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Employment in the Irish Tourism Industries: Using Administrative Data to conduct a Structural and Regional analysis

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Abstract

This paper profiles employment in the tourism industries in Ireland. Sourcing data from the Business Register compiled by the Central Statistics Office in Ireland and other administrative data held by the Revenue Commissioners and the Department of Social Protection '*Tourism Dependency Ratios*' for employment and income are derived and mapped to the NUTS 4 regions. Full-Time Equivalent (FTE) estimates of employment are also presented to provide a more comprehensive view of the structure of that employment. By linking these data sources at a micro-data level, new metrics on age, gender, income of those working in the tourism industries are derived to provide a richer structural analysis and also derive composite '*Quality of Work*' indicators. These indicators illustrate how the tourism supply side can be analysed and understood from a regional and spatial perspective.

Keywords: business registers, administrative data, tourism dependency ratios

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 NACE class level[1]. Traditional Labour Force Surveys, for example, may not be able to provide the level of detail required to estimate employment for tourism industries even at a national level. For this reason, traditional tourism statistics have tended to focus on demand side surveys, with relatively less focus on the supply side, apart from accommodation arrivals and bed-night statistics.

At the sub-national level, the challenges of compiling tourism statistics magnify. However, there are a range of data sources already in existence, although not typically associated with tourism statistics that may provide useful complementary information.

Administrative and similar large datasets have a number of advantages, namely; 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, they usually require extensive work in order to derive usable statistical information. So there is a trade-off; administrative or other very large datasets are realistically the only source of high quality, sub-national data available but these data will, most likely, not align perfectly with tourism statistics concepts or the traditional metrics associated with tourism.

This paper builds on previous work (MacFeely et al, 2011) and the excellent work done by (Sakowski, 2012). At the core of the analyses presented in this paper are business demography statistics. These data are linked at the micro level to other administrative tax and social welfare data to provide broader regional analyses than have previously been possible in Ireland. By constructing a census database of the tourism industries some of the gaps in our understanding of tourism industries and employment at a regional level can be

[1] NACE is the economic activity classification used by Eurostat. Class level corresponds with 4 digit level disaggregation.

addressed; for example, how important is tourism to different regions or is the structure of tourism employment different to that of other industries. The gaps in Irish national and sub-national tourism statistics are clearly outlined in a number of recent papers and reports (Deegan et al, 2004; MacFeely, 2006 & 2007; ITIC 2011). Typically these gaps can be summarised as lack of detail regarding expenditure and regional data and a paucity of information more generally on same-day visits. These reports also noted a lack of information on the performance of tourism businesses. 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).

In the current economic climate, where National Statistical Institutes (NSIs) and Tourism Authorities (NTAs) have contracting budgets, and there is considerable pressure to reduce respondent burden, it is important that all available data sources are examined and utilised to the maximum extent possible. The Business Demography dataset has the advantage of already being compiled and consequently, the only cost of using these data is the marginal cost of conducting new analyses. When linked at a micro-data level to other administrative data sources, the power of these data grow significantly. Some examples of the type of complementary information and analyses that can be derived, such as, Tourism Dependency Ratios (TDRs) are presented.

What are tourism industries?

The tourism industries are formally defined by the United Nations World Tourism Organisation (UNWTO) International Recommendations for Tourism Statistics (UNWTO, 2010: 42) - See Figure 1.

Figure 1 – Tourism Industries (UNWTO – IRTS)

	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 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 NACE class level i.e. a fine disaggregation of economic activity classification (5 digits) would be required.

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 (ref) this accounts for 2,000 farms/stables and approximately 2,400 persons employed on a FTE basis (CSO, 2008) but this is outside the scope of this study (see Section on Data sources used).

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 summarised below:

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[2]. 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[3]. 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-

[2] 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).

[3] 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.

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 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.

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.

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 anonymous 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 micro data matching.

Conceptual scope

The information in this paper is based on enterprise and employment demography in the tourism industries, irrespective of whether the products or services sold by these enterprises were consumed by tourists or not. 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.

Enterprise Demography

Although not the focus of this paper, it is useful to provide some broad context on enterprise demography. Table 1 shows the number of enterprises in the tourism sector compared with all enterprises for the years 2006 to 2010.

