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Linking registers with administrative data at unit record level to conduct structural and regional analyses of the tourism industries

Session 2: Rethinking Regional Tourism Observatories

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Introduction

Tourism activity is a complex, demand driven, phenomena. The tourism sector, as defined by the International Recommendations for Tourism Statistics (UNWTO, 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]. In many countries traditional Labour Force Surveys, for example, are not be able to provide the level of detail required to estimate employment for tourism industries even at a national level (see Smith & White, 2012 for a good example of what can be done when such detail are available). For the same reason many structural business statistics or annual business surveys may not be able to provide estimates of the numbers of tourism enterprises.

Tourism, as a sector, is also unusual or even unique in that the unit of analysis tends to be the customer or 'tourist' rather than the service provider or producer. In large measure this is a consequence of the complexity noted above. This complexity has resulted in traditional tourism statistics putting greater emphasis on demand side surveys i.e. on the tourist. There has been relatively less focus on the supply side, and this has tended to concentrate on accommodation arrivals and bed-night statistics. While this is understandable, it has meant that tourism statistics tend to be very sector specific and consequently very difficult to compare with other economic sectors. This 'isolation' of tourism statistics was part of the reason why the UNWTO invested so much effort in developing the Tourism Satellite Account (TSA), as it put tourism on a comparable analytical footing with other economic sectors or industries, facilitating credible analyses and providing meaningful information to policy and decision makers.

At the sub-national level, the challenges of compiling national tourism statistics magnify. Not only can tourism not be identified owing to problems of sectoral disaggregation but the sample sizes of many traditional official statistics cannot support sub-national statistics either. Equally the challenges of compiling a TSA multiply considerably below national aggregation (See Frechtling, 2008; Jones, 2009; Jones et al, 2009; for some interesting discussions on this topic). This poses a real challenge as

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[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.

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tourism is a very local phenomenon; the tourism product and the relative contribution to the regional economy can differ significantly from region to region.

There is 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; administrative and similar large public service datasets. These administrative datasets have a number of advantages; they are already well established and in many cases, may be sufficiently large to provide robust, sub-national data. However these 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.

The approach outlined this is paper is particularly relevant at a time when National Statistical Institute (NSIs) and Tourism Authority (NTAs) budgets are contracting and are also under considerable pressure to reduce respondent burden. The administrative data used or recycled in this paper already exist, making it an efficient approach where the only cost is the marginal cost of conducting new analyses. Furthermore the approach outlined in this paper complements the philosophy of the TSA as it provides indicators that are directly comparable with other economic sectors. Furthermore it provides robust regional indicators.

Purpose of the paper

The purpose of this paper is to propose an approach to compiling policy relevant national and regional tourism indicators in a cost effective and burden free manner. The approach outlined also illustrates how some long standing gaps or criticisms of tourism can 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). The approach outlined will also illustrate how a number of criticisms of Irish tourism statistics could be addressed (Deegan et al, 2004; MacFeely, 2006 & 2007; ITIC 2011) where the paucity of regional data and information on the performance of tourism businesses has been continually highlighted.

Lastly, but very importantly, the approach proposed in this paper provides a set of indicators that can be provided at both national and regional level. These indicators complement the philosophy of the TSA and they could further be used to bridge the gap between tourism and other industries by providing comparable indicators. So, the approach outlined, helps to address both the spatial deficit that has long existed in tourism statistics and also provides a bridge between traditional tourism and business or economic statistics (see Figure 1).

Figure 1 – Relationship between register based indicators and
traditional tourism statistics and accounts
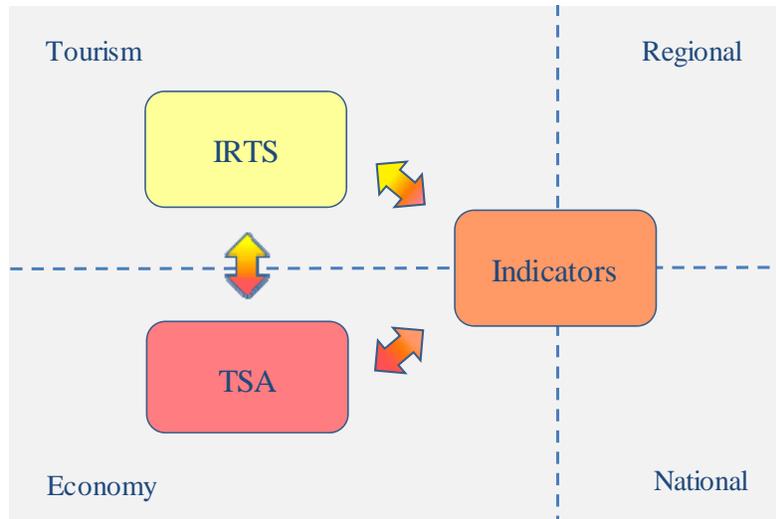
General Approach

