Catalogue no. 81-595-MIE — No. 053
ISSN: 1711-831X
ISBN: 978-0-662-46629-1

Research Paper

Culture, Tourism and the Centre for Education Statistics

Towards a Geography of Culture: Culture Occupations Across the Canadian Urban-Rural Divide

2001

by Michael Schimpf and Paul Sereda

Culture, Tourism and the Centre for Education Statistics Division
Main Building, Room 2001, Ottawa, K1A 0T6

Telephone: 1-800-307-3382 Fax: 1-613-951-9040

Statistics Canada Statistique Canada

Canada

How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website at www.statcan.ca or contact us by e-mail at infostats@statcan.ca or by phone from 8:30am to 4:30pm Monday to Friday at:

Toll-free telephone (Canada and the United States):	
Enquiries line	1-800-263-1136
National telecommunications device for the hearing impaired	1-800-363-7629
Fax line	1-877-287-4369
Depository Services Program enquiries line	1-800-635-7943
Depository Services Program fax line	1-800-565-7757
Statistics Canada national contact centre:	1-613-951-8116
Fax line	1-613-951-0581

Information to access the product

This product, catalogue no. 81-595-MIE, is available for free in electronic format. To obtain a single issue, visit our website at www.statcan.ca and select Publications.

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, the Agency has developed standards of service which its employees observe in serving its clients. To obtain a copy of these service standards, please contact Statistics Canada toll free at 1-800-263-1136. The service standards are also published on www.statcan.ca under About us > Providing services to Canadians.

Culture, Tourism and the Centre for Education Statistics
Research papers

Towards a Geography of Culture: Culture Occupations Across the Canadian Urban-Rural Divide

2001

Michael Schimpf and Paul Sereda
Statistics Canada

Published by authority of the Minister responsible for Statistics Canada

September 2007

Catalogue no. 81-595-MIE2007053

Frequency: Occasional

ISSN 1711-831X

ISBN 978-0-662-46629-1

Ottawa

Cette publication est disponible en français (nº 81-595-MIF2007053 au catalogue).

Statistics Canada

Acknowledgements

The authors wish to thank Mark Brown, Desmond Beckstead and Judy Hosein for their extensive assistance. Their ideas, suggestions and feedback were of vital importance for determining the overall direction and scope of the research undertaken by the authors. They also suggested a number of ways that the analysis could be improved. In addition, comments provided by Terry Cheney and Marla Waltman-Daschko were very useful for revising the paper. Finally, the authors would like to thank Desmond Beckstead and Cindy Lecavalier for their work in developing the dataset used for this project and Alice Peters for her editorial work.

Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

Acronyms

CA	Census Agglomeration
CD	Census Division
CMA	Census Metropolitan Area
DI	Diversity Index
LQ	Location Quotient

Table of contents

Abstract

This paper examines the extent of the culture workforce in cities and rural areas across Canada. We find that size, represented by the number of workers in the overall workforce, is important for determining the proportion of the workforce in culture occupations in large cities but less so for smaller cities and rural areas. In particular, we find that as the workforce of a city increases, the share of the workforce in culture employment also increases. We also identify those areas of significant culture employment across Canada, which we refer to as culture clusters. Finally, we examine the culture occupational diversity of cities and rural areas and find that diversity varies significantly across the urban-rural spectrum. Rural areas with significant culture employment tend to have very specialized culture workforces while culture employment in cities is much more varied.

1. Introduction

Over the past several years, increasing attention has been paid to the expanding role that culture plays in the urban economy. Several papers emphasize the role of the culture sector for encouraging economic growth, urban renewal and improving a city's quality of life.[1] Closely related is Richard Florida's emphasis on "creativity" as a driving force in economic development. He notes the importance of culture activities, recreation opportunities and quality of lifestyle for attracting workers.[2] Hence, recent academic literature devotes more attention to studying the role of culture activities in the urban economy.

The importance of culture in shaping public policy is also noteworthy. The final report to the Canadian government by the Prime Minister's External Advisory Committee on Cities and Communities asserts that "...strong cultural engagement can substantially improve the cohesiveness, confidence and international image and attractiveness of places, with attendant economic, environmental and social benefits."[3] City governments themselves express interest in further developing their culture sectors. For example, the City of Toronto's *Culture Plan for the Creative City* argues that arts and culture and "cultural openness" are crucial for spurring economic growth, "In sum: a lively culture and a lively economy are an equation."[4] Smaller cities, such as Barrie, Ontario, have also studied the economic benefits of culture. The city's recent *Building a Creative Future: A plan for Culture* stresses the need to promote the arts and theatre to improve Barrie's attractiveness, enhance its quality of life and generate wealth.[5] Clearly, there is great interest in the role which the culture sector plays in contributing to the economic development of cities.

However, there is little written in past analytical literature concerning whether the size of a city affects the extent of the workforce engaged in the culture sector. Hence, the first purpose of this paper is to shed light on the relative importance of culture employment across a broad cross-section of Canadian communities, ranging from isolated rural parts of Canada to its largest cities. Specifically, we are interested in whether culture is only a big city phenomenon, or if there are smaller cities and rural areas that also support vibrant cultural life. In addition, large metropolitan areas have a far larger capacity for niche markets for various culture goods and services, such as specific genres of theatre, performing arts and visual arts compared to smaller cities and rural areas. This suggests that large cities may have a more diverse culture workforce, composed of a wide variety of different culture occupations, compared to smaller areas. Hence, the second purpose of this paper is to determine the extent to which the occupational diversity of the culture workforce varies across the rural-urban spectrum.

This paper is divided into six sections. Section 2 describes the data used and the methods adopted. Section 3 analyzes the effects of size on the proportion of a city or rural region's workforce in culture occupations. Section 4 analyzes how culture occupational diversity varies between rural areas through to Canada's largest metropolitan areas. In Section 5, certain rural areas with large culture sectors are examined to determine what unique features contribute to the presence of significant local culture employment. Section 6 concludes the paper.

2. Data and methods

We use the *Canadian Framework for Culture Statistics* to define the culture sector of the workforce. The *Framework* considers culture occupations to be those which involve "creative artistic activity and the goods and services produced by it, and the preservation of human heritage."[6] Examples of culture occupations in the *Framework* include artists, writers and museum curators. Other types of occupations that are not directly related to the production of culture goods and services but provide technical, managerial or manufacturing support are also included. Examples of these are performing arts managers, library clerks and audiovisual technicians. The complete list of culture occupations is presented in Table 1 and is taken from the *Framework*. Forty-eight culture occupations are defined in Table 1; 21 directly involve creative and artistic production or heritage collection and preservation (core culture occupations) while the other 27 are culture support occupations. This paper uses employment data from the 2001 Census of Population to estimate the number of workers in each of the 48 culture occupations, as well as the total number of culture workers for each city and rural area in Canada.

The geographic areas used in this analysis are generally consistent with those found in the 2001 version of the Standard Geographical Classification. For urban areas, Census Metropolitan Areas (CMAs) and Census Agglomerations (CAs) are used. CMAs are urban areas with a population of at least 100,000 and are referred to in this paper as "large cities". CAs are urban areas with a population of at least 10,000 but less than 100,000 and are referred to here as "small cities". The reason for analyzing CMAs and CAs separately is that there are important differences in urban areas that are dependant on size. For example, CMAs have a much larger local market for culture goods and services than CAs. Census Divisions (CDs) are used to define rural areas. In cases where a CD contains a CA or a portion of a CMA, only the residual non-urban population is included. The rationale behind this is to prevent double-counting as well as to focus the analysis on the rural portions of a CD. We refer to CMAs, CAs and CDs collectively as "geographies" in this paper.

