



**MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT**
HĪKINA WHAKATUTUKI

Using electronic card transaction data to measure and monitor regional tourism in New Zealand

Rebecca Burson, Senior Analyst, MBIE
Peter Ellis, Sector Performance Team Manager, MBIE



Tourism Data Domain Plan

Comprehensive review of tourism data and insight in New Zealand

Five key topics of interest:

1. The value of tourism to New Zealand
2. The growth, innovation, productivity and efficiency of tourism businesses in New Zealand
3. The value of government interventions
4. The global competitiveness of New Zealand's tourism industry
5. The sustainability of New Zealand tourism

Particular drive for strong regional insight.



Regional Tourism Indicators: Method

- Electronic card transaction data from *Paymark* (international sample) and *Bank of New Zealand* (domestic sample).
- Card-present spending only. No cash, internet purchases, or other methods of payment.
- Monthly aggregated spend and transaction counts by cardholder origin, merchant location, and industry classification (ANZSIC-06)



Regional Tourism Indicators: Method

- Extract Transform Load (ETL) processes classify data into local, domestic, and international data sets
 - Domestic / local split of data based on geographic relationship between cardholder and merchant
 - Spending within a territorial authority (TA) or across a 'fluid' TA boundary is considered local. All other types of spending between TAs is considered domestic tourism.
- ETL also provides additional geographic and industry classifications (e.g., Regional Tourism Organisations, country groupings)
- Spend data are converted to indexes (100 = average month in 2008) before analysis or publication



Regional Tourism Indicators: Products

- MBIE publish updates to RTIs every month
- National and subnational insights into state of tourism expenditure
- Products include commentary, graphs and tables

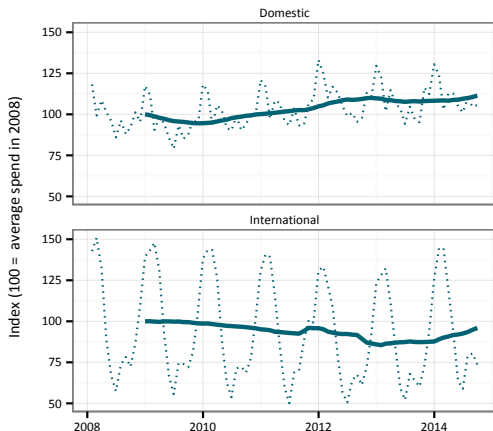


Figure 1: Domestic and international indexes (dashed lines) and 12-month rolling indexes (solid line). Source: MBIE, Regional Tourism Indicators

Regional Tourism Indicators: Products

- Variety of products suitable for basic and advanced users
- Pivot tables provide detailed insights for specific destinations and markets/industry groups

	A	B	C	D
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HIKINA WHAKATUTUKI

September-2014 International RTI Indexes

Data Source: Regional Tourism Indicators (RTI), Ministry of Business, Innovation and Employment

Indicator type: Index
RTO: Wellington RTO

<<< Do not select (All) or select multiple Items as

Period	Country	Total (all countries)
2008-01-31	Australia	103
2008-02-29	Australia	103
2008-03-31	Australia	117
2008-04-30	Australia	98
2008-05-31	Australia	94
2008-06-30	Australia	81
2008-07-31	Australia	69
2008-08-31	Australia	91
2008-09-30	Australia	79
2008-10-31	Australia	94
2008-11-30	Australia	77
2008-12-31	Australia	91
2009-01-31	Australia	76
2009-02-28	Australia	105
2009-03-31	Australia	92
2009-04-30	Australia	109
2009-05-31	Australia	112
2009-06-30	Australia	113
2009-07-31	Australia	127
2009-08-31	Australia	103
2009-09-30	Australia	120
2009-10-31	Australia	107
2009-11-30	Australia	137
2009-12-31	Australia	112
2010-01-31	Australia	124
2010-02-28	Australia	94
2010-03-31	Australia	100
2010-04-30	Australia	81
2010-05-31	Australia	100
2010-06-30	Australia	76
2010-07-31	Australia	67



Method: Regional Tourism Estimates

Leverage the RTIs to produce estimates of *total spending* (regardless of payment method) using *Iterative Proportional Fitting* (IPF)

- Uses Tourism Satellite Account (TSA, Statistics New Zealand) and the International Visitor Survey (IVS, MBIE) as source of total spending by product and country respectively
- RTI data are 'raked' so that their marginal totals equal totals from IVS (international only) and TSA



Method: Regional Tourism Estimates

A basic example of IPF ('raking')

7	5		12
3	11		14
<hr/>			
10	16		26

Table 1: Seed data

			15
			8
<hr/>			
10	13		23

Table 2: Target totals

- Goal is to adjust seed cells so that marginal totals align with target totals
- Iterative process involving weighting to row totals and column totals



Method: Regional Tourism Estimates

Method has some assumptions and limitations:

- Excludes air passenger transport and education spending
- Method controls for different propensities to use cards for different products and by people from different countries (but not interactions of these propensities).
- Assumes no within-New Zealand regional differences in propensity to use cards

Detailed methods can be found here:

[http://www.med.govt.nz/sectors-industries/tourism/
tourism-research-data/regional-tourism-estimates/about-the-rtes](http://www.med.govt.nz/sectors-industries/tourism/tourism-research-data/regional-tourism-estimates/about-the-rtes)



