

Identifying tourism characteristic occupations in Canada

1. Introduction

The Canadian Tourism Satellite Account (CTSA) measures tourism's contribution to the economy in Canada, including the number of jobs attributable to tourism. The Human Resource Module of the CTSA (HRM) expands the information available in the CTSA to provide detailed information on jobs, wages, and hours worked in the tourism industries by occupation and by demographic variables. Although the *Tourism Satellite Account: Recommended Methodological Framework 2008* (TSA:RMF) indicates how to measure tourism characteristic products and activities, it provides no guidance on tourism occupations.

The International Labour Organization (ILO) and the United Nations World Tourism Organization (UNWTO) have worked to improve measurement of employment in tourism industries as well as characteristics of employment such as occupations. One proposed means to achieve this is the development of a list of occupations characteristic of tourism, or a 'tourism view' of the International Standard Classification of Occupations (ISCO) 2008.¹

Currently, the HRM provides occupation details for all occupations in tourism industries for which underlying observations in survey and census data are sufficiently numerous to support a reliable time series. There is no consideration of which occupations might be considered characteristic of tourism, as at present, no conceptual definition of tourism characteristic occupations exists in Canada or internationally.

With the next update of the HRM, it is planned to implement a notion of *tourism characteristic occupations*. Several analytical and empirical approaches have recently been proposed to identify these occupations and have been discussed at recent international events.² These approaches include selecting those occupations which are found in tourism industries, those which constitute a minimum proportion of jobs in tourism, and those which are more common in tourism than in the total economy, as well as an occupation-minded version of the TSA:RMF notion of "direct contact" applied to occupations.

Using data from Canada's National Household Survey 2011, the present paper tests the above approaches and proposes a preferred approach based on the International Recommendations for Tourism Statistics (IRTS). In this new approach, the working definition of "tourism characteristic occupation" is one in which employment would be significantly reduced as a direct result of an absence of tourism. A significant reduction is defined as ten percent of employment in the occupation in the total economy. This figure is estimated using levels of employment in tourism industries compared to the total economy, adjusted by tourism gross domestic product (GDP) ratios by industry from the CTSA.

2. Toward a definition of tourism characteristic occupations

The framework of the CTSA and international guidelines constitute a starting point for defining tourism characteristic occupations. One possible approach can be found in the International Recommendations for Tourism Statistics (IRTS) definition of tourism characteristic products:

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

¹ "Proposal to develop a tourism view of the International Standard Classification of Occupations", Eleventh meeting of the UNWTO Committee on Statistics and the Tourism Satellite Account. Madrid, 2010.

² Meis, Scott and Chris Jackson. *Proposal for Identifying Characteristic Occupations of the Tourism Industries as a Tourism Thematic View within ISCO-08 and National Occupational Classification System*. Room document, 19th International Conference of Labour Statisticians, Geneva, 2013.

(a) *Tourism expenditure on the product should represent a significant share of total tourism expenditure (**share-of-expenditure/demand condition**);*

(b) *Tourism expenditure on the product should represent a significant share of the supply of the product in the economy (**share-of-supply condition**).*

This criterion implies that the supply of a tourism characteristic product would cease to exist in meaningful quantity in the absence of visitors.³

Expressed with a view to tourism characteristic occupations, the share-of-expenditure/demand condition could be adapted as:

Tourism characteristic occupations should represent a significant share of total employment in tourism industries.

The share-of-supply condition could be adapted as:

Tourism industries should represent a significant share of employment in tourism characteristic occupations in the economy.⁴

The next step would be to establish the threshold for each of these criteria: what minimum share would be sufficient to call an occupation “characteristic”? In the case of tourism’s share of the occupation in the total economy, a natural threshold would be tourism’s share of employment in the total economy. If an occupation is more common in tourism than elsewhere, it is likely characteristic of tourism. In Canada in 2012, this figure was 9.4%, and this condition identified 80 occupations among 447 which appeared in tourism industries.⁵ Unfortunately, in the case of an occupation’s share of employment in tourism there is no such natural threshold.

