7
	S&E	10.1	10.0	10.3	10.7	11.0	11.0
NUTS 3	Border	12.2	11.9	12.4	13.1	13.7	13.8
	Midland	11.4	11.4	11.7	12.6	13.1	12.6
	West	12.1	12.2	12.7	13.6	14.0	14.2
	Dublin	8.1	8.2	8.3	8.4	8.6	8.8
	Mid-East	9.1	9.2	9.5	10.1	10.3	10.3
	Mid-West	12.8	12.7	12.9	13.4	13.9	13.8
	South-East	11.8	11.7	12.3	13.2	13.8	13.6
	South-West	12.0	11.8	12.2	12.8	13.1	13.1
NUTS 4	Carlow	10.8	10.8	11.6	11.7	12.6	12.1
	Cavan	11.2	10.4	11.0	11.6	12.5	12.5
	Clare	13.7	13.5	13.8	14.2	14.7	14.7
	Cork	10.6	10.4	10.9	11.4	11.5	11.4
	Donegal	13.5	13.3	14.2	15.6	16.4	16.9
	Dublin	8.1	8.2	8.3	8.4	8.6	8.8
	Galway	11.7	11.9	12.3	13.1	13.4	13.4
	Kerry	16.5	16.4	16.8	17.8	18.7	19.1
	Kildare	9.0	9.2	9.5	10.2	10.4	10.1
	Kilkenny	11.8	11.9	12.3	13.5	14.3	13.7
	Laois	11.0	11.7	11.9	12.9	13.1	12.5
	Leitrim	16.0	15.8	16.0	16.8	18.0	18.3
	Limerick	12.0	11.9	12.0	12.6	13.2	13.0
	Longford	10.8	10.4	11.0	11.8	12.7	12.3
	Louth	10.8	10.6	11.1	11.4	11.9	12.1
	Mayo	13.1	13.2	13.9	14.8	15.4	16.0
	Meath	8.7	8.9	9.3	9.7	9.7	9.9
	Monaghan	8.8	8.5	8.9	9.4	9.7	9.2
	Offaly	11.4	11.3	11.1	12.1	12.7	12.2
	Roscommon	11.5	11.5	12.1	13.1	14.1	13.5
	Sligo	14.5	14.6	14.2	14.0	14.4	14.1
	Tipperary	13.3	13.1	13.5	14.2	14.5	14.2
	Waterford	12.9	12.5	13.2	14.2	14.5	14.3
	Westmeath	11.9	11.6	12.3	13.1	13.5	13.1
	Wexford	10.5	10.5	11.2	12.3	13.0	13.3
	Wicklow	9.8	9.5	9.9	10.3	10.8	11.1

Appendix 8: Adjusted Regional TDRs – Total Employment, 2006 – 2011

NUTS Regions		2006	2007	2008	2009	2010	2011
		%	*%*	*%*	*%*	*%*	*%*
NUTS 1	State	10.3	10.3	10.6	10.5	10.6	10.7
NUTS 2	BMW	8.6	8.7	8.7	8.7	8.8	8.8
	S&E	10.9	10.8	11.2	11.1	11.2	11.3
NUTS 3	Border	9.2	9.2	9.3	9.2	9.3	9.3
	Midland	6.9	6.6	6.7	6.9	6.8	6.6
	West	9.1	9.4	9.3	9.1	9.6	9.6
	Dublin	14.5	14.2	15.0	15.0	14.9	15.3
	Mid-East	6.8	7.0	7.2	6.9	6.7	7.0
	Mid-West	9.2	9.7	9.7	9.7	9.7	8.8
	South-East	8.9	8.6	8.6	8.7	9.0	9.1
	South-West	9.4	9.2	9.4	9.3	9.4	9.7
NUTS 4	Carlow	9.5	8.5	9.1	9.3	9.5	9.6
	Cavan	6.5	7.0	7.1	7.1	7.3	7.8
	Clare	11.1	11.8	11.3	10.5	10.9	9.5
	Cork	8.3	8.0	8.2	8.3	8.3	8.4
	Donegal	11.9	11.8	11.9	11.7	12.2	12.3
	Dublin	14.5	14.9	17.3	15.9	15.2	15.3
	Galway	9.9	10.2	10.0	9.9	10.4	10.5
	Kerry	13.7	13.6	13.9	13.3	13.5	14.3
	Kildare	7.2	7.4	7.3	7.2	6.9	6.7
	Kilkenny	7.6	7.4	7.2	7.4	8.2	8.7
	Laois	6.1	5.9	5.8	5.6	5.1	5.0
	Leitrim	9.6	9.2	9.3	9.1	9.6	8.8
	Limerick	8.6	9.0	9.4	9.7	9.6	9.1
	Longford	5.8	5.7	5.6	6.2	6.4	6.1
	Louth	8.2	8.1	8.5	8.4	8.3	8.4
	Mayo	9.3	9.6	9.5	9.3	9.6	9.8
	Meath	5.5	5.9	5.8	5.6	5.5	5.4
	Monaghan	6.7	6.8	7.0	6.9	6.8	6.8
	Offaly	6.4	6.3	6.6	6.5	6.5	6.2
	Roscommon	5.2	5.5	6.0	5.7	6.1	5.9
	Sligo	10.0	9.9	9.8	9.7	9.1	8.9
	Tipperary	7.4	8.0	7.7	7.9	7.8	7.4
	Waterford	10.0	9.4	9.6	9.5	9.9	9.6
	Westmeath	8.4	8.0	8.0	8.7	8.9	8.7
	Wexford	9.5	9.4	9.3	9.5	9.6	9.9
	Wicklow	8.0	7.7	8.8	8.4	8.3	9.9