Table 1 – Enterprise Demography, 2006 - 2010

Year	Tourism Industries	All Industries	Tourism Dependency Ratio - Enterprises
	000's	*000's*	*%*
2006	23.0	217.2	10.6
2007	23.3	221.9	10.5
2008	24.1	222.1	10.8
2009	24.0	212.9	11.3
2010	23.5	201.7	11.6

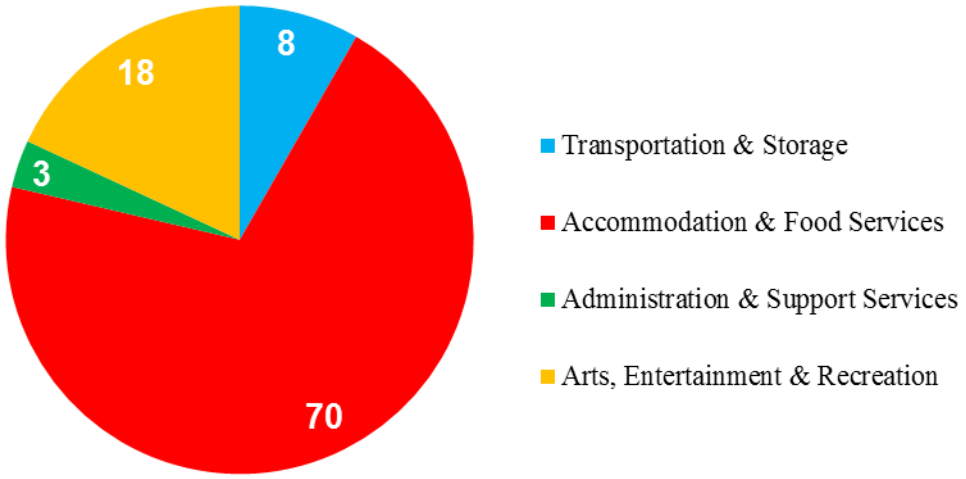
Source: (CSO, 2012a)

In 2010, enterprises operating in tourism industries accounted for 11.6% (approximately 23,500 enterprises) of all enterprises in the State. Since 2006, the Tourism Dependency Ratio (TDR) for enterprises has been steadily increasing, suggesting that enterprises in the tourism sector are faring better than enterprises generally. This is not particularly surprising as some sector, most notably construction, has experienced a significant loss of enterprises since 2008. The change in the number of enterprises in Table 1 is the net change (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 described as 'creative destruction' (ref).

Figure 2 shows that Accommodation and Food Services account for 70% of all tourism industries. The next most important sector is Arts, Entertainment & Recreation, accounting for 18% of all tourism enterprises.

Figure 2 – Tourism Enterprises by Sector (%), 2006 - 2010



Employment Demography

Table 2 shows the number of persons engaged in the tourism sector compared with overall economy for the years 2006 to 2010.

Table 2 – Employment Demography, 2006 - 2010

Year	Numbers of Persons Engaged - Tourism	Total Employment	Tourism Dependency Ratio - Employment
	000's	*000's*	%
2006	212.3	2,048.3	10.4
2007	220.2	2,122.8	10.4
2008	225.0	2,099.7	10.7
2009	206.2	1,928.6	10.7
2010	198.8	1,847.9	10.8

Source: (CSO, 2012a & 2012b)

In 2010, persons engaged (i.e. total employment – both employees and owner/proprietors) in tourism industries accounted for 10.8% (approximately 199,000 persons) of all employment in the State[4]. Similar to the pattern seen with enterprises, the employment TDR has steadily increased since 2006. Again, it must be stressed, the change in employment is the net change. So the net loss of employment of 13,500 masks a larger job churn.

From Table 3, it is evident that tourism industries are more labour intensive when compared with the economy overall. An average tourism enterprise employs between 2.2 and 2.4 more persons than an average enterprise in the wider economy.

Table 3 – Labour Intensity, 2006 - 2010

Year	Tourism			All Sectors		
	Number of Enterprises	Total Employment	Average Employment per Enterprise	Number of Enterprises	Total Employment	Average Employment per Enterprise
	000's	*000's*	*Unit*	*000's*	*000's*	*Unit*
2006	23.0	212.3	9.2	217.2	1,482.4	6.8
2007	23.3	220.2	9.4	221.9	1,563.0	7.0
2008	24.1	225.0	9.4	222.1	1,537.7	6.9
2009	24.0	206.2	8.6	212.9	1,343.3	6.3
2010	23.5	198.8	8.5	201.7	1,270.9	6.3

Source: (CSO, 2012a)

Caution must be exercised 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)[5] For this reason, Full-Time Equivalent (FTE) labour provides a better measure of real labour utilisation over time.