Regional Tourism Estimates: Products

- MBIE publish updates to RTEs around November each year, after the release of the Tourism Satellite Account
- Products include pivot table, regional summaries, and interactive graphs



MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT
HIKINA WHAKATUTUKI

ORIGIN: (All); International;

DESTINATION: Auckland RTO;

Origin of Cardholder	(All)	▼
Type	International	▼
Territorial_Authority	(All)	▼
RTO	Auckland RTO	▼
Regional Council	(All)	▼

Origin
Destination

Sum of Spend (\$millions)	Year Ending March ▼				
Product ▼	2009	2010	2011	2012	2013
Accommodation	275	286	326	376	439
Food and beverage serving services	597	597	625	697	666
Other passenger transport	350	350	347	375	347
Other tourism products	208	209	202	224	212
Retail sales - fuel and other automotive	75	72	73	88	88
Retail sales - other	671	658	630	708	710
Grand Total	2,175	2,171	2,204	2,468	2,461



Regional Tourism Estimates: Products

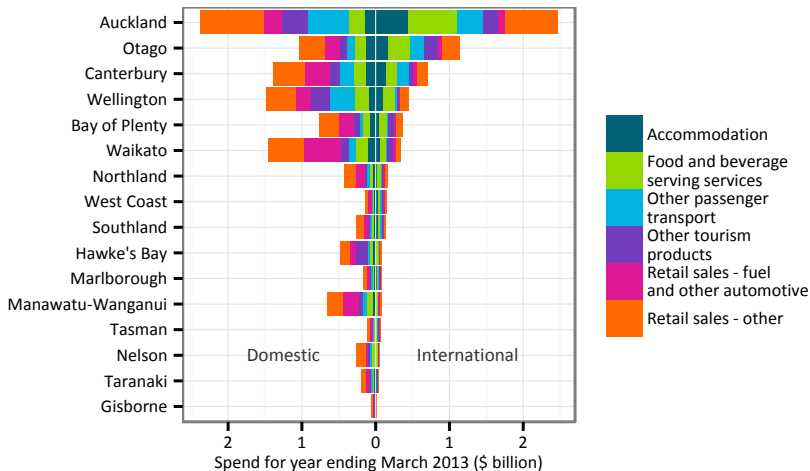


Figure 2: Estimates of international and domestic visitor spending by Region and product. Source: MBIE, Regional Tourism Estimates

Software and Capabilities

- Transitioned from Microsoft Excel and SPSS to R for analytical work
- Established database for centralised storage and analysis of data sets
- Developed custom programmes and functions to automate production of standard products with less human intervention



Policy and Business Application

- Performance indicators and lobbying tools
 - Regional Economic Activity Report, international connectedness
 - Key performance indicators and evidence for tourism agencies
- Assessing market shocks
 - Christchurch Earthquakes
 - Rugby World Cup 2011
- Gaining market insights
 - Emerging and declining markets
 - Distribution of market spending



Market Shocks: Christchurch Earthquakes

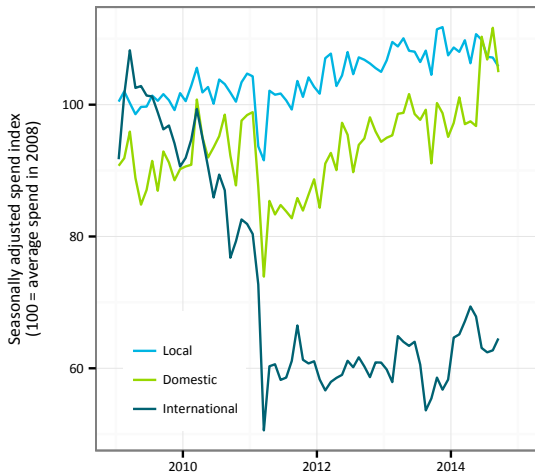


Figure 3: Domestic, international, and local spend in Christchurch City. Source: MBIE, Regional Tourism Indicators



Market Shocks: Rugby World Cup

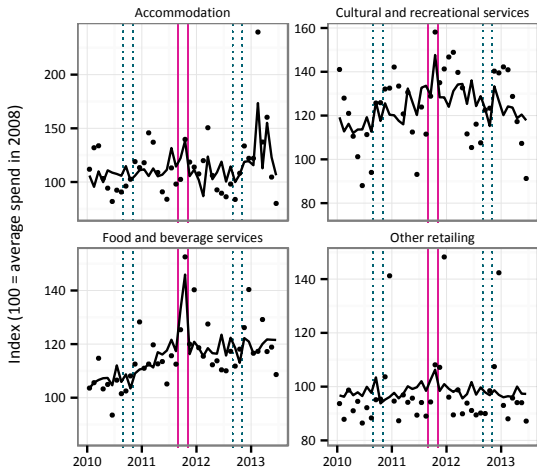


Figure 4: International seasonally adjusted indexes (solid black line) and raw indexes (points) for selected industries in Auckland Region. Source: MBIE, Regional Tourism Indicators

Future Directions

- Review of RTIs in 2015
- Methodology improvement
 - Definition of domestic tourism in RTIs
 - Imputation of non-paymark merchants for international RTIs
- Product expansion
 - Seasonal adjustment of RTIs
 - Inflation adjustment of RTIs



Questions?