MacFeely et al (2011) illustrated how business registers could be used to generate a new suite of complementary tourism indicators, most 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 births, deaths and survival rates were also derived. The central point made in MacFeely et al was that standardised business registers exist across all EU member states and 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 that work corresponds to 'core register' depicted in Figure 2.

The subsequent analysis presented by Sakowski (2012) extended the work of MacFeely et al by illustrating the range of highly relevant regional indicators that could be compiled with regard to labour market conditions and earnings in the tourism industries in Brazil. The 'Annual Register on Social Information' (or RAIS) used by Sakowski to undertake her analyses is considerably more extensive in scope than any single administrative dataset in Ireland. The approach taken in this paper now builds-on Sakowski's work by linking the business register in Ireland to other registers or administrative datasets in order to build a more comprehensive database. For the purposes of illustration, this paper will concentrate on labour market related indicators, but the approach outlined could be used to compile a comprehensive set of business, environmental or cultural indicators.

While MacFeely et al (2011) offered a framework to develop internationally comparable indicators, the structure, quality and organisation of public service or administrative data will vary enormously from country to country. Consequently, the approach outlined in this paper to compile regional tourism indicators or statistics from linked administrative data may not be as readily transferable across countries (or perhaps regions in federal states). The differences between the Brazilian 'RAIS' database and the Irish administrative data systems provides a good example of the significant differences in coverage that can exist between countries. Nevertheless, the broad approach or logic of what is proposed in this paper should be transferable, even if the exact indicators are not replicable.

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, ownership type, profitability, business costs, prices etc.) or people data (e.g. gender, age, income, nationality etc.). The people dataset could include employees, sole traders, directors and business proprietors.

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The approach outlined in this paper could be extended further to incorporate other administrative data sources from other domains, such as, for example environment or culture. This is outside the scope of this paper but could be useful in the context of measuring competitiveness of tourism industries (see Dupeyras & MacCallum, 2013). The basic approach can be summarised as follows: construct a census type database of the tourism industries to address some of the gaps in our understanding of tourism industries and employment at a national and regional level.

Figure 2 – Linking Registers and Administrative Databases
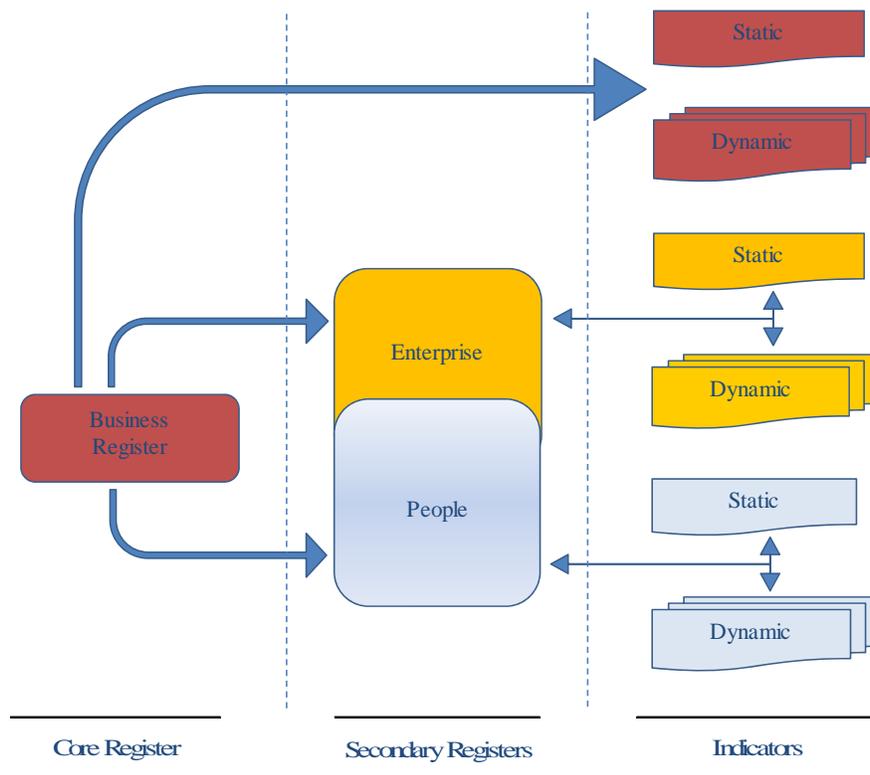
From a statistical compilation perspective administrative data have a number of advantages, particularly when trying to produce sub-national data. Most importantly, key administration files such as taxation or social protection files typically have universal coverage, so even small, hard to reach areas and cohorts are included. In addition, if administrative data are well organised and structured, they may allow the facility to link or match unit records over time, so that longtitudinal or time-series datasets can be constructed. This allows analyses to move beyond static or point-in-time indicators to more dynamic or flow type analyses.