[4] 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).

[5] 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?"

Table 4 presents the number of persons engaged in the tourism industries in both simple head-count and full-time equivalent units.

Table 4 – Labour Utilisation in the Tourism Sector, 2006 – 2010

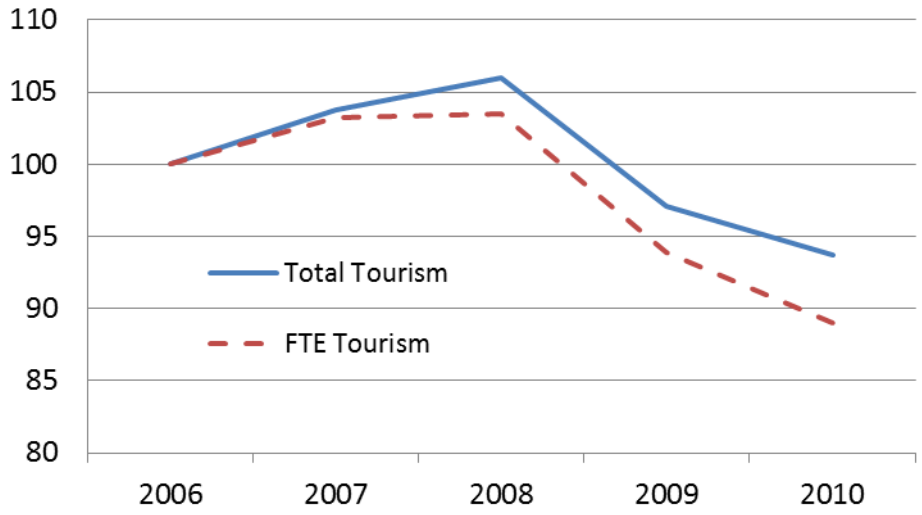
Year	Numbers of Persons Engaged - Total	Year-on-Year Change	Numbers of Persons Engaged - FTE	Year-on-Year Change	FTE Share
	000's	*%*	*000's*	*%*	*%*
2006	212.3		171.0		81
2007	220.2	3.7	176.5	3.2	80
2008	225.0	2.2	176.9	0.2	79
2009	206.2	-8.4	160.5	-9.3	78
2010	198.8	-3.6	152.1	-5.2	76

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

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.

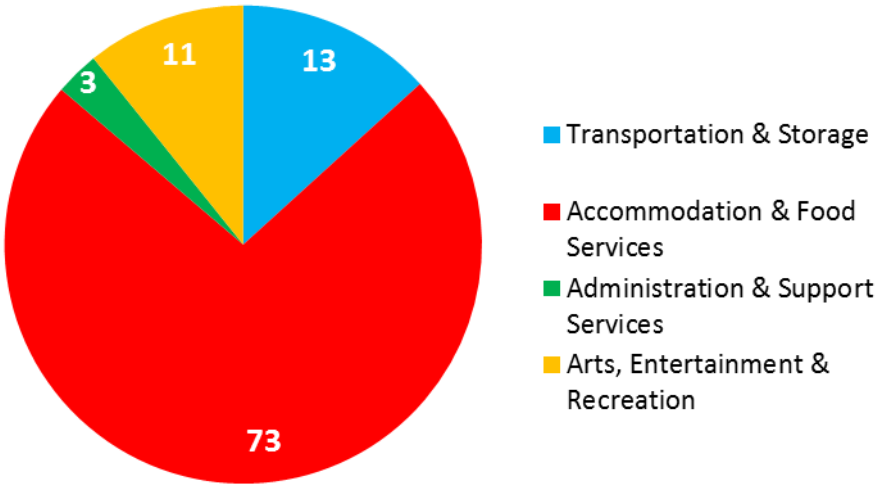
Figure 3 – Labour Utilisation in the Tourism Industries, 2006 – 2010

(Base: Year 2006 = 100)



When expressed in index form, the change in employment trend is clear (see Figure 3). The widening gap between the two lines, illustrates the continued substitution from full-time to part-time labour. Thus in Table 4 the FTE share has fallen from 81% in 2006 to 76% in 2010.