This paper determines the extent to which the size of the total workforce affects the proportion of the workforce in culture occupations. One method to do this would be to calculate the share of a geography's workforce engaged in culture occupations and then determine whether the culture portion of the workforce is affected by the size of the total workforce. However, the share of a geographic area's workforce in culture occupations does not provide us with a benchmark as to whether culture employment is over or under represented in a geographic area. Hence, location quotients (LQs) are used instead. A culture LQ is the share of culture employment of a particular city or rural area divided by the national share of culture employment for the entire Canadian workforce.[7] In this paper, we often refer to LQ as "culture employment intensity". An LQ that is greater than 1.00 clearly identifies a region that has more employment in culture occupations than the national average. Culture employment in these cities and rural regions is thus

overrepresented, and they are referred to in this paper as "culture clusters". Conversely, an LQ that is less than 1.00 indicates that a geographic area has less culture employment than the national average. Hence, LQs easily identify areas with high or low culture employment intensity. Mathematically, the LQ is defined as:

$$LQ_j = \frac{S_j}{S_\bullet},$$

where S_j and $S_\bullet$ are the employment shares of culture occupations in region *j* and Canada, respectively. The dot (•) indicates the variable has been summed across all geographic regions in Canada. To determine whether total workforce size affects culture employment intensity, LQ was regressed on the total workforce size for all 399 geographies. The results are discussed in-depth in Section 3.

The second question addressed by this paper concerns whether the culture workforce in larger cities is more diverse than small cities and rural areas. Occupational diversity can be measured in several ways. The simplest is based on a count of the number of different culture occupations that are present in a geographic area. However, a potential weakness with this measure of diversity is that it is possible for an area to have most of its culture employment in one or two culture occupations while only having minimal employment in other occupations. Culture employment in such an area would appear to be diverse but in reality would be rather specialized. In measuring culture employment diversity, it is therefore important to account for the way that employment is distributed across the 48 culture occupations. Hence, we use an entropy-based measure that takes into consideration the intensity of employment in each culture occupation as well as the number of culture occupations present in a geographic area. The entropy-based measure used here is defined mathematically as follows:

$$E_j^{occ} = \sum_{i=1}^{n_j} S_{ij} \log\left(1 / S_{ij}\right),$$

where *i* indexes *n* occupations and S_{ij} is the share of employment of occupation *i* in region *j*. Note that n can equal 48 since there are 48 culture occupations. The entropy index has a value of zero when employment is concentrated in just one occupation, indicating that the area is extremely specialized. At the other extreme, if employment is evenly distributed across all 48 occupations, the entropy index takes on a value of $E_j^{occ} = \log(48)$, which in turn equals 1.68. The entropy index, therefore, captures both the number of occupations found in a geographic unit and how employment is distributed across them. In this instance, the entropy measure can have values ranging between 0 and 1.68. However, this scale is not very convenient nor clear. To increase clarity, in this paper the values produced by the entropy measure are exponentiated. Hence, occupational diversity here is measured thusly:

$$Diversity_j = 10^{E_j^{occ}}$$

Thus, the exponentiation produces a better scale, with diversity allowed to vary between 1 (all culture employment in one culture occupation) and 48 (all culture employment distributed evenly across all 48 culture occupations).

Table 1

Core creative and artistic production culture occupations

Literary Arts:

Authors and Writers
Editors
Journalists

Visual Arts and Design:

Architects
Landscape Architects
Industrial Designers
Painters, sculptors, and other visual artists
Photographers
Graphic designers and illustrators
Interior designers
Theatre, fashion, exhibit and other creative designers
Artisans and craftsperson's

Performing Arts:

Actors and comedians
Producers, directors and choreographers
Conductors, composers and arrangers
Musicians and singers
Dancers
Other performers

Heritage collection and preservation culture occupations

Heritage Occupations:

Librarians
Conservators and curators
Archivists

Culture support occupations

Cultural management:

Library, archive, museum and art gallery managers
Managers in publishing, motion pictures, broadcasting and performing arts
Supervisors, library, correspondence and related information clerks

Technical and operational occupations:

Library clerks
Correspondence, publication and related clerks
Landscape and horticultural technicians and specialists
Architectural technologists and technicians
Drafting technologists and interpreters
Professional occupations in public relations and communications
Translators, terminologists and interpreters
Library and archive technicians and assistants
Technical occupations related to museums and galleries
Film and video camera operator
Graphics arts technicians
Broadcast technicians
Audio and video recording technicians
Other technical occupations in motion pictures, broadcasting, and the performing arts
Support and assisting occupations in motions pictures, broadcasting and the performing arts
Announcers and other broadcasters
Patternmakers, textile, leather and fur products

Manufacturing occupations:

Typesetters and related occupations
Supervisors, printing and related occupations
Printing press operators
Printing machine operators
Camera, platemaking and other pre-press occupations
Binding and finishing machine operators
Photographic and film processors

Source: Canadian Framework for Culture Statistics.

3. Population and the culture workforce

Overview

We begin the analysis by providing an overview of the relative significance of culture employment across urban and rural areas of Canada. To do so, location quotients (LQs) are calculated for all 399 geographies (cities and rural areas) in Canada. The LQs indicate that cities and rural areas across Canada are strikingly different from each other in terms of the proportion of their workforces engaged in culture occupations. A total of 32 geographies had LQs greater than one and are defined in this paper as culture clusters; the complete list of culture clusters is in Appendix 1.

We hypothesize that LQ generally increases with the size of a geography's workforce due to the nature of the market for culture goods and services, an expectation based on findings that are common in urban economics literature.[8] In the culture sector, live theatre, art galleries, museums and similar venues have very substantial fixed costs and operating expenses. In short, they are expensive to build and run. Such culture venues therefore require a large market to be economically viable. Building a large, expensive art gallery in a rural area would imply that the costs for the gallery would be spread only amongst a very small local market, an economically inefficient outcome. Rather, since the fixed costs give rise to economies of scale, building the gallery in a large city is much more efficient given that far more people would be able to visit it. Hence, the costs per visitor would be much lower. Thus, we expect that certain culture activities, especially those associated with high-cost facilities, are more likely found in cities and especially large cities. Culture occupations associated with such facilities would therefore tend to be located in large cities, leading to large cities having a higher portion of their workforce in culture employment relative to smaller cities and rural areas.

Reinforcing this hypothesis is the fact that Canadian households spend a very low portion of their income on culture products. In 1999, for example, spending on culture products represented just 3.1% of household income and trails expenditures on housing, food and transportation.[9] Also, many goods and services produced by the culture sector must be consumed in person (for example, museum visits, concert performances). The urban economics literature notes the importance of transportation costs for determining the consumption of goods and services.[10] Since the time and effort required to travel long distances is considered a disincentive for consumption, we expect that consumer demand for culture goods and services is often only local in nature. This is a second limitation on culture employment in smaller cities and rural areas.

Thus, we have good grounds for predicting that LQ will in general rise with the size of a geography's workforce. However, we are also aware that exceptions to this hypothesis exist. Stratford, for example, has a substantial proportion of its workforce engaged in employment related to its annual theatre festival, despite the fact that it is a relatively small city. As well, some very sizeable heritage venues and museums are located in small cities and rural settings, such as the Royal Tyrell Museum in Drumheller, Alberta and Fortress Louisbourg on Cape Breton Island. Hence, the extent to which the hypothesized relationship between LQ and size of workforce is valid is a relevant question.

As can be seen in Table 2, LQ does indeed increase with the size of a geography's workforce. Large cities have an average LQ of 0.95, which is substantially higher than small cities. Moreover, the average LQ is right below 1.00 the threshold for being a culture cluster. Small cities in turn have a higher LQ compared to rural areas. This indicates that size matters;[11] that is, culture clusters are positively associated with large cities.