The 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 of analysis is then extended beyond the core business demography indicators to generate a more complex set of indicators. This is done by linking the 'core' business register at the unit-record level to other 'secondary' registers or administrative data sources. As already noted, for the purposes of exposition, the scope of this paper will focus on labour market type indicators using secondary administrative data sources taken from the tax and social welfare systems.

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 are formally defined by the United Nations World Tourism Organisation International Recommendations for Tourism Statistics (UNWTO, 2010: 42) - See Figure 3.

Figure 3 – Tourism Industries

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: (UNWTO, 2010)

The definition of tourism industries used for this study is closely aligned, although not exactly the same, as that specified by the UNWTO (see Appendix 1 for definition of tourism industries used in this study). The main differences between the two classifications arise because the business register in Ireland does not have sufficient granularity to identify the very specialist 'country specific' industries - retailing and other activities. This problem will not be unique to Ireland and will most likely be an issue for any country that only classifies activity to ISIC or NACE class level.

Consequently the number of tourism enterprises and employment presented in this paper may be a slight underestimate of activity in the tourism industries, although this underestimation should not be significant as retailing of Irish-specific tourism related goods is unlikely to generate much employment in Ireland. A good example of an Irish specific tourism activity might be horse riding. From the National Farm Survey (CSO, 2008) this accounts for 2,000 farms/stables and approximately 2,400 persons employed on a FTE basis.

Conceptual scope

The information in this paper relates to total activity in the tourism industries, irrespective of whether the products or services sold by these enterprises were consumed by tourists. In other words the analyses do not quantify enterprise activity or employment generated by tourism demand. In order to measure the latter a Tourism Satellite Account is required.

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National Tourism Dependency Ratios

From the core business register, a number of basic national and regional Tourism Dependency Ratios can be derived to demonstrate the importance of the tourism sector to both the national and regional economies. Typically, there are three basic TDRs than can be derived: total number of enterprises, total number of employees and total turnover.

Table 1 – National Tourism Dependency Ratios, 2006 - 2010

	Unit	2006	2007	2008	2009	2010
Tourism Industries						
Number of Enterprises	*000's*	23.0	23.3	24.1	24.0	23.5
Total Employment	*000's*	212.3	220.2	225.0	206.2	198.8
All Industries						
Number of Enterprises	*000's*	217.2	221.9	222.1	212.9	201.7
Total Employment	*000's*	2,048.3	2,122.8	2,099.7	1,928.6	1,847.9
Tourism Dependency Ratios						
Number of Enterprises	*%*	10.6	10.5	10.8	11.3	11.6
Total Employment	*%*	10.4	10.4	10.7	10.7	10.8

Source: (CSO, 2012a & 2012b)

Table 1 shows the number of national enterprise and employment[3] TDRs. The table illustrates that the tourism sector accounts for 11.6% of all business enterprises and 10.8% of total employment. Furthermore, since the downturn in 2008, the contribution of the tourism sector to the national economy has increased. This should not be particularly surprising as some sectors, most notably construction, have experienced significant losses of enterprises during recent years. It should be stressed that the changes summarised in Table 1 are net changes (e.g. a net gain of 500 enterprises between 2006 and 2010); the gross number of enterprise births and failures were considerably higher, reflecting what Schumpeter famously described as 'creative destruction' (1942, p.83). Equally the net loss of employment of 13,500 between 2006 and 2010 masks significantly higher job churn.