Figure 4 – Tourism Employment by Sector (%), 2010



The contribution of persons engaged to the overall sector is broadly similar to that of enterprises. Figure 4 illustrates the contribution of the main tourism industries to overall tourism employment. In 2010 there were over 145,000 persons engaged in the Accommodation & Food Services (NACE Section I), accounting for 73% of employment in the tourism industries. Less than 6,000 persons were employed in Administration & Food Services (NACE Section N).

Figure 5 – Tourism FTE by Sector (%), 2010

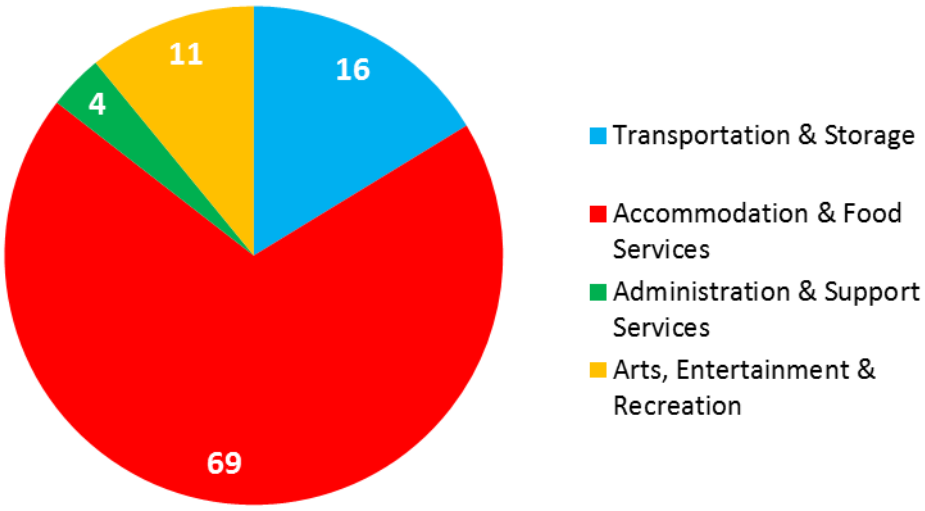


Figure 5 illustrates the contribution of employment in the main tourism industries to the overall sector on a FTE basis. The lower usage of part-time labour in the Transportation & Storage (12%) and the Administration & Support Services (17%) shows their contribution from a labour utilisation perspective to be greater than perhaps realised (See Table 5).

