

Measuring Tourism: Developing a Regional Level Framework for assessing Tourism Impacts

Elena Konovalov* & Laurie Murphy^ & Gianna Moscardo^o

*James Cook University, Australia, elena.konovalov@my.jcu.edu.au

^James Cook University, Australia, laurie.murphy@my.jcu.edu.au

^oJames Cook University, Australia, gianna.moscardo@my.jcu.edu.au

Abstract:

In the field of tourism impacts research it is often assumed that certain characteristics of tourism are related to the nature and extent of tourism impacts on the destination's community well-being. However, a standard set of measures for tourism that allows comparison between destinations and facilitates the establishment of causal relationships between specific characteristics of tourism and associated impacts has not yet been established. Previously, Faulkner and Tideswell [Faulkner, B., & Tideswell, C. (1997). A Framework for Monitoring Community Impacts of Tourism. *Journal of Sustainable Tourism*, 5(1), 3 - 28] introduced a framework for monitoring social impacts of tourism, which identifies four facets of tourism in a destination: stage of tourism development, visitor-resident contact, types of visitors, and seasonality. A set of objective measures for those facets has been devised and tested on three tropical Australian regional communities. This paper reports on the process of developing this objective measures framework and collecting and analysing the available data. The study found that the devised framework allows for the identification of differences in tourism development at a regional destination level and classification of tourism destinations according to the type and degree of tourism development. The paper concludes by outlining future directions for research into the impacts of tourism.

Keywords: social impacts of tourism, objective measures, destination, extrinsic dimension, North Queensland

Introduction

"Failure to specify details of the precise nature of tourists – their numbers, distributions, activities and other characteristics, as well as the settings in which tourism takes place – results in communication failures among researchers and between researchers and policy makers." (Wall & Mathieson, 2006, p. 63)

Tourism is frequently promoted as a developmental tool and a way to improve regional communities' well-being. However, as pointed out by McKercher (1993), the tourism industry consumes valuable community resources, requires specific infrastructure, and creates waste, all of which if not properly managed can lead to regrettable consequences for destination communities. Planning and managing tourism are indeed some of the major challenges faced by regional communities that seek to benefit from tourism development (Hall, 2000). Sustainable tourism development protects community interests and enhances residents' well-being. Assessing sustainability of tourism development at a destination includes assessment of its impacts on human- and ecosystem (Ko, 2005), and requires a systematic and holistic approach. Tourism researchers have examined the effects of tourism on the economy (by analysing contribution of tourism to income, sales, employment, government revenue, and imports), environment/land use, political environment/governance and society and culture, with relatively fewer studies focusing on social impacts of tourism (Sharma, Dyer, Carter, & Gursoy, 2008).

In the field of tourism impacts research it is often assumed that certain characteristics of tourism determine the nature and extent of tourism impacts on the destination's community well-being, with research not yet establishing specific links. McMinn (1998, p. 675) stated "[r]esearchers have long recognised that different forms of tourism will have variable impacts"; and studies by Haukeland (1984), Slee, Farr and Snowdon (1997), Stoeckl, Greiner and Mayocchi (2006), and Tsartas (1992) have found that different types of visitors and styles of tourism development are associated with different impacts on a destination community's well-being. However, a standard set of measures for tourism that allows for the comparison of tourism development between destinations and facilitates the establishment of causal relationships between specific characteristics of tourism and its associated impacts has not yet been established.

The aim of the study reported in this paper was to develop an objective tourism measures¹ framework, which would provide a systematic assessment of the degree and type of tourism development at a specific destination with particular relevance to the research of social impacts of tourism. This study is part of a bigger project that aims to answer the question 'For a given regional community, what type of tourism development should it pursue in order to maximise benefits and minimise negative consequences of that development for social aspects of regional community well-being?'. The larger project seeks to establish links between (1) characteristics of tourism at a particular destination, (2) characteristics of the destination community and (3) the nature and extent of tourism impacts on social aspects of destination community well-being. The paper will begin with a short review of research on social impacts of tourism, will then focus on Faulkner and Tideswell's (1997) theoretical framework for analysing social impacts of tourism and will

¹ The term 'objective measures' is used throughout this paper to represent measures capturing characteristics of a social phenomenon that can be expressed in terms of quantity or frequency (Land, Michalos, & Sirgy, 2012).

seek to identify objective measures applied in research for each of the Faulkner and Tideswell's four facets of destination's tourism. The paper will proceed by describing the application of the identified set of measures for tourism in three Australian tropical regional destinations, concluding with discussion of the challenges involved in systematically measuring the nature of tourism development in regional destinations.

Social Impacts of Tourism

'Social impacts of tourism' is an umbrella-like term that is used to describe the impacts of tourism on the lifestyle of residents (Butler, 1974); their social life, daily routines, habits, beliefs and values (Doğan, 1989); and on individual behaviour, family relationships, safety levels, moral conduct, creative expressions, traditional ceremonies and community organisation (Fox, 1977 as cited in Ap, 1990). Brunt and Courtney (1999) note that tourism development can lead to changes in the structure of society including such things as income growth, increased employment opportunities and local infrastructure and services, which tend to be perceived positively by destination residents. However, tourism can also lead to the emergence of new economically powerful groups, the alteration of traditions to suit the needs of visitors and changes to social and family values, which are often perceived negatively. Compared to economic and environmental impacts, social impacts of tourism are not as obvious, and their quantification and direct measurement are problematic. The difficulties associated with measuring social impacts have led to the use of indirect measures, such as assessing resident perceptions of social impacts (Milman & Pizam, 1988).