Accommodation and Food Services accounted for 70% of all tourism enterprises. The next most important set of industries was in Arts, Entertainment & Recreation accounting for 18% of all tourism enterprises.

Other National indicators

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[3] The business register in Ireland does not currently include comprehensive information for non-market and agricultural sectors. Consequently, in order to avoid overstating the real contribution of employment in the tourism industries to total employment, total persons engaged in the tourism industries must be compared with total employment sourced from the Labour Force Survey (known in Ireland as the Quarterly National Household Survey).

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In addition to the national TDRs, a number of other indicators can be derived. For example, a measure of labour intensity can be derived (i.e. the average number of persons engaged per enterprise). The key TDRs can also be supplemented by a measure of labour utilisation (i.e. a full-time equivalent measure of employment) – see Table 2.

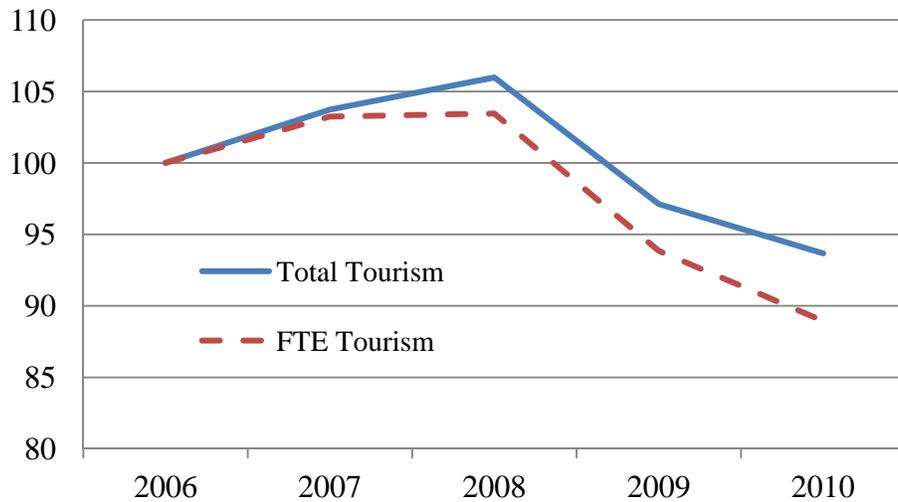Table 2 - Other National Indicators, 2006 - 2010

	Unit	2006	2007	2008	2009	2010
Tourism Industries						
Number of Enterprises	*000's*	23.0	23.3	24.1	24.0	23.5
Total Employment	*000's*	212.3	220.2	225.0	206.2	198.8
Total Employment (FTE)	*000's*	171.0	176.5	176.9	160.5	152.1
All Industries						
Number of Enterprises	*000's*	217.2	221.9	222.1	212.9	201.7
Total Employment (business sectors only)	*000's*	1,482.4	1,563.0	1,537.7	1,343.3	1,270.9
Other Indicators						
Labour Intensity (Tourism)	*Unit*	9.2	9.4	9.4	8.6	8.5
Labour Intensity (All)	*Unit*	6.8	7.0	6.9	6.3	6.3
FTE share	*%*	81	80	79	78	76

Source: (CSO, 2012a, CSO, 2012b & unpublished CSO Structural Business Statistics)

It is evident (see Table 2) that tourism industries are more labour intensive when compared with non-tourism industries. Caution must be exercised however when comparing numbers of persons engaged or employed over time, as the structure of employment across economies or within economic sectors can change quite dramatically and rapidly. Both entering and departing recession, quite significant changes in the use of part-time and full-time labour can be experienced. For example, full-time employment accounted for 83% of total employment in Ireland during 2006 but by 2010 had fallen to 77% (CSO, 2012b: Table 1a)[4] For this reason, Full-Time Equivalent (FTE) labour provides a better measure of real labour utilisation over time. Comparing the two measures of employment for the tourism industries in 2010, the FTE measure was 46,700 persons lower than the simple head-count figure, a reduction of 23%. The FTE measure also shows that the real fall in labour utilisation between 2006 and 2010 has been greater than the reduction in the simple head-count implies; closer to a 11% reduction than the 6% fall suggested by the simple head-count numbers (see Figure 4).