Another problem with examining an occupation’s share of employment in tourism is that occupations common in industries with higher levels of employment will more easily achieve a higher share of employment in tourism than will occupations more common in industries with lower levels of employment. The majority of employment in tourism industries in Canada is in food and beverage services (54% in 2012), whereas travel services has a much smaller share (less than 3%).⁶ So it is very difficult for an occupation more common in travel services to meet a given share of employment in tourism industries, whereas it is very easy for an occupation in food and beverage services.

One way to mitigate this effect would be to analyse the occupations by industry rather than at the tourism sector total. The threshold then would be not the tourism sector’s share of total employment but rather the tourism industry’s share of total employment. In Canada in 2012, the accommodation industry’s share of employment in the total economy was 1.3%, for example (see Table 1). So if more than 1.3% of all light duty cleaners in the economy worked in accommodation, that occupation would be tourism characteristic with regard to the accommodation industry. This solution presents its own challenge in that this paper aims to arrive at a sector-wide list of tourism characteristic occupations, not one by industry. It is

³ United Nations Statistical Commission, *2008 International Recommendations for Tourism Statistics*. New York/Madrid 2008. Emphasis added.

⁴ These conditions implicitly limit the scope of tourism characteristic occupations to those observed in tourism industries; occupations observed only in non-tourism industries are out of scope. While there may be employment in non-tourism industries due to tourism demand—such as in retail sales of camping equipment—it is difficult to imagine how an occupation which does not appear in tourism industries could be considered characteristic of tourism.

⁵ Statistics Canada, *Human Resource Module of the Tourism Satellite Account, 2012*. <http://www.statcan.gc.ca/pub/13-604-m/13-604-m2013072-eng.htm>, accessed 17 February 2014.

⁶ Ibid.

furthermore counterintuitive to suggest that an occupation may be characteristic of tourism in one industry but not another.

Table 1: Tourism industries' share of employment in the total economy

Industry	Share of employment in the total economy (%)
Air transportation	0.3
Other transportation	1.0
Accommodation	1.3
Food and beverage services	5.1
Recreation and entertainment	1.5
Travel services	0.2
Total tourism industries	9.4

Source: Human Resource Module of the Tourism Satellite Account 2012, Statistics Canada.

However, analysis of occupations' shares of employment in tourism identifies very few tourism occupations which are not also identified by tourism's share of the occupation in the total economy. Indeed, on a sector-wide basis, only 18 occupations exceeded one percent⁷ of employment in tourism industries, and of these, only one occupation—*G211 Retail salespersons and sales clerks*—was not among the 80 indicated by the previous condition (tourism's share of total employment in the occupation). This condition ("tourism characteristic occupations should represent a significant share of total employment in tourism industries") was not useful in the identification of tourism characteristic occupations using Canadian data. This leaves only the condition "tourism industries should represent a significant share of employment in tourism characteristic occupations."

It has been proposed to adapt the TSA:RMF notion of tourism consisting of the direct provision of goods and services to visitors as an additional condition. Under this approach, direct contact with visitors would be a necessary condition for an occupation to be considered tourism characteristic.⁸ Whether an occupation involves direct contact with visitors can be partly informed by the definitions and lists of job titles in the occupation classification. However, "flagging" occupations in this way is dependent on personal intuition. In the example of rail transportation, the ticket taker certainly has direct contact with the visitor. Some would say the conductor has direct contact with the visitor, even if not seen by him, since the conductor contributes to the direct provision of rail transportation. Some would also say that the yard engineer, who may perform track maintenance, should also be considered to have direct contact for the same reason, though she will never have been anywhere near the visitor; others would disagree.

Several lists of occupations with direct contact with visitors were developed during research discussions using increasingly expansive notions of contact: 1) involving speaking or appearing to the visitor, 2) direct contribution to the provision of a tourism commodity, and 3) any contribution to the provision of a tourism commodity. Of the 447 occupations appearing in tourism industries in Canada, notion 1 identified 48 occupations, notion 2 identified 79 occupations, and notion 3 identified 122 occupations. Ultimately the statistical approach to the identification of tourism characteristic occupations ought to be

⁷ Test threshold for research purposes.

⁸ Meis, Scott and Chris Jackson, op. cit.

empirical, whereas it is impossible to rescue these notions of direct contact from reliance on personal intuition.