Appendix 9: Regional TDRs – Total Turnover, 2009 – 2011

NUTS Region		2009	2010	2011	2009 - 2011
		%	%	%	%
NUTS 1	State	5.0	5.0	5.0	5.0
NUTS 2	BMW	7.2	7.4	7.4	7.2
	S & E	4.8	4.8	4.7	4.7
NUTS 3	Border	6.5	6.4	6.0	6.2
	Midland	6.0	7.0	8.0	6.8
	West	8.7	8.9	8.8	8.7
	Dublin	4.7	5.1	5.0	4.9
	Mid-East	6.1	5.3	5.4	5.5
	Mid-West	5.5	4.6	4.4	4.8
	South-East	8.0	5.7	8.1	7.1
	South-West	3.3	2.9	3.0	3.0

Appendix 10: Enterprise Births in the Tourism Industries
as a Percentage of Total Enterprise Birth by NUTS Regions, 2006 – 2011

NUTS Regions		2006	2007	2008	2009	2010	2011
		%	%	%	%	%	%
NUTS 1	State	9.4	10.2	12.6	14.8	16.9	14.3
NUTS 2	BMW	10.5	12.5	16.0	19.0	21.9	18.1
	S&E	9.0	9.4	11.6	13.7	15.6	13.2
NUTS 3	Border	11.1	11.9	14.8	18.4	21.2	18.1
	Midland	10.0	10.4	16.1	20.0	21.6	17.4
	West	10.1	14.3	17.1	19.1	22.7	18.6
	Dublin	7.6	7.9	8.7	10.3	11.0	10.8
	Mid-East	9.4	9.9	11.5	12.9	18.6	13.4
	Mid-West	11.1	10.7	13.8	18.6	21.1	17.4
	South-East	10.0	11.0	15.8	20.1	22.5	16.6
	South-West	9.7	11.0	14.8	16.6	19.6	15.3
NUTS 4	Carlow	8.9	8.0	15.5	19.6	22.8	18.4
	Cavan	11.9	10.6	15.1	18.4	23.5	16.8
	Clare	13.5	9.9	14.2	16.9	20.1	16.0
	Cork	9.0	9.7	14.0	15.4	16.7	14.3
	Donegal	12.1	13.1	17.3	24.0	20.8	20.6
	Dublin	7.6	7.9	8.7	10.3	11.0	10.8
	Galway	9.3	13.7	15.8	18.0	19.4	17.8
	Kerry	11.7	15.9	17.6	21.5	31.7	19.5
	Kildare	8.9	11.3	10.5	13.8	22.5	10.6
	Kilkenny	9.5	10.9	14.8	19.6	25.0	17.5
	Laois	10.2	10.8	16.8	19.6	18.4	17.3
	Leitrim	13.8	17.1	18.2	22.6	29.1	20.0
	Limerick	9.5	10.6	12.7	18.4	21.9	18.3
	Longford	8.9	10.1	20.1	18.2	31.9	18.7
	Louth	8.8	10.6	12.8	14.4	18.2	17.5
	Mayo	10.8	15.3	19.7	20.2	25.5	20.8
	Meath	9.5	9.0	11.8	12.5	16.5	15.1
	Monaghan	7.7	9.4	14.6	14.4	16.0	14.2
	Offaly	8.1	10.1	11.3	18.5	22.2	19.1
	Roscommon	12.2	14.5	17.8	21.9	33.8	17.4
	Sligo	13.8	12.8	11.7	15.9	27.8	18.7
	Tipperary	11.1	13.0	16.0	22.1	20.9	17.1
	Waterford	10.5	11.9	18.3	18.4	21.7	17.1
	Westmeath	11.6	10.6	17.4	22.0	19.3	15.6
	Wexford	9.9	10.4	14.5	20.8	22.4	14.8
	Wicklow	10.0	8.8	12.6	12.2	15.9	15.1

Appendix 11: Enterprise Deaths in the Tourism Industries
as a Percentage of Total Enterprise Deaths by NUTS Regions, 2006 – 2010