Figure 4 – Labour Utilisation in the Tourism Industries, 2006 – 2010
(Base: Year 2006 = 100)

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[4] For an interesting discussion around this trend see Walsh, K. (2012), "Wage Bill Change in Ireland during recession – how have employers reacted to the downturn?"

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When expressed in index form, the change in employment trend is clear (see Figure 4). The widening gap between the two lines, illustrates the continued substitution from full-time to part-time labour.

Figure 5 – 2010 County Tourism Dependency Ratios – Enterprises
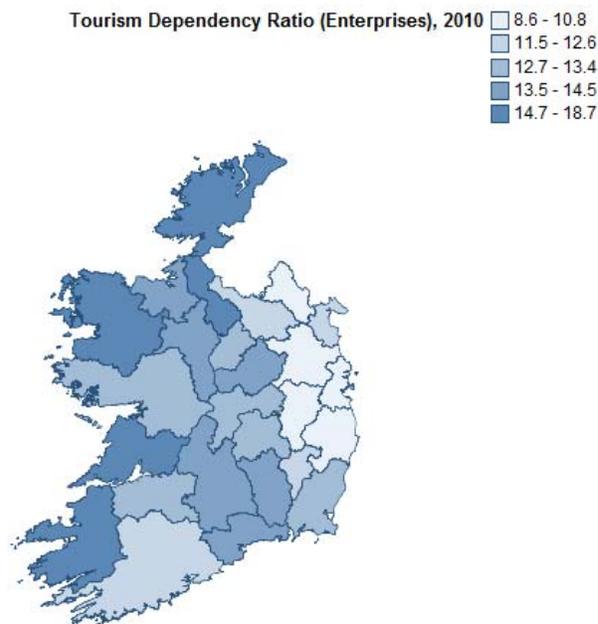
As already noted, these are enterprise data and not local units, and consequently, these estimates probably incorporate a bias in absolute terms towards Dublin (the Capital city), where more head offices are located. In turn, this may overstate the importance of the tourism industries to regions outside 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

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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). Notwithstanding this, the Enterprise - TDRs give a reasonably accurate regional distribution of enterprises and provide a robust and intuitive indicator of the importance of tourism enterprises in the different regions.

Figure 6 – 2010 County Tourism Dependency Ratios – Employment
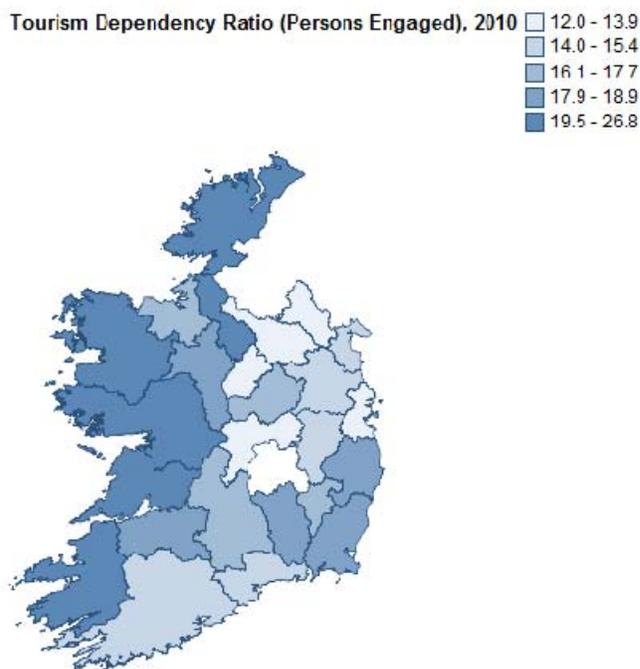
Drawing conclusions from the examination of persons engaged in enterprises must be done with care, as this excludes employment in non-market sectors and agriculture (which in 2010 accounted for more than 31% of total employment (CSO, 2012b)). As these sectors are not currently included in the business register held by CSO, employment for these sectors are not available at county level. Again this introduces a bias as the public sector tends to be located in the larger urban centres whereas agriculture is more important to the more rural midland and western counties. Despite this, the regional patterns of the Employment - TDRs are revealing and present a similar pattern to that shown in Figure 6. In particular they illustrate the relative importance of tourism to the western regions.