Table 2
Summary statistics for location quotient by geography type

Geography	Total number	Number of clusters	Mean work force	Mean location quotient	Variance of location quotient	Minimum location quotient	Maximum location quotient
Large cities (CMAs)	27	9	362,333	0.95	0.06	0.57	1.44
Small cities (CAs)	113	9	18,887	0.64	0.05	0.21	1.37
Rural areas (CDs)	259	14	10,726	0.55	0.08	0	2.56
All areas	**399**	**32**	**36,830**	**0.60**	**0.08**	**0**	**2.56**

It is also important, however, to point out that some rural areas and small cities do have unusually high LQs. Nine small cities and fourteen rural areas are culture clusters, some with extremely high LQs (see Appendix 1 for the complete list of culture clusters). For example, the rural portion of the Capital Regional District in British Columbia, has a LQ of 2.56, the highest for all of Canada. Hence, the relationship between culture employment intensity as measured by LQ and the overall size of a geography is a general one. The low average LQs observed for the set of rural areas and the small cities indicate the extent to which the rural and small-city culture clusters are exceptions. Their small size, measured by workforce does not seem large enough to support a culture market that would employ such large numbers of culture workers.

A potential explanation for the rural and small-city culture clusters is that they send the bulk of their culture production to other regions in Canada or internationally. The Baffin Region, for example, produces Inuit carvings and crafts, much of which are shipped to urban Canada and abroad. Similarly, Stratford attracts audiences from nearby cities such as Toronto, Hamilton and Detroit to its theatre festival. Moreover, as artwork can easily be shipped to urban areas and writers are not restricted by location, these culture products are not difficult to export. Thus, the producers of some culture goods and services in the CA and rural culture clusters would not need to depend on small local markets.[12] Hence, a high proportion of the workforce in these clusters can still be employed in culture occupations, despite their small size.

Trends Within Geography Types

The extent to which the relationship between culture employment intensity and total workforce size holds within a particular type of geography is still unclear. To better understand how workforce size might be relevant for culture employment intensity within each category of geography, LQ was regressed on workforce size. The results are summarized in Table 3.[13] Regression analysis also builds on the information in Table 2 by indicating how the three geography types differ in culture employment. Graphs showing the relationship between workforce size and LQ for rural areas, CAs and CMAs are also located below.

Table 3
Simple regression of location quotient on work force by geography type

Geography	Intercept	Workforce	Workforce squared	R-squared
Large cities (CMAs)	0.7523*	8.24E-07*	-2.40E-13*	0.6231
Small cities (CAs)	0.5561*	4.58E-06*	...	0.0881
Rural areas (CDs)	0.5227*	2.57E-06**	...	0.0047
All areas	**0.5836***	**5.44E-07***	**...**	**0.0967**

... not applicable
* Significant at a 1% level of confidence.
** Not significant at a 25% level of confidence.

Chart 1
Rural areas

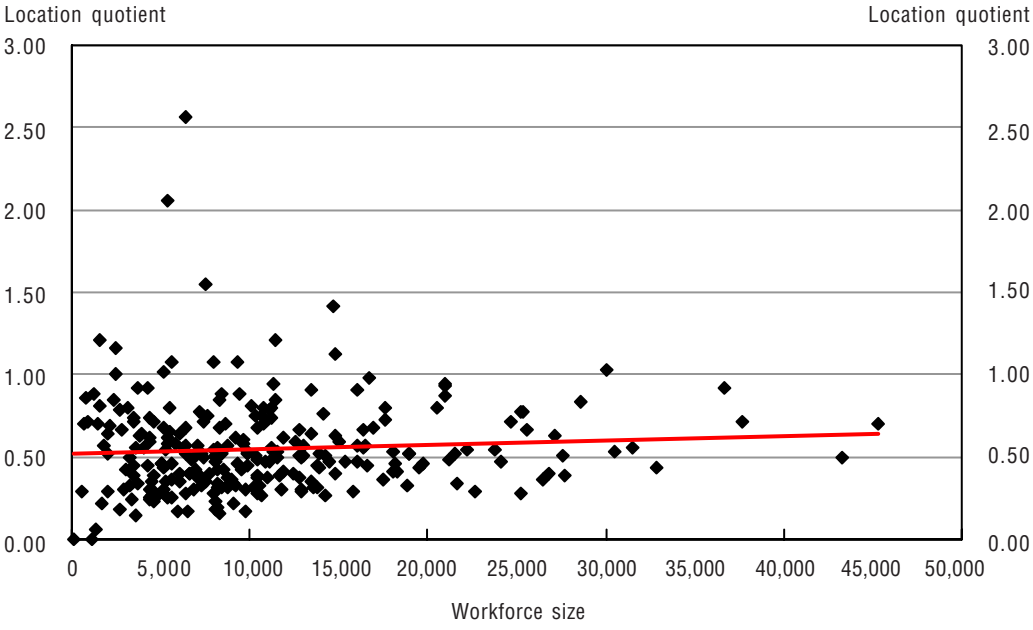


Chart 2
Small cities, Census agglomeration

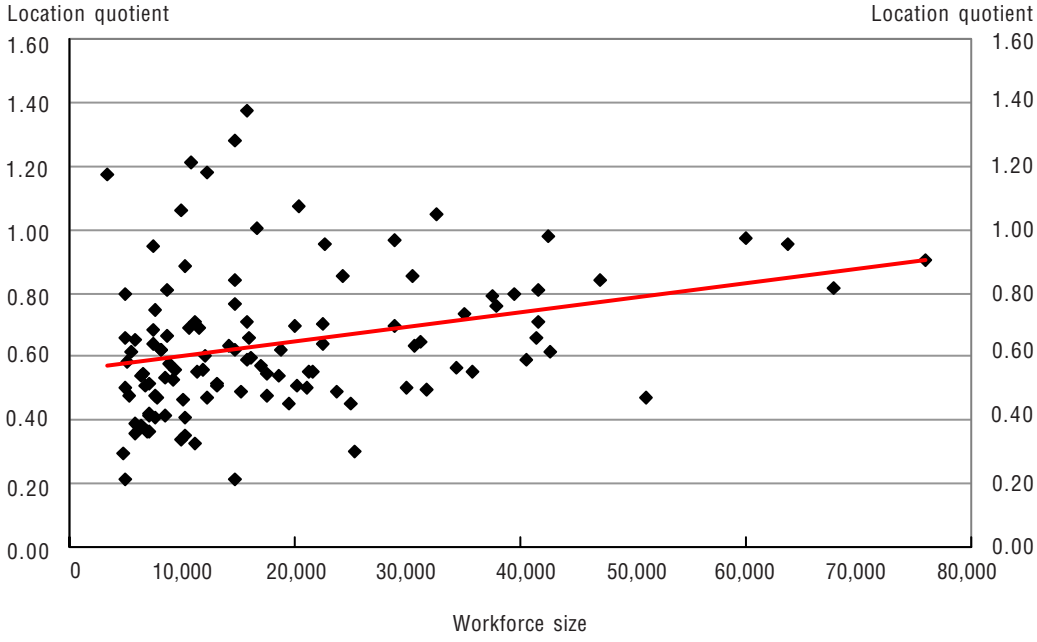
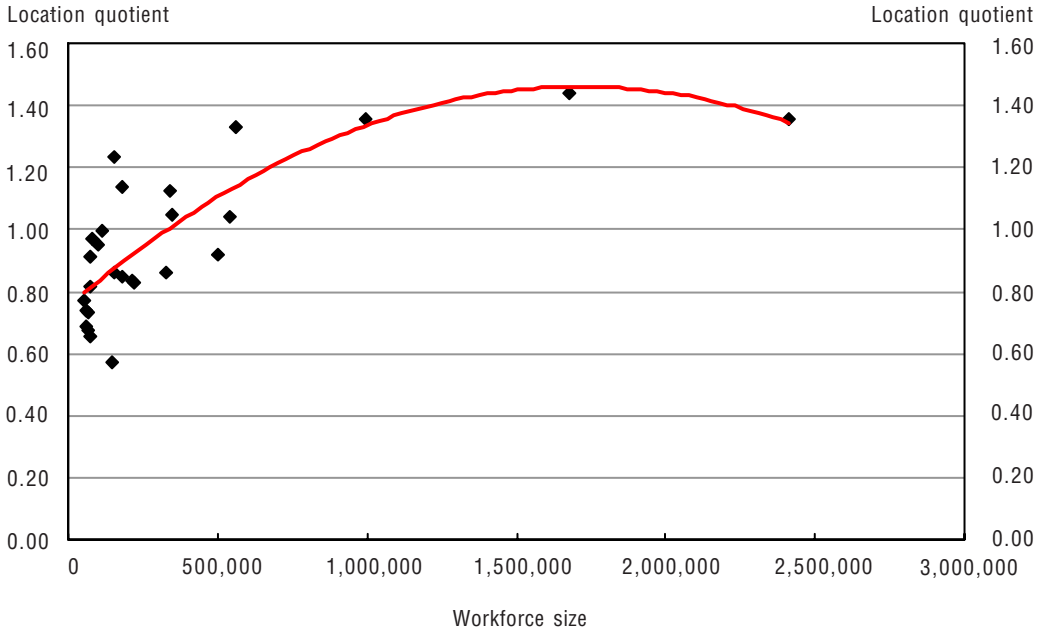