NUTS Region		2006	2007	2008	2009	2010
		%	%	%	%	%
NUTS 1	State	11.2	9.6	8.3	10.3	10.7
NUTS 2	BMW	13.1	11.1	9.2	11.9	12.7
	SE	10.5	9.1	7.9	9.8	10.1
NUTS 3	Border	13.8	10.5	9.7	11.5	12.3
	Midland	12.3	11.7	8.4	11.9	13.3
	West	12.8	11.4	9.2	12.4	12.8
	Dublin	8.0	7.8	7.1	8.4	8.1
	Mid-East	9.2	8.0	7.1	9.4	9.6
	Mid-West	12.9	11.0	9.7	11.4	13.9
	South-East	12.6	10.3	8.8	11.0	12.5
	South-West	13.9	11.0	8.9	11.7	11.3
NUTS 4	Carlow	12.2	8.1	10.0	9.8	12.7
	Cavan	16.5	9.9	8.7	8.0	11.7
	Clare	13.0	11.4	10.4	12.8	13.2
	Cork	12.7	10.3	8.0	11.3	11.0
	Donegal	14.7	10.1	9.3	12.4	12.4
	Dublin	8.0	7.8	7.1	8.4	8.1
	Galway	11.8	11.0	8.9	12.4	12.7
	Kerry	18.1	13.2	12.0	13.0	12.3
	Kildare	9.8	7.5	6.1	9.8	10.3
	Kilkenny	12.0	12.2	7.8	10.2	14.3
	Laois	7.0	13.8	6.2	13.0	13.7
	Leitrim	17.6	13.2	14.3	14.4	14.0
	Limerick	11.9	10.8	8.7	10.2	14.1
	Longford	11.6	10.7	6.7	9.9	14.1
	Louth	10.4	9.2	9.3	11.7	11.1
	Mayo	14.1	12.5	9.4	13.0	11.2
	Meath	8.2	7.8	7.3	9.5	9.3
	Monaghan	14.5	7.4	7.3	9.2	11.0
	Offaly	15.1	11.9	7.8	10.1	11.1
	Roscommon	14.6	10.4	9.9	11.1	15.9
	Sligo	11.5	16.3	13.1	13.8	15.7
	Tipperary	15.7	11.1	11.1	12.0	14.4
	Waterford	14.4	11.0	9.1	13.0	13.0
	Westmeath	14.4	10.5	10.8	13.4	14.3
	Wexford	10.5	9.4	7.4	10.2	10.1
	Wicklow	9.6	8.9	8.2	8.6	8.8

Appendix 12: Enterprises Born in 2006
Survival Rates in the Tourism Industries by NUTS Regions, 2006 – 2011

	Year of Birth		1 Year Survival	2 Year Survival	3 Year Survival	4 Year Survival	5 Year Survival	1 Year Survival Rate	2 Year Survival Rate	3 Year Survival Rate	4 Year Survival Rate	5 Year Survival Rate
		Units	*Units*	*Units*	*Units*	*Units*	*Units*	*%*	*%*	*%*	*%*	*%*
Border	2006	208	186	175	157	117	117	90	84	75	56	56
	2007	169	142	123	97	83		84	73	57	49	
	2008	167	142	115	92			85	69	55		
	2009	208	156	142				75	68			
	2010	184	156					84				
Midland	2006	97	87	73	71	55	50	90	76	73	57	51
	2007	78	65	57	44	40		84	73	57	52	
	2008	98	82	58	58			84	60	60		
	2009	144	112	103				78	72			
	2010	97	80					82				
West	2006	167	146	136	123	100	87	87	81	74	60	52
	2007	176	145	131	102	90		83	75	58	51	
	2008	182	158	120	103			87	66	57		
	2009	238	186	159				78	67			
	2010	175	147					84				
Dublin	2006	393	333	298	274	221	188	85	76	70	56	48
	2007	373	304	268	214	182		82	72	57	49	
	2008	375	313	230	206			83	61	55		
	2009	556	412	366				74	66			
	2010	451	377					84				
Mid-East	2006	191	167	153	137	104	100	87	80	72	54	52
	2007	155	134	119	90	84		86	77	58	54	
	2008	166	142	104	85			85	62	51		
	2009	216	159	149				74	69			
	2010	176	145					82				
Mid-West	2006	149	132	121	113	87	87	89	81	76	58	58
	2007	120	104	96	74	74		87	80	61	61	
	2008	128	110	83	82			86	65	64		
	2009	195	149	125				77	64			
	2010	147	116					79				
South-East	2006	166	143	130	118	91	89	86	79	71	55	54
	2007	142	125	111	88	76		88	78	62	53	
	2008	187	163	119	114			87	63	61		
	2009	259	186	175				72	67			
	2010	198	168					85				
South-West	2006	243	212	188	176	138	129	87	77	72	57	53
	2007	204	177	160	130	114		87	79	64	56	
	2008	246	211	163	145			86	66	59		
	2009	338	259	240				77	71			
	2010	252	217					86				