Perceptions of social impacts research has developed and matured over time moving from the setting of definitional and conceptual boundaries in 1980s, to theoretical and model development in 1990s, to the design and development of instruments and their testing in recent decades (Deery, Jago, & Fredline, 2012). Over time social impacts of tourism have gained recognition among researchers and now represent a prominent focus for tourism research. A significant number of studies assessing residents' perceptions of social impacts of tourism in various locations have been published (see Ap, 1990; Deery et al., 2012; Pearce, Moscardo, & Ross, 1996 for reviews). Although useful for creating lists of tourism impacts that occurred in particular settings, these studies often lack explanatory insights and produce conflicting findings. Harrill (2004) notes that the most studies of the perceptions of tourism impacts are highly specific to the area, are one off research projects, and usually pay limited attention to theoretical foundations of research. Deery, Jago and Fredline (2012, p. 65) in their recent critical review of research on social impacts of tourism conclude: "[t]he research has reached a stage where, using a medical analogy, the symptoms of the problem are being examined rather than its deep seated causes", with the authors arguing that more research is needed in this area to understand the mechanisms underlying residents' perceptions of tourism. This paper argues that having systematic quantitative measures of tourism at a destination and of the destination community's characteristics are essential for further research into the formation and extent of specific

social tourism impacts on community well-being. Further, for understanding social impacts of tourism, a holistic approach should be adopted that incorporates the quantitative analysis measures with analyses of the personal characteristics of residents, their perceptions of tourism and the reasons for formation of those perceptions.

Research on the Extrinsic Dimension of Social Impacts of Tourism

Faulkner and Tideswell (1997) introduced a theoretical framework for analysing the social impacts of tourism on community well-being which synthesised existing theoretical approaches in the field. The authors' review of research on social impacts identified a research gap in consistent comparative analysis methodology, and the devised framework aimed to address this gap. This framework identifies two key dimensions of social impacts of tourism: the extrinsic dimension, or characteristics of tourism destination and the nature of tourism it attracts; and the intrinsic dimension, or characteristics of residents' response to this tourism. Research into the extrinsic dimension of tourism impacts identifies differences *between* communities and the research into the intrinsic dimension identifies differences *within* a single community (Fredline, Deery, & Jago, 2006). Social impacts research has mostly utilised residents' perceptions of the impacts as proxies for the actual impacts. The resident perception approach has been used to study both the extrinsic (Diedrich & García-Buades, 2009; Johnson, Snepenger, & Akis, 1994; Sheldon & Var, 1984; Weaver & Lawton, 2001) and the intrinsic dimensions of the social impacts of tourism (Andriotis & Vaughan, 2003; Fredline, Jago, & Deery, 2003; Nunkoo & Ramkissoon, 2009; Ritchie & Inkari, 2006). Studies of the intrinsic dimension, however, represent the majority of research on perceptions of social impacts of tourism (Fredline et al., 2006). The extrinsic dimension of social impacts remains significantly under researched. Faulkner and Tideswell (1997), based on work by Butler (1980) and Doxey (1975), proposed the following facets of the extrinsic dimension: stage of tourism development, tourist/resident ratio, type of tourists and seasonality. These broad categories are described in further detail below.

Stage of Tourism Development

Usually destinations go through a development cycle with visitors initially coming in small numbers discovering the destination and its unique characteristics, then as awareness grows the destination becomes 'popular' and more visitors arrive, which in some cases leads to the destruction of the very features that attracted those visitors in the first place, and as a result tourism stagnates or decreases. Butler's Tourism Area Life Cycle (TALC) model is based on a product cycle model and represents the idea of a destination passing through a number of stages over time: an initial slow increase in tourists numbers, followed by a rapid growth and subsequent stabilisation/decline/rejuvenation (Butler, 1980). The TALC model is arguably the best known and the most extensively applied model of destination growth and change, as evidenced by the publication of a two volume edited book summarising the research on the model since 1980 (Butler, 2006a, 2006b). Despite the extensive application of the model, operationalisation of the model varies from study to study. Some studies use

a single measure as a proxy of stage of tourism development, such as percent of retail sales attributed to tourism (Allen, Long, Perdue, & Kieselbach, 1988; Long, Perdue, & Allen, 1990; Meng, Li, & Uysal, 2010), or number of visitors and beds in tourist accommodation establishments over time (Foster & Murphy, 1991; Ioannides, 1992; Pulina, Giovanna Dettori, & Paba, 2006), while others rely on a variety of measures (Hovinen, 2002; Johnson & Snepenger, 1993; Zhong, Deng, & Xiang, 2008). The measures by which the model is empirically tested are intended to determine the following characteristics of tourism development: its diversity, variation in growth patterns (i.e. speed or pace of tourism development), and its scale, all of which influence the impacts of tourism on a destination (Haywood, 2006). As a destination passes through the stages of the TALC model, the impacts of tourism on the community's well-being and their extent are said to change.