Chart 3
Large cities, Census metropolitan area



For the urban areas (CMAs and CAs), two aspects of Table 3 are important. First, the coefficients for workforce for large and small cities are significant at a 1% level of significance and indicate that workforce size is positively related to an increase in cultural employment intensity. This result is consistent with the overall trend identified previously that culture employment intensity increases with size. Moreover, the relatively high R-square value for the CMA model compared to the CA and rural groups indicates that workforce size is an important determinant of culture employment intensity in large cities but is less important for the other geography types. Hence, the regression evidence further confirms our expectation that city-size and culture employment intensity are positively related, especially for large cities.

For the CMAs, a non-linear specification was found to fit the data better than a linear one. The non-linear specification is interesting and indicates that in CMAs, increases to workforce size result in a proportionally smaller rise in culture employment intensity. Indeed, as the CMA graph indicates, culture employment intensities for Canada's three largest metropolitan areas (Toronto, Montréal and Vancouver) are only slightly greater than the smaller CMAs, despite the significant difference in workforce size between these three cities and the others. The non-linearity in the relationship between workforce size and LQ may be due to the vast areas covered by Canada's largest CMAs. Population growth in Toronto, Montréal and Vancouver tends to be located in suburbs, at the edges of these cities. For suburban residents, the time and effort required to travel to culture venues, which are often located in the centre of a city, might be so great that the suburbs present considerable disincentives for the purchase of culture goods and services. Hence, from the perspective of the market for culture goods and services, suburbs might be quite separate from the central city. If so, then for very large cities, an increase in the overall metropolitan population or workforce size might result in a proportionally smaller increase in consumer demand for culture products. This would potentially explain the non-linear relationship observed between workforce size and LQ. Moreover, the graph for the CMAs shows that an empirical maximum for LQ exists, suggesting that past a certain workforce size, further additions to the size of a city might lead to more urban sprawl but do not lead to any further increases in culture employment intensity.[14]

In contrast to the CMAs and the CAs, the regression coefficient for total workforce for the rural areas is not significant at any reasonable level of confidence. Also, the R-square value indicates that the model for rural regions does not fit the data. Thus, it seems that workforce size is not relevant for culture employment intensity within rural areas. Hence, the regression data provides further evidence that rural and urban areas behave very differently.

4. Culture work force diversity

Overview

In addition to location quotients, the diversity index (DI) of culture occupations is a valuable measure of the nature of culture employment in geographies. Diversity is important because it measures the extent to which culture employment is concentrated in a few occupations or more widely spread amongst a number of different occupations. We expect that geographies with specialized culture workforces are more likely to produce specialized culture goods and services than those with a more varied culture workforce. Also, Jane Jacobs (1969) identified occupational diversity within a city as critical for innovation and growth over the long run. Consistent with her analysis, we would expect that greater culture occupational diversity would enhance the prospects for sustained growth, development and creativity within a geography's culture sector.

We hypothesize that culture employment in small cities and especially rural areas is relatively specialized while large urban areas with broad markets may be more diverse in terms of the number of culture occupations represented in their economies. This hypothesis is based on two rationales. First, rural areas have small total workforces and relatively few culture workers compared to large urban areas. Appendix 1 shows that many rural clusters have several hundred culture workers and some have less than one hundred. Hence, given the small number of culture workers in rural areas, we expect that culture employment in them would tend to be concentrated in a limited number of occupations, even in clusters with high LQs. Second, the notion that smaller cities and rural communities with high LQs are producing specific culture goods and services, largely for markets located elsewhere, implies that culture employment in these geographies would also tend to be specialized. Hence, we would expect that culture workforces in smaller communities would be composed of relatively few occupations compared to larger areas. In contrast, we expect that large cities, with culture workforces numbering in the thousands, would contain a much wider variety of culture occupations.

Table 4 shows summary statistics for the DIs. The diversity ratings specifically for the 32 culture clusters are in Appendix 1 while Appendix 2 lists the top 34 geographies in terms of diversity. As can be seen, often the geographies that have the highest LQs (ie: the culture clusters), are not necessarily the most diverse. Also, some of the geographies with highly diversified culture workforces are not culture clusters. As is shown in Table 4, diversity increases with the size of a geography's workforce. Large cities have a much broader range of culture occupations than small cities and rural areas, as expected. Montréal is the most diverse geography in terms of culture occupations with a DI of 37.75 while Winnipeg, Hamilton, Toronto and Vancouver are close behind (see Appendix 2 for a list of the top geographies by diversity). Rural areas are the least diverse. The two geographies with no culture

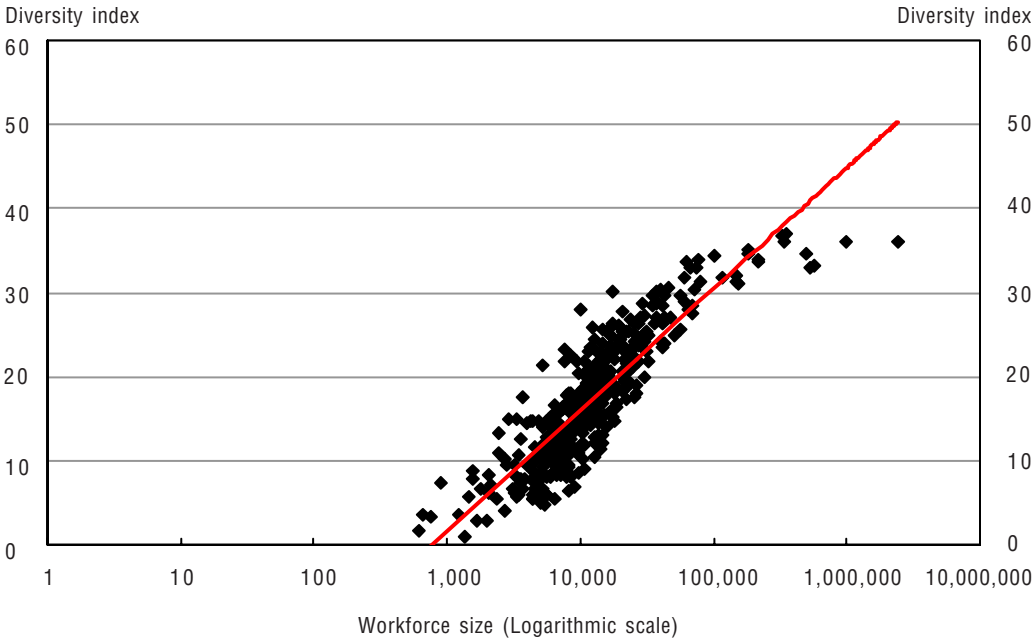
workers were dropped since the DI metric can not be calculated for them. Hence Table 4 is based on data from 397 geographies rather than 399.