Table 5 – Labour Utilisation in the Tourism Industries, 2010

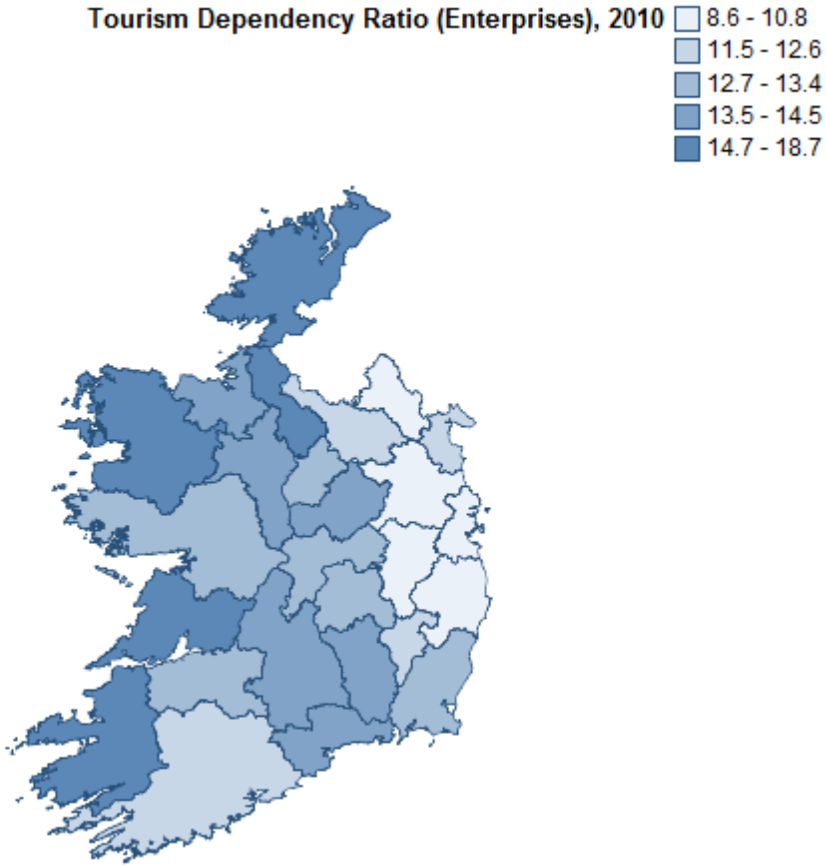
Sector	Total Employed		Total FTE	
	000's	*%*	*000's*	*%*
All Tourism	198.8		152.1	
Full-Time	115.3	*58.0*	115.3	*75.8*
Part-Time	83.5	*42.0*	36.8	*24.2*
Transportation & Storage	26.4		24.8	
Full-Time	23.1	*87.7*	23.1	*93.4*
Part-Time	3.3	*12.3*	1.6	*6.6*
Accommodation & Food Services	145.0		105.4	
Full-Time	74.9	*51.6*	74.9	*71.1*
Part-Time	70.1	*48.4*	30.5	*28.9*
Administrative & Support Services	5.9		5.4	
Full-Time	4.9	*82.6*	4.9	*90.6*
Part-Time	1.0	*17.4*	0.5	*9.4*
Arts, Entertainment & Recreation	21.5		16.5	
Full-Time	12.4	*57.7*	12.4	*75.1*
Part-Time	9.1	*42.3*	4.1	*24.9*

Regional Demography

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, the data are much more revealing, as the relative importance of the tourism industries to each region becomes apparent.

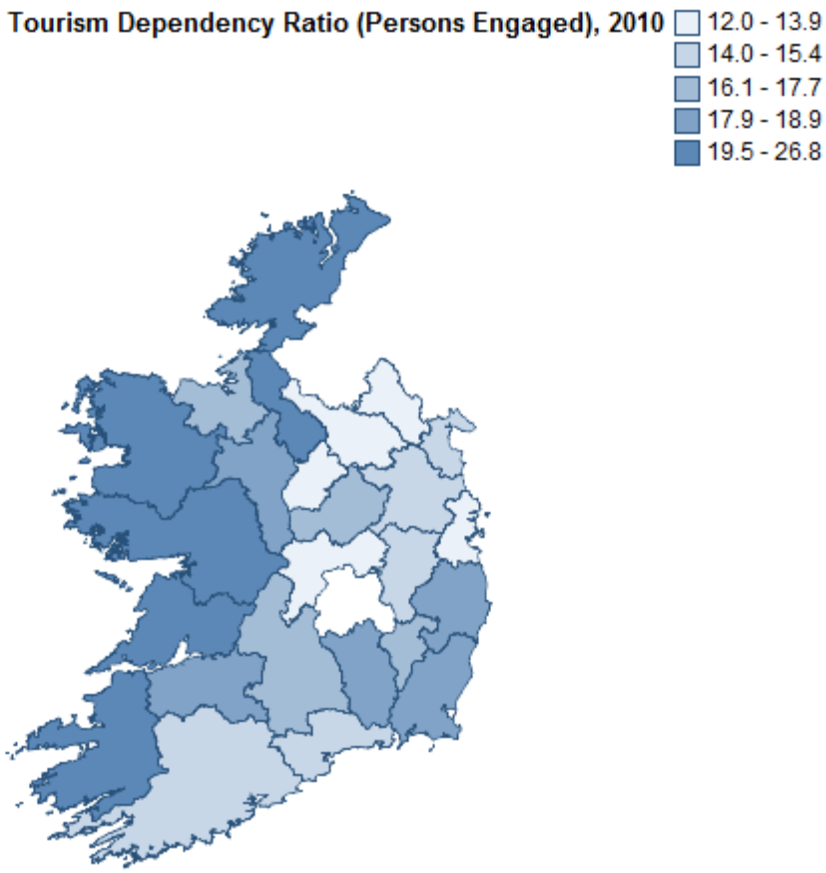
From a regional perspective, Figure 6 clearly illustrates that enterprise TDRs varied considerably across Irish counties (NUTS 4 level) in 2010. Tourism enterprises are relatively more important to counties along the western seaboard, and considerably less important in relative terms to the Greater Dublin Area and Cork. This is intuitive as these regional economies contain the two main cities and have more diversified regional economies, with larger industrial bases and proportionately more foreign direct investment and universities. Thus the relative importance of tourism industries is diluted, even though in absolute terms tourism is an important sector. The Enterprise TDR for Dublin was 8.6% compared with Kerry, where the enterprise TDR was 18.7%.