Visitor-Resident Contact

Contacts between residents and visitors vary in their regularity, intensity and type, with some encounters resulting in conflict (Barber, 2010). Typically, an increase in the number of visitors to a destination is associated with an increase in intensity of some tourism impacts and the emergence of others, such as crowding, litter and noise. Within the extrinsic dimension the intensity of contacts between visitors and residents is usually represented by density of tourists at a destination. The usual measure is average daily visitor density per 1000 population (or per square kilometre) which represents an average measure of domestic and international overnight visitors as well as day visitors that are present at a destination at any given day (de Albuquerque & McElroy, 1992; Liu, Sheldon, & Var, 1987; McElroy & de Albuquerque, 1998; McElroy & Hamma, 2010; Padilla & McElroy, 2005). As numbers of visitors relative to the local population and land area change the intensity of impacts change. This measure provides an easy to interpret indicator of the relative size of tourism at a destination, however other variables such as types of visitors and seasonality of their visits are also instrumental in understanding the nature of tourism impacts.

Types of Visitors

Different types of visitors are associated with different impacts on community well-being (Stoeckl et al., 2006). Depending on the needs of a particular community some visitors may be welcomed, while others may be perceived as nuisances. Uriely, Yonay and Simchai (2002) argue that a distinction should be made between 'type' and 'form' related attributes of tourism. Form represents "visible institutional arrangements by which tourists organise their journey" (based on a typology by Cohen, 1972), and type represents "less tangible psychological attributes" (based on a typology by Cohen, 1979) (Uriely et al., 2002, p. 521). While these two categories are not independent of each other, they represent separate units of analysis for the research on types of visitors. As this study is focused on the extrinsic dimension of tourism the form-related characteristics of visitors were chosen as a primary focus. Research on types of visitors has established that particular travel choices are

associated with particular demographic characteristics of visitors (Johns & Gyimóthy, 2002), therefore segmentation of visitors according to both trip related (such as length of stay and travel party) and demographic characteristics (such as age) is thought to facilitate the identification of certain types of visitors and their relative prevalence in a destination.

Seasonality

Variations in seasonality at tourist destinations can be visualised on a continuum, with destinations where visitors are only present for a short period during a year on one end and destinations where the number of visitors remains relatively steady during the year on the other end (Hartmann, 1986). It is commonly recognised that seasonality is caused by two main groups of factors: natural (related to climate/weather at a destination) and institutionalised (related to social norms, such as time of the year assigned for holidays) (Koenig-Lewis & Bischoff, 2005). Seasonality is associated with a higher intensity of social impacts of tourism at peak times and lower intensity during low season. Building on previous research, De Cantis, Ferrante and Vaccina (2011) propose a framework for analysing seasonality. They argue that seasonality of tourism at different destinations can be compared through analysis of two main features: pattern (changes of occupancy rates through the year) and amplitude (the difference between the off-season and peak-season occupancy rates).

Developing the Preliminary Framework

The commonly used variables and measures for the four facets of the extrinsic dimension of tourism are summarised in the Table 1 below. The summary provided in the Table 1 suggests a set of measures that facilitate the construction of a comprehensive profile of tourism at a destination and the objective comparison of destinations to each other. This section outlines the process of evaluating these measures at a destination level in Australia, including the selection of an appropriate geographical unit of analysis, a survey of available secondary data, and a description of the methods used for analysis of the available data. Even though the particular details of this section are somewhat specific to Australian context, the principles used for the development of the framework, such as close attention to the nature and limitations of the secondary data, substitution of the commonly applied variables and measures with suitable proxies where data are limited, and the examination of data across various geographical units, are universal.

Selection of Geographical Unit of Analysis

Units of analysis vary depending on the aims of a research project. For assessing the social impacts of tourism on community well-being, the analysis should be performed at a tourism destination level, as specific destinations tend to attract specific types of visitors that require specific type of infrastructure.

Table 1. Variables and Measures of the Extrinsic Dimension of Social Impacts of Tourism.

Variables		Possible Measures	Studies
Stage of Tourism Development	<ul style="list-style-type: none"> Scale of tourism development Diversity of tourism development Patterns of growth in tourism development Control over development Economic reliance on tourism 	<ul style="list-style-type: none"> Number of visitors Size of population Number and type of accommodation establishments Number of beds in accommodation establishments Building activity Percentage of foreign ownership Employment in tourism Percent of retail sales attributed to tourism <p>(Note: time series analysis of the above measures should be applied)</p>	<p>For the survey of studies between 1980 and 2002 see Lagiewski, 2006.</p> <p>Recent Studies: Agarwal, 2002 Diedrich & García-Buades, 2009 Garay & Cànoves, 2011 Hovinen, 2002; Meng et al., 2010 Pulina et al., 2006 Zhong et al., 2008</p>
	Visitor-Resident Contact	<ul style="list-style-type: none"> Density of tourists 	<ul style="list-style-type: none"> Average daily visitors density per 1,000 population Average daily visitors density per km²