Table 4
Summary statistics for diversity index by geography type

Geography	Number	Mean workforce	Mean diversity	Variance	Minimum diversity	Maximum diversity
Large cities (CMAs)	27	362,333	32.75	9.80	25.52	37.75
Small cities (CAs)	113	18,887	19.81	38.39	5.57	33.91
Rural areas (CDs)	257	10,804	14.56	38.66	1.00	30.63
All areas	**397**	**37,012**	**17.29**	**59.44**	**1.00**	**37.75**

In Chart 4, culture occupation diversity is graphed as a function of workforce size for all geographies together. Chart 4 indicates that the relationship between diversity and workforce size is strong (R^2=0.7656). Compared to the relationship between workforce and LQ (described in Section 3), there are fewer extreme values. This suggests that the size of the local market (implied by workforce size) is more directly relevant for culture occupation diversity than for LQ. Moreover, Chart 4 further confirms our hypothesis that large local markets, most likely found in urban areas and especially large cities, are necessary to support a broad range of cultural occupations. The high diversity ratings observed for large cities indicate that they produce a far greater range of culture goods and services than smaller geographies, both for local consumption and for shipment to other areas. Thus, these highly diverse geographies offer greater opportunities for consumers of culture products, contributing to their appeal as places to live and work.

Chart 4
Diversity versus workforce size



Cluster diversity and culture clustering

The DI metric adds an extra dimension to the characterization of culture clusters as well, and Table 5 breaks out the mean diversity levels for the 32 clusters. Rural clusters in general have a very low mean diversity relative to the CMA group, indicating that culture employment in these areas is generally concentrated in relatively few occupations. The Baffin Region in Nunavut is particularly noteworthy since it has an extremely high LQ of 2.03 and yet has a culture occupation diversity of just 10.89 (see Appendix 1). The generally low DIs for rural clusters is consistent with our hypothesis that culture employment in rural clusters is specialized and closely associated with the specific culture goods and services produced and shipped to other regions in Canada and internationally. Secondly, the low variance seen for CMA cluster diversity indicates that large cities tend to be more similar to each other compared the CA clusters and rural clusters. Table 5 indicates that small city clusters are an intermediate group in terms of culture occupation diversity, a result that is not surprising.

Table 5
Diversity of clusters

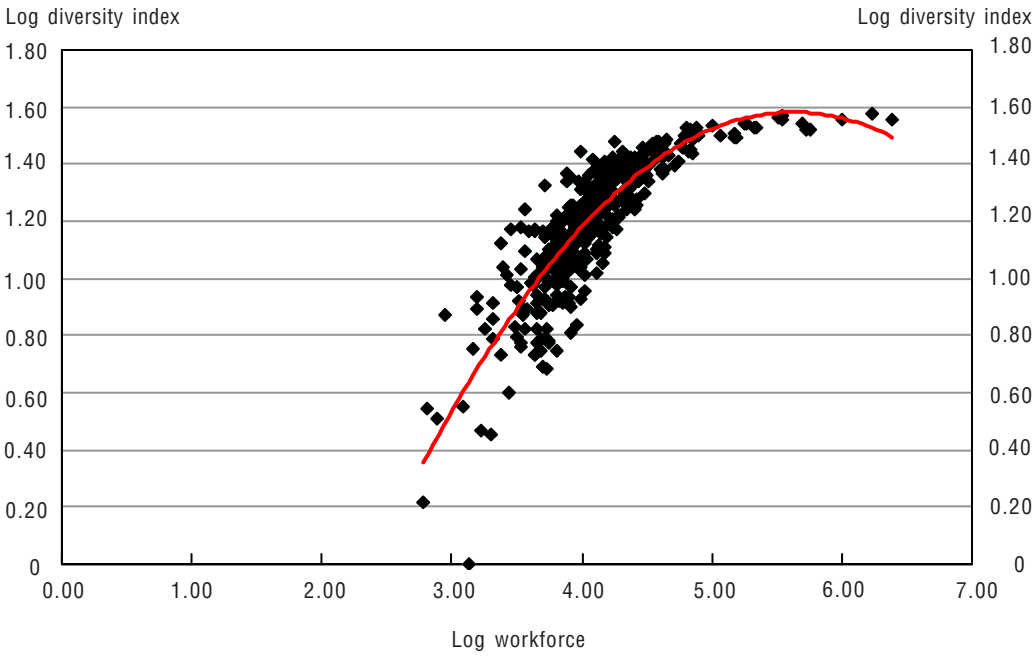
Geography	Number of clusters	Mean diversity	Variance of cluster diversity
Large cities (CMAs)	9	34.99	4.71
Small cities (CAs)	9	22.77	18.60
Rural areas (CDs)	14	15.89	33.98
All areas	**32**	**23.20**	**84.80**

Maximum diversity

We also find an apparent maximum possible value for culture occupation diversity.[15] Chart 5 graphs the logarithm of diversity against the logarithm of workforce for the 397 geographies. The data suggest that beyond a certain workforce size, culture occupation diversity does not increase. This result is intriguing, especially since the most diverse geography in Canada has a DI of 37.75 (Montréal), a value that is significantly below the maximum theoretical DI value of 48.[16] A quadratic equation in Chart 2 fits the data very well (and higher-order polynomials do not improve the goodness of fit).

The fitted curve suggests that the maximum DI corresponds to a workforce size of about 425,000 well-within the range of metropolitan populations in Canada. The corresponding DI is 38.34, only slightly higher than the value for Montréal itself. It is vital to note that this empirical maximum reflects the uniquely Canadian context in 2001. Changing economic conditions could raise or lower this value.

Chart 5
Maximum diversity



5. Characterizing rural and small city culture clusters

Thirty two geographies are identified as culture clusters with LQs above 1.00. As indicated in Table 2, nine culture clusters are large cities, nine are small cities and fourteen are rural areas. A breakdown of culture employment for each cluster into its seven sub-groups is provided in Appendix 3. These sub-groups are literary arts, visual arts and design, performing arts, heritage collection and preservation occupations, cultural management, technical and operational occupations and culture-related manufacturing occupations. Visual arts occupations and technical and operational occupations feature very prominently. For most culture clusters, these subgroups are either the top occupation group or else the second of all seven in terms of number of culture workers. For a small number of clusters, culture-related manufacturing occupations dominate. A noteworthy example is the Robert-Cliche Census District (Quebec), where the printing industry employed a substantial proportion of the workforce in 2001. Owen Sound, Magog and Drummondville also have significant culture-related manufacturing employment. In clusters with large proportions of culture employment in manufacturing, much culture output would not be available for local consumption. Manufactured culture products would more likely be shipped elsewhere, in contrast to performing arts (e.g. the Stratford Theatre Festival) and heritage venues (e.g. museums) which must be consumed locally.

All culture clusters in British Columbia are in geographic proximity to one another, forming what might be termed a "supercluster". Of the four rural areas that have very high visual arts and design shares, three are on Vancouver Island; this is in addition to the cities of Courtenay, Duncan and Victoria which also have a high share in the visual arts. In total, this represents most of the southern third of the island. The fourth rural area with high visual arts in this region is located on the mainland adjacent to this area. It is likely that the beautiful surroundings and warm climate of Vancouver Island are the strongest attraction for visual artists residing there. This is consistent with the analysis by Bunting and Mitchell (2001) concerning the importance of the landscape for visual and literary artists seeking inspiration. In addition, many of the products of visual arts and design can be produced with minimal supporting infrastructure, and in contrast to industries such as film production and printing, few supporting occupations are required for these occupations. Hence, the rural setting is not an impediment for visual and literary artists. Finally, the large number of tourists which visit Vancouver Island and the Sunshine Coast along with the proximity of Vancouver and Seattle suggest that demand for visual arts products from this supercluster would be significant.