Figure 6 – 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 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 7 – 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 6).

Table 6 – 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

Again, considerably different patterns are evident across the regions. Typically, Dublin has the smallest difference in age. In 2010, the difference in median and mean age between the tourism sector and wider economy was 3 and 2 years respectively. For Roscommon, the median and mean differences were 7 and 5 years respectively.

Figure 8 – Proportion of Workers Aged < 35 Years Old
in Tourism Industries by County (NUTS 4 Region), 2010

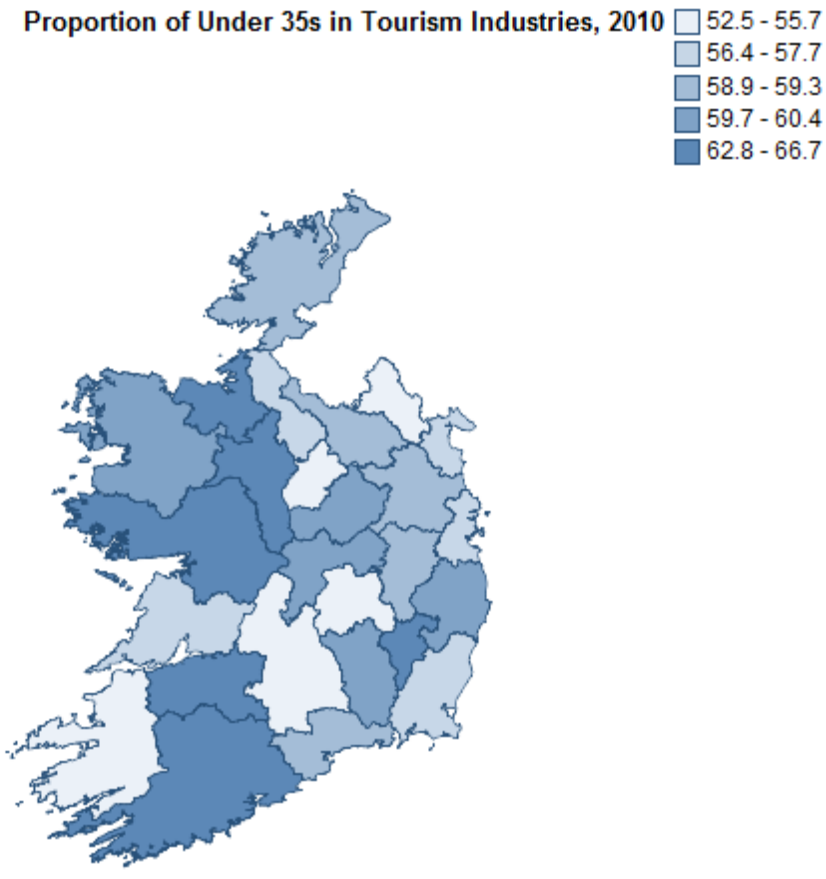


Figure 8 suggests there is no clear regional pattern in the differences in proportion of young people (i.e. less than 35 years old) employed by the tourism sector vis-à-vis the total economy in each region.

The tourism industries typically employ a greater proportion of women than the wider economy as a whole (See Table 7). 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).