Again it must the stressed the HQ effect must be taken into consideration when analysing these data. For both enterprises and employment, the absolute numbers attributed to county Dublin is likely to be overstated (because of the *enterprise – local unit* issue noted earlier). As a result the employment TDRs for the counties outside Dublin are likely to be overstated, as tourism industries are typically single unit enterprises. That said, the regional patterns are unlikely to change much, although the absolute values of the regional employment (and income) TDRs will reduce. A methodology to correct for this bias is currently being developed.

Notwithstanding the issues raised regarding the regional absolutes, the broad regional and spatial patterns are consistent. From a policy perspective these patterns are important as some the counties with the highest TDRs (particularly those along the western seaboard), are some of the most deprived counties in the State as measured by per capita Household Disposable Income (CSO, 2012c). 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 ready supplies of workers, universities and research capacity (Clinch et al, 2002; Doring et al, 2006).

Employee Characteristics

Persons employed in tourism industries are typically younger than those employed across the wider economy; on average 3 years younger and with a difference in median age of between 4 and 5 years. The proportions aged less than 35 years old in the tourism sector is significantly higher than that for the wider economy (See Table 3).

Table 3 – Mean, Median Age & Proportions of Workforce Aged < 35, 2006 - 2010

Year	All Sectors Mean	Tourism Mean	All Sectors Median	Tourism Median	All Sectors <35	Tourism <35
	Age	*Age*	*Age*	*Age*	*%*	*%*
2006	34	30	31	26	55.4	63.7
2007	34	30	31	27	55.2	64.4
2008	34	31	32	27	53.9	62.8
2009	35	32	33	29	51.4	60.5
2010	36	33	33	29	49.3	59.1

Source: Dept. of Social Protection

The tourism industries typically employ a greater proportion of women than the wider economy as a whole (See Table 4). In particular, the Administrative & Support Services employ a high proportion of women (59% in 2010). In contrast, the Transportation & Storage industries involved in tourism employ a significantly lower proportion (24% in 2010).

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Table 4 – Proportion of Female Persons Engaged in Tourism & All Sectors, 2006 – 2010

NACE Rev. 2 - Sector	2006	2007	2008	2009	2010
	%	%	%	%	%
Transportation & Storage	23.4	25.6	24.9	24.3	24.3
Accommodation & Food Services	55.0	54.4	53.5	52.9	52.3
Administrative & Support Services	64.8	63.7	63.0	61.6	59.4
Arts, Entertainment & Recreation	46.4	46.3	45.9	46.1	46.3
Tourism Sector	50.4	50.6	49.2	48.4	47.8
All Sectors	38.1	38.5	39.4	41.0	41.5

Source: Dept. of Social Protection

The Tourism sector typically employs more non-nationals than does the wider economy. For example, in 2010, almost 35% of those employed in the tourism sector were non-national compared with only 22% for the economy as a whole (See Table 5). Within the Tourism sector, NACE Section H (Accommodation & Food Services) employed the highest proportion of non-nationals (41% in 2010). Within NACE Section G (Transportation & Storage) the increase in non-nationals employed between 2006 and 2010 is striking, increasing from 13% in 2006 to 21% in 2010.

Table 5 – Proportion of Non-Nationals Engaged in Tourism & All Sectors, 2006 – 2010

NACE Rev. 2 - Sector	2006	2007	2008	2009	2010
	%	%	%	%	%
Transportation & Storage	13.2	18.6	20.9	20.3	21.1
Accommodation & Food Services	37.0	41.7	43.7	42.2	40.6
Administrative & Support Services	26.9	29.2	30.2	27.1	28.6
Arts, Entertainment & Recreation	16.1	18.4	19.1	18.0	17.2
Tourism Sector	31.4	36.1	37.6	36.0	34.9
All Sectors	19.5	22.8	23.7	22.5	21.9

Income

Studies have shown that age, gender, nationality along with other variables such as experience and educational attainment all have an impact on income (ref). Consequently, the 'superficial' income gap of 35% in 2010 (See Table 6) is probably overstated. The data presented earlier, shows that the tourism sector employs a greater proportion of women, younger people and non-nationals, and this probably explains or accounts for some of the gap. What is not clear at this stage is whether differences in educational standard and work experience would explain away any remaining gap. In order to conduct such an analysis, such data would be required so that standard OLS and Blinder-Ocaxa models can be applied[5].