Another supercluster exists in the vicinity of Montréal. Here, there are two small city clusters and three rural clusters. This supercluster is more heterogeneous than the one in British Columbia; on the whole it would appear that most of the

culture employment is in culture support occupations, but there is significant variation. Montréal is particularly noteworthy for the large number of occupations in the literary arts, performing arts, culture management, technical occupations and culture-related manufacturing occupations, all of which contribute to its high LQ. For the rural clusters in British Columbia and southern Quebec, proximity to large metropolitan areas would contribute to their vitality as culture clusters

Nunavut is represented by three rural regions with high visual arts and design employment shares. The production of Inuit carvings, tapestries, weavings and other artwork made for export is responsible for significant employment.[17] The unique nature of these products implies that the territory is a major global source for them. These clusters are clearly different from other rural clusters since they are not located close to large population centers. However, the potentially global appeal of Inuit artwork and handicrafts would reduce the importance of proximity to larger urban areas. Moreover, the low workforce size in many rural clusters, including the three in Nunavut, implies that only a small number of culture workers are needed for a rural area to have a high LQ.

6. Conclusion

It is important to consider two dimensions when examining the level and variability of culture employment in cities and rural areas across Canada. The proportion of a city or rural region's employment in culture occupations indexed to the national level (represented by location quotients) is one measure used in this paper. The second important measure used is the diversity of cultural occupations present within a particular geography.

Rural areas in general have culture markets which are too small to support much production of culture goods and services. Hence, culture production in rural culture clusters, along with all associated employment, would likely depend on market demand elsewhere in Canada and abroad. Local demand for culture goods and services would tend to be much less important. Moreover, the greater specialization of culture workforces in rural clusters implies that the range of culture goods and services produced in them would be limited, despite their high LQs. Hence these clusters might be termed "production clusters".

In general, small cities have a higher proportion of their workforces engaged in culture occupations compared to rural areas, likely due to the greater presence of culture venues such as libraries, museums and theatre. In addition, the proportion of the total workforce in culture occupations in small cities is somewhat sensitive to increases in the size of the overall workforce. However, as with rural areas, small cities with large culture workforces are unusual; the smaller urban areas that are culture clusters likely distribute many of their culture products to markets and residents living in other areas. Small city clusters tend to have a more diverse culture workforce than rural areas, implying that the range of culture goods and services available for local consumption is greater.

For Canada's largest cities, culture employment levels are already very high and changes in the proportion of the workforce in culture occupations seem to depend strongly on changes in overall workforce size. This indicates that the scale of local demand is much more critical for culture employment and production in large cities compared to rural areas and small cities. Moreover, large urban areas are big enough to accommodate various niche markets for particular culture goods and services. Thus, large cities, and especially the large-city clusters, offer a much more diverse set of culture goods and services available for local consumption compared to smaller regions.

Various extensions are possible for the research undertaken in this paper. In particular, other socio-economic characteristics present within a geography, besides workforce size, might be important for culture employment intensity and diversity. For example, these might include median income, educational attainment levels and whether a geography is a capital city. In addition, culture employment trends could be investigated to determine if culture employment intensity and diversity have increased over time. Hence, there is much room available for future analytical work.

References

Bunting, Trudi and Clare Mitchell. 2001. "Artists in Rural Locales: Market Access, Landscape Appeal and Economic Exigency." *The Canadian Geographer*. 45, 2: 268-284.

City of Barrie. 2006. *Building a Creative Future: A Plan for Culture*.

City of Toronto. 2003. *Culture Plan for the Creative City*.

Clark, Terry. 2003. "Urban Amenities: Lakes, Opera, and Juice Bars Do They Drive Development?" in *The City as an Entertainment Machine: Research in Urban Policy*. 9: 103-140.

Clark, Terry, et. al.. 2002. "Amenities Drive Urban Growth." *Journal of Urban Affairs*. 24, 5: 493-515.

Culture Statistics Program, Statistics Canada. 2004. *Canadian Framework for Culture Statistics*.

Dugas, Erika. 2006. "What Canadian Households Spend on Culture Goods and Services." Focus on Culture: *Quarterly Bulletin from the Culture Statistics Program*. 15, 4.

Duranton, Gilles and Diego Puga. 2003. "Micro-foundations of Urban Agglomeration Economies." draft chapter written for the *Handbook of Regional and Urban Economics*, vol. 4.

External Advisory Committee on Cities and Communities. 2006. *From Restless Communities to Resilient Places: Building a Stronger Future for All Canadians*.

Florida, Richard. 2005. *Cities and the Creative Class*. New York, NY: Routledge.

Glaeser, Edward, Jed Kolko and Albert Saiz. 2001. "Consumer City." *Journal of Economic Geography*. 1: 27-50.

Glaeser, Edward and Joshua Gottlieb. 2006. "Urban Resurgence and the Consumer City." *Urban Studies*. 43, 8: 1275-1299.

Government of Nunavut website: http://www.gov.nu.ca/Nunavut/English/about/eco.pdf. Accessed on April 13, 2007.

Jacobs, Jane. 1969. *The Economy of Cities*. New York: Random House.

Krugman, Paul. 1991. "Increasing Returns and Economic Geography." *The Journal of Political Economy*. 99, 3: 483-499.

Mitchell, Clare, Trudi Bunting and Maria Piccioni. 2004. "Visual Artist: Counter - Urbanites in the Canadian Countryside?" *The Canadian Geographer*. 48, 2: 152-167.

Singh, Vik. 2006. "Rural Employment in the Culture Sector." *Rural and Small Town Canada Analysis Bulletin*. 6, 8.

Endnotes

1. For example, see Glaeser, Kolko and Saiz (2001), Clark *et al* (2002), Clark (2003), Glaeser and Gotlieb (2006).
2. See especially Florida (2005: 90-9).
3. External Advisory Committee on Cities and Communities (2006: 63).
4. City of Toronto (2003: 9).
5. City of Barrie (2006).
6. Culture Statistics Program, Culture, Tourism and the Centre for Education Statistics Division, Statistics Canada (2004: 9).
7. The national rate of culture employment is simply the total number of culture workers in Canada in 2001 (530,325) divided by Canada's total work force in 2001 (14,695,135).
8. For example, Duranton and Puga (2003: 3) make a similar argument. Also see Krugman (1991).
9. Dugas (2006).
10. For example, see Duranton and Puga (2003:3-4) and Krugman (1991).
11. This result is consistent with Singh (2006), which determined that rural areas have proportionally less culture employment than urban areas.
12. See Mitchell, Bunting and Piccioni (2004) for an analysis concerning why artists in particular are attracted to rural areas.
13. To determine whether the results were driven by the definition of culture occupation, the regressions were also run on a restricted definition of culture that included only the "core" culture occupations (creative and artistic production and heritage collection and preservation) and excluded the support occupations entirely. The results with the restricted definition of culture are consistent with the conclusions drawn from Table 3.
14. The authors are in debt to Desmond Beckstead for this explanation concerning why a non-linear relationship might exist between workforce size and LQ for large metropolitan areas.
15. The authors wish to acknowledge that the insights provided by Mark Brown and Desmond Beckstead were essential for this discussion concerning why a maximum value for culture occupation diversity would exist.
16. In order to achieve a diversity measure of 48, the culture employment for an area would need to be equally distributed across each of the 48 occupations in the area; that is, there would need to be the same number of culture workers in each culture occupation.
17. See for example the Government of Nunavut's website for a discussion of artistic production in Nunavut (http://www.gov.nu.ca/Nunavut/English/about/eco.pdf). Accessed on April 12, 2007.