Table 2: Example occupations identified by several notions of direct contact

NOC-S 2006 occupation	Notion 1: direct contact with visitor	Notion 2: direct contribution to provision of tourism commodity	Notion 3: any contribution to provision of tourism commodity
G513 Food and beverage servers	Yes	Yes	Yes
G411 Chefs	No	Yes	Yes
C144 Aircraft instrument, electrical and avionics mechanics, technicians and inspectors	No	No	Yes
A015 Senior managers - Trade, broadcasting and other services, not elsewhere classified	No	No	No
Total occupations flagged	48	79	122

This paper has discussed an adaptation for occupations of the share-of-supply and share-of-demand approaches in the IRTS quotation above. That quotation continues, “This criterion implies that the supply of a tourism characteristic product would cease to exist in meaningful quantity in the absence of visitors.” This is the definition underlying the criteria discussed so far.

In the CTSA, “a tourism industry is defined as one that would cease or continue to exist only at a significantly reduced level of activity as a direct result of an absence of tourism.” This definition can be applied to tourism occupations:

A tourism occupation is defined as one that would cease or continue to exist only at a significantly reduced level of employment as a direct result of an absence of tourism.

To apply this definition to the data, “significantly reduced” must be clarified. The threshold chosen in the research underlying this paper was ten percent. That is, employment levels in tourism occupations would be reduced by at least ten percent as a direct result of an absence of tourism. To estimate by how much employment in an occupation would be reduced in the absence of tourism, one must estimate by occupation the share of employment which is dependent on visitor spending. If ten percent of employment in a given occupation is dependent on visitor spending, we may call that occupation characteristic of tourism.

3. A proposed approach

Data on the level of employment in tourism industries in Canada are certainly available. The difficulty lies in linking tourism to particular occupations. Unfortunately, there are no occupation data available in the input/output tables which underlie the CTSA. However, the share of employment dependent on tourism for

a given occupation can be roughly estimated using *tourism GDP ratios* from existing CTSA figures. The tourism GDP ratios measure how much of the production of a certain industry is attributable to tourism and are calculated by dividing the tourism GDP of an industry by the total GDP of the industry.⁹ These are high-quality estimates and stable over time. See Table 3 for Canada's tourism GDP ratios from the most recent update of the CTSA.

Table 3: Tourism GDP ratios, Canada, 2004

Industry	Tourism GDP ratio (%)
Transportation	32.1
Air transportation	78.4
Railway transportation	13.1
Water transportation	11.2
Bus transportation	30.8
Taxicabs	14.1
Vehicle rental	28.9
Accommodation	65.6
Food and beverage services	17.0
Recreation and entertainment	20.3
Travel services	91.6
Total tourism industries	32.7

Source: Tourism Satellite Account 2004, Statistics Canada.

This paper proposes to use these tourism GDP ratios to adjust tourism's share of each occupation and roughly estimate the proportion of employment dependent on tourism in each occupation. With this method, occupations' shares of employment are examined by industry and adjusted using tourism GDP ratios. For each industry in which the occupation appears, the employment for the occupation in that industry is divided by employment for the occupation in the total economy, and then multiplied by the tourism GDP ratio.¹⁰

The resulting figure estimates the share of employment dependent on tourism for a given occupation in a given industry. The sum of these shares provides a sector-wide share for each occupation across the tourism sector, weighted by the importance of tourism to each industry. In effect it estimates the share of employment in that occupation which would be lost in the absence of tourism. This figure is the *tourism occupation ratio*.

The ratio for each occupation is defined by the following summation in which i represents the tourism industries, x represents the employment for the occupation in the tourism industry, z represents the

⁹ Statistics Canada, *Canadian Tourism Satellite Account Handbook*, <http://www.statcan.gc.ca/pub/13-604-m/13-604-m2007052-eng.pdf>, accessed 14 March 2014, p.7.

¹⁰ Although NHS industry data are available at four digits of detail, occupation data were adjusted by tourism GDP ratios from the TSA by tourism industry group for the sake of simplicity.

employment for the occupation in the total economy, and y represents the tourism GDP ratio for the tourism industry.