Types of Visitors	<ul style="list-style-type: none"> • Trip characteristics • Demographic characteristics 	related	<ul style="list-style-type: none"> • Type of transport/ accommodation/ activities • Organised/ Independent trip • Length of stay • Travel party • Age/ Income/ Education • Family Lifecycle • Usual place of residence 	Andereck & Caldwell, 1994 Becken & Gnoth, 2004 Graham & Wall, 1978 Hsieh, O'Leary, & Morrison, 1992 McMinn, 1998 Stoeckl et al., 2006 Uysal & McDonald, 1989
Seasonality	<ul style="list-style-type: none"> • Pattern • Amplitude 	<ul style="list-style-type: none"> • Monthly occupancy rates of tourist accommodation establishments over time 	De Cantis et al., 2011; Jeffrey, 1985; Jeffrey, Barden, Buckley, & Hubbard, 2002; Koenig-Lewis & Bischoff, 2005; Lim & McAleer, 2001	

Aggregated level analysis performed at state and nation wide scale averages out specific impacts and provides limited insights for local, destination level policy-making and tourism management bodies. Australia has three geographical frameworks to be considered when choosing the unit of analysis at a destination or community level, with the majority of the available databases organised in these geographical units:

- Australian Statistical Geography Standard (ASGS), which is effective from July 2011 (Pink, 2011b) and replaces Australian Standard Geography Classification (ASGC) (Pink, 2011a). The smallest geographical unit of data in the intercensal years within ASGS is Statistical Area Level 2 (SA2), which replaced slightly bigger Statistical Local Areas (SLA) within the ASGC framework.
- Tourism Regions (TRs) – much bigger regions than SA2, with only 78 TRs for the whole of Australia (ABS, 2011a; 2012c).
- At a government level, the Australian States and Territories are subdivided into Local Government Authorities (LGAs) (ABS, 2011a; 2012a).

Note that there are also Postal Areas, Electoral Divisions and State Suburb geographical frameworks, but the data organised in those geographical units are limited.

The Destination Regions

As the focus of the project was on the links between tourism development and community well-being in Australian tropical destinations, it was necessary to find places that differed in their level of tourism dependency in order to establish links between the level and characteristics of tourism development and associated impacts on social aspects of community well-being. As a means of achieving this goal, three destinations were sought with varying degrees of tourism development: one with a very prominent tourism industry, one with the tourism industry being a part of the economic mix along with other major industries in the region, and one with an emerging tourism industry. Analysis of background documents and the extensive knowledge of tourism in the state of two of the authors led to the selection of the following three destinations:

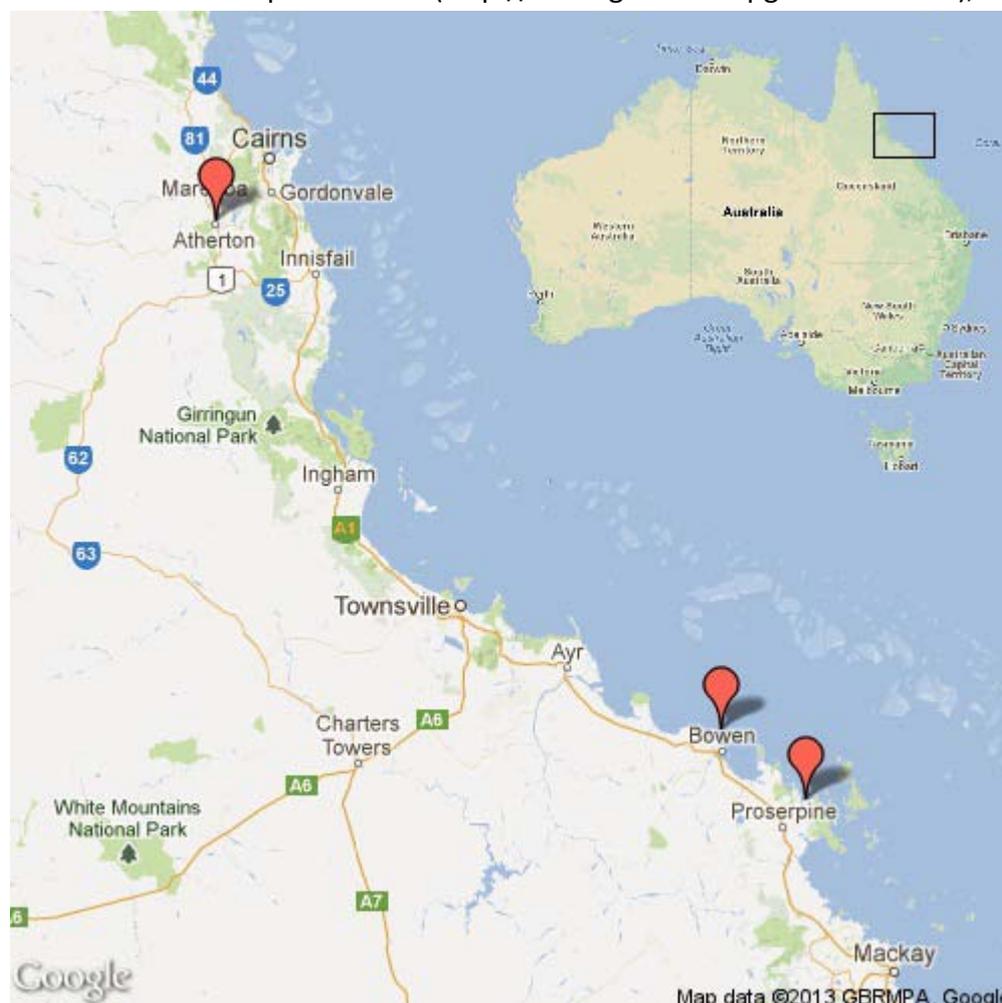
- Airlie Beach, as a destination with the highest tourism profile. This area is recognised as a world famous tourism destination due to its unique environmental settings and includes Airlie Beach town which serves as a gateway to exploring the Whitsunday Islands, and the islands themselves;
- Bowen, as a destination with an emerging tourism industry. The town serves as a local centre for mining, is a major industrial port, and has beautiful beaches and a relaxed atmosphere that could attract visitors; and
- Atherton Tablelands Region, as a destination with a small but established tourism industry. The region's main industry is agriculture and tourism is seen as a complementary opportunity for economic development.