Table 6 – Comparison of Income in the Tourism & All Sectors, 2006 - 2010

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[5] See CSO (2012d) and NES Supplementary Study and Foley, P & F. O'Callaghan (2009)
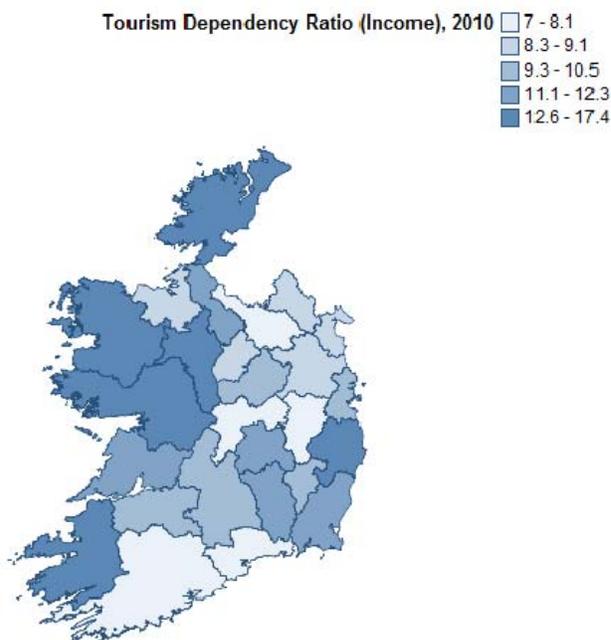
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Year	Total Income – Tourism Industries	Total Income – All Industries	Average Income per Employee – Tourism Industries	Average Income per Employee – All Industries	Average Income Gap	Average Income Gap
	€ Billion	€ Billion	€ 000	€ 000	€ 000	%
2006	4.2	42.8	21.4	31.8	10.5	32.9
2007	4.5	47.4	22.1	33.3	11.2	33.7
2008	4.8	48.1	23.1	34.3	11.2	32.6
2009	4.3	40.8	22.6	33.4	10.8	32.3
2010	3.9	38.1	21.3	32.9	11.6	35.3

Source: P35 Revenue Commissioners

Table 6 shows that since 2008 average incomes have fallen in both the tourism sector (-7.8%) and across the wider economy (-4.1%) but that the fall has been more significant in the tourism sector. This difference is reflected in the growing gap in average income. It should be noted that Table 6 only outlines employee incomes and does not include income earned by proprietors and directors (employee account for approximately 92% of all persons engaged in the tourism sector and 91% of all those engaged in the economy as a whole).

As has been evident with enterprise and employment and TDRs, income TDRs are not homogeneous across the tourism industries or the regions (See Figure 7). The importance of tourism incomes to the economies of the western regions is evident. This is a useful indicator as remuneration of employees is an important element of GVA.

Figure 7 – County Tourism Dependency Ratios – Income, 2010

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Future potential

By linking a number of datasets at a micro-data level a broad range of analyses are possible. A small sample of the possible national and regional analysis is presented in this paper. A considerably wider range of analysis is possible (see Sakowski, 2012; MacFeely at al, 2011 for some examples). By matching or linking micro-data, a wide range of complementary regional indicators can be developed, such as, metrics on size class of enterprises or survival rates of enterprises classified by nationality of ownership. Other composite indicators, such as, *quality of work* indicators or model indicators like concentration or competitiveness indicators can also be developed using the type of data sources outlined above. Potentially even more sophisticated analyses can also be developed, such as, tracking spatial migration of temporary workers, lifecycle working patterns or determining relative income costs.

Conclusion

The data show, the tourism accounted for 12% of all enterprises operating in Ireland in 2010 and accounted for 11% of all employment. This pattern was not uniform across the regions of Ireland; along the west coast of Ireland in particular, the data illustrate clearly that tourism is very important to those regional economies. The data also show that despite the economic downturn, tourism industries appeared to have weathered the recession and are performing well relative to the broader economy. Employment in the Tourism industries has clear structural patterns; the tourism sector employs more women, more young people and more non-national than does the economy as a whole. Employees in the tourism sector appear to be paid a sizeable negative income pay gap relative to employees in the rest of the economy (-35% in 2010). It is likely that this apparent pay gap is overstated owing to the nature and structure of tourism employment. With additional data on experience and education, a more comprehensive analysis could be done. What is clear however is that gross mean annual incomes have fallen in the tourism sector since 2008 by -7.8%.