Appendix 1

Location quotients and diversity for national culture clusters

Location quotient ranking	Province	Geography	Type	Total workers[1]	Culture workers[1]	Location quotient	Diversity index
1	British Columbia	Capital Regional District	Rural	6,375	590	2.564	15.39
2	Nunavut	Baffin Region	Rural	5,380	395	2.034	10.89
3	British Columbia	Nanaimo Regional District	Rural	7,460	420	1.560	16.17
4	Quebec	Montréal	CMA	1,678,720	87,025	1.436	37.75
5	Quebec	Les Pays-d'en-Haut	Rural	14,700	750	1.414	23.85
6	Ontario	Stratford	CA	15,840	785	1.373	22.02
7	British Columbia	Vancouver	CMA	995,320	48,685	1.355	36.10
8	Ontario	Toronto	CMA	2,413,100	117,940	1.354	36.16
9	Ontario	Ottawa - Hull	CMA	561,875	26,910	1.327	33.31
10	Ontario	Owen Sound	CA	14,605	675	1.281	20.41
11	British Columbia	Victoria	CMA	155,730	6,950	1.237	31.01
12	Quebec	Magog	CA	10,810	475	1.218	17.73
13	British Columbia	Sunshine Coast Regional District	Rural	11,445	500	1.211	14.97
14	Nunavut	Keewatin Region	Rural	2,435	105	1.195	10.92
15	Yukon Territory	Whitehorse	CA	12,165	520	1.184	25.96
16	Ontario	Elliot Lake	CA	3,355	140	1.156	15.01
17	Nunavut	Kitikmeot Region	Rural	1,565	65	1.151	7.83
18	Nova Scotia	Halifax	CMA	182,480	7,505	1.140	34.72
19	Quebec	Québec	CMA	343,745	13,965	1.126	35.98
20	British Columbia	Cowichan Valley Regional District	Rural	14,810	600	1.123	25.57
21	British Columbia	Courtenay	CA	20,370	790	1.075	25.96
22	Quebec	Robert-Cliche	Rural	9,350	360	1.067	10.85
23	Quebec	Memphrémagog	Rural	7,930	305	1.066	16.84
24	Quebec	La Vallée-du-Richelieu	Rural	5,620	215	1.060	14.71
25	Northwest Territories	Yellowknife	CA	9,945	380	1.059	27.98
26	Quebec	Drummondville	CA	32,540	1,235	1.052	24.97
27	Manitoba	Winnipeg	CMA	345,725	13,105	1.050	36.93
28	Alberta	Calgary	CMA	540,375	20,345	1.043	32.99
29	Nova Scotia	Victoria County	Rural	2,410	90	1.035	13.24
30	Ontario	Lanark County	Rural	30,065	1,115	1.028	27.31
31	Ontario	Manitoulin District	Rural	5,140	190	1.024	13.98
32	British Columbia	Duncan	CA	16,650	605	1.007	24.93

1. Figures rounded to preserve confidentiality.

Appendix 2

Diversity

Diversity index ranking	Location quotient ranking	Province	Geography	Total workers[1]	Culture workers[1]	Diversity index	Location quotient
1	4	Quebec	Montréal	1,678,720	87,025	37.75	1.436
2	27	Manitoba	Winnipeg	345,725	13,105	36.93	1.050
3	61	Ontario	Hamilton	325,795	10,090	36.71	0.858
4	8	Ontario	Toronto	2,413,100	117,940	36.16	1.354
5	7	British Columbia	Vancouver	995,320	48,685	36.10	1.355
6	19	Quebec	Québec	343,745	13,965	35.98	1.126
7	66	Ontario	St. Catharines - Niagara	180,470	5,515	35.10	0.847
8	18	Nova Scotia	Halifax	182,480	7,505	34.72	1.140
9	48	Alberta	Edmonton	503,360	16,710	34.71	0.920
10	41	Saskatchewan	Regina	100,470	3,440	34.42	0.949
11	71	Ontario	Kitchener	220,080	6,605	33.98	0.832
12	53	Ontario	Barrie	76,010	2,470	33.91	0.900
13	39	Ontario	Guelph	63,655	2,195	33.73	0.956
14	70	Ontario	London	215,695	6,500	33.60	0.835
15	9	Ontario	Ottawa - Hull	561,875	26,910	33.31	1.327
16	28	Alberta	Calgary	540,375	20,345	32.99	1.043
17	74	British Columbia	Kelowna	67,805	2,000	32.98	0.817
18	50	Quebec	Sherbrooke	74,960	2,475	32.91	0.915
19	187	Ontario	Windsor	149,810	3,075	31.96	0.569
20	102	Quebec	Trois-Rivières	60,950	1,625	31.85	0.739
21	33	Saskatchewan	Saskatoon	114,615	4,125	31.74	0.997
22	37	Newfoundland	St. John's	80,090	2,810	31.38	0.972
23	59	Ontario	Oshawa	150,690	4,685	31.27	0.862
24	11	British Columbia	Victoria	155,730	6,950	31.01	1.237
25	122	Ontario	Simcoe County	45,280	1,135	30.63	0.695
26	73	Ontario	Kingston	71,035	2,095	30.47	0.817
27	81	Quebec	Saint-Jean-sur-Richelieu	39,435	1,135	30.26	0.798
28	86	Ontario	Prescott and Russell United Counties	17,585	505	30.10	0.796
29	113	Alberta	Division No. 6	37,640	965	30.09	0.710
30	126	Ontario	Thunder Bay	57,065	1,420	29.76	0.690
31	106	Alberta	Lethbridge	34,995	925	29.64	0.732
32	168	British Columbia	Prince George	42,585	940	29.62	0.612
33	36	New Brunswick	Moncton	60,025	2,105	28.93	0.972
34	95	Alberta	Red Deer	37,820	1,035	28.85	0.758

1. Figures rounded to preserve confidentiality.

Appendix 3

Detailed break-out of culture occupation sub-groups for culture clusters

Province	Geography	Type	Heritage	Literary arts	Performing arts	Visual arts and design	Cultural manage-ment	Technical and operational occupations	Manu-facturing occupations	Total culture workers
Alberta	Calgary	CMA	580	1,600	2,500	5,590	650	7,140	2,285	20,345
British Columbia	Courtenay	CA	x	x	105	255	x	290	70	790
British Columbia	Duncan	CA	x	x	110	255	x	140	x	605
British Columbia	Vancouver	CMA	1,160	3,920	8,460	13,130	1,760	15,000	5,255	48,685
British Columbia	Victoria	CMA	305	895	965	2025	220	2,055	485	6,950
British Columbia	Capital Regional District	Rural	x	40	90	325	x	115	x	590
British Columbia	Cowichan Valley Regional District	Rural	x	60	120	190	x	110	100	600
British Columbia	Nanaimo Regional District	Rural	x	55	x	220	x	65	x	420
British Columbia	Sunshine Coast Regional District	Rural	x	60	65	245	x	85	x	500
Manitoba	Winnipeg	CMA	410	970	1,845	2,865	655	3,850	2,520	13,105
Northwest Territories	Yellowknife	CA	x	55	x	90	x	145	x	380
Nova Scotia	Halifax	CMA	380	650	1,090	1,540	590	2,455	785	7,505
Nova Scotia	Victoria County	Rural	x	x	x	x	x	x	x	90
Nunavut	Baffin Region	Rural	x	x	x	190	x	145	x	395
Nunavut	Keewatin Region	Rural	x	x	x	x	x	50	x	105
Nunavut	Kitikmeot Region	Rural	x	x	x	x	x	x	x	65
Ontario	Elliot Lake	CA	x	x	x	x	x	50	x	140
Ontario	Owen Sound	CA	x	x	x	135	x	110	310	675
Ontario	Stratford	CA	x	x	180	225	x	170	150	785
Ontario	Ottawa - Hull	CMA	1,615	3,750	2,025	4,890	1,875	9,990	2,755	26,910
Ontario	Toronto	CMA	2,275	11,405	17,150	32,045	6,885	31,390	16,785	117,940
Ontario	Lanark County	Rural	50	165	50	285	40	295	250	1,115
Ontario	Manitoulin District	Rural	x	40	x	55	x	x	x	190
Quebec	Drummondville	CA	x	x	50	300	45	375	425	1,235
Quebec	Magog	CA	x	x	x	100	x	140	180	475
Quebec	Montréal	CMA	1,810	6,830	10,725	20,615	4,460	31,370	11,205	87,025
Quebec	Québec	CMA	385	1,050	1,210	3,355	590	5,750	1,630	13,965
Quebec	La Vallée-du-Richelieu	Rural	x	x	x	75	x	50	x	215
Quebec	Les Pays-d'en-Haut	Rural	x	75	50	210	x	345	x	750
Quebec	Memphrémagog	Rural	x	x	65	90	x	115	x	305
Quebec	Robert-Cliche	Rural	x	x	x	65	x	x	255	360
Yukon	Whitehorse	CA	x	70	130	115	x	125	x	520

X suppressed to meet the confidentialty requirements of the Ststistics Act

Culture, Tourism and the Centre for Education Statistics

Research Papers

Cumulative index

Statistics Canada's **Division of Culture, Tourism and the Centre for Education Statistics** develops surveys, provides statistics and conducts research and analysis relevant to current issues in its three areas of responsibility.