These destinations best aligned with the ASGS geographical framework. The first two destinations represented single SA2 units: Airlie-Whitsundays SA2 and Bowen SA2. The third destination is more geographically dispersed and consists of six SA2 units. Geographically all

six SA2 units within the Atherton Tablelands Region are within a close proximity to each other (half an hour drive) and represent a single destination from the visitors' point of view.

Figure 1. The three study destinations: the Atherton Tablelands Region, Bowen, and Airlie Beach and Whitsunday Islands.

Source: Generic Map Generator (<http://www.genericmapgenerator.com>), Google Maps.



Secondary Data Survey

In Australia there are two main bodies maintaining databases on communities and tourism: the Australian Bureau of Statistics (ABS) and Tourism Research Australia (TRA). A review of available data was conducted in order to identify databases that satisfy two criteria: databases should provide data for the identified measures for tourism and destinations (see Table 1), and be available at the SA2 unit level of analysis. The main features of the identified databases are summarised in Table 2 and the databases are described in more details below.

Table 2. Identified Databases.

Database	Provider	Type of Survey	Availability	Periodicity of Data	Years available at SA2 level
International and National Visitor Survey	TRA	Sample Survey	Paid subscription	Monthly/ Quarterly/ Annual Estimates	IVS – 1999 onwards NVS – 1998 onwards
Survey of Tourist Accommodation (STA)	ABS	Census	Publicly available	Quarterly	2012 onwards*
Counts of Australian Businesses	ABS	Census	Publicly available	Annual	2009 onwards**
Census of Population and Housing	ABS	Census	Publicly available	Every 5 years	2011***

* At the SLA level Survey of Tourist Accommodation data are available from 2001; however in 2003 a further 132 establishments were added to the STA frame in the June Quarter, adding approximately 3% to the figures. Due to this reason data at SLA level can be used as a consistent time series from 2003 onwards.

** At SLA level Counts of Australian Businesses Data are available from 2003; however changes occurred to business classes and criteria of addition to the frame since then.

*** At SLA level Census of Population and Housing data are available from 1996.

- National Visitor Survey (NVS) and International Visitor Survey (IVS) Database

The NVS and IVS are conducted by Tourism Research Australia (TRA). The collected data are organised into separate databases for international (from 1999 to present) and domestic visitors (from 1998 to present), with domestic visitors further separated into domestic overnight and domestic day visitors. Information about numbers, characteristics and travel patterns of visitors can be extracted from the databases to create custom tables. The NVS and IVS data represent estimates calculated from a sample of international and domestic visitors. Estimates are produced through a weighting procedure – each respondent is given a ‘weight’ equalling how many visitors he/she represents: IVS respondents are weighted to the data on international visitors’ numbers (Overseas Arrivals and Departures data, ABS) (TRA, 2011a); NVS respondents are weighted to the estimates of Australia’s population aged 15 and over (Census of Australian Population and Housing data, ABS) (TRA, 2011b).

- Survey of Tourist Accommodation (STA), Small Area Data

The STA database provides information on the number, type and business activity of tourist accommodation establishments, with data released quarterly. The STA is a census and the frame of the survey lists all eligible establishments within Australia (ABS, 2011d). However, for some regions with only a few tourist accommodation establishments, data are not provided due to issues around privacy and confidentiality which mean that data cannot be released if it enables the identification of a particular organisation. Another issue with the STA is that the establishments for which data are consistently collected, are hotels/resorts, motels/private hotels/ guest houses and serviced apartments with 15 or more rooms. Data for (i) holiday flats and units, (ii) hotels, motels and serviced apartments with five to fourteen rooms, (iii) visitor hostels, and (iv) caravan parks (used by campers, recreational vehicles and towed caravans) are provided as supplementary data and published irregularly. For some of the regions those latter types of accommodation establishment represent a considerable proportion of total tourist establishments in the region.