Figure 1: tourism occupation ratio

$$\sum \frac{x_i}{z} \times y_i$$

If the tourism occupation ratio indicates that at least ten percent of employment would be lost in the absence of tourism, the occupation may be called tourism characteristic. See Table 4 for an example. Since the sum of the values by industry is greater than or equal to ten percent (6.6% + 3.4% + 1.0% = 11.0%), the occupation would be considered tourism characteristic.

Table 4: Example calculation of tourism occupation ratio

		Tourism industries		
		Accommodation	Food and beverage services	Recreation
G961 Food counter attendants				
x	G961 jobs in tourism industry	1000	2000	500
z	G961 jobs in total economy	10000	10000	10000
y	tourism GDP ratio for industry	65.6%	17.0%	20.3%
	$x / z * y$	6.6%	3.4%	1.0%

Note: fictive occupation data.

Some flexibility may be desired when applying this threshold. A second threshold of five percent is proposed to allow for flexibility for occupations near that ten percent threshold. Occupations in which employment would fall by at least ten percent economy-wide as a direct result of an absence of tourism are *tourism characteristic occupations*, and occupations in which employment would fall by five percent to less than ten percent are regarded as *other tourism occupations*. All remaining occupations found in tourism industries are considered *other occupations in tourism industries*.

Table 5: Ranges of tourism occupation categories

Tourism occupation category	Tourism occupation ratio (TOR)	Number of NOC-S 2006 occupations identified
Tourism characteristic occupations	$10\% \leq \text{TOR}$	46
Other tourism occupations	$5\% \leq \text{TOR} < 10\%$	16
Other occupations in tourism industries	$\text{TOR} < 5\%$	385

International comparisons may discover more appropriate boundaries. Certainly the above thresholds were not rejected by the data. Further research may also reveal that this category of *other tourism occupations* differs greatly by country. Indeed, further research may suggest that space ought to be left in a tourism occupation framework for country-specific tourism occupations, much like the country-specific tourism characteristic products set out in the TSA:RMF.

This 'tourism occupation ratio' approach offers several advantages. It incorporates the strengths of the adapted share-of-supply approach discussed earlier, measuring tourism's share of employment by

occupation. It also has the added benefit of treating occupations according to their dependence on tourism by adjusting that share by the tourism GDP ratios. Another advantage is that the tourism GDP ratio includes the notion that tourism consists of direct provision of commodities, fulfilling the same goal as the problematic “direct contact” condition described above.

4. Results

For the results of this approach, see Appendix A. Occupations are displayed under the NOC-S 2006 classification.¹¹ This is the classification used by the Human Resource Module of the CTSA. However, for purposes of international comparison, these occupations have been joined to ISCO 2008 occupations. In some cases these joins are difficult to make. Not only are there significant differences between these classifications, such as the treatment of supervisors, but there exists no published concordance from NOC-S 2006 to ISCO 2008. Instead two concordances were used, joining NOC-S 2006 occupations to NOC 2011 occupations and then the NOC 2011 occupations to ISCO 2008 occupations.

The first table in Appendix A lists the *tourism characteristic occupations*—those occupations in which ten percent or more of employment would be expected to disappear in the absence of tourism—while the second table lists *other tourism occupations*, those for which that same figure is between five and ten percent. *Other occupations in tourism*, which include all other occupations observed in tourism industries, are not included for reasons of space.

It should be noted that this approach can provide additional value in a national Human Resource Module (HRM). Previous modules for Canada provided detail on all occupations for which a stable time series could be created, grouping the remaining occupations into a remainder category. Based on the results of this analysis, the next HRM update will group remainder occupations into two categories: *other tourism occupations* and *other occupations in tourism*. The similarities and differences observed when comparing and contrasting HRM data in these two categories will hopefully prove fruitful for researchers and analysts.

Note that when providing occupation detail in an HRM, consideration must be given to the observations underlying the occupation data.¹² There must be sufficient observations to support disaggregation of an occupation by employee characteristics over a time series. For some tourism characteristic occupations, this is not the case. For instance, *G721 Tour and travel guides* is a tourism characteristic occupation, yet has too few underlying observations in the National Household Survey, Censuses of Population, and Labour Force Survey source data to support disaggregation in the HRM. It is therefore added to the HRM remainder occupation category *other tourism occupations*. It is important to avoid conflating the two concepts.