The **Culture Statistics Program** creates and disseminates timely and comprehensive information on the culture sector in Canada. The program manages a dozen regular census surveys and databanks to produce data that support policy decision and program management requirements. Issues include the economic impact of culture, the consumption of culture goods and services, government, personal and corporate spending on culture, the culture labour market, and international trade of culture goods and services. Analysis is also published in *Focus on Culture* (87-004-XIE, free, http://www.statcan.ca/bsolc/english/bsolc?catno=87-004-X).

The **Tourism Statistics Program** provides information on domestic and international tourism. The program covers the Canadian Travel Survey and the International Travel Survey. Together, these surveys shed light on the volume and characteristics of trips and travellers to, from and within Canada.

The **Centre for Education Statistics** develops and delivers a comprehensive program of pan-Canadian education statistics and analysis in order to support policy decisions and program management, and to ensure that accurate and relevant information concerning education is available to the Canadian public and to other educational stakeholders. The Centre conducts fifteen institutional and over ten household education surveys. Analysis is also published in *Education Matters* (81-004-XIE, free, http://www.statcan.ca/bsolc/english/bsolc?catno=81-004-X), and in the *Analytical Studies Branch research paper series* (11F0019MIE, free, http://www.statcan.ca/bsolc/english/bsolc?catno=11F0019M).

Following is a cumulative index of Culture, Tourism and the Centre for Education Statistics research papers published to date

Research papers

81-595-MIE2002001	Understanding the rural-urban reading gap
81-595-MIE2003002	Canadian education and training services abroad: the role of contracts funded by international financial institution
81-595-MIE2003003	Finding their way: a profile of young Canadian graduates
81-595-MIE2003004	Learning, earning and leaving – The relationship between working while in high school and dropping out
81-595-MIE2003005	Linking provincial student assessments with national and international assessments
81-595-MIE2003006	Who goes to post-secondary education and when: Pathways chosen by 20 year-olds
81-595-MIE2003007	Access, persistence and financing: First results from the Postsecondary Education Participation Survey (PEPS)
81-595-MIE2003008	The labour market impacts of adult education and training in Canada
81-595-MIE2003009	Issues in the design of Canada's Adult Education and Training Survey
81-595-MIE2003010	Planning and preparation: First results from the Survey of Approaches to Educational Planning (SAEP) 2002
81-595-MIE2003011	A new understanding of postsecondary education in Canada: A discussion paper
81-595-MIE2004012	Variation in literacy skills among Canadian provinces: Findings from the OECD PISA
81-595-MIE2004013	Salaries and salary scales of full-time teaching staff at Canadian universities, 2001-2002: final report
81-595-MIE2004014	In and out of high school: First results from the second cycle of the Youth in Transition Survey, 2002
81-595-MIE2004015	Working and Training: First Results of the 2003 Adult Education and Training Survey
81-595-MIE2004016	Class of 2000: Profile of Postsecondary Graduates and Student Debt
81-595-MIE2004017	Connectivity and ICT integration in Canadian elementary and secondary schools: First results from the Information and Communications Technologies in Schools Survey, 2003-2004

Following is a cumulative index of Culture, Tourism and the Centre for Education Statistics research papers published to date

Research papers

81-595-MIE2004018	Education and labour market pathways of young Canadians between age 20 and 22: an Overview
81-595-MIE2004019	Salaries and salary scales of full-time teaching staff at Canadian universities, 2003-2004
81-595-MIE2004020	Culture Goods Trade Estimates: Methodology and Technical Notes
81-595-MIE2004021	Canadian Framework for Culture Statistics
81-595-MIE2004022	Summary public school indicators for the provinces and territories, 1996-1997 to 2002-2003
81-595-MIE2004023	Economic Contribution of Culture in Canada
81-595-MIE2004024	Economic Contributions of the Culture Sector in Ontario
81-595-MIE2004025	Economic Contribution of the Culture Sector in Canada – A Provincial Perspective
81-595-MIE2004026	Who pursues postsecondary education, who leaves and why: Results from the Youth in Transition Survey
81-595-MIE2005027	Salaries and salary scales of full-time teaching staff at Canadian universities, 2002-2003: final report
81-595-MIE2005028	Canadian School Libraries and Teacher-Librarians: Results from the 2003/04 Information and Communications Technologies in Schools Survey
81-595-MIE2005029	Manitoba Postsecondary Graduates from the Class of 2000: How Did They Fare?
81-595-MIE2005030	Salaries and Salary Scales of Full-time teaching Staff at Canadian Universities, 2004-2005: Preliminary Report
81-595-MIE2005031	Salaries and salary scales of full-time teaching staff at Canadian universities, 2003-2004: final report
81-595-MIE2005032	Survey of Earned Doctorates: A Profile of Doctoral Degree Recipients
81-595-MIE2005033	The Education Services Industry in Canada
81-595-MIE2005034	Connectivity and ICT Integration in First Nations Schools: Results from the Information and Communications Technologies in Schools Survey, 2003/04
81-595-MIE2005035	Registered Apprentices: A Class Ten Years Later

Following is a cumulative index of Culture, Tourism and the Centre for Education Statistics research papers published to date

Research papers

81-595-MIE2005036	Participation in Postsecondary Education: Evidence from the Survey of Labour Income Dynamics
81-595-MIE2006037	Economic Contribution of the Culture sector to Canada's Provinces
81-595-MIE2006038	Profile of Selected Culture Industries in Ontario
81-595-MIE2006039	Factors Affecting the Repayment of Student Loans
81-595-MIE2006040	Culture Goods Trade Data User Guide
81-595-MIE2006041	Health Human Resources and Education: Outlining Information Needs
81-595-MIE2006042	How Students Fund Their Postsecondary Education: Findings from the Postsecondary Education Participation Survey
81-595-MIE2006043	Educational Outcomes at Age 19 Associated with Reading Ability at Age 15
81-595-MIE2006044	Summary Public School Indicators for the Provinces and Territories, 1997-1998 to 2003-2004
81-595-MIE2006045	Follow-up on Education and Labour Market Pathways of Young Canadians Aged 18 to 20 – Results from YITS Cycle 3
81-595-MIE2006046	Salaries and Salary Scales of Full-time Teaching Staff at Canadian Universities, 2005/2006: Preliminary Report
81-595-MIE2006047	Canada Student Loans Repayment Assistance: Who Does and Does Not Use Interest Relief?
81-595-MIE2006048	Salaries and Salary Scales of Full-time Teaching Staff at Canadian Universities, 2004/2005: Final Report
81-595-MIE2007049	Educating Health Workers: A Statistical Portrait
81-595-MIE2007050	Summary Public School Indicators for the Provinces and Territories, 1997-1998 to 2003-2004
81-595-MIE2007051	Culture Employment in a North American Context
81-595-MIE2007052	Salaries and Salary Scales of Full-time Teaching Staff at Canadian Universities, 2006/2007: Preliminary Report
81-595-MIE2007053	Towards a Geography of Culture: Culture Occupations Across the Canadian Urban-Rural Divide