- Counts of Australian Businesses, including Entries and Exits

The data are sourced through a census of business organisations. There are certain criteria by which businesses are entered into the census, specifically those below the threshold turnover of \$75,000 do not get counted (ABS, 2010a), meaning that smaller tourism businesses not likely to be included. Businesses are classified into industry classes (such as 'agriculture, forestry and fishing', 'retail trade', 'accommodation and food services' etc.), with each business allocated to a single industry class according to its main source of income, and further detailed by sizes of employment and turnover. Another issue for use of this data at destination level is that businesses can operate in more than one location. Multi-location businesses are only attributed to a single location, according to their main business address. Therefore, caution is required when interpreting the data for a particular destination, as it does not represent all business operations within that area.

- Census of Australian Population and Housing

The Australian Census provides the most accurate data on the number of people and dwellings and a range of their key characteristics for small geographic areas (ABS, 2011c). In Australia it is a legal requirement to complete a Census of Australian Population and Housing form which ensures the data accuracy. Regularity of the Australian Census, which is performed once every five years, is unusual with many countries conducting a regular census once a decade, and some not performing regular censuses. Additionally, the ABS produces number of publications that are derived from census data but available in annual estimates (such as Regional Population Growth, Australia, ABS 2012b). In 2011, a new geographical framework was implemented resulting in a change of geographical units used to report Census data. This change means that there will be break in time series data, which limits data usability.

Methodology

This section will describe in detail the attempt to use the identified datasets to populate the devised framework. In particular it will highlight the challenges faced because these are likely to exist beyond the specific cases; and the lessons learnt may be of value to others in this area of research.

Stage of Tourism Development

Unfortunately, time series data on the identified stage of tourism development variables and measures for a sufficient number of years were not available for the destinations at SA2 or SLA level; therefore it was not possible to establish how the tourism at the selected destinations developed over time. Also current data on control over development (foreign versus domestic) were not available. However, it was possible to construct current accommodation profiles using STA data for the three locations (data for corresponding SLA units were used, as the detailed data for the SA2 units were unavailable, data source: ABS 2010b) in order to determine the size and type of accommodation establishments relative to each other, which can be used as a proxy of scale and diversity of tourism development. For the current economic reliance on tourism, data sourced from Census of Population and Housing data (ABS 2011b) on employment in the accommodation and food services industry in the three locations were used as a proxy.

Average Daily Visitor Density

McElroy & de Albuquerque (1998) introduced the tourism penetration index which aggregates economic, environmental and social penetration measures. To measure social penetration, average daily visitor (stayover and excursionists) density per 1000 population was selected: $[(\text{Overnight Visitors} \times \text{Stay}) + \text{Day Visitors} / (\text{Population} \times 365)] \times 1000$. To be able to calculate this, daily visitor density data are required on (1) number of residents, and (2) number of visitors. Data on the resident population are collected through the Census of Population and Housing by ABS with annual estimates based on the Census data freely available for download from the ABS web-site (ABS 2012b); while data on visitor numbers are provided by Tourism Research Australia (TRA). TRA also provides number of visitor nights, which represents a more accurate measure than just the number of overnight visitors multiplied by their average stay and this was used to calculate average daily visitor densities for the three locations.

Analysis of NVS and IVS data should be based on an understanding that confidence intervals for the given estimates should be constructed in order to be 95% confident that the 'true' parameter value is captured. Confidence intervals for available annual estimates of the number of international nights, domestic nights and domestic day trips for each of the three selected locations were calculated; and it was evident that they are unsuitably large and therefore cannot be meaningfully interpreted. When analysing NVS and IVS data at SA2 level confidence intervals tend to be very large (due to small sample sizes for specific geographic regions) and interpretation of the data is problematic. It is known that repeated sampling reduces the sampling error, expressed by confidence interval. In order to obtain estimates with smaller confidence intervals means of 12 annual estimates were calculated

making it possible to use the resulting estimates for calculation of the average daily visitor density.

Following McElroy and de Albuquerque (1998) average daily visitor density per 1,000 population (\overline{VD}_d) was calculated by the following equation:

$$\overline{VD}_d = \frac{(\overline{IN}_t + \overline{DN}_t + \overline{DD}_t)}{\overline{P} \times \overline{D}} \times 1000$$

Where:

- $(\overline{IN}_t + \overline{DN}_t + \overline{DD}_t)$ is an average of 12 annual estimates of total daily visitors calculated as the sum of international nights, domestic nights and domestic day visitors in a given year;
- \overline{P} is an average of the corresponding 12 annual estimates of the number of destination residents; and
- \overline{D} is an average of the number of days in the corresponding 12 years.

Average daily visitor density per square kilometre was calculated by replacing \overline{P} with size of the land area in square kilometres (data source: ABS 2011) and not multiplying the resulting value by 1000.

Visitor Types

The NVS and IVS also collect data for selected visitor characteristics which can be organised by preferred categories, thus relevant proportions of visitors in different categories can be calculated. Of the available variables the most useful categories for assessing types of visitors prevalent in a destination were length of stay, age and travel party. Again, due to large confidence intervals for annual estimates at SA2 level, the means of available annual estimates were calculated. Analysis of confidence intervals for the calculated means proved that there were no significant variations in proportions of categories relative to each other, therefore all percentages of visitors categories derived from NVS and IVS data were based on means of available annual estimates.