5. Next steps

This paper has proposed an approach for determining tourism characteristic occupations and provided results from a proof of concept using available data for Canada. If other national statistical agencies apply this approach using data from their own tourism satellite accounts, differences between countries may suggest country-specific tourism occupations akin to the country-specific tourism commodities in the TSA:RMF. In addition to the derivation of a tourism view of a given occupation classification, this method can also improve the Human Resource Module of a national Tourism Satellite Account by dividing the

¹¹ For more information on NOC-S 2006, see *National Occupational Classification for Statistics (NOC-S) 2006*, <http://www.statcan.gc.ca/subjects-sujets/standard-norme/soc-cnp/2006/noc2006-cnp2006-eng.htm>, accessed 18 March 2014.

¹² Statistics Canada, *Human Resource Module of the Tourism Satellite Account 2012*.

remainder occupation category into other tourism occupations and other occupations in tourism. It is hoped that this paper will serve as a step forward in the understanding of tourism both in Canada and internationally and as a proposed approach to creating a tourism view of ISCO 2008, to be refined using similar data sets from other countries' statistical systems.

Appendix A List of tourism occupations for Canada

A.1 Tourism characteristic occupations

NOC-S 2006 ¹³		ISCO 2008	
Code	Title	Code	Title
A221	Restaurant and food service managers	1412	Restaurant managers
A222	Accommodation service managers	1411	Hotel managers
A343	Recreation, sports and fitness program and service directors	1349	Professional services managers not elsewhere classified
A373	Transportation managers	1324	Supply, distribution and related managers
B576	Transportation route and crew schedulers	4323	Transport clerks
C144	Aircraft instrument, electrical and avionics mechanics, technicians and inspectors	7412 7421	Electrical mechanics and fitters Electronics mechanics and servicers
C171	Air pilots, flight engineers and flying instructors	3153	Aircraft pilots and related associate professionals
C172	Air traffic control and related occupations	3154	Air traffic controllers
C175	Railway traffic controllers and marine traffic regulators	4323	Transport clerks
F012	Conservators and curators	2621	Archivists and curators
F112	Technical occupations related to museums and art galleries	3433	Gallery, museum and library technicians
F132	Other performers	2653 2659 3435	Dancers and choreographers Creative and performing artists not elsewhere classified Other artistic and cultural associate professionals
F151	Athletes	3421	Athletes and sports players
F153	Sports officials and referees	3422	Sports coaches, instructors and officials
F154	Program leaders and instructors in recreation, sport and fitness	3422	Sports coaches, instructors and officials
G012	Food service supervisors	5131 5246 9411	Waiters Food service counter attendants Fast food preparers ¹⁴
G013	Executive housekeepers	5151	Cleaning and housekeeping supervisors in offices, hotels and other establishments
G016/ G014	Other service supervisors/ Dry cleaning and laundry supervisors	4212 4221 4224 5111 5113 9621	Bookmakers, croupiers and related gaming workers Travel consultants and clerks Hotel receptionists Travel attendants and travel stewards Travel guides Messengers, package deliverers and luggage porters ¹⁵

¹³ Canadian National Household Survey (NHS) data were collected under the NOC 2011 occupation classification. However, the Human Resource Module of the Canadian Tourism Satellite Account presently remains under the NOC-S 2006 occupation classification for comparability with previous data sources. Concordantly, analysis of NHS occupation data was conducted under the NOC-S 2006 classification. Certain occupations appear concatenated in this list as a result where they were collapsed for NOC 2011. As no concordance exists for NOC-S 2006 and ISCO 2008, NOC-S 2006 occupations were converted to NOC 2011 occupations and then joined to ISCO 2008 occupations using the official NOC 2011 to ISCO 2008 concordance. Some occupations are impossible to join on a one-to-one basis; see relevant footnotes.

¹⁴ Supervisors are not distinguished in the same manner in ISCO 2008.