More importantly, the approach adopted here was wider lessons and implications for tourism statistics which are traditionally 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. Realistically the traditional methods of compiling tourism statistics (i.e. from survey data) cannot provide robust, detailed, small area or regional tourism information unless a sophisticated supply side data infrastructure is in place. Even in the event that such an infrastructure does exist, it will most likely be limited to collective accommodation and therefore will not provide a comprehensive view of regional tourism activity. Thus alternate approaches to compiling sub-national statistics and deriving indicators must be considered. In particular, administrative datasets which provide regional information or large commercial datasets arising from tourists' electronic finger prints should be explored and exploited.

This paper has illustrated just some of the data and analyses that can be undertaken using business registers and other administrative data sources. There are a number of advantages to utilising business registers and other administrative taxation and demography information; they provide large, robust data sources that are already compiled to support the wider body of business statistics or state administrative systems. Utilising these data should therefore be inexpensive and impose no additional response burden. This approach consequently offers a sustainable approach to compiling regional tourism indicators into the future. Although not perfectly aligned with concepts like tourism demand, this approach nevertheless offers high quality, policy relevant information. 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 biases arising from poor tax compliance. However EU member states, in compiling their business demography data, should have adjusted for such bias. Consequently, the TDRs derivable from the business demography data (and many other administrative sources) offers a robust, inexpensive and internationally comparable approach to compiling indicators of tourism performance at the sub-national level.

Appendix 1 – Tourism Industries identified in Ireland

CSO Tourism Industries

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

* Activities of sports clubs (93.12) excluded

Appendix 2 – Business Register Coverage - NACE Rev. 2 (Sections)

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

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Appendix 3 – Data Sources

This study uses three main data sources: CSO Business Demography, the Revenue Commissioner Employer P35 Tax File and the Department of Social Protection Client Record File. These data files are described below:

(1) CSO - Business Register

The primary source data for this study are the Business Demography statistics, published by the Central Statistics Office in Ireland, in compliance with EU legislation[6]. 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[7]. These register data are assembled using information provided by the Revenue Commissioners (the Tax authorities) covering all companies, individuals and partnerships that register with the Revenue Commissioners for VAT, Corporation Tax or Income Tax or as employers.

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 – R (see Appendix 2). Thus, Agriculture and Non-market/Public services sections are excluded. The CSO are currently extending the coverage of the business register to include these sectors by the end of 2013.

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 (although, it should be noted that the quality of the turnover data is not sufficiently good to allow publication). Other information that will be available in the future will include nationality of ownership.

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 (See section Regional Demography). Enterprises with an 'Unknown' address are generally registered outside the Republic of Ireland for tax purposes. 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

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[6] 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).

[7] 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.

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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, directors and casual or temporary workers.

(1) Revenue Commissioners – Employer P35

Every employer in the State must file a return to the Revenue Commissioners each year, detailing their employer registration number (PREM number) and details of every employee on their payroll during the reference year. Employee details include their personal identifier (PPSN), number of weeks worked during the year, and employee's net pay. The total number of weeks worked by all employees for each employer is calculated and this figure divided by 52 is used as an annualised equivalent for the number of employees working a full year for the employer. This figure is used as the basis for the employment data published in the Business Demography release. The P35 file also allows data on businesses from the Business Register to be linked to the individual employees working for that business.

(2) Department of Social Protection – Client Record System

Allocation of PPSN numbers is the responsibility of the Department of Social Protection. These personal identifiers are allocated to two distinct groups: new born children; and immigrants. All births in Ireland are recorded by the General Registrations Office and details are forwarded to DSP so that a PPSN can be allocated. For Immigrants, applications for a PPSN must be supported by documentation such as birth certificate and passport from their country of origin. Nationality is taken as stated by the applicant, subject to their supporting documentation. Where a country name is in dispute (e.g. Burma and Myanmar, either is accepted). Date of birth and gender are verified by DSP before the PPSN is allocated. Official records are updated with any subsequent errors detected.

A complete extract of the DSP Client Record System is provided to the CSO on a quarterly basis. Typically these data are made available at T+13 weeks. So for example, CSO has CRS data up to the end of September 2012.

Once the data are received in CSO the data are partially anonymised for added confidentiality. So all names are removed, dates of birth are perturbed by setting the days to the first of the respective month and PPS Numbers are removed and replaced with an artificial or protected CSO identifier that still facilitates microdata matching.

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