Seasonality

Traditionally tourism seasonality analysis implies an analysis of visitor arrivals data. In regional case studies this type of data is often not available or associated with big confidence intervals (as described above). Some of the previous regional studies of seasonality used data on bed occupancy rates (De Cantis et al., 2011) or room occupancy rates (Koenig & Bischoff, 2004) as proxy for visitor arrivals, as these are often collected by tourism establishments/reported by statistical bodies. ABS consistently collects and publishes room occupancy rates for hotels/motels/serviced apartments with fifteen or more rooms, but for the selected SA2 level units data were not available. Quarterly room occupancy rates for the corresponding SLA level units represented the most complete dataset and were used as proxy for the selected regions (ABS 2011e).

Seasonality analysis was carried out following the framework offered by De Cantis, et al. (2011) and data were analysed to identify patterns (changes of occupancy rates through the year) and amplitude (the change between the off-season and peak-season occupancy rates)

in room occupancy rates at the three locations. Seasonal indexes were calculated for each of the three destinations following a three step procedure, described by Lim and McAleer (2001). First, a centered moving average was calculated by the following equation:

$$MA_t = \frac{[A_{t+2} + 2 \sum_{k=1}^3 (A_{t+2-k}) + A_{t-2}]}{8}$$

Where

- MA_t is the centered moving average for room occupancy rates for a quarter t ,
- A_t is occupancy rates in a quarter t ,
- k is number of lags.

Ratios of observation-to-moving average (P_t) were then calculated by dividing original room occupancy rates by the corresponding moving average figure for each quarter:

$$P_t = \frac{A_t}{MA_t}$$

Finally, the calculated ratios were averaged by quarters after deleting the lowest and the highest values in order to eliminate irregular movements and obtain the seasonal components. The resulting seasonal indexes for each of the quarters characterise patterns of seasonality at the three locations, with values above one corresponding to the high tourism season and values below one indicating low tourism season. To assess the amplitude of seasonality the lowest quarter seasonal index was divided by the highest. The resulting ratio provides information about the intensity of seasonal swings – the higher the value to more evenly tourist arrivals are distributed throughout the year with 100% indicating the absence of seasonality at a location.

Results

Analysis of the available data was performed as described above and the main findings are summarised in the Table 3. As expected from onsite visits and previous experience with the three locations, the chosen destinations had significant variations in size and type of tourism development. Airlie Beach and Whitsundays had the most developed tourism industry of the three regions, with tourism in Bowen and the Atherton Tablelands regions being significantly smaller in absolute and relative terms.

Looking in more detail at the results in Table 3 allows for the description of detailed profiles of tourism for each destination. In Airlie Beach and Whitsundays nearly every second person is a visitor, the most dominant type of accommodation is serviced apartments with 15 or more rooms and nearly one quarter of the local residents are employed in the accommodation and food services industry.

Table 3. Summary of the Findings

	Variables	Available Measures	Airlie Beach and Whitsundays	Bowen	The Atherton Tablelands
Stage of Tourism Development	Scale and Diversity of Tourism Development ^a	Number and type of accommodation establishments (Abbreviations: CP – caravan parks, SA – serviced apartments, H – hotels, M – motels, (15+) - with 15 or more rooms, (5-14) – with 5 to 14 rooms)	Total number - 59 Hostels 10% Flats/Units 8% CP 15% SA (15+) 24% M (15+) 10% H (15+) 14% H/M/SA (5-14) 19%	Total number - 23 Hostels 13% Flats/Units 4% CP 30% SA (15+) none M (15+) 22% H (15+) 9% H/M/SA (5-14) 22%	Total number - 39 Hostels 5% Flats/Units 2% CP 26% SA (15+) none M (15+) 18% H (15+) 5% H/M/SA (5-14) 44%
		Average Bed Spaces (excluding H/M/SA(5-14))	220	80	56
	Economic Reliance on Tourism	Employment in 'Accommodation and Food Services' Industry	Number 1,514 % total 26.3% employment	Number 363 % total 9.1% employment	Number 1,097 % total 6.2% employment
Visitor-Resident Contact	Density of visitors	Average daily visitor density per 1000 population ^b	Between 1071 and 662 per 1000 residents	Between 201 and 62 per 1000 residents	Between 109 and 60 per 1000 residents
		Average daily visitor density per land area ^b	Between 34 and 21 per km ²	Between 34 and 11 per km ²	Between 0.07 and 0.04 per km ²
Type of Visitors	Demographic and Trip Related Characteristics	Visitors by Length of Stay	Day Visitors 16% 1 night 8% 2-4 nights 40% 5-8 nights 27%	Day Visitors 47% 1 night 16% 2-4 nights 23% 5-8 nights 6%	Day Visitors 65% 1 night 8% 2-4 nights 13% 5-8 nights 6%