NOC-S 2006 ¹⁵		ISCO 2008	
Code	Title	Code	Title
G411	Chefs	3434	Chefs
G412	Cooks	5120	Cooks
G511	Maîtres d'hôtel and hosts/hostesses	5131	Waiters
G512	Bartenders	5132	Bartenders
G513	Food and beverage servers	5131	Waiters
G711	Travel counsellors	4221	Travel consultants and clerks
G712	Pursers and flight attendants	5111	Travel attendants and travel stewards
G713	Airline sales and service agents	4221	Travel consultants and clerks
G714	Ticket agents, cargo service representatives and related clerks (except airline)	4221	Travel consultants and clerks
G715	Hotel front desk clerks	4224	Hotel receptionists
G721	Tour and travel guides	5113	Travel guides
G722	Outdoor sport and recreational guides	5113	Travel guides
G723	Casino occupations	4212	Bookmakers, croupiers and related gaming workers
G731	Operators and attendants in amusement, recreation and sport	8342 8343 9629	Earthmoving and related plant operators Crane, hoist and related plant operators Elementary workers not elsewhere classified
G732	Other attendants in accommodation and travel	5111	Travel attendants and travel stewards
G931	Light duty cleaners	9111	Domestic cleaners and helpers
G961	Food counter attendants, kitchen helpers and related occupations	5212 5246 9411 9412	Street food salespersons Food service counter Fast food preparers Kitchen helpers
H021	Supervisors, railway transport operations	1324	Supply, distribution and related managers
H414	Railway carmen/women	7231	Motor vehicle mechanics and repairers
H415	Aircraft mechanics and aircraft inspectors	7232	Aircraft engine mechanics and repairers
H712	Bus drivers and subway and other transit operators	8331	Bus and tram drivers
H713	Taxi and limousine drivers and chauffeurs	8322	Car, taxi and van drivers
H721	Railway and yard locomotive engineers	8311 8312	Locomotive engine drivers Railway brake, signal and switch operators
H722	Railway conductors and brakemen/women	5112 8312	Transport conductors Railway brake, signal and switch operators
H731/ H732	Railway yard workers/ Railway track maintenance workers	7233	Agricultural and industrial machinery mechanics and repairers
H733 /H734	Deck crew, water transport/ Engine room crew, water transport	8182 8350	Steam engine and boiler operators Ships' deck crews and related workers
H735/ H736	Lock and cable ferry operators and related occupations/ Boat operators	8350	Ships' deck crews and related workers
H737	Air transport ramp attendants	9333 8332 9112	Freight handlers Heavy truck and lorry drivers Cleaners and helpers in offices, hotels and other establishments for aircraft cleaners

¹⁵ Supervisors are not distinguished in the same manner in ISCO 08.

A.2 Other tourism occupations

NOC-S 2006 ¹⁶		ISCO 2008	
Code	Title	Code	Title
I212	Landscaping and grounds maintenance labourers	9214	Garden and horticultural labourers
A015	Senior managers - Trade, broadcasting and other services, n.e.c.	1114	Senior officials of special-interest organizations
		1120	Managing directors and chief executives
G983	Other elemental service occupations	5152	Domestic housekeepers
		5162	Companions and valets
		8322	Car, taxi and van drivers
		9331	Hand and pedal vehicle drivers
		9510	Street and related service workers
		9629	Elementary workers not elsewhere classified
F033	Musicians and singers	2652	Musicians, singers and composers
F035	Actors and comedians	2655	Actors
		2659	Creative and performing artists not elsewhere classified
B316	Conference and event planners	3332	Conference and event planners
F152	Coaches	3422	Sports coaches, instructors and officials
A361	Other services managers	1431	Sports, recreation and cultural centre managers
		1439	Services managers not elsewhere classified
H022	Supervisors, motor transport and other ground transit operators	4323	Transport clerks
G971	Service station attendants	5245	Service station attendants
C173	Deck officers, water transport	3152	Ships' deck officers and pilots
G981/ G982	Dry cleaning and laundry occupations/ Ironing, pressing and finishing occupations	8157	Laundry machine operators
F036	Painters, sculptors and other visual artists	2651	Visual artists
A341	Library, archive, museum and art gallery managers	1349	Professional services managers not elsewhere classified
C174	Engineer officers, water transport	3151	Ships' engineers
F032	Conductors, composers and arrangers	2652	Musicians, singers and composers

¹⁶ See footnote 11.