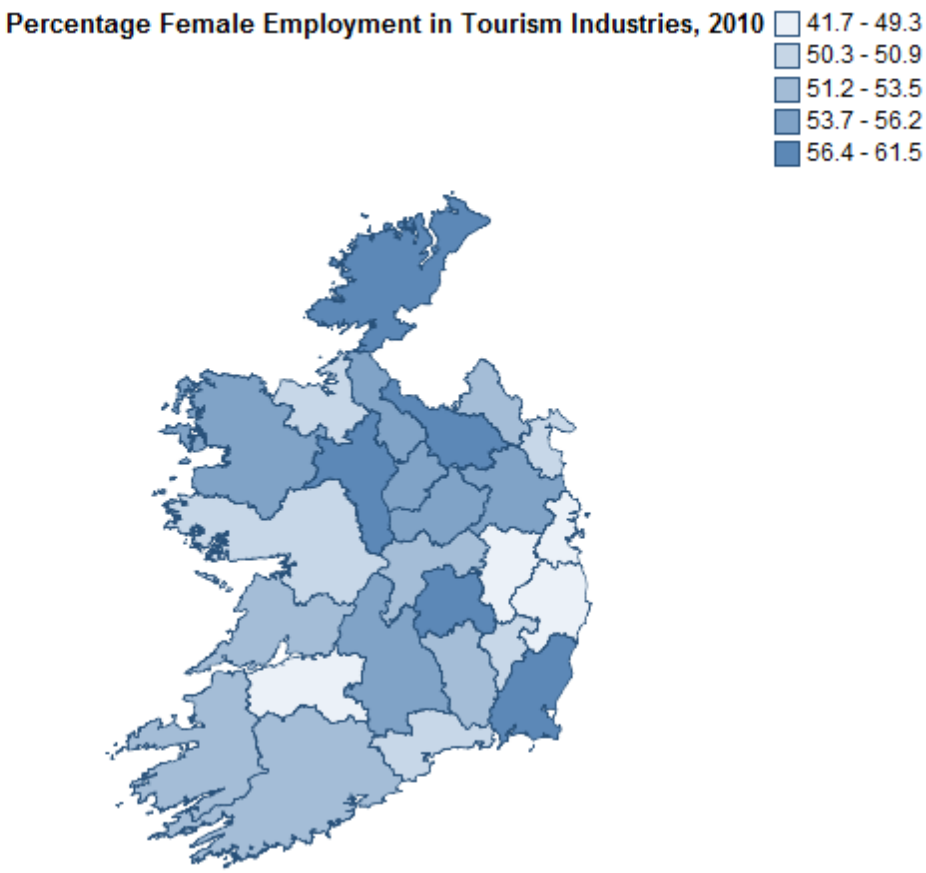
Table 7 – Proportion of Female Persons Engaged in Tourism & All Sectors, 2006 – 2010

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)

In this case, Figure 9 suggests tourism enterprises through the spine of the midlands, from the border down to the SE region, employ a greater proportion of females than enterprises in general. There is no obvious or intuitive reason for this.

Figure 9 – Proportion of Females Working in the Tourism Industries County (NUTS 4 Region), 2010



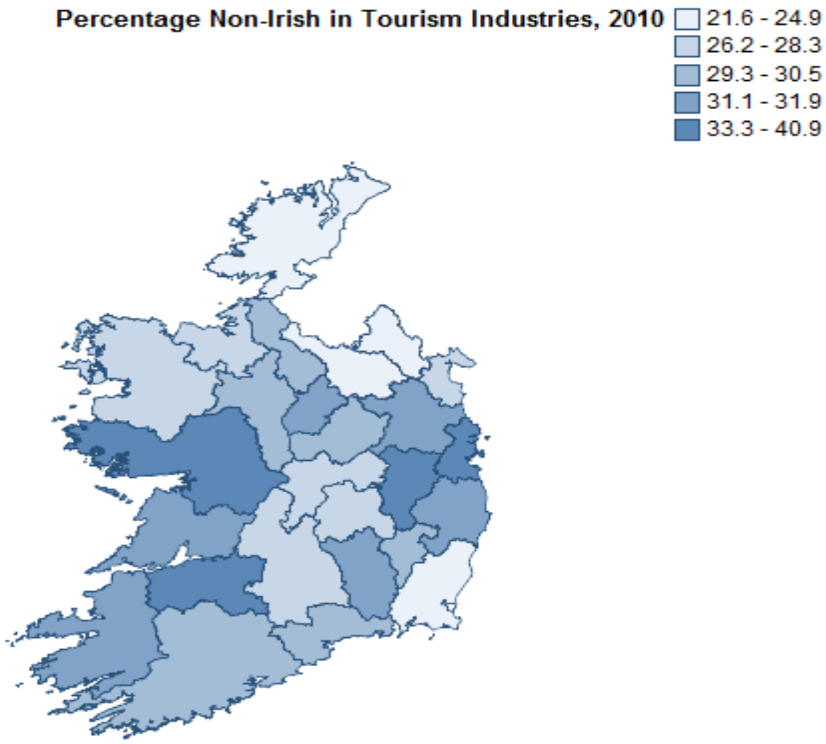
The Tourism sector typically employs more non-nationals than does the wider economy. For example, in 2010, almost 35% of those employed in the tourism sector were non-national compared with only 22% for the economy as a whole (See Table 8). Within the Tourism sector, NACE Section H (Accommodation & Food 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 8 – 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