			9-30 nights 7% 31 or more nights 1%	9-30 nights 5% 31 or more nights 3%	9-30 nights 7% 31 or more nights 2%
		Travel Party + Age + Length of Stay (% of annual domestic and international overnight visitors mean) ^c	Adult Couple, 25-64, 2-8 nights – 15% Unaccompanied Traveller, 15-44, 2-8 nights – 12% Family Group, 25-44, 2-8 nights – 7% Friends/Relatives, 15-44, 2-4 nights – 6%	Friends/Relatives, 15-24, 1-4 nights – 12% Unaccompanied Traveller, 15-64, 2-4 nights – 10% Adult Couple, 45-64, 1-4 nights -8% Family Group, 15-44, 2-4 nights – 6%	Adult Couple, 45-64. 1-30 nights – 10% Friends/Relatives, 15-44, 1-4 nights – 7%
		Percent of International Visitors	30%	6%	4%
		Interstate/Intrastate Overnight Domestic Visitors Ratio	50 interstate and 50 intrastate visitors per 100 domestic overnight visitors	16 interstate and 84 intrastate visitors per 100 domestic overnight visitors	21 interstate and 79 intrastate visitors per 100 domestic overnight visitors
Seasonality^a	Pattern	Seasonal Index (tourism seasons correspond to the index above one)	March Quarter 0.947 June Quarter 0.860 September Quarter 1.083 December Quarter 1.115	March Quarter 0.769 June Quarter 1.019 September Quarter 1.239 December Quarter 0.967	March Quarter 0.806 June Quarter 1.019 September Quarter 1.203 December Quarter 0.965
	Amplitude	Low Season/High Season Ratio	77%	62%	67%

Notes:

^a Scale of Tourism Development and Seasonality analysis is based on data for SLA units rather than SA2 units due to unavailability of detailed data at SA2 level.

^b 95% Confidence Interval

^c Data on domestic day visitors is not detailed by travel party and age.

Data Sources: Australian Bureau of Statistics and Tourism Research Australia

Visitors tend to be relatively young, travel unaccompanied or with a partner and stay between two and eight nights. International visitors represent nearly one-third of all visitors to the area, and domestic overnight visitors are nearly evenly divided between visitors from other states and visitors from Queensland. Seasonality is not as pronounced as in the other two regions; the peak season occurs in the December quarter coinciding with summer holidays in Australia, with shoulder season occurring in the September quarter. Tourism development in Bowen and the Atherton Tablelands Region is on a different scale. In Bowen, on average visitors represent between six and twenty percent of the local population, and tend to come for short visits. The most prevalent form of tourism accommodation is caravan parks, followed by smaller establishments with five to fourteen rooms. The Atherton Tablelands region is popular with day visitors, which represent more than one-half of total visitors to the region. Among the overnight visitors to the Atherton Tableland region older couples that can stay for prolonged amounts of time represent a significant proportion, with another significant category being younger groups of friends or relatives coming for short visits. Small tourism establishments with five to fourteen rooms, caravan parks and motels are the dominant type of accommodation. As the land area of the region is much bigger than that of the other two destinations, on average there is less than one visitor per square kilometre. This is somewhat misleading as a significant area of the region is designated national park or state forest meaning that both residents and visitors are concentrated into a smaller land area. Both Bowen and the Atherton Tablelands region attract much fewer international and interstate visitors than Airlie Beach and the Whitsundays. For both these destinations high tourism season occurs in the September quarter with the shoulder season in the June quarter, reflecting the different style of tourism.

Discussion and Conclusions

This study demonstrates that the devised set of measures assists systematic analysis of available secondary data and enables construction of tourism profiles for regional tourism destinations. The created tourism profiles identified distinct differences in both the type and size of tourism development at the three chosen locations. The profiles are also consistent with resident description of tourism generated in a qualitative study conducted in the three regions and reported at the 2012 BEST EN Conference (Murphy, Moscardo, McGehee, & Konovalov, 2012). Thus it seems that the proposed destination level framework for measuring tourism in regional locations does offer a reasonable description of the key

characteristics of tourism. This provides a good base for the next stage of the overall research projects which is to connect evidence of social impacts to these tourism characteristics.

The framework can be implemented in other destinations within Australia or adapted for destinations in other countries by following the process described in this paper. The identified variables of tourism development are universal, and parallel measures to the ones applied in this study exist internationally. The objective measures assessment of tourism development at a destination reported in this paper, consisted of the following steps: selection of a suitable geographical unit of analysis, survey of the available secondary data and investigation of the limitations of this data, selection of the suitable methods of analysis for the available data, and synthesising/evaluating the findings. The challenges encountered during this process allow the following recommendations to be made for similar studies: it is essential to read background documents and source as much information as possible for the selected locations as these provide a 'reality check' for the sourced secondary data; analysis of the data can be done across geographical frameworks (using data for bigger regions as proxy for the smaller ones), as this allows for the use of various data sources to construct a more detailed tourism profiles; and a variety of methods should be used that allow maximum extraction of information from the available data.

A key pillar of the sustainable tourism development is an informed decision making process. It was noted previously that the perceptions of social impacts research has yielded limited information for tourism planners (Harrill, 2004). It is hoped that the devised framework can contribute to the tourism planning and management process by providing a valuable instrument for research of social impacts of tourism. The aim of the overall research project is the development of a tourism planning and management tool that will help specific regional communities to identify the type of tourism development best suited to their specific circumstances, that will maximise tourism's contribution to the wellbeing of the community, or in case of existing tourism development, will enable local governments to effectively mitigate tourism impacts. This study represents a first step in that direction.

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