The distribution of non-nationals working in the tourism sector is not homogeneous across the regions in Ireland. Figure 10 shows that the counties where tourism sectors employ the highest proportion of non-nationals are those with cities; Dublin, Galway and Limerick. This is perhaps not surprising as cities will tend to be more multicultural. The obvious outlier to this pattern is Cork, where the proportion is quite low. This perhaps reflects the very large size of the county beyond the city or perhaps says something about the relative low level of multiculturalism within Cork generally.

Figure 10 – Proportion of Non-Nationals Working in the Tourism Industries County (NUTS 4 Region), 2010



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 9) 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[6].

Table 9 – Comparison of Income in the Tourism & All Sectors, 2006 - 2010

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

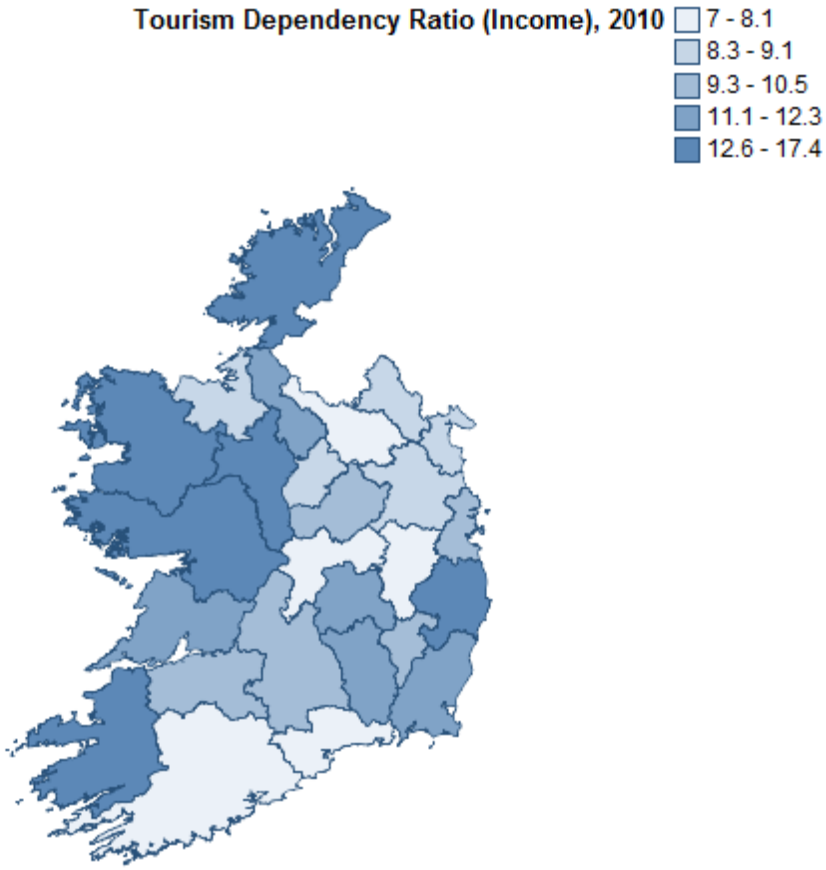
Table 9 shows that since 2008 average incomes have fallen in both the tourism sector (-7.8%) and across the wider economy (-4.1%) but that the fall has been more significant in the tourism sector. This difference is reflected in the growing gap in average income. It should be noted that Table 9 only 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 11). The importance of

[6] See CSO (2012d) and NES Supplementary Study and Foley, P & F. O'Callaghan (2009)

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 11 – County Tourism Dependency Ratios – Income, 2010



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

1 – Tourism Industries identified in Ireland

		NACE Rev.2
1	**Accommodation services for visitors**	
	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 2

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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